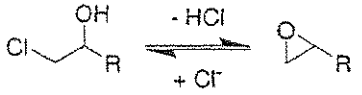
IMPROVED HALOHYDRIN DEHALOGENASES AND RELATED POLYNUCLEOTIDES

FIELD OF THE INVENTION

The present invention relates to novel halohydrin dehalogenase polypeptides and the polynucleotides that encode them.

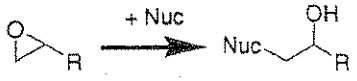
BACKGROUND OF THE INVENTION

Halohydrin dehalogenase ("HHDH"), also named halohydrin hydrogen-halide-lyase or halohydrin epoxidase, [EC4.5.1] catalyzes the interconversion of 1,2-halohydrins and the corresponding 1,2-epoxides:

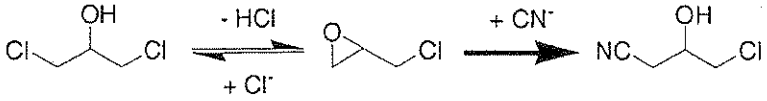


U.S. Pat. No. 4,284,723 describes the use of a halohydrin epoxidase for the production of propylene oxide. U.S. Pat. Nos. 5,166,061 and 5,210,031 describe the use of this enzyme activity for the conversion of 1,3-dichloropropanol (DCP) and epichlorohydrin (ECH) respectively to 4-chloro-3-hydroxybutyronitrile (CHBN). HHDH enzymes from *Agrobacterium radiobacter* and *Corynebacterium* have been characterized on a broad range of halogenated substrates (Van Hylckama Vlieg *et al.*, J. Bacteriol. (2001) 183:5058-5066; Nakamura *et al.*, Appl. Environ. Microbiol. (1994) 60:1297-1301; Nagasawa *et al.*, Appl. Microbiol. Biotechnol. (1992) 36:478-482).

HHDH also catalyzes the ring opening of epoxides with nucleophiles other than chloride or bromide. It has been demonstrated that azide (N_3^-), nitrite (NO_2^-) and cyanide (CN^-) can replace chloride in the opening of epoxides (see Nakamura et al., Biochem. Biophys Res. Comm. (1991) 180:124-130; Nakamura et al., Tetrahedron (1994) 50: 11821-11826; Lutje Spelberg et al., Org. Lett. (2001) 3:41-43; Lutje Spelberg et al., Tetrahedron Assym. (2002) 13:1083):



Nakamura et al. (Tetrahedron (1994) 50: 11821-11826) describe the use of HHDH for the direct conversion of DCP to chloro-3-hydroxy-butyronitrile (CHBN) through epichlorohydrin (ECH) as the intermediate:



Some halohydrin dehalogenases have been characterized. For example, HHDH from *A. radiobacter* AD1 is a homotetramer of 28 kD subunits. *Corynebacterium* sp. N-1074 produces two HHDH enzymes, one of which is composed of 28 kD subunits (Ia), while the other is composed of related subunits of 35 and/or 32 kD (Ib). HHDH from some sources is easily inactivated under oxidizing conditions in a process that leads to dissociation of the subunits, has a pH optimum from pH 8 to 9 and an optimal temperature of 50°C (Tang, Enz. Microbial Technol. (2002) 30:251-258; Swanson, Curr. Opin. Biotechnol. (1999) 10:365-369). The optimal pH for HHDH catalyzed epoxide formation has been reported as 8.0 to 9.0 and the optimal temperature in the range of from 45°C to 55°C (Van Hylckama Vlieg *et al.*, J. Bacteriol. (2001) 183:5058-5066; Nakamura *et al.*, Appl. Environ. Microbiol. (1994) 60:1297-1301; Nagasawa *et al.*, Appl. Microbiol. Biotechnol. (1992) 36:478-482). The optimal pH for the reverse reaction, ring opening by chloride, has been reported for the two *Corynebacterium* sp. N-1074 enzymes and is 7.4 (Ia) or 5 (Ib). Site directed mutagenesis studies on the *A. radiobacter* AD1 HHDH indicated that oxidative inactivation is due to disruption of the quartenary structure of the enzyme by oxidation of cysteine residues (Tang et al., Enz. Microbial Technol. (2002) 30:251-258).

Purified HHDH enzymes from different sources exhibit specific activities on DCP ranging from 146 U/mg (Ib) to 2.75 U/mg (Ia) (Nakamura *et al.*, Appl. Environ. Microbiol. 1994 60:1297-1301; Nagasawa *et al.*, Appl. Microbiol. Biotechnol. (1992) 36:478-482). The high activity of the Ib enzyme is accompanied by a high enantioselectivity to produce R-ECH from DCP, while the Ia enzyme produces racemic ECH.

HHDH encoding genes have been identified in *Agrobacterium radiobacter* AD1 (*hheC*), *Agrobacterium tumefaciens* (*halB*), *Corynebacterium sp* (*hheA* encoding

Ia and *hheB* encoding Ib), *Arthrobacter sp.* (*hheA*$_{AD2}$), and *Mycobacterium* sp. GP1 (*hheB*$_{GP1}$). All enzymes have been functionally expressed in *E. coli*.

It is highly desirable for commercial applications of HHDH that the enzyme exhibits high volumetric productivity, that reactions run to completion in a relatively short period of time, with a high final product concentration, with high enanantioselectivity, and that no chemical side products are formed. These characteristics of a process can generally be used to define the broad characteristics of the enzyme: low Km for the substrate(s), high process stability, high specific activity, no substrate and product inhibition under conditions where chemical reactions are not proceeding. Currently available HHDH enzymes do not fulfill all of these criteria. For instance, the conversion on 1,2-epoxybutane and cyanide to 3-hydroxyvaleronitrile by HHDH proceeds at a maximum rate of 3 mmol/hr and this rate is sustained for only 10 minutes (Nakamura et al., Biochem. Biophys Res. Comm. (1991) 180:124-130). Conversion of DCP and ECH to 4-chloro-3-hydroxybutyro-nitrile (CHBN) is also limited to rates of 2-3 mmol/hr (Nakamura, U.S. Pat. Nos. 5,166,061 and 5,210,031). An in depth analysis of the ECH to CHBN conversion reveals that while the hheB encoded HHDH-Ib enzyme has high activity, high productivity is maintained for only 20 min after which further conversion occurs at a rate that is at least 50-fold slower, with the overall conversion at just over 60% (Nakamura et al. Tetrahedron (1994) 50: 11821-11826). The direct conversion of DCP, via ECH to CHBN proceeds at a reduced rate and results in a 65.3% yield. Thus, HHDH as described in the literature does not meet the desired criteria for a catalyst in commercial applications.

Accordingly, new halohydrin dehalogenases would be highly desirable.

SUMMARY

The present disclosure is directed to a polypeptide, typically an isolated and optionally purified polypeptide (more typically, a recombinant polypeptide) having halohydrin dehalogenase activity, wherein the polypeptide comprises an amino acid sequence selected from the group consisting of:

(a) a polypeptide having an amino acid sequence that is at least 99% identical to SEQ ID NO: 4, 12, 16, 18, 34, 38, 44, 48, 52, 66, 80, 84, 114, 154, 158, 170, or 270;

(b) a polypeptide having an amino acid sequence that is at least 98% identical to SEQ ID NO: 10, 14, 68, 118, 164, 166, or 180;

(c) a polypeptide having an amino acid sequence that is at least 97% identical to SEQ ID NO: 110, 162, 262, 422, 440 or 520;

(d) a polypeptide having an amino acid sequence that is at least 96% identical to SEQ ID NO: 116 or 448;

(e) a polypeptide having an amino acid sequence that is at least 95% identical to SEQ ID NO: 264, 266, 470 or 476;

(f) a polypeptide having an amino acid sequence that is at least 93% identical to SEQ ID NO: 200;

(g) a polypeptide having an amino acid sequence that is at least 89% identical to SEQ ID NO: 442;

(h) a polypeptide having an amino acid sequence that is at least 88% identical to SEQ ID NO: 702;

(i) a polypeptide that is at least 80% identical to SEQ ID NO: 2, when optimally aligned with SEQ ID NO: 2, and which comprises at least one amino acid residue selected from the group consisting of T at (residue) position 2, A or P or S at position 3, V at position 4, D at position 6, either I or F at position 9, L at position 10, S at position 13, S at position 14, K at position 15, C at position 16, T or R at position 17, either C or S or K at position 20, T at position 24, Q at position 26, F at position 28, T at position 29, A at position 30, L at position 31, G at position 33, R at position 34, L at position 35, N at position 36, H at position 37, D at position 40, L at position 44, P at position 45, either P or A at position 47, N at position 52, V at position 54, R at position 55, D at position 56, K at position 58, G or D at position 61, V at position 63, R at position 72, I at position 75, P at position 76, C at position 78, Y at position 82, either S or L at position 84, A at position 85, E at position 91, D at position 93, Q or G at position 95, N at position 96, K at position 107, A at position 112, either T, S or G at position 114, A at position 115, P at position 117, N at position 120, E at position 121, P at position 122, R at position 126, V at position 130, S at position 133, A or V at position 134, L, W or V at position 136, H at position 139, I or R at position 142, S at position 144, S at position 146, T at position 152, S at position 153, either S or A at position 154, V at position 168, T at position 169, F at position 177, V at position 178, I at position 180, G or I at position 181, K at position 184, Y at position 186, L at

position 194, N at position 198, M at position 199, E at position 215, G at position 236, V at position 237, L at position 238, T at position 240, either I or A or V at position 245, Y at position 249, V or I at position 252, and V at position 254;

(j) a polypeptide encoded by a nucleic acid that hybridizes under stringent conditions over substantially the entire length of a nucleic acid corresponding to SEQ ID NO: 1, and wherein the encoded polypeptide, when optimally aligned with SEQ ID NO: 2, comprises an amino acid sequence having at least one amino acid residue selected from the group consisting of T at (residue) position 2, A, P or S at position 3, V at position 4, D at position 6, either I or F at position 9, L at position 10, S at position 13, S at position 14, K at position 15, C at position 16, T or R at position 17, either S or K or C at position 20, T at position 24, Q at position 26, F at position 28, T at position 29, A at position 30, L at position 31, G at position 33, R at position 34, L at position 35, N at position 36, H at position 37, D at position 40, L at position 44, P at position 45, either P or A at position 47, N at position 52, V at position 54, R at position 55, D at position 56, K at position 58, G or D at position 61, V at position 63, R or Q at position 72, I at position 75, P at position 76, C at position 78, Y at position 82, either S or L at position 84, A at position 85, E at position 91, D at position 93, Q or G at position 95, N at position 96, G at position 99, K at position 107, A at position 112, either T, G or S at position 114, A at position 115, P at position 117, N at position 120, E at position 121, P at position 122, R at position 126, V at position 130, S at position 133, A or V at position 134, L, W or V at position 136, H at position 139, I or R at position 142, S at position 144, S at position 146, T at position 152, S at position 153, either S or A at position 154, V at position 168, T at position 169, F at position 177, V at position 178, I at position 180, G at position 181, K at position 184, Y at position 186, T at position 189, L at position 194, N at position 198, M at position 199, E at position 215, A at position 222, G at position 236, V at position 237, L at position 238, T at position 240, either I or A or V at position 245, V or I at position 252, and V at position 254.

In one aspect, there is provided a recombinant halohydrin dehalogenase (HHDH) polypeptide capable of converting ethyl (S)-4-chloro-3-hydroxybutyrate to ethyl (R)-4-cyano-3-hydroxybutyrate with at least 1.4-fold greater HHDH activity than the wild-type *Agrobacterium* sp. HHDH polypeptide of SEQ ID NO:2, wherein said recombinant HHDH polypeptide comprises an amino acid sequence that is at least 93% identical to SEQ ID NO:442 and includes an Alanine at the residue position that corresponds to position 134 of SEQ ID NO:2.

In another embodiment, the present disclosure is directed to a polypeptide, typically an isolated and optionally purified polypeptide (more typically, a recombinant polypeptide) having HHDH , wherein the polypeptide comprises an amino acid sequence selected from the group consisting of (a), (b), (c), (d), (e), (f), (g), (h), (i) and (j) as described above, and further comprises an amino acid residue selected from

the group consisting of Q at position 37, Y at position 70, Q at position 72, Q at position 80, Gat position 99, R at position 107, T at position 146, C at position 153, F at position 186, T at position 189, and A at position 222.

In another embodiment, the present disclosure is directed to halohydrin dehalogenases (HHDH) having from 1.4 fold to 10,000 fold greater activity as compared to wild-type halohydrin dehalogenase from *Agrobacterium* sp. (SEQ ID NO: 2).

In a further embodiment, the present disclosure is directed to an isolated or recombinant polypeptide having at least 1.4 fold greater HHDH activity as compared to wild-type HHDH having the amino acid sequence of SEQ ID NO: 2, and

wherein the polypeptide is encoded by a nucleic acid that hybridizes under stringent conditions over substantially the entire length of a nucleic acid having a sequence selected from the group consisting of SEQ ID NO: 3, 9, 11, 13, 15, 17, 33, 37, 43 , 47, 49, 51, 65, 67, 79, 83, 109, 113, 115, 117, 153, 157, 161, 163, 165, 169, 179, 161, 199, 261, 263, 265, 269, 421, 439, 441, 447, 469, 475, 519, 701, 725, 729, 731, 733, 735, 737, and complementary sequences thereof.

In another embodiment, the present disclosure is directed to HHDH polynucleotides that encode polypeptides having halohydrin dehalogenase activity.

In a still further embodiment, the present disclosure is directed to a vector comprising an HHDH polynucleotide of the present disclosure operatively linked to a promoter.

In other embodiments, the present disclosure is directed to host cells and methods for producing HHDH polypeptides of the present disclosure from such host cells.

BRIEF DESCRIPTION OF THE FIGURES

FIG. 1 is a 3944 bp expression vector (PCK110700) of the present invention comprising a p15A origin of replication (P15A ori), a lacI repressor, a T5 promoter, a T7 ribosomal binding site (T7g10), and a chloramphenicol resistance gene (camR).

FIG. 2 depicts the percent conversion vs. time for the reactions of ethyl (S)-4-chloro-3-hydroxybutyrate with aqueous hydrocyanic acid in the presence of various halohydrin dehalogenase enzymes that are described in Examples 8 through 12.

DETAILED DESCRIPTION

HHDH Polypeptides

The present invention provides novel polypeptides having halohydrin dehalogenase ("HHDH") activity, as well as the polynucleotides that encode them. The HHDH polypeptides of the present invention are suitable for catalyzing the conversion of 4-halo-3-hydroxybutyric acid derivatives to 4-substituted-3-hydroxybutyric acid derivatives, using, for example, the methods described in the patent application entitled, "Enzymatic Processes for the Production of 4-Substituted-3-Hydroxybutyric Acid Derivatives," corresponding to Attorney Docket No. 0339.210US, filed on August 11, 2003 and assigned U.S. serial number 10/639,159, which is hereby incorporated herein by reference. These invention polypeptides are also suitable for catalyzing the conversion of vicinal halo, hydroxy substituted carboxylic acid esters to vicinal cyano, hydroxy substituted carboxylic acid esters using, for example the methods described in the patent application entitled, "Enzymatic Processes for the Production of 4-Substituted-3-Hydroxybutyric Acid Derivatives and Vicinal Cyano, Hydroxy Substituted Carboxylic Acid Esters," corresponding to Attorney Docket No. 0339.310US, filed on February 18, 2004 and assigned U.S. serial number 10/782,258, which is hereby incorporated by reference. Polypeptides of the present invention are particularly useful as catalysts for converting halohydrins to cyanohydrins, which are useful as pharmaceutical intermediates. In a specific application, HHDH polypeptides of the present invention are used to catalyze the conversion of ethyl-4-chloro-3-hydroxybutyrate to ethyl-4-cyano-3-hydroxybutyrate. Examples illustrating such conversion are provided hereinbelow. A more detailed description of such uses is provided in the aforementioned patent applications entitled, "Enzymatic Processes for the Production of 4-Substituted-3-Hydroxybutyric Acid Derivatives" and "Enzymatic Processes for the Production of 4-Substituted-3-Hydroxybutyric Acid Derivatives and Vicinal Cyano, Hydroxy Substituted Carboxylic Acid Esters." Id.

The present invention provides an isolated or recombinant polypeptide having HHDH activity, wherein the HHDH polypeptide comprises an amino acid sequence selected from the group consisting of: a polypeptide having an amino acid sequence that is at least 99% identical to SEQ ID NO: 4, 12, 16, 18, 34, 38, 44, 48, 52, 66 80, 84, 114, 154, 158, 170, or 270 .

As used herein, the terms "HHDH activity" and "halohydrin dehalogenase activity" are used interchangeably herein to refer to the ability to catalyze the conversion of ethyl (S)-4-chloro-3-hydroxybutyrate ("ECHB") to a detectable amount of ethyl (R) 4-cyano-3-hydroxybutyrate ("HN") using the assay described in Example 5A. The term "HHDH polypeptide" refers herein to a polypeptide having HHDH activity. The term "HHDH polynucleotide" refers to a polynucleotide encoding a polypeptide having HHDH activity.

As used herein, the term "isolated" refers to a nucleic acid, polynucleotide, polypeptide, protein, or other component that is partially or completely separated from components with which it is normally associated (other proteins, nucleic acids, cells, synthetic reagents, etc.). A nucleic acid or polypeptide is "recombinant" when it is artificial or engineered, or derived from an artificial or engineered protein or nucleic acid. For example, a polynucleotide that is inserted into a vector or any other heterologous location, *e.g.*, in a genome of a recombinant organism, such that it is not associated with nucleotide sequences that normally flank the polynucleotide as it is found in nature is a recombinant polynucleotide. A protein expressed in vitro or in vivo from a recombinant polynucleotide is an example of a recombinant polypeptide. Likewise, a polynucleotide sequence that does not appear in nature, for example a variant of a naturally occurring gene, is recombinant.

The terms "percent identity," "% identity," "percent identical," and "% identical" are used interchangeably herein to refer to the percent amino acid sequence identity that is obtained by ClustalW analysis (version W 1.8 available from European Bioinformatics Institute, Cambridge, UK), counting the number of identical matches in the alignment and dividing such number of identical matches by the length of the reference sequence, and using the following default ClustalW parameters to achieve slow/accurate pairwise optimal alignments – Gap Open Penalty:10; Gap Extension Penalty:0.10; Protein weight matrix: Gonnet series; DNA weight matrix: IUB; Toggle Slow/Fast pairwise alignments = SLOW or FULL Alignment.

The present invention also provides a polypeptide having an amino acid sequence that is at least 98% identical to SEQ ID NO: 10, 14, 68, 118, 164, 166, or 180. Desirable HHDH polypeptides include those that are at least 99% identical to SEQ ID NO: 10, 14, 68, 118, 164, 166, or 180.

In another embodiment, the present invention provides a polypeptide having an amino acid sequence that is at least 97% identical to SEQ ID NO: 110, 162, 262, 422, 440, or 520. Some HHDH polypeptides of the present invention are at least 98%, and sometimes at least 99% identical to SEQ ID NO: 110, 162, 262 422, 440, or 520.

In yet another embodiment, the present invention is directed to a polypeptide, typically an isolated and purified polypeptide having HHDH activity greater than the wild-type HHDH of SEQ ID NO. 2, and having an amino acid sequence that is at least 93% identical to SEQ ID NO: 200, typically, 95% identical to SEQ ID NO: 200; more typically, 97% identical to SEQ ID NO: 200; most typically, 99% identical to SEQ ID NO: 200.

In still another embodiment, the present invention is directed to a polypeptide, typically an isolated and purified polypeptide having HHDH activity greater than the wild-type HHDH of SEQ ID NO. 2, and having an amino acid sequence that is at least 89% identical to SEQ ID NO: 442; typically, 93% identical to SEQ ID NO: 442; more typically, 95% identical to SEQ ID NO: 442; even more typically, 97% identical to SEQ ID NO: 442; most typically, 99% identical to SEQ ID NO: 442.

In another embodiment, the present invention is directed to a polypeptide, typically an isolated and purified polypeptide having HHDH activity greater than the wild-type HHDH of SEQ ID NO. 2, and having an amino acid sequence that is at least 88% identical to SEQ ID NO: 702; typically, 93% identical to SEQ ID NO: 702: more typically, 95% identical to SEQ ID NO: 702; even more typically, 97% identical to SEQ ID NO: 702; most typically, 99% identical to SEQ ID NO: 702.

In a further embodiment , the present invention provides an HHDH polypeptide having an amino acid sequence that is at least 96% identical to SEQ ID NO: 116 or 448. HHDH polypeptides of the present invention include those that are least 97% identical, 98% identical, and 99% identical to SEQ ID NO: 116 or 448.

The present invention further provides an HHDH polypeptide having an amino acid sequence that is at least 95% identical to SEQ ID NO: 264, 266, 470 or 476. Desirable HHDH polypeptides of the present invention include those that are least 96% identical, 97% identical, 98% identical, and 99% identical to SEQ ID NO: 264, 266, 470 or 476.

The present invention further provides an HHDH polypeptide that is at least 80% identical to SEQ ID NO: 2, when optimally aligned with SEQ ID NO:2, and which further has one or more substitutions selected from the group consisting of S2T, either T3A or T3P, A4V, V6D, either V9I or V9F, K10L, G13S, G14S, M15K, G16C, either S17T or S17R, either R20S, R20C or R20K, A24T, H26Q, V28F, A29T, C30A, H31L, E33G, S34R, F35L, K36N, Q37H, E40D, F44L, A45P, either T47P or T47A, K52N, M54V, S55R, E56D, E58K, either E61G or E61D, I63V, Q72R, V75I, L76P, S78C, F82Y, either P84S or P84L, E85Q, K91E, A93D, E95Q or E95G, D96N, R107K, V112A, either A114T or A114G or A114S, V115A, S117P, K120N, K121E, R122P, H126R, I130V, A133S, T134A or T134V, F136L or F136W or F136V, W139H, L142I or L142R, T144S, T146S, A152T, C153S, either T154S or T154A, I168V, P169T, Y177F, L178V, S180I, E181G or E181I, P184K, F186Y, T194I, H198N, V199M, K215E, V236G, F237V, W238L, A240T, either M245I or M245A or M245V, W249Y, M252V or M252I, and E254V. In some embodiments, HHDH polypeptides of the present invention are at least 85% identical to SEQ ID NO: 2 and having one or more of the substitutions indicated above. Some HHDH polypeptides of the present invention are at least about 90% identical to SEQ ID NO: 2, some are at least about 95% identical to SEQ ID NO: 2, and others are at least 99% identical to SEQ ID NO: 2, all having one or more of the substitutions indicated above. Some of these HHDH polypeptides have at least 2 or more of the aforementioned substitutions, and some of these HHDH polypeptides have at least 3 or more of the aforementioned substitutions.

When optimally aligned with sequence SEQ ID NO: 2, certain HHDH polypeptides of the present invention have a sequence corresponding to SEQ ID NO: 2, but one or more amino acid substitutions selected from the group consisting of S2T, either T3A or T3P, A4V, V6D, either V9I or V9F, K10L, G13S, G14S, M15K, G16C, either S17T or S17R, either R20S, R20C or R20K, A24T, H26Q, V28F, A29T, C30A, H31L, E33G, S34R, F35L, K36N, Q37H, E40D, F44L, A45P, either T47P or T47A, K52N, M54V, S55R, E56D, E58K, either E61G or E61D, I63V, Q72R, V75I, L76P, S78C, F82Y, either P84S or P84L, E85Q, K91E, A93D, E95Q or E95G, D96N, R107K, V112A, either A114T or A114G or A114S, V115A, S117P, K120N, K121E, R122P, H126R, I130V, A133S, T134A or T134V, F136L or F136W or F136V, W139H, L142I or L142R, T144S, T146S, A152T, C153S, either T154S or T154A,

I168V, P169T, Y177F, L178V, S180I, E181G or E181I, P184K, F186Y, T194I, H198N, V199M, K215E, V236G, F237V, W238L, A240T, either M245I or M245A or M245V, W249Y, M252V or M252I, and E254V. In some embodiments, the HHDH polypeptides have two or more, and sometimes three or four or more of the aforementioned substitutions. Typically, in this embodiment, the resulting HHDH polypeptide has at least 80% of sequence identity with SEQ ID NO: 2; more typically, at least 90% sequence identity; even more typically at least 95% sequence identity; and yet even more typically at least 98% sequence identity.

The HHDH polypeptides described herein may further have one or more amino acid residues selected from the group consisting of Q at position 37, Y at position 70, Q at position 72, Q at position 80, Gat position 99, R at position 107, T at position 146, C at position 153, F at position 186, T at position 189, and A at position 222. In some embodiments, the HHDH polypeptides of the present invention have two, three, or four or more of these selected residues. Of these residues, Q37, Y70, Q87, R107, T146, C153, and F186 appear to correlate favorably with HHDH activity. Others appear to correlate favorably well with resistance to inhibition by ethyl-4-chloroacetate, as discussed in more detail below.

Two sequences are "optimally aligned" when they are aligned for similarity scoring using a defined amino acid substitution matrix (e.g., BLOSUM62), gap existence penalty and gap extension penalty so as to arrive at the highest core possible for that pair of sequences. Amino acid substitution matrices and their use in quantifying the similarity between two sequences are well-known in the art. See e.g., Dayhoff et al. (1978), "A model of evolutionary change in proteins"; "Atlas of Protein Sequence and Structure," Vol. 5, Suppl. 3 (Ed. M.O. Dayhoff), pp. 345-352, Natl. Biomed. Res. Round., Washington, D.C.; Henikoff et al. (1992) Proc. Natl. Acad. Sci. USA, 89:10915-10919. The BLOSUM62 matrix is often used as a default scoring substitution matrix in sequence alignment protocols such as Gapped BLAST 2.0. The gap existence penalty is imposed for the introduction of a single amino acid gap in one of the aligned sequences, and the gap extension penalty is imposed for each additional empty amino acid position inserted into an already opened gap. The alignment is defined by the amino acids position of each sequence at which the alignment begins and ends, and optionally by the insertion of a gap or multiple gaps in one or both sequences so as to arrive at the highest possible score. While optimal

alignment and scoring can be accomplished manually, the process is facilitated by the use of a computer-implemented alignment algorithm, *e.g.*, gapped BLAST 2.0, described in Altschul, *et al.* (1997) Nucleic Acids Res., 25:3389-3402, and made available to the public at the National Center for Biotechnology Information Website. Optimal alignments, including multiple alignments can be prepared using readily available programs such as PSI-BLAST, which is described by Altschul, *et al.* (1997) Nucleic Acids Res., 25:3389-3402.

With respect to an amino acid sequence that is optimally aligned with a reference sequence, an amino acid residue "corresponds to" the position in the reference sequence with which the residue is paired in the alignment. The "position" is denoted by a number that sequentially identifies each amino acid in the reference sequence based on its position relative to the N-terminus. Owing to deletions, insertions, truncations, fusions, and the like that must be taken into account when determining an optimal alignment, in general the amino acid residue number in a test sequence is determined by simply counting from the N-terminal will not necessarily be the same as the number of its corresponding position in the reference sequence. For example, in a case where there is a deletion in an aligned test sequence, there will be no amino acid that corresponds to a position in the reference sequence at the site of deletion. Where there is an insertion in an aligned reference sequence, that insertion will not correspond to any amino acid position in the reference sequence. In the case of truncations or fusions there can be stretches of amino acids in either the reference or aligned sequence that do not correspond to any amino acid in the corresponding sequence.

In a further embodiment, the present invention provides an HHDH polypeptide that is at least 93% identical to SEQ ID NO: 200 (*i.e.*, 18 or fewer amino acid differences as compared to SEQ ID NO: 200, when optimally aligned with SEQ ID NO: 200). Some of these HHDH polypeptides are at least 95% identical to SEQ ID NO: 200, and some are at least 97, 98, or 99% identical to SEQ ID NO: 200. In certain embodiments, these polypeptides have one or more of the following residues: T at (residue) position 2, A or P or S at position 3, V at position 4, D at position 6, either I or F at position 9, L at position 10, S at position 13, S at position 14, K at position 15, C at position 16, T or R at position 17, either C or S or K at position 20, T at position 24, Q at position 26, F at position 28, T at position 29, A at position 30, L

at position 31, G at position 33, R at position 34, L at position 35, N at position 36, H at position 37, D at position 40, L at position 44, P at position 45, either P or A at position 47, N at position 52, V at position 54, R at position 55, D at position 56, K at position 58, G or D at position 61, V at position 63, R at position 72, I at position 75, P at position 76, C at position 78, Y at position 82, either S or L at position 84, A at position 85, E at position 91, D at position 93, Q or G at position 95, N at position 96, K at position 107, A at position 112, either T, S or G at position 114, A at position 115, P at position 117, N at position 120, E at position 121, P at position 122, R at position 126, V at position 130, S at position 133, A or V at position 134, L, W or V at position 136, H at position 139, I or R at position 142, S at position 144, S at position 146, T at position 152, S at position 153, either S or A at position 154, V at position 168, T at position 169, F at position 177, V at position 178, I at position 180, G or I at position 181, K at position 184, Y at position 186, L at position 194, N at position 198, M at position 199, E at position 215, G at position 236, V at position 237, L at position 238, T at position 240, either I or A or V at position 245, Y at position 249, V or I at position 252, and V at position 254.

The present invention also provides HHDH polypeptides encoded by a nucleic acid that hybridizes under stringent conditions over substantially the entire length of a nucleic acid corresponding to SEQ ID NO: 1, where the encoded polypeptide, when optimally aligned with SEQ ID NO: 2, comprises an amino acid sequence having at least one amino acid residue selected from the group consisting of T at (residue) position 2, A or P or S at position 3, V at position 4, D at position 6, either I or F at position 9, L at position 10, S at position 13, S at position 14, K at position 15, C at position 16, T or R at position 17, either S or K at position 20, T at position 24, Q at position 26, F at position 28, T at position 29, A at position 30, L at position 31, G at position 33, R at position 34, L at position 35, N at position 36, H at position 37, D at position 40, L at position 44, P at position 45, either P or A at position 47, N at position 52, V at position 54, R at position 55, D at position 56, G or D at position 61, V at position 63, R or Q at position 72, I at position 75, P at position 76, C at position 78, Y at position 82, either S or L at position 84, A at position 85, E at position 91, D at position 93, Q or G at position 95, N at position 96, G at position 99, K at position 107, A at position 112, either T, S or G at position 114, A at position 115, P at position 117, N at position 120, E at position 121, P at position 122, R at position 126,

V at position 130, S at position 133, A or V at position 134, L, W or V at position 136, H at position 139, I or R at position 142, S at position 144, S at position 146, T at position 152, S at position 153, either S or A at position 154, V at position 168, T at position 169, F at position 177, V at position 178, I at position 180, G or I at position 181, K at position 184, Y at position 186, T at position 189, L at position 194, N at position 198, M at position 199, E at position 215, A at position 222, G at position 236, V at position 237, L at position 238, T at position 240, either I or A or V at position 245, Y at position 249, V or I at position 252, and V at position 254.

The present invention also provides an isolated or recombinant polypeptide having at least 1.4 fold greater HHDH activity as compared to wild-type HHDH having the amino acid sequence of SEQ ID NO: 2, and

wherein the polypeptide is encoded by a nucleic acid that hybridizes under stringent conditions over substantially the entire length of a nucleic acid having a sequence selected from the group consisting of SEQ ID NO: 3, 9, 11, 13, 15, 17, 33, 37, 43, 47, 49, 51, 65, 67, 79, 83, 109, 113, 115, 117, 153, 157, 161, 163, 165, 169, 179, 161, 199, 261, 263, 265, 269, 421, 439, 441, 447, 469, 475, 519, 701, 725, 729, 731, 733, 735, 737,and complementary sequences thereof.

Nucleic acids "hybridize" when they associate, typically in solution. Nucleic acids hybridize due to a variety of well-characterized physico-chemical forces, such as hydrogen bonding, solvent exclusion, base stacking and the like. An extensive guide to the hybridization of nucleic acids is found in Tijssen (1993) "Laboratory Techniques in biochemistry and Molecular Biology-Hybridization with Nucleic Acid Probes," Part I, Chapter 2 (Elsevier, New York).

As used herein, the term "stringent hybridization wash conditions" in the context of nucleic acid hybridization experiments, such as Southern and Northern hybridizations, are sequence dependent, and are different under different environmental parameters. An extensive guide to the hybridization of nucleic acids is found in Tijessen (1993) "Laboratory Techniques in Biochemistry and Molecular Biology-Hybridization with Nucleic Acid Probes," Part I, Chapter 2 (Elsevier, New York).

For purposes of the present invention, "highly stringent" (or "high stringency") hybridization and wash conditions are generally selected to be about 5°C or less lower than the thermal melting point (T_m) for the specific sequence at a defined ionic

strength and pH (as noted below, highly stringent conditions can also be referred to in comparative terms). The T_m is the temperature (under defined ionic strength and pH) at which 50% of the test sequence hybridizes to a perfectly matched probe. Very stringent conditions are selected to be equal to the T_m for a particular probe.

The T_m of a nucleic acid duplex indicates the temperature at which the duplex is 50% denatured under the given conditions and it represents a direct measure of the stability of the nucleic acid hybrid. Thus, the T_m corresponds to the temperature corresponding to the midpoint in transition from helix to random coil; it depends on length, nucleotide composition, and ionic strength for long stretches of nucleotides.

After hybridization, unhybridized nucleic acid material can be removed by a series of washes, the stringency of which can be adjusted depending upon the desired results. Low stringency washing conditions (*e.g.*, using higher salt and lower temperature) increase sensitivity, but can produce nonspecific hybridization signals and high background signals (*i.e.*, loses specificity). Higher stringency conditions (*e.g.*, using lower salt and higher temperature that is closer to the hybridization temperature) lowers the background signal, typically with only the specific signal remaining (*i.e.*, increases specificity). See Rapley, R. and Walker, J.M. Eds., "Molecular Biomethods Handbook" (Humana Press, Inc. 1998).

The T_m of a DNA-DNA duplex can be estimated using Equation 1 as follows:

$$T_m\ (°C) = 81.5°C + 16.6\ (\log_{10}M) + 0.41\ (\%G + C) - 0.72\ (\%f) - 500/n,$$

where M is the molarity of the monovalent cations (usually Na+), (%G + C) is the percentage of guanosine (G) and cystosine (C) nucleotides, (%f) is the percentage of formamide and n is the number of nucleotide bases (*i.e.*, length) of the hybrid. See id.

The T_m of an RNA-DNA duplex can be estimated by using Equation 2 as follows:

$$T_m\ (°C) = 79.8°C + 18.5\ (\log_{10}M) + 0.58\ (\%G + C) - 11.8(\%G + C)^2 - 0.56\ (\%f) - 820/n,$$

where M is the molarity of the monovalent cations (usually Na+), (%G + C)is the percentage of guanosine (G) and cystosine (C) nucleotides, (%f) is the percentage of formamide and n is the number of nucleotide bases (*i.e.*, length) of the hybrid. Id.

Equations 1 and 2 are typically accurate only for hybrid duplexes longer than about 100-200 nucleotides. Id.

The Tm of nucleic acid sequences shorter than 50 nucleotides can be calculated as follows:

$$T_m\ (°C) = 4(G + C) + 2(A + T),$$

where A (adenine), C, T (thymine), and G are the numbers of the corresponding nucleotides.

An example of stringent hybridization conditions for hybridization of complementary nucleic acids which have more than 100 complementary residues on a filter in a Southern or northern blot is 50% formamide with 1 mg of heparin at 42°C, with the hybridization being carried out overnight. An example of stringent wash conditions is a 0.2x SSC wash at 65°C for 15 minutes (*see* Sambrook, et al., Molecular Cloning – A Laboratory Manual" (1989) Cold Spring Harbor Laboratory (Cold Spring Harbor, New York) for a description of SSC buffer). Often the high stringency wash is preceded by a low stringency wash to remove background probe signal. An example low stringency wash is 2x SSC at 40°C for 15 minutes.

In general, a signal to noise ratio of 2.5x-5x (or higher) than that observed for an unrelated probe in the particular hybridization assay indicates detection of a specific hybridization. Detection of at least stringent hybridization between two sequences in the context of the present invention indicates relatively strong structural similarity or homology to, e.g., the nucleic acids of the present invention provided in the sequence listings herein.

As noted, "highly stringent" conditions are selected to be about 5° C or less lower than the thermal melting point (T_m) for the specific sequence at a defined ionic strength and pH. Target sequences that are closely related or identical to the nucleotide sequence of interest (e.g., "probe") can be identified under highly stringent conditions. Lower stringency conditions are appropriate for sequences that are less complementary.

Stringent hybridization (as well as highly stringent, ultra-high stringency, or ultra-ultra high stringency hybridization conditions) and wash conditions can be readily determined empirically for any test nucleic acid. For example, in determining highly stringent hybridization and wash conditions, the hybridization and wash conditions are gradually increased (*e.g.*, by increasing temperature, decreasing salt concentration, increasing detergent concentration and/or increasing the concentration of organic solvents, such as formamide, in the hybridization or wash), until a selected

set of criteria are met. For example, the stringency of hybridization and wash conditions are gradually increased until a probe corresponding to SEQ ID NO: 3, 9, 11, 13, 15, 17, 33, 37, 43, 47, 49, 51, 65, 67, 79, 83, 109, 113, 115, 117, 153, 157, 161, 163, 165, 169, 179, 161, 199, 261, 263, 265, 269, 421, 439, 441, 447, 469, 475, 519, 701or complementary sequence thereof, binds to a perfectly matched complementary target. A test nucleic acid is said to specifically hybridize to a probe nucleic acid when it hybridizes at least ½ as well to the probe as to the perfectly matched complementary target, *i.e.*, with a signal to noise ratio at least ½ as high as hybridization of the probe to the target under conditions in which the perfectly matched probe binds to the perfectly matched complementary target.

Ultra high-stringency hybridization and wash conditions are those in which the stringency of hybridization and wash conditions are increased until the signal to noise ratio for binding of the probe to the perfectly matched complementary target nucleic acid is at least 10x. A target nucleic acid which hybridizes to a probe under such conditions, with a signal to noise ratio of at least ½ that of the perfectly matched complementary target nucleic acid is said to bind to the probe under ultra-high stringency conditions.

Similarly, even higher levels of stringency can be determined by gradually increasing the stringency of hybridization and/or wash conditions of the relevant hybridization assay. For example, those in which the stringency of hybridization and wash conditions are increased until the signal to noise ratio for binding of the probe to the perfectly matched complementary target nucleic acid is at least 10x, 20X, 50X, 100X, or 500X. A target nucleic acid which hybridizes to a probe under such conditions, with a signal to noise ratio of at least ½ that of the perfectly matched complementary target nucleic acid is said to bind to the probe under ultra-ultra-high stringency conditions.

Specific HHDH polypeptides of the present invention include those having an amino acid sequence corresponding to SEQ ID NOS: 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212,

214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258. 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 416, 418, 420, 422, 424, 426, 428, 430, 432, 434, 436, 438, 440, 442, 444, 446, 448, 450, 452, 454, 456, 458, 460, 462, 464, 466, 468, 470, 472, 474, 476, 478, 480, 482, 484, 486, 488, 490, 492, 494, 496, 498, 500, 502, 504, 506, 508, 510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 532, 534, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556, 558, 560, 562, 564, 566, 568, 570, 572, 574, 576, 578, 580, 582, 584, 586, 588, 590, 592, 594, 596, 598, 600, 602, 604, 606, 608, 610, 612, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702, 704, 706, 708, 710, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740, 742 or 744. All of these HHDH polypeptides have demonstrated activity in the assays described in Example 5A or 5B.

Exemplary HHDH polynucleotides that encode these HHDH polypeptides are provided herein as SEQ ID NOS: 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99, 101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, 123, 125, 127, 129, 131, 133, 135, 137, 139, 141, 143, 145, 147, 149, 151, 153, 155, 157, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 189, 191, 193, 195, 197, 199, 201, 203, 205, 207, 209, 211, 213, 215, 217, 219, 221, 223, 225, 227, 229, 231, 233, 235, 237, 239, 241, 243, 245, 247, 249, 251, 253, 255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275, 277, 279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301, 303, 305, 307, 309, 311, 313, 315, 317, 319, 321, 323, 325, 327, 329, 331, 333, 335, 337, 339, 341, 343, 345, 347, 349, 351, 353, 355, 357, 359, 361, 363, 365, 367, 369, 371, 373, 375, 377, 379, 381, 383, 385, 387, 389, 391, 393, 395, 397, 399, 401, 403, 405, 407, 409, 411, 413, 415, 417, 419, 421, 423, 425, 427, 429, 431, 433, 435, 437, 439, 441, 443, 445, 447, 449, 451, 453, 455, 457, 459, 461, 463, 465, 467, 469, 4712, 473, 475, 477, 479, 481, 483, 485, 487, 489, 491, 493, 495, 497, 499, 501, 503, 505, 507, 509, 511, 513, 515, 517, 519, 521, 523, 525,

527, 529, 531, 533, 535, 537, 539, 541, 543, 545, 547, 549, 551, 553, 555, 557, 559, 561, 563, 565, 567, 569, 571, 573, 575, 577, 579, 581, 583, 585, 587, 589, 591, 593, 595, 597, 599, 601, 603, 605, 607, 609, 611, 613, 615, 617, 619, 621, 623, 625, 627, 629, 631, 633, 635, 637, 639, 641, 643, 645, 647, 649, 651, 653, 655, 657, 659, 661, 663, 665, 667, 669, 671, 673, 675, 677, 679, 681, 683, 685, 687, 689, 691, 693, 695, 697, 699, 701, 703, 705, 707, 709, 711, 713, 715, 717, 719, 721, 723, 725, 727, 729, 731, 733, 735, 739, 741, and 743 respectively.

HHDH polypeptides of the present invention often have HHDH activity that is at least 1.4 fold greater HHDH activity as compared to wild-type HHDH having the amino acid sequence of SEQ ID NO: 2, as measured in the assay described in Example 5A. Some HHDH polypeptides of the present invention (SEQ ID NOS: 740, 742, 728, 90, 92, 94, 96 and 96) have HHDH enzyme activity that is at least 2 fold and often at least 2.4 fold up to 100 fold greater than the activity of *Agrobacterium sp.* HHDH (SEQ ID NO: 2); the HHDH polypeptides of SEQ ID NOS: 100, 732, 734 and 736 have HHDH enzyme activity that is from 100 to 500 fold greater than the activity of *Agrobacterium sp.* HHDH (SEQ ID NO: 2); and the HHDH polypeptides of SEQ ID NOS: 726 and 730 have HHDH enzyme activity that is 500 to 1000 times greater than the activity of *Agrobacterium sp.* HHDH (SEQ ID NO: 2), the enzyme activities being measured in the assay described in Example 5A.

The present invention also provides HHDH polypeptides that are variants of the polypeptide of SEQ ID NO: 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258. 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 416, 418, 420, 422, 424, 426, 428, 430, 432, 434, 436, 438, 440, 442, 444, 446, 448, 450, 452, 454, 456, 458, 460,

462, 464, 466, 468, 470, 472, 474, 476, 478, 480, 482, 484, 486, 488, 490, 492, 494, 496, 498, 500, 502, 504, 506, 508, 510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 532, 534, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556, 558, 560, 562, 564, 566, 568, 570, 572, 574, 576, 578, 580, 582, 584, 586, 588, 590, 592, 594, 596, 598, 600, 602, 604, 606, 608, 610, 612, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702, 704, 706, 708, 710, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740 or 742 having a substitution, deletion, and/or insertion of one to six amino acid residues.

Variants of the HHDH polypeptides of the present invention may be generated using methods that are well known to those having ordinary skill in the art. Libraries of these variants may be generated and screened using the high throughput screen for presence of HHDH activity described in Example 4A. In some instances it may be desirable to identify halohydrin dehalogenases that exhibit activity in the presence of cyanohydrin product inhibitor, e.g., ethyl (R)-4-cyano-3-hydroxybutyrate. A high throughput screen for identifying such enzymes is provided in Example 4B.

Each of the residue changes to an HHDH polypeptide was evaluated to determine what relationship, if any, existed between the sequence change and the desired function (increased HHDH enzymatic activity). To do so, the sequence changes and resulting enzyme activity in members of a library generated by the method described in WO 00/42561 were evaluated using the method disclosed in USSN 10/379,378 filed March 3, 2003, entitled "Methods, systems, and software for identifying functional biomolecules" and incorporated herein by reference. Based upon this method, codons encoding important residues at certain positions that appear to correlate favorably to activity were identified and incorporated into the polynucleotides of a subsequently generated combinatorial library. In other words, the polynucleotides encoding the desired change were generated, expressed and then screened. The method is again applied to the resulting sequences and the enzymatic activity of the hits. The results are again utilized to select those residue changes that enhance enzyme activity for programming into the next library. Using this method, the functionality of various sequence changes (and although not characterized, potential structural changes as well) is subject to immediate evaluation. The residue

changes at various residue positions that provide for enhanced enzymatic activity relative to the wild-type HHDH are disclosed herein in the sequences and elsewhere as preferred residues at identified positions.

Those variants exhibiting the presence of HHDH activity can be further characterized in the quantitative HHDH assay described in Example 5A. Variants that exhibit HHDH activity in the presence of product cyanohydrin, e.g., ethyl (R) 4-cyano-3-hydroxybutyrate, may be further characterized using the assay described in Example 5B. Example 5B describes a protocol for assaying for enzymes that are robust with respect to product inhibition. Thus, variant libraries may be readily screened and assayed to identify HHDH polypeptides that are active under conditions that mimic actual process conditions. The present invention provides HHDH polypeptides that exhibit significant activity even in the presence of product, ethyl (R)-4-cyano-3-hydroxybutyrate in the assay described in Example 5B (e.g., SEQ ID NOS: 98, 100, 102, 104, 106, 108, 120, 122, 124, 126, 128, 130, 132, 136, 138, 140, 142, 144, 146, 148, 150, 152, 160, 174, 176, 178, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212,, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 416, 418, 420, 422, 424, 426, 428, 430, 432, 434, 436, 438, 440, 442, 444, 446, 448, 450, 452, 454, 456, 458, 460, 462, 464, 466, 468, 470, 472, 474, 476, 478, 480, 482, 484, 486, 488, 490, 492, 494, 496, 498, 500, 502, 504, 506, 508, 510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 532, 534, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556, 558, 560, 562, 564, 566, 568, 570, 572, 574, 576, 578, 580, 582, 584, 586, 588, 590, 592, 594, 596, 598, 600, 602, 604, 606, 608, 610, 612, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702, 704, 706, 708, 710, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740 or 742. Polypeptides that exhibit the ability to convert ethyl (S)-4-chloro-3-hydroxybutyrate to ethyl (R)-4-cyano-3-hydroxybutyrate

in the assay of Example 5B, would also demonstrate HHDH activity in the assay of Example 5A.

Methods for generating variant libraries are well known in the art. For example, mutagenesis and directed evolution methods can be readily applied to polynucleotides (such as, for example, wild-type HHDH encoding polynucleotides or the polynucleotides of the present invention) to generate variant libraries that can be expressed, screened, and assayed using the methods described herein. Mutagenesis and directed evolution methods are well known in the art. See, e.g., Ling, et al., "Approaches to DNA mutagenesis: an overview," Anal. Biochem., 254(2):157-78 (1997); Dale, et al., "Oligonucleotide-directed random mutagenesis using the phosphorothioate method," Methods Mol. Biol., 57:369-74 (1996); Smith, "In vitro mutagenesis," Ann. Rev. Genet., 19:423-462 (1985); Botstein, et al., "Strategies and applications of in vitro mutagenesis," Science, 229:1193-1201 (1985); Carter, "Site-directed mutagenesis," Biochem. J., 237:1-7 (1986); Kramer, et al., "Point Mismatch Repair," Cell, 38:879-887 (1984); Wells, et al., "Cassette mutagenesis: an efficient method for generation of multiple mutations at defined sites," Gene, 34:315-323 (1985); Minshull, et al., "Protein evolution by molecular breeding," Current Opinion in Chemical Biology, 3:284-290 (1999); Christians, et al., "Directed evolution of thymidine kinase for AZT phosphorylation using DNA family shuffling," Nature Biotechnology, 17:259-264 (1999); Crameri, et al., "DNA shuffling of a family of genes from diverse species accelerates directed evolution," Nature, 391:288-291; Crameri, et al., "Molecular evolution of an arsenate detoxification pathway by DNA shuffling," Nature Biotechnology, 15:436-438 (1997); Zhang, et al., "Directed evolution of an effective fucosidase from a galactosidase by DNA shuffling and screening," Proceedings of the National Academy of Sciencess, U.S.A., 94:45-4-4509; Crameri, et al., "Improved green fluorescent protein by molecular evolution using DNA shuffling," Nature Biotechnology, 14:315-319 (1996); Stemmer, "Rapid evolution of a protein in vitro by DNA shuffling," Nature, 370:389-391 (1994); Stemmer, "DNA shuffling by random fragmentation and reassembly: In vitro recombination for molecular evolution," Proceedings of the National Academy of Sciences, U.S.A., 91:10747-10751 (1994); WO 95/22625; WO 97/0078; WO 97/35966; WO 98/27230; WO 00/42651; and WO 01/75767.

In another embodiment, the present invention also provides a fragment of the HHDH polypeptides described herein having HHDH activity that is at least 1.4 fold greater than the activity of *Agrobacterium sp.* (wild-type) HHDH (SEQ ID NO: 2) in the assay of Example 5A. As used herein, the term "fragment" refers to a polypeptide having a deletion of from 1 to 5 amino acid residues from the carboxy terminus, the amino terminus, or both. Preferably, the deletion is from 1 to 5 residues from the carboxy terminus.

HHDH Polynucleotides

The present invention provides polynucleotides that encode HHDH polypeptides of the present invention. In a specific embodiment of the present invention, HHDH polynucleotides comprise a nucleic acid that hybridizes under stringent conditions over substantially the entire length of a nucleic acid corresponding to SEQ ID NO: 1, where the polypeptide encoded by the HHDH polynucleotide comprises an amino acid sequence having at least one amino acid residue selected from the group consisting of T at (residue) position 2, A or P or S at position 3, V at position 4, D at position 6, either I or F at position 9, L at position 10, S at position 13, S at position 14, K at position 15, C at position 16, T or R at position 17, either C or S or K at position 20, T at position 24, Q at position 26, F at position 28, T at position 29, A at position 30, L at position 31, G at position 33, R at position 34, L at position 35, N at position 36, H at position 37, D at position 40, L at position 44, P at position 45, either P or A at position 47, N at position 52, V at position 54, R at position 55, D at position 56, K at position 58, G or D at position 61, V at position 63, R at position 72, I at position 75, P at position 76, C at position 78, Y at position 82, either S or L at position 84, A at position 85, E at position 91, D at position 93, Q or G at position 95, N at position 96, K at position 107, A at position 112, either T, S or G at position 114, A at position 115, P at position 117, N at position 120, E at position 121, P at position 122, R at position 126, V at position 130, S at position 133, A or V at position 134, L, W or V at position 136, H at position 139, I or R at position 142, S at position 144, S at position 146, T at position 152, S at position 153, either S or A at position 154, V at position 168, T at position 169, F at position 177, V at position 178, I at position 180, G or I at position 181, K at position 184, Y at position 186, L at position 194, N at position 198, M at position 199, E at position

215, G at position 236, V at position 237, L at position 238, T at position 240, either I or A or V at position 245, Y at position 249, V or I at position 252, and V at position 254, when optimally aligned with SEQ ID NO: 2. The present invention also provides an HHDH polynucleotide, SEQ ID NO: 1, that is codon optimized for expression in E. coli. The polypeptide encoded by this codon optimized polynucleotide corresponds to HHDH polypeptide from *Agrobacterium sp.* (SEQ ID NO: 2).

In addition, the present invention provides specific polynucleotides corresponding to SEQ ID NO: 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99, 101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, 123, 125, 127, 129, 131, 133, 135, 137, 139, 141, 143, 145, 147, 149, 151, 153, 155, 157, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 189, 191, 193, 195, 197, 199, 201, 203, 205, 207, 209, 211, 213, 215, 217, 219, 221, 223, 225, 227, 229, 231, 233, 235, 237, 239, 241, 243, 245, 247, 249, 251, 253, 255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275, 277, 279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301, 303, 305, 307, 309, 311, 313, 315, 317, 319, 321, 323, 325, 327, 329, 331, 333, 335, 337, 339, 341, 343, 345, 347, 349, 351, 353, 355, 357, 359, 361, 363, 365, 367, 369, 371, 373, 375, 377, 379, 381, 383, 385, 387, 389, 391, 393, 395, 397, 399, 401, 403, 405, 407, 409, 411, 413, 415, 417, 419, 421, 423, 425, 427, 429, 431, 433, 435, 437, 439, 441, 443, 445, 447, 449, 451, 453, 455, 457, 459, 461, 463, 465, 467, 469, 4712, 473, 475, 477, 479, 481, 483, 485, 487, 489, 491, 493, 495, 497, 499, 501, 503, 505, 507, 509, 511, 513, 515, 517, 519, 521, 523, 525, 527, 529, 531, 533, 535, 537, 539, 541, 543, 545, 547, 549, 551, 553, 555, 557, 559, 561, 563, 565, 567, 569, 571, 573, 575, 577, 579, 581, 583, 585, 587, 589, 591, 593, 595, 597, 599, 601, 603, 605, 607, 609, 611, 613, 615, 617, 619, 621, 623, 625, 627, 629, 631, 633, 635, 637, 639, 641, 643, 645, 647, 649, 651, 653, 655, 657, 659, 661, 663, 665, 667, 669, 671, 673, 675, 677, 679, 681, 683, 685, 687, 689, 691, 693, 695, 697, 699, 701, 703, 705, 707, 709, 711, 713, 715, 717, 719, 721, 723, 725, 727, 729, 731, 733, 735, 739, and 741.

Those having ordinary skill in the art will readily appreciate that due to the degeneracy of the genetic code, a multitude of nucleotide sequences encoding HHDH polypeptides of the present invention exist. Table I is a Codon Table that provides the

synonymous codons for each amino acid. For example, the codons AGA, AGG, CGA, CGC, CGG, and CGU all encode the amino acid arginine. Thus, at every position in the nucleic acids of the invention where an arginine is specified by a codon, the codon can be altered to any of the corresponding codons described above without altering the encoded polypeptide. It is understood that U in an RNA sequence corresponds to T in a DNA sequence.

Table 1: Codon Table

Amino acids			Codon					
Alanine	Ala	A	GCA	GCC	GCG	GCU		
Cysteine	Cys	C	UGC	UGU				
Aspartic acid	Asp	D	GAC	GAU				
Glutamic acid	Glu	E	GAA	GAG				
Phenylalanine	Phe	F	UUC	UUU				
Glycine	Gly	G	GGA	GGC	GGG	GGU		
Histidine	His	H	CAC	CAU				
Isoleucine	Ile	I	AUA	AUC	AUU			
Lysine	Lys	K	AAA	AAG				
Leucine	Leu	L	UUA	UUG	CUA	CUC	CUG	CUU
Methionine	Met	M	AUG					
Asparagine	Asn	N	AAC	AAU				
Proline	Pro	P	CCA	CCC	CCG	CCU		
Glutamine	Gln	Q	CAA	CAG				
Arginine	Arg	R	AGA	AGG	CGA	CGC	CGG	CGU
Serine	Ser	S	AGC	AGU	UCA	UCC	UCG	UCU
Threonine	Thr	T	ACA	ACC	ACG	ACU		
Valine	Val	V	GUA	GUC	GUG	GUU		
Tryptophan	Trp	W	UGG					
Tyrosine	Tyr	Y	UAC	UAU				

Such "silent variations" are one species of "conservative" variation. One of ordinary skill in the art will recognize that each codon in a nucleic acid (except AUG, which is ordinarily the only codon for methionine) can be modified by standard techniques to encode a functionally identical polypeptide. Accordingly, each silent variation of a nucleic acid which encodes a polypeptide is implicit in any described sequence. The invention contemplates and provides each and every possible variation of nucleic acid sequence encoding a polypeptide of the invention that could be made by selecting combinations based on possible codon choices. These combinations are made in accordance with the standard triplet genetic code (set forth in Table 1), as applied to the polynucleotide sequences of the present invention.

A group of two or more different codons that, when translated in the same context, all encode the same amino acid, are referred to herein as "synonymous codons." HHDH polynucleotides of the present invention may be codon optimized for expression in a particular host organism by modifying the polynucleotides to conform with the optimum codon usage of the desired host organism. Those having ordinary skill in the art will recognize that tables and other references providing preference information for a wide range of organisms are readily available See *e.g.*, Henaut and Danchin in "*Escherichia coli* and *Salmonella,*" Neidhardt, *et al.* Eds., ASM Pres, Washington D.C. (1996), pp. 2047-2066.

An exemplary HHDH variant polynucleotide sequence of the present invention is provided as SEQ ID NO: 31, which expresses well in *E. coli*. This polynucleotide is a variant of SEQ ID NO: 1 that expresses the polypeptide corresponding to SEQ ID NO: 2 from *E. coli* at a level of about 4 ½ fold higher than the amount expressed from SEQ ID NO: 1 (*i.e.*, HHDH-encoding polynucleotide encoding native HHDH from *Agrobacterium sp.*).

In some embodiments of the present invention, certain codons are preferred when the following residues are employed in the HHDH polypeptides of the present invention: ATT encoding Isoleucine at amino acid position 5; AAG encoding Lysine at amino acid position 36; ATT encoding Isoleucine at amino acid position 63; GAG encoding Glutamic acid at amino acid position 95; and CCC encoding Proline at amino acid position 188. The amino acid position referred to above is the corresponding amino acid position in SEQ ID NO: 2, when the invention HHDH polypeptides are aligned with SEQ ID NO: 2.

The terms "conservatively modified variations" and "conservative variations" are used interchangeably herein to refer to those nucleic acids that encode identical or essentially identical amino acid sequences, or in the situation where the nucleic acids are not coding sequences, the term refers to nucleic acids that are identical. One of ordinary skill in the art will recognize that individual substitutions, deletions or additions which alter, add or delete a single amino acid or a small percentage of amino acids in an encoded sequence are considered conservatively modified variations where the alterations result in one or more of the following: the deletion of an amino acid, addition of an amino acid, or substitution of an amino acid with a chemically similar amino acid. When more than one amino acid is affected, the

percentage is typically less than 5% of amino acid residues over the length of the encoded sequence, and more typically less than 2%. References providing amino acids that are considered conservative substitutions for one another are well known in the art.

Examples of conservative substitutions are within the group of basic amino acids (arginine, lysine and histidine), acidic amino acids (glutamic acid and aspartic acid), polar amino acids (glutamine and asparagines), hydrophobic amino acids (leucine, isoleucine and valine), aromatic amino acids (phenylalanine, tryptophan and tyrosine), and small amino acids (glycine, alanine, serine, threonine, proline, cysteine and methionine). Amino acid substitutions which do not generally alter the specific activity are known in the art and are described, for example, by H. Neurath and R.L. Hill, 1979, in "The Proteins," Academic Press, New York. The most commonly occurring exchanges are Ala/Ser, Val/Ile, Asp/Glu, Thr/Ser, Ala/Gly, Ala/Thr, Ser/Asn, Ala/Val, Ser/Gly, Tyr/Phe, Ala/Pro, Lys/Arg, Asp/Asn, Leu/Ile, Leu/Val, Ala/Glu, and Asp/Gly as well as these in reverse.

Conservatively substituted variations of the HHDH polypeptides of the present invention include substitutions of a small percentage, typically less than 5%, more typically less than 2%, and often less than 1% of the amino acids of the polypeptide sequence, with a conservatively selected amino acid of the same conservative substitution group. The addition of sequences which do not alter the encoded activity of an HHDH polynucleotide, such as the addition of a non-functional or non-coding sequence, is considered a conservative variation of the HHDH polynucleotide.

Polynucleotides of the present invention can be prepared using methods that are well known in the art. Typically, oligonucleotides of up to about 120 bases are individually synthesized, then joined (*e.g.*, by enzymatic or chemical ligation methods, or polymerase-mediated methods) to form essentially any desired continuous sequence. For example, polynucleotides of the present invention can be prepared by chemical synthesis using, e.g., the classical phosphoramidite method described by Beaucage, *et al.* (1981) Tetrahedron Letters, 22:1859-69, or the method described by Matthes, *et al.* (1984) EMBO J., 3:801-05., *e.g.*, as is typically practiced in automated synthetic methods. According to the phosphoramidite method, oligonucleotides are synthesized, *e.g.*, in an automatic DNA synthesizer, purified, annealed, ligated and cloned in appropriate vectors.

In addition, essentially any nucleic acid can be custom ordered from any of a variety of commercial sources, such as The Midland Certified Reagent Company (Midland, TX), The Great American Gene Company (Ramona, CA), ExpressGen Inc. (Chicago, IL), Operon Technologies Inc. (Alameda, CA), and many others.

Polynucleotides may also be synthesized by well-known techniques as described in the technical literature. See, e.g., Carruthers, *et al.*, Cold Spring Harbor Symp. Quant. Biol., 47:411-418 (1982) and Adams, *et al.*, J. Am. Chem. Soc., 105:661 (1983). Double stranded DNA fragments may then be obtained either by synthesizing the complementary strand and annealing the strands together under appropriate conditions, or by adding the complementary strand using DNA polymerase with an appropriate primer sequence.

General texts which describe molecular biological techniques useful herein, including the use of vectors, promoters and many other relevant topics, include Berger and Kimmel, Guide to Molecular Cloning Techniques, Methods in Enzymology volume 152 Academic Press, Inc., San Diego, CA (Berger); Sambrook et al., Molecular Cloning - A Laboratory Manual (2nd Ed.), Vol. 1-3, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, 1989 ("Sambrook") and Current Protocols in Molecular Biology, F.M. Ausubel *et al.*, eds., Current Protocols, a joint venture between Greene Publishing Associates, Inc. and John Wiley & Sons, Inc., (supplemented through 1999) ("Ausubel"). Examples of protocols sufficient to direct persons of skill through *in vitro* amplification methods, including the polymerase chain reaction (PCR) the ligase chain reaction (LCR), Qβ-replicase amplification and other RNA polymerase mediated techniques (e.g., NASBA), e.g., for the production of the homologous nucleic acids of the invention are found in Berger, Sambrook, and Ausubel, as well as Mullis *et al.*, (1987) U.S. Patent No. 4,683,202; PCR Protocols A Guide to Methods and Applications (Innis *et al.* eds) Academic Press Inc. San Diego, CA (1990) (Innis); Arnheim & Levinson (October 1, 1990) C&EN 36-47; The Journal Of NIH Research (1991) 3, 81-94; (Kwoh et al. (1989) Proc. Natl. Acad. Sci. USA 86, 1173; Guatelli *et al.* (1990) Proc. Natl. Acad. Sci. USA 87, 1874; Lomell *et al.* (1989) J. Clin. Chem 35, 1826; Landegren *et al.*, (1988) Science 241, 1077-1080; Van Brunt (1990) Biotechnology 8, 291-294; Wu and Wallace, (1989) Gene 4, 560; Barringer et al. (1990) Gene 89, 117, and Sooknanan and Malek (1995) Biotechnology 13: 563-564. Improved methods for cloning in vitro amplified nucleic

acids are described in Wallace *et al.*, U.S. Pat. No. 5,426,039. Improved methods for amplifying large nucleic acids by PCR are summarized in Cheng *et al.* (1994) Nature 369: 684-685 and the references cited therein, in which PCR amplicons of up to 40kb are generated. One of ordinary skill in the art will readily appreciate that essentially any RNA can be converted into a double stranded DNA suitable for restriction digestion, PCR expansion and sequencing using reverse transcriptase and a polymerase. *See, e.g.*, Ausubel, Sambrook and Berger, all *supra.*

Vectors, Promoters, and Expression Systems

The present invention also includes recombinant constructs comprising one or more of the HHDH polynucleotide sequences as broadly described above. The term "construct" or "nucleic acid construct" refers herein to a nucleic acid, either single- or double-stranded, which is isolated from a naturally occurring gene or which has been modified to contain segments of nucleic acids in a manner that would not otherwise exist in nature. The term "nucleic acid construct" is synonymous with the term "expression cassette" when the nucleic acid construct contains the control sequences required for expression of an HHDH coding sequence of the present invention.

The present invention also provides an expression vector comprising an HHDH polynucleotide of the present invention operably linked to a promoter. Example 1 provides a description of how to make expression constructs for expression of halohydrin dehalogenase. The term "control sequences" refers herein to all the components that are necessary or advantageous for the expression of a polypeptide of the present invention. Each control sequence may be native or foreign to the nucleotide sequence encoding the polypeptide. Such control sequences include, but are not limited to, a leader, polyadenylation sequence, propeptide sequence, promoter, signal peptide sequence, and transcription terminator. At a minimum, the control sequences include a promoter, and transcriptional and translational stop signals. The control sequences may be provided with linkers for the purpose of introducing specific restriction sites facilitating ligation of the control sequences with the coding region of the nucleotide sequence encoding a polypeptide.

The term "operably linked" refers herein to a configuration in which a control sequence is appropriately placed at a position relative to the coding sequence of the DNA sequence such that the control sequence directs the expression of a polypeptide.

When used herein, the term "coding sequence" is intended to cover a nucleotide sequence, which directly specifies the amino acid sequence of its protein product. The boundaries of the coding sequence are generally determined by an open reading frame, which usually begins with the ATG start codon. The coding sequence typically includes a DNA, cDNA, and/or recombinant nucleotide sequence.

As used herein, the term "expression" includes any step involved in the production of the polypeptide including, but not limited to, transcription, post-transcriptional modification, translation, post-translational modification, and secretion.

The term "expression vector" refers herein to a DNA molecule, linear or circular, that comprises a segment encoding a polypeptide of the invention, and which is operably linked to additional segments that provide for its transcription.

As used herein, the term "host cell" refers to any cell type which is susceptible to transformation with a nucleic acid construct.

Nucleic acid constructs of the present invention comprise a vector, such as, a plasmid, a cosmid, a phage, a virus, a bacterial artificial chromosome (BAC), a yeast artificial chromosome (YAC), or the like, into which a nucleic acid sequence of the invention has been inserted, in a forward or reverse orientation. In a preferred aspect of this embodiment, the construct further comprises regulatory sequences, including, for example, a promoter, operably linked to the sequence. Large numbers of suitable vectors and promoters are known to those of skill in the art, and are commercially available.

Polynucleotides of the present invention can be incorporated into any one of a variety of expression vectors suitable for expressing a polypeptide. Suitable vectors include chromosomal, nonchromosomal and synthetic DNA sequences, *e.g.*, derivatives of SV40; bacterial plasmids; phage DNA; baculovirus; yeast plasmids; vectors derived from combinations of plasmids and phage DNA, viral DNA such as vaccinia, adenovirus, fowl pox virus, pseudorabies, adenovirus, adeno-associated virus, retroviruses and many others. Any vector that transduces genetic material into a cell, and, if replication is desired, which is replicable and viable in the relevant host can be used.

When incorporated into an expression vector, a polynucleotide of the invention is operatively linked to an appropriate transcription control sequence

(promoter) to direct mRNA synthesis, e.g., T5 promoter. Examples of such transcription control sequences particularly suited for use in transgenic plants include the cauliflower mosaic virus (CaMV) and figwort mosaic virus (FMV). Other promoters known to control expression of genes in prokaryotic or eukaryotic cells or their viruses and which can be used in some embodiments of the invention include SV40 promoter, *E. coli* lac or trp promoter, phage lambda P_L promoter, tac promoter, T7 promoter, and the like. An expression vector optionally contains a ribosome binding site for translation initiation, and a transcription terminator, such as PinII. The vector also optionally includes appropriate sequences for amplifying expression, e.g., an enhancer.

In addition, the expression vectors of the present invention optionally contain one or more selectable marker genes to provide a phenotypic trait for selection of transformed host cells. Suitable marker genes include those coding for resistance to the antibiotic spectinomycin or streptomycin (*e.g.*, the aada gene), the streptomycin phosphotransferase (SPT) gene coding for streptomycin resistance, the neomycin phosphotransferase (NPTII) gene encoding kanamycin or geneticin resistance, the hygromycin phosphotransferase (HPT) gene coding for hygromycin resistance. Additional selectable marker genes include dihydrofolate reductase or neomycin resistance for eukaryotic cell culture, and tetracycline or ampicillin resistance in *E. coli.*

An exemplary expression vector for the expression of HHDH polypeptides of the present invention is depicted in Figure 1. Vectors of the present invention can be employed to transform an appropriate host to permit the host to express an invention protein or polypeptide. Examples of appropriate expression hosts include bacterial cells, such as *E. coli* , *B. subtilis*, and *Streptomyces.* In bacterial systems, a number of expression vectors may be selected, such as, for example, multifunctional *E. coli* cloning and expression vectors.

HHDH polynucleotides of the invention can also be fused, for example, in-frame to nucleic acids encoding a secretion/localization sequence, to target polypeptide expression to a desired cellular compartment, membrane, or organelle of a cell, or to direct polypeptide secretion to the periplasmic space or into the cell culture media. Such sequences are known to those of skill, and include secretion leader peptides, organelle targeting sequences (*e.g.*, nuclear localization sequences,

endoplasmic reticulum (ER) retention signals, mitochondrial transit sequences, chloroplast transit sequences), membrane localization/anchor sequences (*e.g.*, stop transfer sequences, GPI anchor sequences), and the like.

Expression Hosts

The present invention also relates to engineered host cells that are transduced (transformed or transfected) with a vector or construct of the invention (*e.g.*, an invention cloning vector or an invention expression vector), as well as the production of polypeptides of the invention by recombinant techniques. The vector may be, for example, a plasmid, a viral particle, a phage, *etc.* The host cell can be a eukaryotic cell, such as a plant cell. Alternatively, the host cell can be a prokaryotic cell, such as a plant cell. Introduction of the construct into the host cell can be effected by calcium phosphate transfection, DEAE-Dextran mediated transfection, electroporation, or other common techniques (Davis, L., Dibner, M. and Battey, I. (1986) Basic Methods in Molecular Biology). The engineered host cells can be cultured in conventional nutrient media modified as appropriate for activating promoters, selecting transformants, or amplifying the HHDH polynucleotide. Culture conditions, such as temperature, pH and the like, are those previously used with the host cell selected for expression, and will be apparent to those skilled in the art and in the references cited herein, including, *e.g.*, Sambrook, Ausubel and Berger, as well as *e.g.*, Freshney (1994) Culture of Animal Cells, a Manual of Basic Technique, third edition, Wiley- Liss, New York and the references cited therein.

HHDH polypeptides of the invention can be produced in non-animal cells such as plants, yeast, fungi, bacteria, and the like. In addition to Sambrook, Berger and Ausubel, details regarding non-animal cell culture can be found in Payne *et al.* (1992) Plant Cell and Tissue Culture in Liquid Systems John Wiley & Sons, Inc. New York, NY; Gamborg and Phillips (eds) (1995) Plant Cell, Tissue and Organ Culture; Fundamental Methods Springer Lab Manual, Springer-Verlag (Berlin Heidelberg New York) and Atlas and Parks (eds) The Handbook of Microbiological Media (1993) CRC Press, Boca Raton, FL. The host cell can be a eukaryotic cell, such as a plant cell. Alternatively, the host cell can be a prokaryotic cell, such as a bacterial cell. Introduction of the construct into the host cell can be effected by calcium phosphate transfection, DEAE-Dextran mediated transfection, electroporation, or

other common techniques (Davis, L., Dibner, M., and Battey, I. (1986) Basic Methods in Molecular Biology).

Fusion Polypeptides for Purification

HHDH polypeptides of the present invention may also be expressed as part of a fusion polypeptide to facilitate purification of the encoded HHDH polypeptide. Polynucleotides encoding such fusion polypeptides comprise a nucleic acid sequence corresponding to an HHDH polynucleotide of the present invention that is fused-in frame to a purification facilitating domain. As used herein, the term "purification facilitating domain" refers to a domain that mediates purification of the polypeptide to which it is fused. Suitable purification domains include metal chelating peptides, histidine-tryptophan modules that allow purification on immobilized metals, a sequence which binds glutathione (*e.g.*, GST), a hemagglutinin (HA) tag (corresponding to an epitope derived from the influenza hemagglutinin protein; Wilson *et al.* (1984) Cell, 37:767), maltose binding protein sequences, the FLAG epitope utilized in the FLAGS extension/affinity purification system (Immunex Corp, Seattle, WA), and the like. The inclusion of a protease-cleavable polypeptide linker sequence between the purification domain and the HHDH polypeptide is useful to facilitate purification. One expression vector contemplated for use in the compositions and methods described herein provides for expression of a fusion protein comprising a polypeptide of the invention fused to a polyhistidine region separated by an enterokinase cleavage site. The histidine residues facilitate purification on IMIAC (immobilized metal ion affinity chromatography, as described in Porath *et al.* (1992) Protein Expression and Purification 3:263-281) while the enterokinase cleavage site provides a means for separating the HHDH polypeptide from the fusion protein. pGEX vectors (Promega; Madison, WI) may also be used to express foreign polypeptides as fusion proteins with glutathione S-transferase (GST). In general, such fusion proteins are soluble and can easily be purified from lysed cells by adsorption to ligand-agarose beads (*e.g.*, glutathione-agarose in the case of GST-fusions) followed by elution in the presence of free ligand.

Production and Recovery of HHDH Polypeptides

The present invention further provides a method of making an HHDH polypeptide, said method comprising: (a) cultivating a host cell transformed with an

HHDH polynucleotide under conditions suitable for the production of the HHDH polypeptide; and (b) recovering the HHDH polypeptide. Typically, recovery is from the host cell culture medium, the host cell or both, using protein recovery techniques that are well known in the art, including those described below.

Following transduction of a suitable host strain and growth (cultivating) of the host strain to an appropriate cell density, the selected promoter is induced by appropriate means (*e.g.*, temperature shift or chemical induction) and cells are cultured for an additional period. Cells are typically harvested by centrifugation, disrupted by physical or chemical means, and the resulting crude extract retained for further purification. Microbial cells employed in expression of proteins can be disrupted by any convenient method, including freeze-thaw cycling, sonication, mechanical disruption, or use of cell lysing agents, or other methods, which are well known to those skilled in the art.

As noted, many references are available for the culture and production of many cells, including cells of bacterial, plant, animal (especially mammalian) and archebacterial origin. *See e.g.*, Sambrook, Ausubel, and Berger (*all supra*), as well as Freshney (1994) Culture of Animal Cells, a Manual of Basic Technique, third edition, Wiley- Liss, New York and the references cited therein; Doyle and Griffiths (1997) Mammalian Cell Culture: Essential Techniques John Wiley and Sons, NY; Humason (1979) Animal Tissue Techniques, fourth edition W.H. Freeman and Company; and Ricciardelli, *et al.*, (1989) In vitro Cell Dev. Biol. 25:1016-1024. For plant cell culture and regeneration, Payne *et al.* (1992) Plant Cell and Tissue Culture in Liquid Systems John Wiley & Sons, Inc. New York, NY; Gamborg and Phillips (eds) (1995) Plant Cell, Tissue and Organ Culture; Fundamental Methods Springer Lab Manual, Springer-Verlag (Berlin Heidelberg New York); Jones, ed. (1984) Plant Gene Transfer and Expression Protocols, Humana Press, Totowa, New Jersey and Plant Molecular Biology (1993) R.R.D.Croy, Ed. Bios Scientific Publishers, Oxford, U.K. ISBN 0 12 198370 6. Cell culture media in general are set forth in Atlas and Parks (eds.) The Handbook of Microbiological Media (1993) CRC Press, Boca Raton, FL. Additional information for cell culture is found in available commercial literature such as the Life Science Research Cell Culture Catalogue (1998) from Sigma-Aldrich, Inc (St Louis, MO) ("Sigma-LSRCCC") and, *e.g.*, The Plant Culture

Catalogue and supplement (1997) also from Sigma-Aldrich, Inc (St Louis, MO) ("Sigma-PCCS").

HHDH polypeptides of the present invention can be recovered and purified from recombinant cell cultures by any of a number of methods well known in the art, including ammonium sulfate or solvent (e.g., ethanol, acetone, and the like) precipitation, acid extraction, anion or cation exchange chromatography, phosphocellulose chromatography, hydrophobic interaction chromatography, affinity chromatography (e.g., using any of the tagging systems noted herein), hydroxylapatite chromatography, and lectin chromatography. Protein refolding steps can be used, as desired, in completing the configuration of the mature protein. Finally, high performance liquid chromatography (HPLC) can be employed in the final purification steps. In addition to the references noted *supra*, a variety of purification methods are well known in the art, including, *e.g.*, those set forth in Sandana (1997) Bioseparation of Proteins, Academic Press, Inc.; and Bollag *et al.* (1996) Protein Methods, 2nd Edition, Wiley-Liss, NY; Walker (1996) The Protein Protocols Handbook Humana Press, NJ, Harris and Angal (1990) Protein Purification Applications: A Practical Approach, IRL Press at Oxford, Oxford, England; Harris and Angal Protein Purification Methods: A Practical Approach, IRL Press at Oxford, Oxford, England; Scopes (1993) Protein Purification: Principles and Practice 3rd Edition, Springer Verlag, NY; Janson and Ryden (1998) Protein Purification: Principles, High Resolution Methods and Applications, Second Edition, Wiley-VCH, NY; and Walker (1998) Protein Protocols on CD-ROM, Humana Press, NJ.

In some cases it may be desirable to produce the HHDH polypeptides of the invention on a large scale suitable for industrial and/or commercial applications. In such cases bulk fermentation procedures are employed. An exemplary bulk fermentation procedure for producing HHDH is provided in Example 2. Briefly, an HHDH polynucleotide, is cloned into an expression vector, such as, for example, the vector depicted in Figure 1 (PCK110700). After inserting the polynucleotide of interest into a vector, the vector is tranformed into a bacterial host, such as, for example, *E. coli* BL21 (Strategene, La Jolla, CA) after passage through *E. coli* TOP10 (Invitrogen, Carlsbad, CA) using standard methods.

The transformed cells are cultivated in a nutrient medium suitable for production of the polypeptide using methods that are known in the art. For example,

the cell may be cultivated by shake flask cultivation, small-scale or large-scale fermentation (including continuous, batch, fed-batch, or solid state fermentations) in laboratory or industrial fermentors performed in a suitable medium and under conditions allowing the polypeptide to be expressed and/or isolated. The cultivation takes place in a suitable nutrient medium comprising carbon and nitrogen sources and inorganic salts, using procedures known in the art. Suitable media are available from commercial suppliers or may be prepared according to published compositions (*e.g.*, in catalogues of the American Type Culture Collection). The secreted polypeptide can be recovered directly from the nutrient (culture) medium.

The resulting polypeptide may be isolated by methods known in the art. For example, the polypeptide may be isolated from the nutrient medium by conventional procedures including, but not limited to, centrifugation, filtration, extraction, spray-drying, evaporation, or precipitation. The isolated polypeptide may then be further purified by a variety of procedures known in the art including, but not limited to, chromatography (*e.g.*, ion exchange, affinity, hydrophobic, chromatofocusing, and size exclusion), electrophoretic procedures (*e.g.*, preparative isoelectric focusing), differential solubility (*e.g.*, ammonium sulfate precipitation), or extraction (see, e.g., Bollag et al. (1996) Protein Methods, 2nd Edition, Wiley-Liss, NY; Walker (1996) The Protein Protocols Handbook, Humana Press, NJ; Bollag *et al.* (1996) Protein Methods, 2nd Edition, Wiley-Liss, NY; Walker (1996) The Protein Protocols Handbook, Humana Press, NJ). A procedure for recovering the HHDH polypeptide from a cell lysate is illustrated in Example 3.

It is believed that the pI of the wild-type HHDH of SEQ ID NO: 2 maybe too low for polyethyleneimine (PEI) precipitation to be used to purify HHDH from DNA. Applicants have discovered that they could make the following residue changes relative to the alignment in SEQ ID NO: 2 to produce HHDH polypeptides of the present invention that have a sufficiently high pI to allow for isolation by PEI precipitation, but without loss of HHDH enzyme activity: E40Q,K, E42Q,K, E46Q,K, E56Q,K, E58Q,K, E61Q,K, and E64Q,K. Thus, in another embodiment, the present invention is directed to an HHDH polypeptide that can be isolated from solution by PEI precipitation, the HHDH polypeptide, when aligned with SEQ ID NO: 2, having five or more of the residue changes selected from the group consisting of E40Q,K, E42Q,K, E46Q,K, E56Q,K, E58Q,K, E61Q,K, and E64Q,K. For

example, PEI precipitation was applied to the HHDH polypeptide of SEQ ID NO: 744:

MSTAIVTNVKHFGGMGSALRLSEAGHTVACHDESFKHQDQLKAFAKTYPQLI
PMSEQEPAELIEAVTSALGQVDVLVSNDIYPVEWRPIDKYAVEDYRGTVEAL
QIKPFALVNAVASQMKKRKSGHIIFITSAAPFGPWKELSTYSSARAGASALAN
ALSKELGEYNIPVFAIAPNYLHSGDSPYYYPTEPWKTSPEHVAHVRKVTALQR
LGTQKELGELVAFLASGSCDYLTGQVFWLTGGFPVIERWPGMPE .

This polypeptide is encoded by the polynucleotide of SEQ ID NO: 743:

atgagcaccgctattgtcaccaacgtcaaacattttggaggtatgggtagcgctctgcgtctgagcgaagct
ggtcataccgtcgcttgccatgatgaaagctttaagcatcaggatcaactgaaagcttttgctaaaacctacc
cacagctgatcccaatgagcgaacaggaaccagctgaactgattgaagctgtcaccagcgctcttggtca
ggtcgatgtactggtcagcaacgatatctatcctgtggaatggcggccaatcgataaatacgctgtcgagga
ttacaggggtactgtcgaagctctgcagatcaagccatttgctctagtgaatgctgtcgcttcgcaaatgaag
aagcgaaagtcggggcacatcatcttcatcacttcggctgccccgttcgggccatggaaggagctatcgac
ttactcttcggctcgagctggggctagtgcactagctaatgctctatcgaaggagctaggagagtacaatatc
ccggtgttcgctatcgctccgaattacctacactcgggggattcgccgtactattaccccactgagccgtgga
agacttctccggagcacgtggctcacgtgcgtaaggtgactgctctacaacgactagggactcaaaaaga
gctgggggaattggtggcatttttggcatctggctcttgtgattatttgactggccaggtgttttggttgacaggcg
gctttcccgtcatcgaacgttggcccggcatgcccgaataatgaggatccggccaaactgttgtccgtctgca
tcacctctaggtaatgtgagcggatacgatgccc.

Cell-free transcription/translation systems can also be employed to produce HHDH polypeptides using the polynucleotides of the present invention. Several such systems are commercially available. A general guide to in vitro transcription and translation protocols is found in Tymms (1995) *In vitro* Transcription and Translation Protocols: Methods in Molecular Biology, Volume 37, Garland Publishing, NY.

Ethyl-4-chloroacetoacetate (ECAA) is the substrate for the coupled reduction reaction using KRED/GDH to produce ethyl (*S*)-4-chloro-3-hydroxybutyrate (ECHB). The ECHB is then used as substrate for the HHDH reaction. However, the ECAA starting material is a potent inhibitor (K_i approximately = 70 μM) of HHDH. Because the KRED/GDH catalyzed reaction may go to 99.9% completion, instead of the desired 99.97%, then 0.1% ECAA remains in the ECHB material and this 0.1% ECAA can inhibit the HHDH reaction. In other words, the remaining substrate from the first reaction is an inhibitor in the second reaction. Hence, it is desirable that the HHDH polypeptides of the present invention have resistance to inhibition by ECAA.

Applicants have discovered that they could make the following residue changes relative to the alignment in SEQ ID NO: 2 to produce HHDH polypeptides of the present invention that demonstrate increased resistance against inhibition by

ECAA: A4V, A82Y,A134V, G136W, G136V, L142R, L178V, W238L, A240T, W249Y, M252I. Thus, in another embodiment, the present invention is directed to an HHDH polypeptide is resistant to inhibition by ECAA, the HHDH polypeptide, when aligned with SEQ ID NO: 2, having one or more of the residue changes selected from the group consisting of A4V, F82Y, T134V, F136W, F136V, L142R, L178V, W238L, A240T, W249Y and M252I.

A method for testing the HHDH polypeptides of the present invention for their reactivity in the presence of ECAA is disclosed in Example 5C herein. A gas chromatographic method for screening the reaction products from Example 5C, and determining the amount of product produced, is disclosed in Example 6B herein.

Methods of Using HHDH Polypeptides

As described *supra*, HHDH polypeptides of the present invention can be used to catalyze the conversion of 4-halo-3-hydroxybutyric acid derivatives to 4-nucleophile substituted-3-hydroxybutyric acid derivatives. The novel halohydrin dehalogenases of the present invention are also useful in the process for enzymatically resolving a mixture of enantiomeric epoxides by reacting the mixture with an anionic nucleophile in the presence of the halohydrin dehalogenase, wherein the enzyme preferentially reacts one of the epoxide enantiomers with the nucleophile to form a mixture of the resulting enantiomerically enriched vicinal nucleophile-substituted alcohol and the unreacted epoxide enriched in the other enantiomer, in the manner disclosed in publication WO 01/90397, which is incorporated herein by reference in its entirety.

The foregoing and other aspects of the invention may be better understood in connection with the following non-limiting examples.

EXAMPLES

Example 1

Construction of Expression Constructs for Expression of Halohydrin Dehalogenase

The gene for *Agrobacterium sp.* halohydrin dehalogenase was codon optimized (SEQ ID NO: 1) for expression in *E. coli* based on the amino acid sequence of the halohydrin dehalogenase from *Agrobacterium sp.* (SEQ ID NO: 2).

The gene was synthesized using 60-mer oligomers, and cloned into expression vector PCK110700 (depicted in Figure 1) under the control of a T5 promoter. The vector was transformed into *E.coli* TOP10 (Invitrogen, Carlsbad, CA) from which plasmid DNA was prepared using standard methods. The plasmid DNA was then transformed into *E. coli* BL21 (Stratagene, La Jolla, CA), the expression host, using standard methods. A clone was found in the expression library that expressed active HHDH. The gene from this clone was sequenced (see SEQ ID NO: 1 (HHDH.1)) and found to encode *Agrobacterium sp.* HHDH (SEQ ID NO: 2).

Polynucleotides encoding halohydrin dehalogenases of the present invention were similarly cloned into vector PCK 110700, depicted in Figure 1, then transformed and expressed from *E. coli* BL21 after passage through *E. coli* TOP10 using standard methods.

Example 2

Production of HHDH

In an aerated agitated fermentor, 10.0L of growth medium containing 0.528g/L ammonium sulphate; 7.5g/L of di-potassium hydrogen phosphate trihydrate; 3.7g/L of potassium dihydrogen phosphate; 2g/L of Tastone-154 yeast extract; 0.05g/L ferrous sulphate; and 3ml/L of a trace element solution containing 2g/L of calcium chloride dihydrate, 2.2g/L of zinc sulfate septahydrate, 0.5g/L manganese sulfate monohydrate, 1g/L cuprous sulfate heptahydrate: 0.1g/l sodium borate decahydrate and 0.5g/L EDTA, was brought to a temperature of 30°C. The fermentor was inoculated with a late exponential culture of *Escherchia coli* BL21 (Stratagene, La Jolla, CA) equipped with plasmid containing HHDH polynucleotides as described in Example 1, then grown in a shake flask containing LB, 1% glucose (Sigma Chemical Co., St. Louis, MO), and 30μg/ml chloroamphenicol (Sigma Chemical Co., St. Louis, MO) to a starting optical density at 600 nm (OD_{600}) of 0.5 to 2.0. The fermentor was agitated at 500-1500 rpm and air was supplied to the fermentation vessel at 1.0-15.0 L/min to maintain a dissolved oxygen level of 30% saturation or greater. The pH of the culture was controlled at 7.0 by addition of 20% v/v ammonium hydroxide. After the culture reached an OD_{600} of 40, the temperature was maintained at 30°C and the expression of halohydrin dehalogenase was induced by the addition of isopropyl-β-D-thiogalactoside (IPTG) (Sigma Chemical Corp., St. Louis, MO) to a final concentration of 1mM. The culture was grown for another 15 hours.

After the induction, the cells were harvested by centrifugation and washed with 10 mM potassium phosphate buffer, pH 7.0. The cell paste was used directly in the downstream recovery process or was stored at –80°C until use.

Example 3

Enzyme Preparation

The cell paste from Example 2 was washed by suspending 1 volume wet weight of cell paste in 3 volumes of 100mM Tris/sulfate (pH 7.2) followed by centrifugation at 5000g for 40 minutes in a Sorval 12BP. The washed cell paste was suspended in 2 volumes of 100mM Tris/sulfate (pH 7.2). The intracellular HHDH was released from the cells by passing the suspension through a homogenizer in two passes using a pressure of 14,000 psig for the first pass and 8,000 psig for the second pass. The cell lysate was allowed to cool to 4°C between passes through the homogenizer. The lysate is warmed to room temperature then either 2.5M $MnSO_4$ (50-350 mM final concentration), or a 10% w/v solution of polyethyleneimine (PEI), pH 7.2, (0.6-1.0% w/v final concentration) was added to the lysate and stirred for 30 minutes. The homogenate was centrifuged at between 5,000 and 10,000 g in a standard laboratory centrifuge for 30 to 60 minutes. The supernatant was desalted, concentrated by ultrafiltration, dispensed in shallow containers, frozen at –20°C and lyophilized to a powder that was stored at –80 °C.

To assess the quality of the preparation after fermentation, cell lysate containing the expressed halohydrin dehalogenase enzyme was assayed according to the following protocol. Approximately 50 µl of clarified cell lysate in 100mM Tris-SO_4, 100mM NaCN, pH 8.0 was mixed with 10mM ethyl-(S)-4-chloro-3-hydroxybutyrate (ECHB) (Sigma Aldrich, St. Louis, MO). The total reaction volume was 0.2 ml. The reaction was incubated at room temperature for 30 min to 1 hour. The reaction was extracted with 7 volumes of ethyl acetate and the organic layer removed to a 1.8 ml gas chromatography (GC) vial. The organic layer was analyzed by GC for presence of the ethyl-(R)-4-cyano-3-hydroxybutyrate product. The amount of product produced was determined by comparison to a standard curve prepared and analyzed under the same conditions.

Example 4

High Throughput Screen for Presence of HHDH Activity

A. No cyanohydrin in agarose

The following screen was used to ascertain the presence of HHDH activity. On day 1, freshly transformed colonies on a Q-tray (Genetix USA, Inc. Beaverton, OR) containing 200 ml LB agar + 1% glucose, 30 μg/ml chloramphenicol were picked using a Q-bot® robot colony picker (Genetix USA, Inc., Beaverton, OR) into shallow 384 well Nunc plates containing media (70 μL/well 2xYT+1% glucose, 30 μg/ml cam) (Nalge Nunc International, Rochester, NY) for overnight growth at 30°C, 250 revolutions per minute (rpm), 85% relative humidity (RH). A negative control (*E. coli* BL21 with empty vector) and a positive control (*E. coli* BL21 with vector containing HHDH Mz1/2G5, SEQ ID NO: 31) were included. These master well plate cultures were covered with AirPore™ microporous tape (Qiagen, Inc., Valencia, California).

On day 2, the master plate cultures were gridded onto nylon membranes (Pall Biodyne B Nylon Membrane pre-cut for Omnitray, 115 x 76 mm, Nalge Nunc #250385) then placed onto a Q-tray (Genetix USA, Inc. Beaverton, OR) containing 200 ml LB agar + 1% glucose, 30 μg/ml chloramphenicol. The Q-trays were incubated at 30°C for 8-12 hours until growth was detected. Each nylon membrane was transferred to a Q-tray containing inducing media: 200 ml LB agar + 1mM IPTG, 30 μg/ml chloramphenicol. The Q-trays were then incubated at 23°C or room temperature overnight.

On day 3, the assay plate was prepared as follows: a solution of 150 ml of 10mM Tris-SO_4, pH 7.0, and 1.0% low melt agarose was prepared and cooled to about 45°C. 5M NaCl was added to give a final concentration of 500mM NaCl. Bromcresol purple (BCP) and ethyl (S)-4-chloro-3-hydroxybutyrate (ECHB) were added to final concentrations of 0.004% and 0.3%, respectively. The solution was poured into a 150 ml Q-tray and allowed to solidify.

The nylon membrane with the colonies was removed from the Q tray containing inducing media and inverted onto the assay plate. The membrane was imaged through the inverted Q-tray using the Alpha Imaging ChemStation (Alpha Innotech Corporation, San Leandro, California), aperture setting of 4 with a 420nm (+/- 10nm filter). An image was acquired during the first hour of the reaction. The

intensity data for each imaged spot was then normalized to the value of the negative control spots. A normalized value greater than one indicated the presence of HHDH activity. Active clones from this screen were further characterized using the method described in Example 5A. Clones from this screen may also be further characterized using the medium throughput assay described in Example 5B.

B. Cyanohydrin in agarose

This high throughput screen is used when it is desired to screen for HHDH polypeptides that exhibit HHDH activity in the presence of cyanohydrin product, *e.g.*, ethyl (R)-4-cyano-3-hydroxybutyrate. The protocol for days one and two are the same as in part A. On day 3, the assay plate was prepared as follows: a 150 ml low melt agarose solution was made up as follows: 10 mM Tris, pH 7.0, 2.0% low melt agarose (melted in microwave), 0.004% bromcresol purple (1.2 ml/150 ml). The solution was cooled to 37°C overnight. On day three, ECHB (0.45 ml ECHB/150 ml solution) and ethyl (R)-4-cyano-3-hydroxybutyrate (8.26 ml ethyl (R)-4-cyano-3-hydroxybutyrate / 150 ml solution) were added to give a 0.3% ECHB and 400 mM ethyl (R)-4-cyano-3-hydroxybutyrate solution. The solution was mixed and poured into a 150 ml Q-tray, then allowed to solidify as described in part A.

The nylon membrane with the colonies was removed from the Q tray containing the inducing media and inverted onto the assay plate. The membrane was imaged as described in part A above.

Active clones from this screen were further characterized using the gas chromatography method described in Example 5B (Medium through-put assay).

Example 5

Characterization of Halohydrin Dehalogenase Activity.

A. Gas Chromatography Method for Detection of Product Ethyl-(R)-4-cyano-3-hydroxybutyrate

To a solution of ethyl (S)-4-chloro-3-hydroxybutyrate (10mM-100mM) in 500 mM HCN (500 mM NaCN adjusted to pH 7.0 with phosphoric acid) was added the halohydrin dehalogenase enzyme as a predissolved solution in the same buffer. Over time, aliquots of the mixture were withdrawn and extracted with three volumes of

ethyl acetate. The organic layer was then analysed for ethyl (R)-4-cyano-3-hydroxybutyrate by gas chromatography (GC), as described hereinbelow in Example 6. Samples were taken at various time points, and the peak area of the product cyanohydrin, ethyl (R)-4-cyano-3-hydroxybutyrate, was plotted as a function of time. Time points are selected at low conversion, for example, less than 5% conversion, to avoid the effect of product inhibition (e.g., 0.5%, 1.0%, 1.5%, 2.0%, 2.5%, 3.0%, etc.). The peak areas were converted to concentration units using a standard curve that was prepared for the ethyl (R)-4-cyano-3-hydroxybutyrate. Activity of the halohydrin dehalogenase was determined in units of μmol (cyanohydrin produced)/min/mg (total halohydrin dehalogenase catalyst). Relative activities of some of the clones are shown in Table 2, computed as Activity of Improved HHDH Enzyme/Activity of Agrobacterium sp. HHDH (SEQ ID NO: 2).

Table 2. Relative HHDH Activity of Improved HHDH Enzymes on ECHB Substrate

SEQ ID NO:	Fold Improvement in HHDH Activity of *Agrobacterium* sp. HHDH (SEQ ID NO: 2)
(SEQ ID NO: 4)	1.5
(SEQ ID NO: 6)	1.6
(SEQ ID NO: 8)	1.8
(SEQ ID NO: 10)	1.7
(SEQ ID NO: 34)	2.4
(SEQ ID NO: 12)	2.5
(SEQ ID NO: 14)	1.4
(SEQ ID NO: 16)	2.0
(SEQ ID NO: 18)	2.7
(SEQ ID NO: 20)	3.8
(SEQ ID NO: 22)	2.5
(SEQ ID NO: 24)	3.2
(SEQ ID NO: 26)	1.7
(SEQ ID NO: 28)	2.2
(SEQ ID NO: 30)	2.8

B. Medium Throughput-Gas Chromatography Assay in Presence of Cyanohydrin Product

Hits were picked from desired wells (10 µL of culture) in the prescreen master well plates and transferred into the wells of 96 well NUNC plates (each well containing 200ul LB +1% glucose, 30 µg/ml chloramphenicol (cam)) for overnight growth at 30°C, 250 rpm, 85% relative humidity. The positive controls were picked from the prescreen master well plates.

The next day, 10 µl aliquots of the overnight growth was subcultured into 96 deep well plates each well containing 300 µl 2xYT, 100mM NaH_2PO_4/Na_2HPO_4 pH 7, 1 mM $MgSO_4$, 30 µg/ml cam. These plates were incubated at 30°C, 250 rpm, 85% relative humidity, 2-4 hrs, until the cell density reached an OD 600nm =0.6. The plates were then induced with 1 mM isopropyl-β-D-thiogalactoside (IPTG) (*e.g.*, 10µl/well of a 34 mM IPTG stock solution or 30uL/well of 10 mM IPTG stock) and incubated at 30°C overnight, 250 rpm, 85% relative humidity.

The next day, the plates were centrifuged (4000 rpm, 10 min., 4°C) to pellet the cells and the spent media was discarded. The plates can be frozen at –80°C for one hour to aid in cell breakage.

The pelleted cells were lysed by adding 200 µL B-PER® lysing solution (Pierce, cat# 78243) containing 2.04 M ethyl-4-cyano-3-hydroxybutyrate ("NH") (320g/L)(fw=157, d 1.19, 26.8 ml/100ml lysis mixture) and 1ul/10ml DNase (~200U/ul). The mixture of cells and lysing solution was vortexed to resuspend the cells and then incubated at 50°C with shaking for two hours.

A reaction solution was made up in a fume hood, preferably using a plastic (polypropylene) disposal container. The volume of reaction solution was determined by number of plates screened. To prepare the reaction solution having a 1M final concentration of NaCN, NaCN (fw= 49.01, 4.9 g/100mL) was added to the desired volume of 100 mM sodium phosphate pH 7 to give 1.47M concentration of NaCN. To each 68 mL of the NaCN solution was added 24mL of 5M stock NaCl and 8 ml of concentrated HCl (~10 M) to produce the desired volume of reaction mixture that was 1.2 M NaCl, 800 mM HCl, and 1M NaCN. The final pH of the reaction mixture was 7.0-7.2. To this solution was added ECHB (fw= 166.6, d=1.19) at 280 µL/100 mL

reaction mix to obtain a 20 mM final concentration. The final concentrations in the reaction mix are ~ 1M HCN, 2M NaCl, 50 mM sodium phosphate pH 7.0 to 7.2, 20 mM ECHB.

200 µL of the reaction mixture was added to the lysed cells in each well. The plates were sealed using the Velocity11 PlateLoc™ heat sealer. The sealed plates were then shaken at room temperature for 120 minutes. After shaking, the plates were unsealed and 1 mL of 1mM thymol (dissolved in ethyl acetate) was added to each well. The plates were resealed using the Velocity11 PlateLoc™ heat sealer, shaken vigorously, then allowed to sit for ~1 minute to let the layers separate

150 µL aliquots of the upper layer were transferred to Costar round bottom shallow well polypropylene (PP) reaction plates (Cat# 3365) using a Hydra™ positive displacement liquid handler (Asp mode, AV 150, AH 2650, EH 37800, WH 3730, WV full, Wash 3). Samples were transferred from the deep well plate into the shallow well plates.

These plates were sealed using the Velocity11 PlateLoc™ heat sealer and stored at -20°C until analysis by Gas Chromatography as described in Example 6B.

C. Medium Throughput-Gas Chromatography Assay for Inhibition in the Presence of Ethyl-4-Chloroacetoacetate (ECAA)

Hits were picked from desired wells (10 µL of culture) in the prescreen master well plates and transferred into the wells of 96 well NUNC plates (each well containing 200ul LB +1% glucose, 30 µg/ml chloramphenicol (cam)) for overnight growth at 30°C, 250 rpm, 85% relative humidity. The positive controls were picked from the prescreen master well plates.

The next day, 10 µl aliquots of the overnight growth was subcultured into 96 deep well plates, each well containing 300 µl 2xYT, 100mM NaH_2PO_4/Na_2HPO_4 pH 7, 1 mM $MgSO_4$, 30 µg/ml cam. These plates were incubated at 30°C, 250 rpm, 85% relative humidity, 2-4 hrs, until the cell density reached an OD 600nm =0.6. The plates were then induced with 1 mM IPTG (e.g., 10µl/well of a 34 mM IPTG stock solution or 30µL/well of 10 mM IPTG stock) and incubated at 30°C overnight, 250 rpm, 85% relative humidity.

The next day, the plates were centrifuged (4000 rpm, 10 min., 4°C) to pellet the cells and the spent media was discarded. The plates can be frozen at –80°C for one hour to aid in cell breakage.

The pelleted cells were lysed by adding 200 µL B-PER® lysing solution (Pierce, cat# 78243) with 1ul/10ml DNase (~200U/ul). The mixture of cells and lysing solution was vortexed to resuspend the cells and then incubated at 50°C with shaking for two hours.

A reaction solution was made up in a fume hood, preferably using a plastic (PP) disposal container (volume determined by number of plates screened). To prepare the reaction solution having a 1M final concentration of NaCN, NaCN (fw= 49.01, 4.9 g/100mL) was added to the desired volume of 100 mM sodium phosphate pH 7 to give 1.47M concentration of NaCN. To each 68 mL of the NaCN solution was added 24mL of 5M stock NaCl and 8 ml of concentrated HCl (~10 M) to produce the desired volume of reaction mixture that was 1.2 M NaCl, 800 mM HCl, and 1M NaCN. The final pH of the reaction mixture is 7.0-7.2. To this solution is added ECHB (fw= 166.6, d=1.19) to 100 mM final concentration (1400 µL/100 mL reaction mix) and ECAA (fw= 164.6, d= 1.21) to 5 mM final concentration (100 µL/100 mL reaction mix).

200 µL of the reaction mixture was added to the lysed cells in each well. The plates were sealed using the Velocity11 PlateLoc™ heat sealer. The sealed plates were then shaken at room temperature for 60 minutes. After shaking, the plates were unsealed and 1 mL of 1mM thymol (dissolved in ethyl acetate) was added to each well. The plates were resealed using the Velocity11 PlateLoc™ heat sealer, shaken vigorously, then allowed to sit for ~1 minute to let the layers separate

150 µl aliquots of the upper layer were transferred to Costar round bottom shallow well polypropylene (PP) reaction plates (Cat# 3365) using a Hydra™ positive displacement liquid handler (Asp mode, AV 150, AH 2650, EH 37800, WH 3730, WV full, Wash 3). Samples were transferred from the deep well plate into the shallow well plates. These plates were sealed using the Velocity11 PlateLoc™ heat sealer and stored at -20°C until analysis by Gas Chromatography as described in Example 6B.

Example 6

A. Detection of Ethyl (R)-4-cyano-3-hydroxybutyrate by Gas Chromotography

The ethyl (R)-4-cyano-3-hydroxybutyrate produced in Example 5A was analyzed using gas chromatography with flame ionization (FID) detection using an Agilent® HP-5™ column, 30 m long, 0.32 mm inner diameter, film 0.25 μm, using the following program: 1 minute at 100°C, 5°C/minute for 10 minutes; 25°C/minute for 2 minutes; then 2 minutes at 200°C. Inlet and outlet temperatures were both 300°C, and the flow rate was 2 ml/minute. Under these conditions, ethyl (R)-4-cyano-3-hydroxybutyrate elutes at 6.25 minutes and ethyl (S)-4-chloro-3-hydroxybutyrate elutes at 4.5 minutes. Chemical purity of the species was measured using the integrated peak areas from the gas chromoatography results.

Enantioselectivity of the halohydrin dehalogenase (HHDH) with respect to ethyl (R)-4-cyano-3-hydroxybutyrate was measured by gas chromatography and FID detection using a Restek gammaDex SA™ column (30 m long, 0.32 μm inner diameter) using the following program: 25 minutes at 165°C and flow rate at 2 ml/min. Inlet and outlet temperatures were both at 230°C. Under these conditions ethyl (R)-4-cyano-3-hydroxybutyrate elutes at 19.6 minutes and ethyl (S)-4-cyano-3-hydroxybutyrate elutes at 19.2 minutes.

B. Detection of Remaining Ethyl (S)-4-chloro-3-hydroxybutyrate by Gas Chromatography

Halohydrin dehalogenases of the present invention that exhibited activity in the presence of cyanohydrin product in the prescreen method of Example 4B, were further characterized in the assay described in Example 5B. The remaining ethyl (S)-4-chloro-3-hydroxybutyrate in the reaction mixture from Example 5B was analyzed using gas chromatography with an Agilent® 19091J-413 HP-5™ 5% phenyl methyl siloxane column, 30.0 m long x 320μm inner diameter x 0.25 μm nominal, and a flow rate of 2.6 ml/min. The following program was used: 1 minute at 100°C, 50°C/minute for 2 minutes, 2 minutes hold, with a 10 minute cycle time. The detector conditions were as follows: 300°C, 40 ml/min H_2, 450 ml/min air. Under these conditions, ethyl (S)-4-chloro-3-hydroxybutyrate elutes at 3.12 minutes, ethyl (R)-4-cyano-3-hydroxybutyrate elutes at 3.06 minutes, and thymol elutes at 3.21 minutes. Activity may be characterized by the quantity of ethyl (S)-4-chloro-3-hydroxybutyrate

remaining normalized to the extraction efficiency, *i.e.*, Area ECHB/Area Thymol. Thymol is used as an internal standard for extraction efficiency of the reaction components from water to ethyl acetate.

Example 7

Manufacture of Ethyl (R)-4-cyano-3-hydroxybutyrate from Ethyl (S)-4-chloro-3-hydroxybutyrate

To a 3-necked jacketed 3L flask equipped with a mechanical stirrer and connected to an automatic titrater by a pH electrode and a feeding tube for addition of base, was charged H_20 (1200 mL), NaCN (37.25 g) and NaH_2PO_4 (125 g) to bring the solution to pH 7. The water circulator was set to 40 °C. After 10 minutes, halohydrin dehalogenase SEQ ID NO: 32 as cell lysate (250 mL) was added. The reaction mixture was allowed to stir for 5 minutes. Using an addition funnel, ethyl (S)-4-chloro-3-hydroxybutyrate (45 g) was slowly added over 1 hour. The pH was maintained at 7 by the automatic titrater by the addition of 10 M NaOH (27 mL) over 17 hours. Subsequently, gas chromatography of a reaction sample showed complete conversion to product. Celite (16 g) was added to the flask, which was then connected to a diaphragm pump, whose exhaust is bubbled into 5M NaOH (200 mL), to remove HCN. The mixture was heated to 60 °C under 100mm Hg pressure. After 1 hour, a submerged air bubbler was added to the solution to aid the removal of the HCN. After 3 hours, an HCN detector indicated less than 5 ppm HCN in the off-gas. The mixture was allowed to cool to room temperature, then filtered through a celite pad. The filtrate was extracted with butyl acetate (3x 800 mL) and the combined organic layers filtered through a pad of activated charcoal. The solvent was removed under vacuum by rotary evaporation to provide 28.5 g of ethyl (R)-4-cyano-3-hydroxybutyrate. The purity was 98% (w/w) by HPLC and the enantiomeric excess was >99% (by chiral GC, the S enantiomer was undetectable). As used herein, the term "enantiomeric excess" or " e.e." refers to the absolute difference between the mole or weight fractions of major ($F_{(+)}$) and minor ($F_{(-)}$) enantiomers (*i.e.*, $\left| F_{(+)} - F_{(-)} \right|$), where $F_{(+)} + F_{(-)} = 1$. Percent e.e. is 100 X $\left| F_{(+)} - F_{(-)} \right|$. Enantiomeric composition can be readily characterized by using the gas chromatography method described in Example 6, above, and using methods that are known in the art.

Examples 8-12

Conversion of Ethyl (R)-4-chloro-3-hydroxybutyrate to Ethyl (S)-4-cyano-3-hydroxybutyrate

For each of Examples 8-12, to a 170mL vessel connected to an automatic titrater by a pH electrode and a feeding tube for addition of base was charged NaCN (1.5 g, 31 mmol) and water (50 mL). The vessel was sealed and the pH was adjusted to 7 by the addition of conc. H_2SO_4 (0.9 mL). The reaction mixture was heated to 40 °C and treated with a solution of halohydrin dehalogenase (0.4 g in 10 mL water). The halohydrin dehalogenases used for these Examples had the polypeptide sequences given for the following SEQ ID NOs.:

Example 8 SEQ ID No: 32

Example 9 SEQ ID No: 90

Example 10 SEQ ID No: 94

Example 11 SEQ ID No: 96

Example 12 SEQ ID No: 98

Then, ethyl (S)-4-chloro-3-hydroxybutyrate (5.00 g, 30.1 mmol) was added via syringe. The automatic titrater maintained the pH at 7 by the addition of 4M NaCN. The progress of the reactions was monitored by recording the cumulative volume of the NaCN solution added vs. time.

Figure 2 shows the percent conversion of ethyl (S)-4-chloro-3-hydroxy-butyrate (calculated from the cumulative equivalents of NaCN added) vs. time for each of these Examples. Example 8 used a halohydrin dehalogenase having the amino acid sequence SEQ ID NO. 32, which is the amino acid sequence of the native halohydrin dehalogenase from *Agrobacterium radiobacter* AD1 (*hheC*), expressed from novel nucleic acid corresponding to SEQ ID NO. 31. Comparison of the percent conversion vs. time for Examples 9 through 12 to that of Example 8 shows that novel halohydrin dehalogenases of the present invention have greater activity than the native halohydrin dehalogenase from *Agrobacterium radiobacter* AD1 (*hheC*).

All publications, patents, patent applications, and other documents cited in this application are incorporated by reference in their entirety for all purposes to the same extent as if each individual publication, patent, patent application, or other document were individually indicated to be incorporated by reference for all purposes.

While preferred embodiments of the invention have been illustrated and described, it will be readily appreciated that various changes can be made therein without departing from the spirit and scope of the invention.

What is claimed is:

1. A recombinant halohydrin dehalogenase (HHDH) polypeptide capable of converting ethyl (S)-4-chloro-3-hydroxybutyrate to ethyl (R)-4-cyano-3-hydroxybutyrate with at least 1.4-fold greater HHDH activity than the wild-type *Agrobacterium* sp. HHDH polypeptide of SEQ ID NO:2, wherein said recombinant HHDH polypeptide comprises an amino acid sequence that is at least 93% identical to SEQ ID NO:442 and includes an Alanine at the residue position that corresponds to position 134 of SEQ ID NO:2.

2. The polypeptide of claim 1, which further comprises Isoleucine at the residue position that corresponds to position 75 of SEQ ID NO:2.

3. The polypeptide of claim 1, which further comprises Serine at the residue position that corresponds to position 153 of SEQ ID NO:2.

4. The polypeptide of claim 1, which further comprises Tyrosine at the residue position that corresponds to position 186 of SEQ ID NO:2.

5. The polypeptide of claim 1, which has an amino acid sequence selected from the group consisting of: SEQ ID NO: 442, 726, 730, 734, 736, and 738.

6. The polypeptide of claim 1, which is capable of converting ethyl (S)-4-chloro-3-hydroxybutyrate to ethyl (R)-4-cyano-3-hydroxybutyrate with at least 2-fold greater HHDH activity as compared to the wild-type *Agrobacterium* sp. HHDH polypeptide of SEQ ID NO: 2, and which comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 726, 730, 734, and 736.

7. The polypeptide of claim 1, further capable of increased resistance to inhibition by ethyl-4-chloroacetoacetate (ECAA) and wherein the amino acid sequence further includes one or more residues selected from the group consisting of: Valine at the residue position that corresponds to position 4 of SEQ ID NO:2, Tyrosine at the residue position that corresponds to position 82 of

SEQ ID NO:2, Tryptophan at the residue position that corresponds to position 136 of SEQ ID NO:2, Valine at the residue position that corresponds to position 136 of SEQ ID NO:2, Arginine at the residue position that corresponds to position 142 of SEQ ID NO:2, Valine at the residue position that corresponds to position 178 of SEQ ID NO:2, Leucine at the residue position that corresponds to position 238 of SEQ ID NO:2, Threonine at the residue position that corresponds to position 240 of SEQ ID NO:2, Tyrosine at the residue position that corresponds to position 249 of SEQ ID NO:2, and Isoleucine at the residue position that corresponds to position 252 of SEQ ID NO:2.

8. The polypeptide of claim 1, which has at least 2-fold greater HHDH activity as compared to the wild-type *Agrobacterium* sp. HHDH polypeptide of SEQ ID NO:2.

IMPROVED HALOHYDRIN DEHALOGENASES AND RELATED POLYNUCLEOTIDES

Abstract

The present invention relates to novel halohydrin dehalogenase polypeptides and the polynucleotides that encode them. These polypeptides are useful in the production of 4-substituted-3-butyric acid derivatives and vicinal cyano, hydroxyl substituted carboxylic acid esters. The invention also provides related vectors, host cells and methods.

(Fig. 2)

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Fox, Richard J
Gavrilovic, Vesna
Huisman, Gjalt W
Newman, Lisa M

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Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
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        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 7
<211> 765

<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 7

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agc ctg agc gaa gct ggt cat acc gtc act tgc cat gat       96
Ser Ala Leu Ser Leu Ser Glu Ala Gly His Thr Val Thr Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
```

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 8
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 8

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Ser Leu Ser Glu Ala Gly His Thr Val Thr Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 9
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 9

```
atg acc gcc gct atc gtc acc aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Thr Ala Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc act tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Thr Cys His Asp
            20                  25                  30

gaa agg ttg aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Arg Leu Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aat cca atg agc gaa cag gag cca gct gaa ctg atc gaa      192
Pro Gln Leu Asn Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
```

```
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gag cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 10
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 10

```
Met Thr Ala Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Thr Cys His Asp
            20                  25                  30

Glu Arg Leu Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Asn Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 11
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 11

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atg agc ccc gct atc gtc acc aac atc aaa cat ttt agc ggt atg tgt       48
Met Ser Pro Ala Ile Val Thr Asn Ile Lys His Phe Ser Gly Met Cys
1               5                   10                  15

cgc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Arg Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 12
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 12

```
Met Ser Pro Ala Ile Val Thr Asn Ile Lys His Phe Ser Gly Met Cys
1               5                   10                  15

Arg Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
```

```
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 13
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 13

```
atg agc acc gct atc gac acc aac gtc aaa cat ttt ggt agt aag ggt       48
Met Ser Thr Ala Ile Asp Thr Asn Val Lys His Phe Gly Ser Lys Gly
1               5                   10                  15

acc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Thr Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gat ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac aga ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg agt act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ser Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag cct tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cgg cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 14
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 14

```
Met Ser Thr Ala Ile Asp Thr Asn Val Lys His Phe Gly Ser Lys Gly
1               5                   10                  15

Thr Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

```
Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ser Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 15
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS

<222> (1)..(765)

<400> 15

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ctc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 16

<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 16

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240
```

```
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  17
<211>  765
<212>  DNA
<213>  Artificial

<220>
<223>  HHDH


<220>
<221>  CDS
<222>  (1)..(756)

<400>  17
atg agc acc gct atc gtc acc aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag ggg ttt ttt ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Gly Phe Phe Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg cccgtataa            765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met
                245                 250
```

<210> 18
<211> 252
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 18

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
```

```
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Gly Phe Phe Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met
                245                 250


<210>  19
<211>  765
<212>  DNA
<213>  Artificial

<220>
<223>  HHDH


<220>
<221>  CDS
<222>  (1)..(765)

<400>  19
atg agc ccc gct atc gtc acc aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Pro Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 20
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 20

```
Met Ser Pro Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 21
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 21

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aac cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Asn Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
```

```
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc gtg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Val Pro Glu
                245                 250
```

<210> 22
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 22

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Asn Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Val Pro Glu
                245                 250
```

<210> 23
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 23

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
```

```
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac atg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Met Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 24
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 24

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Met Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 25
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 25

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ctc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240
```

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa 765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 26
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 26

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 27
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(756)

<400> 27

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atg agc ccc gct atc gtc acc aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Pro Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg cccgaataa            765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met
                245                 250


<210>  28
<211>  252
<212>  PRT
<213>  Artificial

<220>
<223>  Synthetic Construct

<400>  28

Met Ser Pro Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met
                245                 250
```

<210> 29
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 29

```
atg agc acc gtt atc gtc acc aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Val Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gcc ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa act tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
```

```
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 30
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 30

```
Met Ser Thr Val Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 31
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 31

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 32
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 32

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
```

```
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 33
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 33

```
atg agc ccc gct atc gtc act aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Pro Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

acc gct ctg agg ctg agc gaa gct ggt caa acc gtc gct tgc cat gat       96
Thr Ala Leu Arg Leu Ser Glu Ala Gly Gln Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 34
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 34

Met Ser Pro Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Thr Ala Leu Arg Leu Ser Glu Ala Gly Gln Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 35
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 35

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gac ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Asp Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa aac       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aaa cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ctg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
```

```
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc ata ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 36
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 36

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Asp Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 37
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 37

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc caa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct ccg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt tct cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
aag gag cta gga gag tac aat gtg ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Val Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 38
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 38

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
```

```
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Val Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 39
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 39

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aaa cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ctg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc ata ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 40
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 40

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 41
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 41

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
```

```
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gac ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Asp Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gac      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aaa cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ctg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc att ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 42
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 42

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Asp Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 43
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 43

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 44
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 44

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala

```
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  45
<211>  765
<212>  DNA
<213>  Artificial

<220>
<223>  HHDH


<220>
<221>  CDS
<222>  (1)..(765)

<400>  45
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gct ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 46
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 46

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 47
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 47

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc caa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg agt      432
```

```
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Ser
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt tct cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 48
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 48

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Ser
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 49
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 49

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
```

```
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc cag gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 50
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 50

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 51
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 51

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

```
agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc cag gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct ctg gcg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Ala
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gct ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 52
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 52

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Ala
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 53
<211> 765

<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 53

```
atg acc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Thr Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt tct cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
```

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 54
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 54

```
Met Thr Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 55
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 55

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa aac      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aaa cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
```

```
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ctg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc ata ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 56
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 56

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 57
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 57

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 58
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 58

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
```

```
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 59
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 59

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct gcg cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Ala His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 60
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 60

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Ala His Asp
            20                  25                  30
```

```
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 61
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS

<222> (1)..(765)

<400> 61

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt gct cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac cca act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ctg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc att atc gaa cgt tgg ccc ggc atg ccc gaa taa           765
Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 62

<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 62

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

```
Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  63
<211>  765
<212>  DNA
<213>  Artificial

<220>
<223>  HHDH


<220>
<221>  CDS
<222>  (1)..(765)

<400>  63
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt gct cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac cca act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ctg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc att atc gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 64
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 64

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
```

```
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 65
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 65

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
tac act tcg gct cga gct ggg gct tgt gct cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac cca act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ctg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc att atc gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 66
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 66

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 67
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 67

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg ggg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Gly Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cac aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gat cca gct gac ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Asp Pro Ala Asp Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
```

```
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aaa cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat gtg ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Val Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc att atc gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 68
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 68

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Gly Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Asp Pro Ala Asp Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Val Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 69
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 69

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
```

```
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc cag gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gct ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt tcc cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 70
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 70

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 71
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 71
atg agc acc gct atc gtc acc aac gtc aaa cat ttt ggt ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat 96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac 144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa 192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat 240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat 288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg 336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc 384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act 432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg 480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat 528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg 576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta 624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg 672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca 720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

```
ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 72
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 72

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220
```

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 73
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 73

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agt gct ctg agg ctg tcg gag gct ggt cac acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gag gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gga ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Gly Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 74
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 74

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Gly Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 75
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 75

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tat cgt ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
```

```
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gaa cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 76
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 76

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 77
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 77

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ctg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc att atc gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 78
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 78

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
```

```
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 79
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 79

```
atg acc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Thr Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat atc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Ile Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc cag gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gct ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 80
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 80

Met Thr Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Ile Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 81
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 81

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atg acc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Thr Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc cag gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gct ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt tcc cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
```

```
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 82
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 82

```
Met Thr Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 83
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 83

```
atg acc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Thr Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat atc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Ile Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc cag gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gct ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 84
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 84

```
Met Thr Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Ile Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
```

```
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 85
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 85

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct tca gaa ttt cag cca atc gat aaa tac gcc gtc gaa gat      288
Ile Phe Ala Ser Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tat cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 86
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 86

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Phe Ala Ser Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 87
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 87

```
atg agc acc gct atc gtc acc aac gtc aag cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
```

```
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tat ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 88
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 88

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

```
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 89
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 89

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa ggt ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Gly Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 90
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 90

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Gly Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala

225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 91
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 91
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat 96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac 144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa 192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat 240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat 288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg 336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc 384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act 432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg 480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat 528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccg act gag ccg tgg 576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

```
aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 92
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 92

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 93
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 93

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
```

```
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc acg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 94
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 94

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 95
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 95

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
```

```
65                  70                  75                  80

atc ttt gct cta gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc acg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 96
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 96

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 97
<211> 765
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 97

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

```
agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa           765
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 98
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 98

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 99
<211> 765

<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(765)

<400> 99

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
```

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 100
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 100

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 101
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 101

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc tct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ser Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aga cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Arg Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cgg cca atc gat aaa tac gct gtc caa aat      288
Ile Phe Ala Pro Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Gln Asn
                85                  90                  95

tac agg cga gct gtc gaa gct ctg cag atc atg cca ttt gct gta gag      336
Tyr Arg Arg Ala Val Glu Ala Leu Gln Ile Met Pro Phe Ala Val Glu
            100                 105                 110

aat gct gtg act tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Thr Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcc gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
```

```
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 102
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 102

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ser Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Arg Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Gln Asn
                85                  90                  95

Tyr Arg Arg Ala Val Glu Ala Leu Gln Ile Met Pro Phe Ala Val Glu
            100                 105                 110

Asn Ala Val Thr Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 103
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 103

```
atg atc acc gcg gcc aac act aac ttc aaa ctg agg ggt ggt atg ggt        48
Met Ile Thr Ala Ala Asn Thr Asn Phe Lys Leu Arg Gly Gly Met Gly
1               5                   10                  15

agc gtt ccg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Val Pro Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
aat gct gtg gct tcg caa atg aag aag cgt aag acg ggt cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Thr Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 104
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 104

```
Met Ile Thr Ala Ala Asn Thr Asn Phe Lys Leu Arg Gly Gly Met Gly
1               5                   10                  15

Ser Val Pro Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
```

```
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Thr Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 105
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 105

```
atg agc aca gac atc gtc acc aac gtc aaa cat ttt gga ggt acg ggt       48
Met Ser Thr Asp Ile Val Thr Asn Val Lys His Phe Gly Gly Thr Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc ggc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Gly Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac cgt ggt act gat gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Thr Asp Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat agc ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct cgt gat tat ctg act gtg cag gtg gtg tgg ctg ccg      720
Ala Ser Gly Ser Arg Asp Tyr Leu Thr Val Gln Val Val Trp Leu Pro
225                 230                 235                 240

ggc ggc ttt ccg atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 106
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 106

```
Met Ser Thr Asp Ile Val Thr Asn Val Lys His Phe Gly Gly Thr Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

```
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Gly Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Thr Asp Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Arg Asp Tyr Leu Thr Val Gln Val Val Trp Leu Pro
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 107
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS

<222> (1)..(768)

<400> 107

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atg agc acg gac ggc gac acc acg gtc aaa cat ttt gga ggt aaa ggt        48
Met Ser Thr Asp Gly Asp Thr Thr Val Lys His Phe Gly Gly Lys Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cac aaa gat gat ctg gaa gct ttt gct gaa ccg tac       144
Glu Ser Phe Lys His Lys Asp Asp Leu Glu Ala Phe Ala Glu Pro Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc cag aac       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asn
                85                  90                  95

tac cgt ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act cag aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ctg act gtg cag gtg gtg tgg ctg acc       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Val Gln Val Val Trp Leu Thr
225                 230                 235                 240

ggc ggg ttt ccg atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 108

<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 108

```
Met Ser Thr Asp Gly Asp Thr Thr Val Lys His Phe Gly Gly Lys Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Asp Leu Glu Ala Phe Ala Glu Pro Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asn
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Val Gln Val Val Trp Leu Thr
225                 230                 235                 240
```

```
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  109
<211>  768
<212>  DNA
<213>  Artificial

<220>
<223>  HHDH


<220>
<221>  CDS
<222>  (1)..(768)

<400>  109
atg agc acc gca atc gtc acc acg gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Thr Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

aac cct gtg agg ctt agg gaa gct ggt cat agc gtc act tgc cat gat       96
Asn Pro Val Arg Leu Arg Glu Ala Gly His Ser Val Thr Cys His Asp
            20                  25                  30

aaa agc ttt aaa cag aaa gct gaa ctg gaa gct ttt gct gaa acc tgc      144
Lys Ser Phe Lys Gln Lys Ala Glu Leu Glu Ala Phe Ala Glu Thr Cys
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat agc ccg tgt ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Cys Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ctg act gtg cag gtg gtg tgg ctg acc      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Val Gln Val Val Trp Leu Thr
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccg ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 110
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 110

```
Met Ser Thr Ala Ile Val Thr Thr Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Asn Pro Val Arg Leu Arg Glu Ala Gly His Ser Val Thr Cys His Asp
            20                  25                  30

Lys Ser Phe Lys Gln Lys Ala Glu Leu Glu Ala Phe Ala Glu Thr Cys
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Cys Phe Tyr Pro Thr Glu Pro Trp
```

```
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Val Gln Val Val Trp Leu Thr
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 111
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 111

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atg agc acc gac atc gtc acc aac gtc aaa cat ttt gga ggt aaa ggt        48
Met Ser Thr Asp Ile Val Thr Asn Val Lys His Phe Gly Gly Lys Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt ctg agc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly Leu Ser Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa ccg tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Pro Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac cgt ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gaa cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct tta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg gtg tgg ctg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Val Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt cgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Arg Pro Gly Met Pro Glu
                245                 250
```

<210> 112
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 112

```
Met Ser Thr Asp Ile Val Thr Asn Val Lys His Phe Gly Gly Lys Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly Leu Ser Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Pro Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Val Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Arg Pro Gly Met Pro Glu
                245                 250
```

<210> 113
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 113

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt ctg agc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly Leu Ser Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
```

```
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gat gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Asp Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg atg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Met Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg gtg tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Val Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 114
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 114

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly Leu Ser Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Asp Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Met Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Val Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 115
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 115

```
atg agc acc gtc atc gtc acc acg gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Val Ile Val Thr Thr Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
```

```
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa ccg tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Pro Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa aac      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

tac agg ggt gct gat gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Asp Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cgt atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly Arg Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ctg ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac tcg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Ser Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act gtg cag gtg gtg tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Val Gln Val Val Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 116
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 116

```
Met Ser Thr Val Ile Val Thr Thr Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Pro Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

Tyr Arg Gly Ala Asp Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly Arg Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Ser Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Val Gln Val Val Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 117
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 117
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

acc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat 96
Thr Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac 144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa 192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat 240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

atc ttt gct cca gaa ttt cag cca atc aat aaa tac gct gtc caa aat 288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asn Lys Tyr Ala Val Gln Asn
85 90 95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct ata gtg 336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Ile Val
100 105 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc 384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act 432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg 480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat 528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg 576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta 624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg 672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg tgt tgg ttg gca 720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Cys Trp Leu Ala
225 230 235 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga 768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 118
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 118

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Thr Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asn Lys Tyr Ala Val Gln Asn
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Ile Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Cys Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 119
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 119

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt ctg acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly Leu Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gat ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gat cca gct gac ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Asp Pro Ala Asp Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa aac      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc att atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  120
<211>  254
<212>  PRT
<213>  Artificial

<220>
<223>  Synthetic Construct

<400>  120

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly Leu Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Asp Pro Ala Asp Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 121
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 121

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gat ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa aac      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aaa cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
```

```
        115                 120                 125

ttc atc act tcg tct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ser Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ctg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc cta ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 122
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 122

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95
```

```
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ser Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 123
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 123

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gat ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gac ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Asp Leu Ile Glu
    50                  55                  60
```

```
gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa aac      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc att atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 124
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 124

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
```

35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Asp Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 125
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 125

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gat ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gac ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Asp Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa aac      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc att atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 126
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 126

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Asp Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 127
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 127

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca caa ttt cag cca gtc gaa aaa tac gca gtc gaa gat      288
Ile Phe Ala Pro Gln Phe Gln Pro Val Glu Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aaa cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
```

```
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 128
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 128

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Gln Phe Gln Pro Val Glu Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 129
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 129

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca caa ttt cag cca gtg gac aaa tac tca gtc gaa gat       288
Ile Phe Ala Pro Gln Phe Gln Pro Val Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 130
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 130

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Gln Phe Gln Pro Val Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
```

```
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 131
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 131

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca caa ttt cag cca gtc gac aaa tac gca gtc gaa gat      288
Ile Phe Ala Pro Gln Phe Gln Pro Val Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg tta ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtg ata gaa cgt tgg cct ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 132
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 132

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Phe Ala Pro Gln Phe Gln Pro Val Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 133
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 133

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
```

```
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gat cca gct gac ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Asp Pro Ala Asp Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc caa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gct ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 134
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 134

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Asp Pro Ala Asp Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 135
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 135
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat 96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac 144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa 192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat 240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc caa gat 288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
85 90 95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg 336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc 384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act 432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg 480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat 528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg 576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta 624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg 672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca 720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga 768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 136
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 136

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala

225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 137
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 137

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atg agc gcc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Ala Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc caa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt tcc cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 138
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 138

```
Met Ser Ala Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 139
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 139

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc caa gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
```

```
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc ata ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Ile Pro Glu
                245                 250
```

<210> 140
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 140

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Ile Pro Glu
                245                 250
```

<210> 141
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 141

```
atg agc acc gct atc gtc acc aac ttc aca cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Phe Thr His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
```

```
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac aca tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 142
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 142

```
Met Ser Thr Ala Ile Val Thr Asn Phe Thr His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 143
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 143

```
atg agc acc gct atc gtc acc aac ttc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Phe Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

```
agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc atc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ile Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc cag gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct acc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt ccc cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Pro Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg cct aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act gac cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Asp Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 144
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 144

Met Ser Thr Ala Ile Val Thr Asn Phe Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ile Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Pro Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Asp Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 145
<211> 768

<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 145
atg agc acg gct atc gtg acc aac ttc aaa cat ttt gga ggc atg gac 48
Met Ser Thr Ala Ile Val Thr Asn Phe Lys His Phe Gly Gly Met Asp
1 5 10 15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat 96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac 144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

cca cag ctg aaa cca atg agc gaa caa gaa cca tct gaa ctg atc gaa 192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ser Glu Leu Ile Glu
50 55 60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat 240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac tct gtc gaa gat 288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ser Val Glu Asp
85 90 95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gcc cta gtg 336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

aat gct gcg act ccc caa atg aag aag cga aag tcg ggg cac att atc 384
Asn Ala Ala Thr Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act 432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg 480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat 528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gaa ccg tgg 576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta 624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg 672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

gca tct ggc tct tgt gat tat ttg gct ggc cag gtg ttt tgg ttg gca 720

```
Ala Ser Gly Ser Cys Asp Tyr Leu Ala Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 146
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 146

```
Met Ser Thr Ala Ile Val Thr Asn Phe Lys His Phe Gly Gly Met Asp
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ser Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Ala Thr Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Ala Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 147
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 147

```
atg agc acc gct atc gtc acc act ttc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Thr Phe Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gtt ctc agg ctg agc gaa ggt ggt cat acc gtc gct tgc cat gat       96
Ser Val Leu Arg Leu Ser Glu Gly Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
```

```
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 148
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 148

```
Met Ser Thr Ala Ile Val Thr Thr Phe Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Val Leu Arg Leu Ser Glu Gly Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 149
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 149

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cag cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
aat gct gtg gct ccg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc acg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 150
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 150

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
```

```
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 151
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 151

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aag ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45
```

```
cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag ata aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc acg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 152
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 152

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

```
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 153
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS

<222> (1)..(768)

<400> 153

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aag ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc ttt      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Phe
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag atg cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Met Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc acg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 154

<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 154

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Phe
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Met Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

```
Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 155
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 155

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aaa cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aac tct gtg gct tcc caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

caa cga ctc ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg 672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca 720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

ggc ggc ttt ccc acg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga 768
Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 156
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 156

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp

```
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

<210>  157
<211>  768
<212>  DNA
<213>  Artificial

<220>
<223>  HHDH

<220>
<221>  CDS
<222>  (1)..(768)

<400>  157
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aaa cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aac gct gtg gct ccc caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct tct ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ser Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
tac tct tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att gat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asp Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc acg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 158
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 158

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
Phe Ile Thr Ser Ala Ser Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asp Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 159
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 159

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gaa gat      288
```

```
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aaa cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct tct ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ser Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att gat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asp Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 160
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 160

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ser Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asp Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 161
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 161

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
```

```
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aaa cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aac gct gtg gct cac caa atg aag agg cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala His Gln Met Lys Arg Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att gat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asp Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc cct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Pro Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc acg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 162
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 162

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala His Gln Met Lys Arg Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asp Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Pro Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 163
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 163

```
atg agc act gcg att gtt act aac gtc aaa cat ttc ggt ggt atg ggg        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agt gcg ctg cgc ctg tcg gag gcc ggt cat aca gta gcg tgt cac gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agt ttc aaa caa aag gac gaa ttg gaa gcc ttt gcg gaa act tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa ccg atg tca gaa cag gag cca gcg gag tta att gag       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gcg gtc acc agt gcc ttc ggc cag gtg gat gtc ctg gtt agc aac gac       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct ctg gaa ttc cgt ccg att gac aag tat gcc gtc gaa gac       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac cgt ggt gcg gta gaa gca ctg cag atc cgc ccg ttc gcg ttg gtt       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gcc gta gct agt caa atg aaa aaa cgt aaa tca ggt cat att atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc att act agc gcg agc ccg ttt ggt cca tgg aag gag ctg tcg act       432
Phe Ile Thr Ser Ala Ser Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tat agt agt gcg cgc gcc ggg gcc tcc acc ttg gct aac gca ctg agt       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aaa gaa tta ggt gag tat aat atc cct gtt ttc gcc att ggg cca aac       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tat ctg cac tca gaa gat agc cca tac tat tac cca acg gaa ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag atc aac cct gaa cat gtg gcg cat gtt aaa aaa gta aca gcc tta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cgt ctg ggt act caa aaa gaa ctt ggc gag ctg gtt gcg ttt ctc       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gct tct ggt agc tgc gat tac ttg acc ggc caa gtc ttc tgg tta gcc       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240
```

ggt ggc ttt ccg act att gag cgc tgg cca ggt atg ccg gaa taa tga 768
Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 164
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 164

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ser Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 165
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 165

```
atg agc act gcg att gtt act aac gtc aaa cat ttc ggt ggt atg ggg       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agt gcg ctg cgc ctg tcg gag gcc ggt cat aca gta gcg tgt cac gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agt ttc aaa caa aag gac gaa ttg gaa gcc ttt gcg gaa act tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa ccg atg tca gaa cag gag cca gcg gag tta att gag      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gcg gtc acc agt gcc ttc ggc cag gtg gat gtc ctg gtt agc aac gac      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct ctg gaa ttc cgt ccg att gac aag tat gcc gtc gaa gac      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac cgt ggt gcg gta gaa gca ctg cag atc aag ccg ttc gcg ttg gtt      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gcc gta gct agt caa atg aaa aaa cgt aaa tca ggt cat att atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc att act agc gcg gct ccg ttt ggt cca tgg aag gag ctg tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tat agt agt gcg cgc gcc ggg gcc tcc acc ttg gct aac gca ctg agt      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aaa gaa tta ggt gag tat aat atc cct gtt ttc gcc att ggg cca aac      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tat ctg cac tca gaa gat agc cca tac tat tac cca acg gaa ccg tgg      576
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag atc aac cct gaa cat gtg gcg cat gtt aaa aaa gta aca gcc tta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cgt ctg ggt act caa aaa gaa ctt ggc gag ctg gtt gcg ttt ctc      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gct tct ggt agc tgc gat tac ttg acc ggc caa gtc ttc tgg tta gcc      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggt ggc ttt ccg gtg att gag cgc tgg cca ggt atg ccg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  166
<211>  254
<212>  PRT
<213>  Artificial

<220>
<223>  Synthetic Construct

<400>  166

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 167
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 167

```
atg agc act gcg att gtt act aac gtt aaa cat ttc ggt ggt atg ggg       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agt gcg ctg aaa ctg tcg gag gcc ggt cat aca gta gcg tgt cac gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agt ttc aaa caa aag gac gaa ttg gaa gcc ttt gcg gaa act tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa ccg atg tca gaa cag gag cca gcg gag tta att gag      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gcg gtc acc agt gcc ttc ggc cag gtg gat gtc ctg gtt agc aac gac      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct ctg gaa ttc cgt ccg att gac aag tat gcc gtc gaa gac      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac cgt ggt gcg gta gaa gca ctg cag atc cgc ccg ttc gcg ttg gtt      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gcc gta gct agt caa atg aaa aaa cgt aaa tca ggt cat att atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
```

```
        115                 120                 125

ttc att act agc gcg gct ccg ttt ggt cca tgg aag gag ctg tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tat agt agt gcg cgc gcc ggg gcc tcc acc ttg gct aac gca ctg agt      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aaa gaa tta ggt gag tat aat atc cct gtt ttc gcc att ggg cca aac      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tat ctg cac tca gaa gat agc cca tac tat tac cca acg gaa ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag atc aac cct gaa cat gtg gcg cat gtt aaa aaa gta aca gcc tta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cgt ctg ggt act caa aaa gaa ctt ggc gag ctg gtt gcg ttt ctc      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gct tct ggt agc tgc gat tac ttg acc ggc caa gtc ttc tgg tta gcc      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggt ggc ttt ccg gtg att gag cgc tgg cca ggt atg ccg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 168
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 168

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 169
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 169

```
atg agc act gcg att gtt act aac gtc aaa cat ttc ggt ggt atg ggg        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agt gcg ctg aaa ctg tcg gag gcc ggt cat aca gta gcg tgt cac gat        96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agt ttc aaa caa aag gac gaa ttg gaa gcc ttt gcg gaa act tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa ccg atg tca gaa cag gag cca gcg gag tta att gag       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
gcg gtc acc agt gcc ttc ggc cag gtg gat gtc ctg gtt agc aac gac      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct ctg gaa ttc cag ccg att gac aag tat gcc gtc gaa gac      288
Ile Phe Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac cgt ggt gcg gta gaa gca ctg cag atc aag ccg ttc gcg ttg gtt      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gcc gta gct agt caa atg aaa aaa cgt aaa tca ggt cat att atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc att act agc gcg agc ccg ttt ggt cca tgg aag gag ctg tcg act      432
Phe Ile Thr Ser Ala Ser Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tat agt agt gcg cgc gcc ggg gcc tcc gcg ttg gct aac gca ctg agt      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aaa gaa tta ggt gag tat aat atc cct gtt ttc gcc att ggg cca aac      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tat ctg cac tca gaa gat agc cca tac tat tac cca acg gaa cca tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag atc cag cct gaa cat gtg gcg cat gtt aaa aaa gta aca gcc tta      624
Lys Ile Gln Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cgt ctg ggt act caa aaa gaa ctt ggc gag ctg gtt gcg ttt ctc      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gct tct ggt agc tgc gat tac ttg acc ggc caa gtc ttc tgg tta gcc      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggt ggc ttt ccg gtg att gag cgc tgg cca ggt atg ccg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 170
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 170

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
```

```
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ser Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Gln Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

<210>  171
<211>  768
<212>  DNA
<213>  Artificial

<220>
<223>  HHDH

<220>
<221>  CDS
<222>  (1)..(768)

<400>  171
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```
atg agc act gcg att gtt act aac gtc aaa cat ttc ggt ggt atg ggg        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agt gcg ctg aaa ctg tcg gag gcc ggt cat aca gta gcg tgt cac gat        96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agt ttc aaa caa aag gac gaa ttg gaa gcc ttt gcg gaa act tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa ccg atg tca gaa cag gag cca gcg gag tta att gag       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gcg gtc acc agt gcc ttc ggc cag gtg gat gtc ctg gtt agc aac gac       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct ctg gaa ttc cgt ccg att gac aag tat gcc gtc gaa gac       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac cgt ggt gcg gta gaa gca ctg cag atc aag ccg ttc gcg ttg gtt       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gcc gta gct agt caa atg aaa aaa cgt aaa tca ggt cat att atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc att act agc gcg gct ccg ttt ggt cca tgg aag gag ctg tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tat agt agt gcg cgc gcc ggg gcc tcc gcg ttg gct aac gca ctg agt       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aaa gaa tta ggt gag tat aat atc cct gtt ttc gcc att ggg cca aac       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tat ctg cac tca gaa gat agc cca tac tat tac cca acg gaa ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag atc aac cct gaa cat gtg gcg cat gtt aaa aaa gta aca gcc tta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cgt ctg ggt act caa aaa gaa ctt ggc gag ctg gtt gcg ttt ctc       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gct tct ggt agc tgc gat tac ttg acc ggc caa gtc ttc tgg tta gcc       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggt ggc ttt ccg gtg att gag cgc tgg cca ggt atg ccg gaa taa tga       768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 172
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 172

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 173
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 173

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aaa cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

cac tct gtg gct tcc caa atg aag aag cga aag tcg ggg cac atc atc      384
His Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att gat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asp Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
```

```
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 174
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 174

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

His Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
Lys Ile Asp Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 175
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 175

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc gag act ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Glu Thr Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc acg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 176
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 176

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Glu Thr Gly Pro Trp Lys Glu Leu Ser Thr
```

```
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 177
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 177

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta gct      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 178
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 178

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 179
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 179

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
```

```
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 180
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 180

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 181
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 181

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct cta cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta gct      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 182
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 182

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala

225 230 235 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 183
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 183

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
aag att aat ccg gag tat gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tcc tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 184
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 184

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 185
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 185

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
```

```
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag tat gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 186
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 186

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 187
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 187

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
```

```
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta gct      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 188
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 188

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45
```

```
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 189
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 189

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

```
agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta gct      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 190
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 190

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 191
<211> 768

<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 191

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
```

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  192
<211>  254
<212>  PRT
<213>  Artificial

<220>
<223>  Synthetic Construct

<400>  192

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 193
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 193

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
```

```
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 194
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 194

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 195
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 195

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gcc gtc gaa gct ctg cag atc aag cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110
```

```
aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 196
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 196

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
```

```
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 197
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 197

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 198
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 198

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

```
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 199
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS

<222> (1)..(768)

<400> 199

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 200

<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 200

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

```
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  201
<211>  768
<212>  DNA
<213>  Artificial

<220>
<223>  HHDH


<220>
<221>  CDS
<222>  (1)..(768)

<400>  201
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 202
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 202

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Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
```

```
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250

<210>  203
<211>  768
<212>  DNA
<213>  Artificial

<220>
<223>  HHDH

<220>
<221>  CDS
<222>  (1)..(768)

<400>  203
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ttg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

cat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
His Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 204
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 204

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

His Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 205
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 205

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aag gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
```

```
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

cat tcg gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
His Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg aca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 206
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 206

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

His Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 207
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 207

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
```

```
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt ttg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Leu Pro Gly Met Leu Glu
                245                 250
```

<210> 208
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 208

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Leu Pro Gly Met Leu Glu
                245                 250
```

<210> 209
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 209

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag tat gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240
```

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga 768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 210
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 210

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

<210>  211
<211>  768
<212>  DNA
<213>  Artificial

<220>
<223>  HHDH

<220>
<221>  CDS
<222>  (1)..(768)

<400>  211
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  212
<211>  254
<212>  PRT
<213>  Artificial

<220>
<223>  Synthetic Construct

<400>  212

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 213
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 213

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggc       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

cat gct gtg gct ccg caa atg aag aag cga aag tcg ggg cac atc atc      384
His Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
```

```
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cat gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 214
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 214

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

His Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 215
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 215

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 216
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 216

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
```

```
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 217
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 217

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta gct       480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga       768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 218
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 218

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
245 250

<210> 219
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 219

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag aac      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
```

```
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 220
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 220

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 221
<211> 768
<212> DNA
<213> Artificial

<220>
<223> CDS

<220>
<221> CDS
<222> (1)..(768)

<400> 221

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta caa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Gln Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta gct       480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160
```

```
aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 222
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 222

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Gln Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
```

```
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 223
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 223

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

cat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
His Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 224
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 224

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

His Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 225
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 225

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
```

```
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 226
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 226

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

```
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 227
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 227

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg acc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Thr Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 228
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 228

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Thr Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala

225 230 235 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 229
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 229

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 230
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 230

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 231
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 231

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
```

```
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag tat gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 232
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 232

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 233
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 233

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
```

```
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 234
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 234

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 235
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 235

```
atg aac acc gtt att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Asn Thr Val Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

```
agc gct ttg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 236
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 236

Met Asn Thr Val Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 237
<211> 768

<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 237

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
```

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 238
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 238

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 239
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 239

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gcc ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
```

```
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 240
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 240

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 241
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 241

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 242
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 242

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
```

```
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 243
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 243

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
cca cag ctg aaa cca atg gcc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tca gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 244
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 244

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

```
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 245
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS

<222> (1)..(768)

<400> 245

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca ctg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Leu Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 246

<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 246

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Leu Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

```
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  247
<211>  768
<212>  DNA
<213>  Artificial

<220>
<223>  HHDH


<220>
<221>  CDS
<222>  (1)..(768)

<400>  247
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gca atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 248
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 248

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
```

```
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 249
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 249

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 250
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 250

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 251
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 251

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
```

```
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gca gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag tat gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 252
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 252

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 253
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 253

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
```

```
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac gat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asp Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 254
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 254

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asp Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 255
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 255

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg ggc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Gly Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta gct       480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240
```

```
ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 256
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 256

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Gly Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220
```

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

<210>  257
<211>  768
<212>  DNA
<213>  Artificial

<220>
<223>  HHDH

<220>
<221>  CDS
<222>  (1)..(768)

<400>  257
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag aac      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 258
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 258

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 259
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 259

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgt cca atc gat aaa tac tca gtc gag aac      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat tcg gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
```

```
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aag gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 260
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 260

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
                85                  90                  95
```

```
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 261
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 261

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 262
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 262

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
```

35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
245 250

<210> 263
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 263

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag aac       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aga cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

cat gct gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc       384
His Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga       768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 264
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 264

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

His Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
245 250

<210> 265
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 265

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
```

```
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cga tgg ccc gac atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Asp Met Leu Glu
                245                 250
```

<210> 266
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 266

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Asp Met Leu Glu
                245                 250
```

<210> 267
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 267

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta caa ttt cgt cca atc gat aaa tac tca gtc gag aac      288
Ile Phe Ala Leu Gln Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat tcg gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 268
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 268

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Gln Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
```

```
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 269
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 269

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95
```

```
tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 270
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 270

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 271
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 271

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
```

```
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

cat tcg gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
His Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 272
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 272

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

His Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
245 250

<210> 273
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 273

```
atg aac acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Asn Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca ctg agc gaa caa gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Leu Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 274
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 274

Met Asn Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
35 40 45

Pro Gln Leu Lys Pro Leu Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala

```
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 275
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 275

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta caa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Gln Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta gct      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
aag att aat ccg gag tat gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 276
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 276

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Gln Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 277
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 277

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg gcc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat tcg gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ser Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
```

```
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 278
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 278

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110
```

```
Asn Ser Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 279
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 279

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg gcc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
```

```
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 280
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 280

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45
```

```
Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 281
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 281

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

```
agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac     144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa     192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat     240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat     288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gtt gtc gaa gct ctg cag atc aag cca ttt gct cta gtg     336
Tyr Arg Gly Val Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc     384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act     432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg     480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat     528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg     576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta     624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg     672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca     720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ctg gaa taa tga     768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 282
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 282

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Val Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 283
<211> 768

<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 283

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat tcg gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ser Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
```

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250


<210>  284
<211>  254
<212>  PRT
<213>  Artificial

<220>
<223>  Synthetic Construct

<400>  284

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ser Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 285
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 285

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
```

```
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggt atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 286
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 286

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 287
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 287

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aat gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110
```

```
aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 288
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 288

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
```

```
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 289
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 289

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45
```

```
cca cag ctg aaa cca atg gcc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgt cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag tat gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 290
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 290

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

```
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 291
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS

<222> (1)..(768)

<400> 291

```
atg aac acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Asn Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg gcc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgt cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag tac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 292

<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 292

```
Met Asn Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240
```

```
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  293
<211>  768
<212>  DNA
<213>  Artificial

<220>
<223>  HHDH


<220>
<221>  CDS
<222>  (1)..(768)

<400>  293
atg agc acc gtt att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Val Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca ctg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Leu Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgt cca atc gat aaa tac tca gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

cat tcg gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
His Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg acc ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 294
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 294

```
Met Ser Thr Val Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Leu Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

His Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
```

```
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 295
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 295

```
atg aac acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Asn Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 296
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 296

```
Met Asn Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
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<210> 297
<211> 774
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(774)

<400> 297

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gac ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Asp Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
```

```
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aaa cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ctg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc ata ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 298
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 298

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Asp Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 299
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 299
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly

```
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac     144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa     192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat     240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag gat     288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg     336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

cat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc     384
His Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act     432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg     480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat     528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg     576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta     624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg     672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca     720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga     768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 300
<211> 254
<212> PRT
<213> Artificial

<220>

<223> Synthetic Construct

<400> 300

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

His Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 301

<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 301

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

cat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
His Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220
```

```
gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 302
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 302

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

His Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 303
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 303

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag aac       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ctg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 304
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 304

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 305
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 305

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg gcc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
```

```
            100                 105                 110

aat gct gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 306
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 306

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 307
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 307

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45
```

```
cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 308
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 308

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
```

```
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 309
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>

<221> CDS
<222> (1)..(768)

<400> 309

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 310
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 310

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

```
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  311
<211>  768
<212>  DNA
<213>  Artificial

<220>
<223>  HHDH


<220>
<221>  CDS
<222>  (1)..(768)

<400>  311
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca ctg acc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Leu Thr Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
```

```
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 312
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 312

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Leu Thr Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 313
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 313

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gtt ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Val Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca ctg gcc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Leu Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 314
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 314

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Val Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Leu Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
```

```
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 315
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 315

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac     144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa     192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat     240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gtt gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Val Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 316
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 316

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Val Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 317
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 317

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
```

```
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 318
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 318

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 319
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 319
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat 96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac 144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa 192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat 240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

atc ttt gct cta gaa ttt cgt cca atc gat aaa tac gct gtc gag gat 288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg 336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc 384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act 432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg 480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat 528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg 576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta 624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg 672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca 720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

ggc ggc tct ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga 768
Gly Gly Ser Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
245 250

<210> 320
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 320

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu

```
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Ser Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 321
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> HHDH
<222> (1)..(768)

<220>
<221> CDS
<222> (1)..(768)

<400> 321

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca ctg gcc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Leu Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

gag att aat ccg gag tat gtg gct cac gtg aag aag gtg act gct cta      624
Glu Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 322
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 322

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Leu Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Glu Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 323
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 323

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
```

```
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta gct      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 324
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 324

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 325
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 325

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
```

```
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 326
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 326

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

```
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 327
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 327

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 328
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 328

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

```
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  329
<211>  768
<212>  DNA
<213>  Artificial

<220>
<223>  HHDH


<220>
<221>  CDS
<222>  (1)..(768)

<400>  329
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg gcc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

cat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
His Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
```

```
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  330
<211>  254
<212>  PRT
<213>  Artificial

<220>
<223>  Synthetic Construct

<400>  330

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

His Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 331
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 331

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca ctg gcc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Leu Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
```

```
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 332
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 332

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Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Leu Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 333
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 333

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca ctg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Leu Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 334
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 334

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Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Leu Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
```

50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 335
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 335
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

```
agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

cat gct gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc       384
His Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ctg gaa taa tga       768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 336
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 336

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Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

His Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 337
<211> 768
<212> DNA

<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 337
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat 96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac 144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa 192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat 240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag aac 288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
85 90 95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg 336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc 384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act 432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg 480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat 528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg 576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta 624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg 672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca 720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala

225 230 235 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga 768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 338
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 338

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 339
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 339

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca ctg gcc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Leu Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct gga act agt gca cta gct aat gct cta gct      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 340
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 340

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Leu Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
```

```
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 341
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 341

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 342
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 342

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 343
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 343

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
```

```
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta gct      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag tat gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 344
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 344

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

```
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 345
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 345

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gcg       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 346
<211> 254

<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 346

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu

245 250

<210> 347
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 347

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 348
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 348

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 349
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 349

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
```

```
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 350
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 350

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 351
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 351

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
```

```
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gcc gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta gct      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 352
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 352

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 353
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 353

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

```
gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca ctg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Leu Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta caa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Gln Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag tat gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 354
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 354

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly

1 5 10 15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
35 40 45

Pro Gln Leu Lys Pro Leu Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Gln Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 355
<211> 768
<212> DNA
<213> Artificial

<220>

<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 355

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gaa ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Glu Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
```

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 356
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 356

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Glu Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 357
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 357

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag aac       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
```

```
            180                 185                 190

aag att aat ccg gag tat gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 358
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 358

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 359
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 359

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag aac      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

cat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
His Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 360
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 360

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
```

```
            100                 105                 110

His Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 361
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 361

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gac gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Asp Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act cag aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 362
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 362

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Asp Ala Tyr
        35                  40                  45
```

```
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 363
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 363
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac     144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg gcc gaa cag gaa cca gct gaa ctg att gaa     192
Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat     240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat     288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg     336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat tcg gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc     384
Asn Ser Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act     432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg     480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat     528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg     576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta     624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg     672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca     720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga     768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 364
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 364

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ser Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
245 250

<210> 365
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 365
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat 96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac 144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa 192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat 240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat 288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg 336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

aat tcg gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc 384
Asn Ser Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act 432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg 480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat 528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg 576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta 624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg 672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

```
gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 366
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 366

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ser Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
```

```
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 367
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 367

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct atc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Ile Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

cat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
His Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 368
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 368

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Ile Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

His Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 369
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 369

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
```

```
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gag taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 370
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 370

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 371
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 371

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgt cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
```

```
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag tat gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 372
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 372

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 373
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 373

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt ggg ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga       768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 374
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 374

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

```
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250


<210>  375
<211>  768
<212>  DNA
<213>  Artificial

<220>
<223>  HHDH


<220>
<221>  CDS
<222>  (1)..(768)

<400>  375
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

cat gcg gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc      384
His Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
```

```
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act cag aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  376
<211>  254
<212>  PRT
<213>  Artificial

<220>
<223>  Synthetic Construct

<400>  376

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

His Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 377
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 377

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
```

```
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta gct      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 378
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 378

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 379
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 379

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

agg att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Arg Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 380
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 380

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
```

50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Arg Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 381
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 381
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

```
agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta caa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Gln Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 382
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 382

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Gln Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 383
<211> 768
<212> DNA

<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 383

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
```

225 230 235 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga 768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 384
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 384

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 385
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 385

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg gcc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgt cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag tat gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 386
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 386

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
```

```
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 387
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 387

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cga cca atc gat aaa tac gct gtc gag aat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ctg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 388
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 388

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95
```

```
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 389
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 389

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg acc gaa cag gaa cca gct gaa ctg att gaa      192
```

```
Pro Gln Leu Lys Pro Met Thr Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 390
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 390

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

```
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Thr Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 391
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 391

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 392
<211> 254

<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 392

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu

245 250

<210> 393
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 393

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca ctg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Leu Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 394
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 394

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Leu Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 395
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 395

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cga cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat tcg gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta gct      480
```

```
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 396
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 396

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 397
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 397

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
```

```
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

cat tcg gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc      384
His Ser Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 398
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 398

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

His Ser Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 399
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 399

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

```
gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag tat gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 400
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 400

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly

1 5 10 15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 401
<211> 768
<212> DNA
<213> Artificial

<220>

<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 401

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
```

```
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250


<210>  402
<211>  254
<212>  PRT
<213>  Artificial

<220>
<223>  Synthetic Construct

<400>  402

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220
```

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 403
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 403

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag aac      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

cat tcg gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
His Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
```

```
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gcc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 404
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 404

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

His Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 405
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 405

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 406
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 406

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
```

```
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 407
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 407

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att agt ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Ser Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 408
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 408

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Ser Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 409
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 409
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac     144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg gcc gaa cag gaa cca gct gaa ctg att gaa     192
Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat     240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag aac     288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg     336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc     384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act     432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg     480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat     528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg     576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta     624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg     672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca     720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ctg gaa taa tga     768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 410
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 410

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ala Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Leu Glu
245 250

<210> 411
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 411

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac       144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca ctg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Leu Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag aac       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta gct       480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag tat gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220
```

```
gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 412
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 412

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Leu Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu Tyr Val Ala His Val Lys Lys Val Thr Ala Leu
```

```
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 413
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 413

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgt cat gac       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac tca gtc gag aac      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct cca caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 414
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 414

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ser Val Glu Asn
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 415
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 415

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
```

```
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg ttc tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gct ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 416
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 416

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Phe Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ala Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 417
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 417

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac     144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
```

```
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat tcg gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ctg gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
                245                 250
```

<210> 418
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 418

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ser Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Leu Glu
245 250

<210> 419
<211> 768
<212> DNA
<213> Artificial

<220>
<223> HHDH

<220>
<221> CDS
<222> (1)..(768)

<400> 419
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat 96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

ggt agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac 144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa 192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat 240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat 288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg 336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc 384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act 432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg 480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat 528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg 576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta 624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg 672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca 720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga 768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 420
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 420

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

```
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  421
<211>  774
<212>  DNA
<213>  Artificial

<220>
<223>


<220>
<221>  CDS
<222>  (1)..(774)

<400>  421
atg agc agc gct atc gtc act aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Ser Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gga agc ttt aaa cag aaa gat gaa ctg gaa gat ttt gca gac acc tac      144
Gly Ser Phe Lys Gln Lys Asp Glu Leu Glu Asp Phe Ala Asp Thr Tyr
        35                  40                  45

cca cag atg aaa cca atg agc gaa cag gaa cca ggt gaa ctg atc gaa      192
Pro Gln Met Lys Pro Met Ser Glu Gln Glu Pro Gly Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

gtc ttt gct cca gaa ttt cag cca atg gat aaa tac gct gtc gaa gat      288
Val Phe Ala Pro Glu Phe Gln Pro Met Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ccg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Pro Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac ctg aag aag gtg act gct cta      624
```

```
Lys Thr Asn Pro Glu His Val Ala His Leu Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 422
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 422

```
Met Ser Ser Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Gly Ser Phe Lys Gln Lys Asp Glu Leu Glu Asp Phe Ala Asp Thr Tyr
        35                  40                  45

Pro Gln Met Lys Pro Met Ser Glu Gln Glu Pro Gly Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Val Phe Ala Pro Glu Phe Gln Pro Met Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Pro Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Leu Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 423
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 423

```
atg agc agc gct att gtc acc aac ttc aaa cat ttt gga ggt atg ggt       48
Met Ser Ser Ala Ile Val Thr Asn Phe Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cat atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu His Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gcc gct tcc caa atg aac aag cga aag tcg ggg cac atc atc      384
Asn Ala Ala Ala Ser Gln Met Asn Lys Arg Lys Ser Gly His Ile Ile
```

```
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 424
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 424

```
Met Ser Ser Ala Ile Val Thr Asn Phe Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu His Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Ala Ala Ser Gln Met Asn Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 425
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 425

```
atg agc acc gct atc gtc acc aac ttc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Asn Phe Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac     144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc atc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ile Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc cag gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct acc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt ccc cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Pro Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg cct aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act gac cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Asp Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 426
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 426

Met Ser Thr Ala Ile Val Thr Asn Phe Lys His Phe Gly Gly Met Gly

1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ile Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Pro Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Asp Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 427
<211> 768
<212> DNA
<213> Artificial

<220>

<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 427

```
atg agc acc gct att gtc acc aac ttc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Phe Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa ctg aaa gct ttt gct aaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Lys Ala Phe Ala Lys Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag caa cca gct caa ctg att aaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Gln Pro Ala Gln Leu Ile Lys
    50                  55                  60

gct gtc acc agc gct ctt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag agg cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Arg Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg aca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
```

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 428
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 428

Met Ser Thr Ala Ile Val Thr Asn Phe Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Lys Ala Phe Ala Lys Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Gln Pro Ala Gln Leu Ile Lys
50 55 60

Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Arg Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 429
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 429

```
atg agc acc gct att gtc acg aac ttc aca cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Phe Thr His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctc agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa ctg gaa gct ttt gct gac acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Asp Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt act gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga cgt tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Arg Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
```

```
            180                 185                 190

aag att tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Ile Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg aca ttt ttg      672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 430
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 430

```
Met Ser Thr Ala Ile Val Thr Asn Phe Thr His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Asp Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Arg Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Ile Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 431
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 431

```
atg agc acc gtt att gtc acc aac ttc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Val Ile Val Thr Asn Phe Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc act ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Thr Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag att tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Ile Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa cgc gag ttg ggg gaa ttg gtg aca ttt ttg      672
Arg Arg Leu Gly Thr Gln Arg Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 432
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 432

```
Met Ser Thr Val Ile Val Thr Asn Phe Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Thr Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
```

```
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Ile Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Arg Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 433
<211> 711
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(711)

<400> 433

```
atg gcc aac ggt cgc aaa cgc gag ttc gcg aac ggc cgc ctg gcg ggc      48
Met Ala Asn Gly Arg Lys Arg Glu Phe Ala Asn Gly Arg Leu Ala Gly
1               5                   10                  15

aaa ctc gtg ctg ctg acc aac gcc gat gcc tac atg ggt gaa gcg acc      96
Lys Leu Val Leu Leu Thr Asn Ala Asp Ala Tyr Met Gly Glu Ala Thr
            20                  25                  30

gtg cag gtt ttc gag gaa gag ggc gcg gaa gtt ttt gcc gac cac acc     144
Val Gln Val Phe Glu Glu Glu Gly Ala Glu Val Phe Ala Asp His Thr
        35                  40                  45

gac ctg acc aaa gtg ggc gcc gcc gaa gaa gtg gtg gaa cgc gcg ggc     192
Asp Leu Thr Lys Val Gly Ala Ala Glu Glu Val Val Glu Arg Ala Gly
    50                  55                  60
```

```
cac atc gat gtg ctg gtt gcc aac ttt gcg gtg gat gcg cac ttt ggt      240
His Ile Asp Val Leu Val Ala Asn Phe Ala Val Asp Ala His Phe Gly
65                  70                  75                  80

gtt acc gtg ctg gaa acc gat gaa gag ctg tgg cag acc gcc tat gag      288
Val Thr Val Leu Glu Thr Asp Glu Glu Leu Trp Gln Thr Ala Tyr Glu
                85                  90                  95

acc atc gtt cat ccg ctg cac cgt atc tgt cgc gcc gtg ctg ccg cag      336
Thr Ile Val His Pro Leu His Arg Ile Cys Arg Ala Val Leu Pro Gln
            100                 105                 110

ttt tat gaa cgc aac aaa ggc aaa atc gtg gtg tac ggt agc gcc gcc      384
Phe Tyr Glu Arg Asn Lys Gly Lys Ile Val Val Tyr Gly Ser Ala Ala
        115                 120                 125

gcc atg cgt tat caa gaa ggt gcg ctg gcc tac agc acc gcc cgc ttc      432
Ala Met Arg Tyr Gln Glu Gly Ala Leu Ala Tyr Ser Thr Ala Arg Phe
    130                 135                 140

gcg cag cgt ggt tac gtg acc gcc ctg ggc cct gag gcc gcg cgt cac      480
Ala Gln Arg Gly Tyr Val Thr Ala Leu Gly Pro Glu Ala Ala Arg His
145                 150                 155                 160

aac gtg aac gtg aac ttc att gcc cag cat tgg acc cag aat aaa gaa      528
Asn Val Asn Val Asn Phe Ile Ala Gln His Trp Thr Gln Asn Lys Glu
                165                 170                 175

tac ttc tgg ccg gaa cgc atc gcg acc gac gaa ttc aaa gaa gat atg      576
Tyr Phe Trp Pro Glu Arg Ile Ala Thr Asp Glu Phe Lys Glu Asp Met
            180                 185                 190

gcg cgc cgc gtt ccg ctg ggt cgc ctg gcc acc gcg cgc gaa gac gcg      624
Ala Arg Arg Val Pro Leu Gly Arg Leu Ala Thr Ala Arg Glu Asp Ala
        195                 200                 205

ctg ctg gcc ctg ttt ctg gcg agc gac gaa agc gat ttt atc gtt ggt      672
Leu Leu Ala Leu Phe Leu Ala Ser Asp Glu Ser Asp Phe Ile Val Gly
    210                 215                 220

aaa agc att gag ttt gat ggc ggt tgg gcg acc taa tga                 711
Lys Ser Ile Glu Phe Asp Gly Gly Trp Ala Thr
225                 230                 235
```

<210> 434
<211> 235
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 434

```
Met Ala Asn Gly Arg Lys Arg Glu Phe Ala Asn Gly Arg Leu Ala Gly
1               5                   10                  15

Lys Leu Val Leu Leu Thr Asn Ala Asp Ala Tyr Met Gly Glu Ala Thr
            20                  25                  30

Val Gln Val Phe Glu Glu Glu Gly Ala Glu Val Phe Ala Asp His Thr
        35                  40                  45

Asp Leu Thr Lys Val Gly Ala Ala Glu Glu Val Val Glu Arg Ala Gly
    50                  55                  60
```

```
His Ile Asp Val Leu Val Ala Asn Phe Ala Val Asp Ala His Phe Gly
65                  70                  75                  80

Val Thr Val Leu Glu Thr Asp Glu Glu Leu Trp Gln Thr Ala Tyr Glu
                85                  90                  95

Thr Ile Val His Pro Leu His Arg Ile Cys Arg Ala Val Leu Pro Gln
            100                 105                 110

Phe Tyr Glu Arg Asn Lys Gly Lys Ile Val Val Tyr Gly Ser Ala Ala
        115                 120                 125

Ala Met Arg Tyr Gln Glu Gly Ala Leu Ala Tyr Ser Thr Ala Arg Phe
    130                 135                 140

Ala Gln Arg Gly Tyr Val Thr Ala Leu Gly Pro Glu Ala Ala Arg His
145                 150                 155                 160

Asn Val Asn Val Asn Phe Ile Ala Gln His Trp Thr Gln Asn Lys Glu
                165                 170                 175

Tyr Phe Trp Pro Glu Arg Ile Ala Thr Asp Glu Phe Lys Glu Asp Met
            180                 185                 190

Ala Arg Arg Val Pro Leu Gly Arg Leu Ala Thr Ala Arg Glu Asp Ala
        195                 200                 205

Leu Leu Ala Leu Phe Leu Ala Ser Asp Glu Ser Asp Phe Ile Val Gly
    210                 215                 220

Lys Ser Ile Glu Phe Asp Gly Gly Trp Ala Thr
225                 230                 235
```

<210> 435
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 435

```
atg agc acc gct att gtc acc aac gtc ctc cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Leu His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
```

```
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg tct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ser Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 436
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 436

```
Met Ser Thr Ala Ile Val Thr Asn Val Leu His Phe Gly Gly Met Gly
1               5                   10                  15
```

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ser Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 437
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 437

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg tgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Cys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag aaa cca gct gaa ctg att gaa       192
Pro Gln Leu Ile Pro Met Ser Glu Gln Lys Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg       336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg       576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta       624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

gga tcc 774
Gly Ser
255

<210> 438
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 438

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Cys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Lys Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu

```
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 439
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 439

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gtt ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc ctt gtt       96
Ser Val Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys Leu Val
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aac tca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Asn Ser Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gga ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Gly Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gat aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Asp Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg atg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Met Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 440
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 440

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Val Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys Leu Val
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Asn Ser Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Gly Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Asp Asn Ala Leu Ser
145                 150                 155                 160
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Met Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 441
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 441

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc ctt gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys Leu Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
```

```
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca cgt aag gag gtc tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Arg Lys Glu Val Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg cgt      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Arg
                165                 170                 175

tac cta cac atc ggg gat tcg ccg tac aaa tac ccc tct gag ccg tgg      576
Tyr Leu His Ile Gly Asp Ser Pro Tyr Lys Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 442
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 442

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys Leu Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Arg Lys Glu Val Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Arg
                165                 170                 175

Tyr Leu His Ile Gly Asp Ser Pro Tyr Lys Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 443
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 443

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gga agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
```

```
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg gcg      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Ala
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 444
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 444

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

```
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Gly Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Ala
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 445
<211> 774
<212> DNA
<213> Artificial

<220>
<223>

<220>
<221> CDS
<222> (1)..(774)

<400> 445

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa ggt ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Gly Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gga agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Gly Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cag cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ctt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Leu Ala Leu Val
            100                 105                 110

aat gct gtg gct ccg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gtt aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Val Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc acg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

gga tcc
Gly Ser
255

<210> 446
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 446

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Gly Gly His Thr Val Ala Cys His Asp
20 25 30

Gly Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Leu Ala Leu Val
100 105 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Val Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 447
<211> 768
<212> DNA
<213> Artificial

<220>
<223>

<220>
<221> CDS
<222> (1)..(768)

<400> 447

```
atg agc gcc gct atc gtc acc agc gtc aac cat ttt ggt ggt atg ggt       48
Met Ser Ala Ala Ile Val Thr Ser Val Asn His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg aac gaa gct ggt cat acc ttc gct tgc cat gat       96
Ser Ala Leu Arg Leu Asn Glu Ala Gly His Thr Phe Ala Cys His Asp
            20                  25                  30

gga agc ttt aac cag aaa gat gaa ctg gaa gct ttt act gaa gcc tac      144
Gly Ser Phe Asn Gln Lys Asp Glu Leu Glu Ala Phe Thr Glu Ala Tyr
        35                  40                  45

gca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Ala Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt aag ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Lys Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  448
<211>  254
<212>  PRT
<213>  Artificial

<220>
<223>  Synthetic Construct

<400>  448

Met Ser Ala Ala Ile Val Thr Ser Val Asn His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Asn Glu Ala Gly His Thr Phe Ala Cys His Asp
            20                  25                  30

Gly Ser Phe Asn Gln Lys Asp Glu Leu Glu Ala Phe Thr Glu Ala Tyr
        35                  40                  45

Ala Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Lys Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 449
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 449

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ctg cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Leu Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
```

```
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act ggt cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Gly Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 450
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 450

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Phe Ala Pro Glu Leu Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Gly Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 451
<211> 774
<212> DNA
<213> Artificial

<220>
<223>

<220>
<221> CDS
<222> (1)..(774)

<400> 451

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc caa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 452
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 452

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly

1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 453
<211> 774
<212> DNA
<213> Artificial

<220>

<223>

<220>
<221> CDS
<222> (1)..(774)

<400> 453

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa gtc gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Val Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ctg cat cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Pro Glu Leu His Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg tct act ccg ctg ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ser Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag ctg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Leu Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
```

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

gga tcc 774
Gly Ser
255

<210> 454
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 454

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Val Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Leu His Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ser Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Leu Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 455
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 455

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gat ctg gaa gct ttt gct gat acc tac       144
Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Asp Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gcg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Ala Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gcc ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
```

```
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 456
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 456

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Asp Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Ala Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 457
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 457

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atg agc acc gct atc gtc act aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga ctg ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg atg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Met Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 458
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 458

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
```

50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Met Ala
225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 459
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 459
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

```
agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac     144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca gtg agc gaa cag gaa cca gct gaa ctg att gaa     192
Pro Gln Leu Lys Pro Val Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat     240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat     288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg     336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc     384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg gcg     432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Ala
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg     480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat     528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg aag gat tcg ccg tac tat tac ccc act gag ccg tgg     576
Tyr Leu His Ser Lys Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta     624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg     672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca     720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga     768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 460
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 460

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Val Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Ala
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Lys Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 461
<211> 768
<212> DNA

<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 461

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca gtg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Ile Pro Val Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gca gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg       336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg       576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta       624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
```

225 230 235 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga 768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 462
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 462

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Val Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 463
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 463

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca gtg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Val Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175
```

```
tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 464
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 464

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Val Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
```

```
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

<210>  465
<211>  774
<212>  DNA
<213>  Artificial

<220>
<223>

<220>
<221>  CDS
<222>  (1)..(774)

<400>  465
atg agc acc gct att gtc acc aac gtc aaa cat ttt ggg ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca gtg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Val Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga ccc                                                             774
Gly Pro
255
```

<210> 466
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 466

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Val Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 467
<211> 768
<212> DNA
<213> Artificial

<220>
<223>

<220>
<221> CDS
<222> (1)..(768)

<400> 467

```
atg agc gcc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Ala Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt tat acc gtc gct tgc cat gat       96
```

```
Ser Ala Leu Arg Leu Ser Glu Ala Gly Tyr Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca gtg agc gaa cag gaa cca act gaa ctg att gaa      192
Pro Gln Leu Ile Pro Val Ser Glu Gln Glu Pro Thr Glu Leu Ile Glu
    50                  55                  60

gct gtc acc ggt gct ctt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Gly Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc tat cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Tyr Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa cgc gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Arg Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 468
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 468

```
Met Ser Ala Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly Tyr Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Val Ser Glu Gln Glu Pro Thr Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Gly Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Tyr Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Arg Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 469
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 469
atg ggc ccc gtt atg gtc act aac gtc aaa cat ttt ggt ggt aag ggt 48
Met Gly Pro Val Met Val Thr Asn Val Lys His Phe Gly Gly Lys Gly
1 5 10 15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat 96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac 144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

cca cag ctg aaa cca gtg agc gaa cag gaa cca gct gaa ctg atc gaa 192
Pro Gln Leu Lys Pro Val Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat 240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat 288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg 336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc 384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act 432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg 480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat 528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg 576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

aag act aat ccg gag cac gtg gct cac gtg aag aaa gtg act gct cta 624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg 672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

gca tct ggc tct tgt gat tat ttg acg ggc cag gtg ttt tgg ttg gca 720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

ggc ggc ttc tcc aag aaa aaa agt tgg ccc ggc ttg ccc gaa taa tga 768
Gly Gly Phe Ser Lys Lys Lys Ser Trp Pro Gly Leu Pro Glu
245 250

gga tcc 774
Gly Ser
255

<210> 470
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 470

Met Gly Pro Val Met Val Thr Asn Val Lys His Phe Gly Gly Lys Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Val Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu

```
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Ser Lys Lys Lys Ser Trp Pro Gly Leu Pro Glu
                245                 250

<210>  471
<211>  774
<212>  DNA
<213>  Artificial

<220>
<223>  Comment

<220>
<221>  CDS
<222>  (1)..(774)

<400>  471
atg agc acc gct atc gtc act aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg cgt ccg atg cgt gat cag gaa cca ccg gac ctg atc gaa      192
Pro Gln Leu Arg Pro Met Arg Asp Gln Glu Pro Pro Asp Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 472
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 472

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Arg Pro Met Arg Asp Gln Glu Pro Pro Asp Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 473
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 473

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gat cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Asp Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
```

```
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc gga cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cat tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct cct gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg cct gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 474
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 474

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
Pro Gln Leu Ile Pro Met Ser Asp Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 475
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 475
atg agc gcc ggt atc gtc acc atc gtc aaa cat ttt ggt ggt atg gga 48
Met Ser Ala Gly Ile Val Thr Ile Val Lys His Phe Gly Gly Met Gly

```
1               5                   10                  15

agc cct ctg agg ctg atc gaa gct ggt cat acc gtc gct tgc cat gag      96
Ser Pro Leu Arg Leu Ile Glu Ala Gly His Thr Val Ala Cys His Glu
            20                  25                  30

gaa agc ttt aat cag aaa gat gat ctg gaa gct ttt ggt gat acc tgc     144
Glu Ser Phe Asn Gln Lys Asp Asp Leu Glu Ala Phe Gly Asp Thr Cys
        35                  40                  45

cca cag ctg aaa cca atg agg gat cag gga cca gct gat ctg atc gaa     192
Pro Gln Leu Lys Pro Met Arg Asp Gln Gly Pro Ala Asp Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat     240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat     288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg     336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc     384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act     432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg     480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat     528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg     576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta     624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg     672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca     720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga     768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 476
<211> 254
<212> PRT
<213> Artificial

<220>

<223> Synthetic Construct

<400> 476

```
Met Ser Ala Gly Ile Val Thr Ile Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Pro Leu Arg Leu Ile Glu Ala Gly His Thr Val Ala Cys His Glu
            20                  25                  30

Glu Ser Phe Asn Gln Lys Asp Asp Leu Glu Ala Phe Gly Asp Thr Cys
        35                  40                  45

Pro Gln Leu Lys Pro Met Arg Asp Gln Gly Pro Ala Asp Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 477

<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 477
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat 96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

gaa agc ttt aag cat cag gat aaa ctg gaa gct ttt gct gaa acc tac 144
Glu Ser Phe Lys His Gln Asp Lys Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

cca cag ctg ata cca atg agc aaa cag aaa cca gct aaa ctg att gaa 192
Pro Gln Leu Ile Pro Met Ser Lys Gln Lys Pro Ala Lys Leu Ile Glu
50 55 60

gct gtc acc agc gct ctt ggt cag gtc gat gtc ctg gtc agc aac gat 240
Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat 288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

tac agg ggt act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg 336
Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc 384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act 432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg 480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

aag gag cta gga gag tac aat atc cca gtg ttc gct atc gct ccg aat 528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg 576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta 624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg aca ttt tcg 672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Ser
210 215 220

```
gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 478
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 478

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Lys Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Lys Gln Lys Pro Ala Lys Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205
```

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Ser
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 479
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 479

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat aaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Lys Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc aaa cag aaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Lys Gln Lys Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg aca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 480
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 480

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Lys Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Lys Gln Lys Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 481
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 481

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa ctg aaa gct ttt gct aaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Lys Ala Phe Ala Lys Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc caa cag aaa cca gct aaa ctg att caa      192
Pro Gln Leu Ile Pro Met Ser Gln Gln Lys Pro Ala Lys Leu Ile Gln
    50                  55                  60

gct gtc acc agc gct ctt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
```

```
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg aca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 482
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 482

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Lys Ala Phe Ala Lys Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Gln Gln Lys Pro Ala Lys Leu Ile Gln
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 483
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 483

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
cca cag ctg ata cca atg agc caa cag aaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Gln Gln Lys Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg aca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gcg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Ala Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 484
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 484

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
```

20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Gln Gln Lys Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Ala Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 485
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>

<221> CDS
<222> (1)..(768)

<400> 485

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag aaa cca gct aaa ctg att aaa       192
Pro Gln Leu Ile Pro Met Ser Glu Gln Lys Pro Ala Lys Leu Ile Lys
    50                  55                  60

gct gtc acc agc gct ctt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg       336
Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta       624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg aca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 486
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 486

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Lys Pro Ala Lys Leu Ile Lys
50 55 60

Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

```
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  487
<211>  768
<212>  DNA
<213>  Artificial

<220>
<223>  Comment


<220>
<221>  CDS
<222>  (1)..(768)

<400>  487
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agt ttt aag cat cag gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg atg cca atg agc gaa cag aaa cca gct caa ctg att caa      192
Pro Gln Leu Met Pro Met Ser Glu Gln Lys Pro Ala Gln Leu Ile Gln
    50                  55                  60

gct gtc acc agc gct ctt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt act gac gaa gct ctg cag ttc aag cca ttt gct cta gtg      336
Tyr Arg Gly Thr Asp Glu Ala Leu Gln Phe Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

cac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
His Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta tac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu Tyr Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
```

```
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg aca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  488
<211>  254
<212>  PRT
<213>  Artificial

<220>
<223>  Synthetic Construct

<400>  488

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Met Pro Met Ser Glu Gln Lys Pro Ala Gln Leu Ile Gln
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Thr Asp Glu Ala Leu Gln Phe Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

His Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175
```

```
Tyr Leu Tyr Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 489
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 489

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cac acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gag gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg gtt gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Val Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg cct ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 490
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 490

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Val Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
```

```
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 491
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 491

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg tcg cag gct ggt cac acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Gln Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gag gct ttt gct gaa acc tac     144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg gtt gaa     192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Val Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat     240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 492
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 492

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Gln Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Val Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 493
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 493

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg tcg gag gct ggt cac acc gtc gct tgc cat gat       96
```

```
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg gtt gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Val Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct ccg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 494
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 494

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Val Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 495
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 495

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gag cag gaa cca gct gaa ctg gtt gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Val Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220
```

```
gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 496
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 496

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Val Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
```

```
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 497
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 497

```
atg agc acc tct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ser Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt agg cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Arg His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg gtt gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Val Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gag      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Glu
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aga tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Arg Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc cca ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 498
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 498

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Met Ser Thr Ser Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Arg His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Val Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Glu
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Arg Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 499
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 499

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atg agc acc gct acc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Thr Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aag ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gat cca gct gac ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Asp Pro Ala Asp Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
```

```
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aaa cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act ctg gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga tta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ctg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc cta ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 500
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 500

```
Met Ser Thr Ala Thr Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45
```

```
Pro Gln Leu Lys Pro Met Ser Glu Gln Asp Pro Ala Asp Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 501
<211> 765
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(765)

<400> 501
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly

```
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac     144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa     192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat     240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa aac     288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg     336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc     384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act     432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg     480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat     528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg     576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta     624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg     672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca     720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc att atc gaa cgt tgg ccc ggc atg ccc gaa taa         765
Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 502
<211> 254
<212> PRT
<213> Artificial

<220>

<223> Synthetic Construct

<400> 502

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Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 503

<211> 696
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(696)

<400> 503

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gcc cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220
```

gca tct ggc tct tgt gat ttt ctg 696
Ala Ser Gly Ser Cys Asp Phe Leu
225 230

<210> 504
<211> 232
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 504

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

```
Ala Ser Gly Ser Cys Asp Phe Leu
225                 230


<210>  505
<211>  765
<212>  DNA
<213>  Artificial

<220>
<223>  Comment


<220>
<221>  CDS
<222>  (1)..(765)

<400>  505
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt ctg acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly Leu Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gga acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Gly Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aaa cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg tct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ser Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt gct cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
```

```
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt cct cta ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 506
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 506

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly Leu Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Gly Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ser Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 507
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 507

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atg agc acc gtt atc gtc acc aac gtc aaa cat ttt gga ggt atg gcc        48
Met Ser Thr Val Ile Val Thr Asn Val Lys His Phe Gly Gly Met Ala
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt caa acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly Gln Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt ggt gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Gly Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gcc tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
```

```
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 508
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 508

```
Met Ser Thr Val Ile Val Thr Asn Val Lys His Phe Gly Gly Met Ala
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly Gln Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Gly Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 509
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 509

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
gct gtc acc agc gct ctt ggt cgt gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly Arg Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct ccg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gca ccg ttc ggg cca tgg aag gag ctc tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 510
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 510

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
```

20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly Arg Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 511
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>

<221> CDS
<222> (1)..(774)

<400> 511

```
atg acc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Thr Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat atc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Ile Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc cag gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gct ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                               774
```

Gly Ser
255

<210> 512
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 512

Met Thr Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Ile Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 513
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 513

```
atg acc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Thr Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gac ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Asp Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat atc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Ile Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc cag gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gct ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt tcc cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
```

```
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ctg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 514
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 514

```
Met Thr Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Asp Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Ile Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 515
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 515

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cac aaa gat gat ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat atc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Ile Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg tct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ser Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat gtg ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Val Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac atg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Met Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc cta ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 516
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 516

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Ile Leu Val Ser Asn Asp
```

65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ser Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Val Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Met Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 517
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 517
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

agc gcc ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat 96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

```
gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat atc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Ile Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 518
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 518

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly His Val Asp Ile Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 519
<211> 774
<212> DNA

<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 519
atg agc acc gct atc gtc act aac gtc aaa cat ttt ggt ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

agc gct ctg agg ctg agc gaa gct ggt gat acc gtc gct tgc cat gat 96
Ser Ala Leu Arg Leu Ser Glu Ala Gly Asp Thr Val Ala Cys His Asp
20 25 30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac 144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa 192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

gct gtc acc agc gct tac ggt cag gtc gat gtc ccg gtc agc aac gat 240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Pro Val Ser Asn Asp
65 70 75 80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat 288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg 336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

aat gct gtg gct tca caa atg aag aag cga aag tcg ggg cac atc atc 384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

ttc atc act tcg tct act ccg ttc ggg ccg tgg aag gag cta tcg act 432
Phe Ile Thr Ser Ser Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

tac act tcg gct cga gct ggg gct cgt act cta gct aat gct cta tcg 480
Tyr Thr Ser Ala Arg Ala Gly Ala Arg Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

aag gag cta gta gag tac aat atc ccg gtg ttc gca att ttg tct aat 528
Lys Glu Leu Val Glu Tyr Asn Ile Pro Val Phe Ala Ile Leu Ser Asn
165 170 175

tac cta ctc tct gag gat tcg ccg tac ttc tac ccg act gag ccg tgg 576
Tyr Leu Leu Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta 624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gag gca ttt ttg 672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Glu Ala Phe Leu
210 215 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca 720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala

```
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 520
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 520

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Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly Asp Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Pro Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ser Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Arg Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Val Glu Tyr Asn Ile Pro Val Phe Ala Ile Leu Ser Asn
                165                 170                 175

Tyr Leu Leu Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Glu Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 521
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 521

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ccg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Pro Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca aaa aag gag ctc tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Lys Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aag      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Lys
                165                 170                 175

tac cta cac acc ggg gat tcg ccg tac cgc tac ccc tct gag ccg tgg      576
Tyr Leu His Thr Gly Asp Ser Pro Tyr Arg Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 522
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 522

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Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Pro Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
```

```
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Lys Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Lys
                165                 170                 175

Tyr Leu His Thr Gly Asp Ser Pro Tyr Arg Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 523
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 523

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gca tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc tgc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Cys Asn Asp
65                  70                  75                  80
```

```
atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 524
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 524

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Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Cys Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 525
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 525

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
```

```
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc tgc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Cys Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc aaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Lys Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 526
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 526

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Cys Asn Asp
65 70 75 80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Lys Arg Trp Pro Gly Met Pro Glu
245 250

<210> 527
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 527

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atg agc acc gct atc gtc acc aac atc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Ile Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gag gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Glu Val Leu Val Ser Asn Asp
65                  70                  75                  80

gtc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat       288
Val Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220
```

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gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
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<210> 528
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 528

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Met Ser Thr Ala Ile Val Thr Asn Ile Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Glu Val Leu Val Ser Asn Asp
65                  70                  75                  80

Val Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
```

```
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 529
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 529

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct ccg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 530
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 530

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 531
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 531

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt ggt gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Gly Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
```

```
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cgt atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly Arg Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 532
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 532

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Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

```
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Gly Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly Arg Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 533
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 533

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gat ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gac ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Asp Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa aac       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc att atc gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                               774
Gly Ser
255
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<210> 534
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 534

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Asp Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala

```
225                 230                 235                 240

Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 535
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 535

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt ctg acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly Leu Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gac ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Asp Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttc gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aaa cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gcc ggg gcg tgt gct cta gcg aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat gtg ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Val Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ctg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc cta ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 536
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 536

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly Leu Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Asp Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
Lys Glu Leu Gly Glu Tyr Asn Val Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 537
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 537

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atg agc acc gct atc gtc acc aac gtc aag cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gga gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Gly Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ctg cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Leu Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cgt atc atc      384
```

```
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly Arg Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ctg ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag agc aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ser Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 538
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 538

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Gly Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Phe Ala Pro Glu Leu Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly Arg Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ser Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 539
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 539

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gag cta gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
```

```
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat gaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Glu Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 540
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 540

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Glu Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 541
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 541

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gat gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Asp Val Glu Asp
                85                  90                  95

tac agg ggt act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240
```

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga 768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

gga tcc 774
Gly Ser
255

<210> 542
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 542

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Asp Val Glu Asp
85 90 95

Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 543
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 543

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc ggg gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Gly Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 544
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 544

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Gly Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 545
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 545

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc ggg gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Gly Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
```

```
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct aag gtc cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala Lys Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gat cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Asp Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 546
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 546

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Gly Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala Lys Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Asp Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 547
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 547

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct atc acc agc gct ctt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Ile Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc ggg gat      288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Gly Asp
                85                  90                  95

tac agg ggt act gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg aca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 548
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 548

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Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
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20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Ile Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Gly Asp
85 90 95

Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 549
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>

<221> CDS
<222> (1)..(768)

<400> 549

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atg agc acc gct att gtc acc aac gtc aga cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Arg His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc ggg gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Gly Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gag cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 550
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 550

Met Ser Thr Ala Ile Val Thr Asn Val Arg His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Gly Asp
85 90 95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

```
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  551
<211>  774
<212>  DNA
<213>  Artificial

<220>
<223>  Comment


<220>
<221>  CDS
<222>  (1)..(774)

<400>  551
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa ggt ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Gly Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tat gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc agt cag ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Ser Gln Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
```

```
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 552
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 552

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Gly Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Ser Gln Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 553
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 553

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa ggt ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Gly Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tat gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
ttc atc act tcg gct gcc cag cgg ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Gln Arg Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 554
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 554

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Gly Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
```

```
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Gln Arg Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 555
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 555

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atg agc acc gct atc gtc act aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 556
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 556

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 557
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 557
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat 96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

gaa agc ttt aag cat cag gat gaa ctg gaa gct ttt gct gaa acc tac 144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

cca cag ctg ata cca atg agc gaa cag gat cca gct gaa ctg att gaa 192
Pro Gln Leu Ile Pro Met Ser Glu Gln Asp Pro Ala Glu Leu Ile Glu
50 55 60

gct gtc acc agc gct ctt ggt cag gtc gat gtc ctg gtc agc aac gat 240
Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat 288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

tac agg ggt act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg 336
Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc 384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act 432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg 480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat 528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg 576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta 624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg aca ttt ttg 672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca 720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga 768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu

245 250

<210> 558
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 558

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Asp Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 559
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 559

```
atg agc acc gct att gtc acg aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttc ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc tat gct cta caa ttt cgt cca atc gat aaa tac gct gtc gag gat       288
Ile Tyr Ala Leu Gln Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag gtc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Val Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg aca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 560
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 560

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Tyr Ala Leu Gln Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Val Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
```

```
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 561
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 561

```
atg agc acc gct gtc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Val Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcc caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att gat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asp Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc acg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 562
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 562

```
Met Ser Thr Ala Val Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asp Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Thr Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 563
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 563

```
atg aac acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Asn Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
```

```
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gcc cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc acc tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gat ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Asp Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg aca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 564
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 564

```
Met Asn Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45
```

```
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Asp Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 565
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 565
atg acc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Thr Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly

```
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac     144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa     192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat     240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

att ttt gct cca gaa ttt cgt cca atc gat aaa tac gct gtc gaa gat     288
Ile Phe Ala Pro Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg     336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cgt atc atc     384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly Arg Ile Ile
        115                 120                 125

ttc atc act tcg gct act ctg ctg ggg cca tgg aag gag cta tcg act     432
Phe Ile Thr Ser Ala Thr Leu Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg     480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat     528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg     576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta     624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg     672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca     720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga     768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                            774
Gly Ser
255
```

<210> 566
<211> 254

<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 566

Met Thr Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly Arg Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Leu Leu Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu

245 250

<210> 567
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 567

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc atg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Met Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct gcg caa atg aag aaa cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ala Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gcc ggg gcg tgt gct cta gcg aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act ggt cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Gly Leu
        195                 200                 205
```

```
caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225             230                 235                 240

ggc ggc ttt ccc atg ata gaa cgc tgg ccc gtt atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Val Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 568
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 568

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Met Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ala Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Gly Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Val Met Pro Glu
                245                 250
```

<210> 569
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 569

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc cag gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac cgt ggt gct gat gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Asp Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
```

```
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tgc act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Cys Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg agc gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ctg act ggc cag gtg tgc tgg ctg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Cys Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccg atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 570
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 570

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95
```

```
Tyr Arg Gly Ala Asp Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Cys Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Cys Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 571
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 571

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
```

```
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 572
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 572

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 573
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 573

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg ggc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Gly Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ctg cag cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Pro Glu Leu Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct gtt gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Val Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ctg ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act ggt cta       624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Gly Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

gga tcc
Gly Ser
255

<210> 574
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 574

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Gly Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Leu Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Val Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Gly Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 575
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 575

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gat ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa tct cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Ser Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aaa cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg tct act ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ser Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ctg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc cta ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 576
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 576

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Ser Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ser Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 577
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 577

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa ggt ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Gly Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tat gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
```

```
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc cag gag ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Gln Glu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 578
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 578

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Gly Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Gln Glu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 579
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 579

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg tgg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Trp Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

```
gaa agc ttt gaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Glu Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gca gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct ccg caa atg aag aaa cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gcc agt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act gat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asp Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 580
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 580

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Trp Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Glu Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Pro Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asp Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 581
<211> 774

<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 581

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atg agc acc gct atc gtc act aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa ccg atg cgt gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Arg Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg atg gca      720
```

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Met Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 582
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 582

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Arg Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Met Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 583
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 583

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aag ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gat ctg gaa gct ttt gct gaa gcc tac       144
Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa aac       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aaa cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
```

```
145                 150                 155                 160

aag gag cta gga gag tac aat gtg ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Val Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac ctg cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ctg gtg gca ttc ctg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc cta ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 584
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 584

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Ala Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Val Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 585
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 585

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat ggt gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Gly Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag atg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Met Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 586
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 586

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
```

35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Gly Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Met Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 587
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 587

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

tat gct gcc gct tcg caa atg aag aag cga aag gcg ggg cac atc atc      384
Tyr Ala Ala Ala Ser Gln Met Lys Lys Arg Lys Ala Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ctg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtt atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 588
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 588

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Tyr Ala Ala Ala Ser Gln Met Lys Lys Arg Lys Ala Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 589
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 589

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aac aag cca aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Asn Lys Pro Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
```

```
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggg atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255


<210>  590
<211>  254
<212>  PRT
<213>  Artificial

<220>
<223>  Synthetic Construct

<400>  590

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Asn Lys Pro Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175
```

```
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 591
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 591

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atg aag ccc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Lys Pro Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac     144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg cgt cca atg agc gaa cag gaa cca gct gaa ctg att gaa     192
Pro Gln Leu Arg Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat     240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat     288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gtt gtc gaa gct ctg cag atc aag cca ttt gct cta gtg     336
Tyr Arg Gly Val Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag gag cga aag tcg ggg cac atc atc     384
Asn Ala Val Ala Ser Gln Met Lys Glu Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act     432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg act cac gtg cgt aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Thr His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 592
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 592

```
Met Lys Pro Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Arg Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Val Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Glu Arg Lys Ser Gly His Ile Ile
```

```
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Thr His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 593
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 593

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac     144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa     192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat     240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag gag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Glu Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gac tat ttg act ggc cag gtg ttt tgg ttg agc      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ser
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 594
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 594

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Glu Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ser
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 595
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 595

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
```

```
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag gag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Glu Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aaa act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc aaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Lys Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 596
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 596

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Glu Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Lys Arg Trp Pro Gly Met Pro Glu
245 250

<210> 597
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 597

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atg agc acc gtt att gtc acc aat gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Val Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

gcg gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ala Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag gag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Glu Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gcc atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220
```

```
gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 598
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 598

```
Met Ser Thr Val Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ala Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Glu Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
```

```
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 599
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 599

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atg agc acc gct atc gtc acc acg gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Thr Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac     144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa     192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc tat gtc ctg gtc agc aac gat     240
Ala Val Thr Ser Ala Tyr Gly Gln Val Tyr Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat     288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg     336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cca aag tcg ggg cac atc atc     384
Asn Ala Val Ala Ser Gln Met Lys Lys Pro Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act     432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg     480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag gag gtg att gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Glu Val Ile Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ctg act gtg cag gtg gtg tgg ctg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Val Gln Val Val Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccg atg atc gaa cgt tgg ccg ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 600
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 600

```
Met Ser Thr Ala Ile Val Thr Thr Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Tyr Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Pro Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Glu Val Ile Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Val Gln Val Val Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 601
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 601

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac     144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gag cca gct gaa ctg att gaa     192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat     240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat     288
```

```
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc gtc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Val Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 602
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 602

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Val Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 603
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 603

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
```

```
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gca ccg ttc ggg cca cat aag gag atc tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro His Lys Glu Ile Ser Thr
    130                 135                 140

tac tct tcg gcc cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 604
<211> 254
<212> PRT
<213> Artificial

<220>

<223> Synthetic Construct

<400> 604

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro His Lys Glu Ile Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 605

<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 605
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat 96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac 144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa 192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat 240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat 288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg 336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc 384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

ttc atc act tcg gct gca ccg ttc ggg cca cat aag gag ctc tcg act 432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro His Lys Glu Leu Ser Thr
130 135 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg 480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aag 528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Lys
165 170 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg 576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta 624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg 672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

```
gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 606
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 606

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro His Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Lys
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190
```

```
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 607
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 607

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca cat aag gag gtc tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro His Lys Glu Val Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
```

```
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
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<210> 608
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 608

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Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110
```

```
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro His Lys Glu Val Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 609
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 609

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg atc cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
```

```
65                  70                  75                  80

atc tat cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Tyr Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt act gtc gaa gct cta cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gca ccg ttc ggg cca cat aag gag atc tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro His Lys Glu Ile Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ctg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg aca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Thr
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 610
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 610

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Tyr Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro His Lys Glu Ile Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Thr
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 611
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 611

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

```
agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agg ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac       144
Glu Arg Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg       336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gga ccg ttc ggg cca cat aag gag gtc tcg act       432
Phe Ile Thr Ser Ala Gly Pro Phe Gly Pro His Lys Glu Val Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aaa gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg gag       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Glu
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg       576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta       624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act gac cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Asp Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
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<210> 612
<211> 254
<212> PRT

<213> Artificial

<220>
<223> Synthetic Construct

<400> 612

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Arg Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Gly Pro Phe Gly Pro His Lys Glu Val Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Glu
165 170 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Asp Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 613
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 613

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc cac       144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr His
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg       336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gca ccg ttc ggg cca tgg aag gag atc tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Ile Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac acc ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg       576
Tyr Leu His Thr Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta       624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg       672
```

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255


<210>  614
<211>  254
<212>  PRT
<213>  Artificial

<220>
<223>  Synthetic Construct

<400>  614

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr His
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Ile Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175
```

```
Tyr Leu His Thr Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 615
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 615

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gag cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gac      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca aaa aag gag atc tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Lys Lys Glu Ile Ser Thr
```

```
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca ctg gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac agc ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 616
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 616

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Lys Lys Glu Ile Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 617
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 617

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg atc cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
gct gtc acc agc gct ctt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc tat cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Tyr Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca aaa aag gag atc tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Lys Lys Glu Ile Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ctg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg aca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Thr
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 618
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 618

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Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
```

35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Tyr Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Lys Lys Glu Ile Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Thr
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 619
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 619

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg cta agc gaa gct ggt ctg acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly Leu Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg acc       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Thr
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg gcc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Met Ile Glu Arg Trp Ala Gly Met Pro Glu
                245                 250

gga tcc                                                               774
Gly Ser
255
```

<210> 620
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 620

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly Leu Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Thr
225 230 235 240

```
Gly Gly Phe Pro Met Ile Glu Arg Trp Ala Gly Met Pro Glu
                245                 250


<210>  621
<211>  765
<212>  DNA
<213>  Artificial

<220>
<223>  Comment


<220>
<221>  CDS
<222>  (1)..(765)

<400>  621
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc caa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg agt      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Ser
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt tcc cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
```

```
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 622
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 622

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Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Ser
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 623
<211> 771
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(771)

<400> 623

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca gtg gac aaa tac tca gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Val Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga                                                                  771
Gly
255
```

<210> 624
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 624

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Val Asp Lys Tyr Ser Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
```

```
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
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<210> 625
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 625

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc ttt     144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Phe
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa     192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat gtg ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Val Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc cac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe His Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 626
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 626

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Phe
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Val Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe His Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 627
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS

<222> (1)..(768)

<400> 627

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atg aac acc gct att gtc acg aac gtc aaa cat ttt gga ggt atg ggt        48
Met Asn Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa ctg gaa gct ttt gct gac gcc tac       144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Asp Ala Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tat ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gtt gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg       336
Tyr Arg Gly Val Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta       624
Lys Thr Asn Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

cgt cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg aca ttt ttg       672
Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 628

<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 628

Met Asn Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Asp Ala Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Val Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Arg Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

```
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  629
<211>  768
<212>  DNA
<213>  Artificial

<220>
<223>  Comment


<220>
<221>  CDS
<222>  (1)..(768)

<400>  629
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggt cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 630
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 630

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
```

```
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 631
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 631

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg cgt cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Arg Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg aca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 632
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 632

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Arg Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 633
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 633

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gac acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Asp Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
```

```
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 634
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 634

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Asp Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 635
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 635

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
```

```
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gac gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Asp Ala Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc att gct cta gaa ttt cag cca atc gat aaa tac gct gtc gag gat      288
Ile Ile Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gtt gtc gaa gct ctg cag gtc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Val Val Glu Ala Leu Gln Val Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 636
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 636

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Asp Ala Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ile Ala Leu Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Val Val Glu Ala Leu Gln Val Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 637
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 637

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atg agc gcc gct att gtc acg aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Ala Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg aaa ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa ctg gaa gct ttt gct gac acc tac       144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Asp Thr Tyr
        35                  40                  45

cca cag ctg cgt cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Arg Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tat ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc tat gct cta gaa ttt cgt cca atc gat aaa tac gct gtc gag gat       288
Ile Tyr Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg act agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta       624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa cgc gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Arg Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240
```

ggc ggc ttt ccc gtc ctc gaa cgt tgg ccc ggc atg ccc gaa taa tga 768
Gly Gly Phe Pro Val Leu Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 638
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 638

Met Ser Ala Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Lys Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Asp Thr Tyr
35 40 45

Pro Gln Leu Arg Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Tyr Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Arg Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Leu Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 639
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 639

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atg agc acc gct atc gtc acc aac atc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Ile Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg cgg cca atg agc gaa cag gaa cca gct gac atg atc gaa       192
Pro Gln Leu Arg Pro Met Ser Glu Gln Glu Pro Ala Asp Met Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg       576
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 640
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 640

```
Met Ser Thr Ala Ile Val Thr Asn Ile Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Arg Pro Met Ser Glu Gln Glu Pro Ala Asp Met Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 641
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 641

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc cag gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
```

```
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gct ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt tcc cta gct aat gct cta gct      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

cga cga cta ggg act caa gaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Arg Arg Leu Gly Thr Gln Glu Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 642
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 642

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ala
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Arg Arg Leu Gly Thr Gln Glu Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 643
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 643

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

```
gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 644
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 644

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly

1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 645
<211> 774
<212> DNA
<213> Artificial

<220>

<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 645

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gat ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gat cca gct gac ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Asp Pro Ala Asp Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa aac       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aaa cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aaa gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ctg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc att atc gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
```

Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

gga tcc 774
Gly Ser
255

<210> 646
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 646

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Asp Pro Ala Asp Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asn
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Ile Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 647
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 647

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atg agc acc gct atc gtc act aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga ggg tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Gly Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
```

```
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 648
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 648

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Gly Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 649
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 649

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atg agc acc gct atc gtc act aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa ccg atg cgt gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Arg Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gac      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg atg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Met Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 650
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 650

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Arg Glu Gln Glu Pro Ala Glu Leu Ile Glu
```

```
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Met Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  651
<211>  768
<212>  DNA
<213>  Artificial

<220>
<223>  Comment


<220>
<221>  CDS
<222>  (1)..(768)

<400>  651
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

```
agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc acc gtg tac gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Thr Val Tyr Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gac tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gga taa tga       768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Gly
                245                 250
```

<210> 652
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 652

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Thr Val Tyr Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Gly
245 250

<210> 653
<211> 768
<212> DNA

<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 653

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc acc gtg tac gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Thr Val Tyr Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
```

225 230 235 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga 768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 654
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 654

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Thr Val Tyr Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 655
<211> 696
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(696)

<400> 655

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gca tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg cat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro His
                165                 170                 175
```

```
ttt cta aac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Phe Leu Asn Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg                                      696
Ala Ser Gly Ser Cys Asp Tyr Leu
225                 230
```

<210> 656
<211> 232
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 656

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro His
```

```
                165                 170                 175

Phe Leu Asn Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu
225                 230
```

<210> 657
<211> 696
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(696)

<400> 657

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

ttt cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Phe Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg                                     696
Ala Ser Gly Ser Cys Asp Tyr Leu
225                 230
```

<210> 658
<211> 232
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 658

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Phe Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu
225                 230
```

<210> 659
<211> 696
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(696)

<400> 659

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
```

```
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

ttt cta cag tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Phe Leu Gln Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg                                     696
Ala Ser Gly Ser Cys Asp Tyr Leu
225                 230
```

<210> 660
<211> 232
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 660

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Phe Leu Gln Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu
225                 230
```

<210> 661
<211> 696
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(696)

<400> 661

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
```

```
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg cat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro His
                165                 170                 175

ttt cta aac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Phe Leu Asn Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg                                     696
Ala Ser Gly Ser Cys Asp Tyr Leu
225                 230
```

<210> 662
<211> 232
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 662

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro His
                165                 170                 175

Phe Leu Asn Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu
225                 230
```

<210> 663
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 663

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc cca gtg ttc gct atc ggg cca aac      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

ttt cta cac tcg gag gat tcg aag tac tat tac ccc act gag ccg tgg      576
Phe Leu His Ser Glu Asp Ser Lys Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gac tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 664
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 664

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
```

35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Phe Leu His Ser Glu Asp Ser Lys Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 665
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 665

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg       336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca cgt aag gag gtc tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Arg Lys Glu Val Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg cgt       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Arg
                165                 170                 175

tac cta cac atc ggg gat tcg ccg tac cgc tac ccc tct gag ccg tgg       576
Tyr Leu His Ile Gly Asp Ser Pro Tyr Arg Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta       624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 666
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 666

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Arg Lys Glu Val Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Arg
165 170 175

Tyr Leu His Ile Gly Asp Ser Pro Tyr Arg Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

```
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250


<210>  667
<211>  774
<212>  DNA
<213>  Artificial

<220>
<223>  Comment


<220>
<221>  CDS
<222>  (1)..(774)

<400>  667
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gga ccg ttc ggg cca cgt aag gag gtc tcg act      432
Phe Ile Thr Ser Ala Gly Pro Phe Gly Pro Arg Lys Glu Val Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg cgt      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Arg
                165                 170                 175

tac cta cac acc ggg gat tcg ccg tac tgg tac ccc tct gag ccg tgg      576
Tyr Leu His Thr Gly Asp Ser Pro Tyr Trp Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
```

```
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ctg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 668
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 668

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Gly Pro Phe Gly Pro Arg Lys Glu Val Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Arg
                165                 170                 175

Tyr Leu His Thr Gly Asp Ser Pro Tyr Trp Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 669
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 669

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gga      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Gly
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125
```

```
ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag gtc tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Val Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac acc ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Thr Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gta acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 670
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 670

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Gly
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
```

```
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Val Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Thr Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 671
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 671

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
cca cag ctg ata cca atg agc gaa cag gaa cca gtt gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Val Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gca ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac acc ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Thr Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ctg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 672
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 672

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Val Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Thr Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 673
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 673

```
atg agg acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Arg Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gga cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Gly Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gcc ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg cgt      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Arg
                165                 170                 175

tac cta cac gac ggg gat tcg ccg tac cgc tac ccc tct gag ccg tgg      576
Tyr Leu His Asp Gly Asp Ser Pro Tyr Arg Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg tcc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Ser Gly Met Pro Glu
                245                 250
```

245 250

gga tcc 774
Gly Ser
255

<210> 674
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 674

Met Arg Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Gly Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Arg
165 170 175

Tyr Leu His Asp Gly Asp Ser Pro Tyr Arg Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

```
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Ser Gly Met Pro Glu
                245                 250
```

<210> 675
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 675

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg gcg      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Ala
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
tac cta cac tcg att gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Ile Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 676
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 676

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Ala
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
```

```
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Ile Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 677
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 677

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac att atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tct gcg      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Ala
    130                 135                 140

tac tct tcg tct cga gct ggg act agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ser Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg att gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Ile Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 678
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 678

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Ala
    130                 135                 140

Tyr Ser Ser Ser Arg Ala Gly Thr Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Ile Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 679
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 679

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
```

```
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg aag tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Lys Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gac      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Asp
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 680
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 680

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

```
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Lys Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Asp
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 681
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 681

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cta gaa ttt cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg aag tac tat tac ccc act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Lys Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 682
<211> 254

<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 682

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Leu Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Lys Tyr Tyr Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Ile Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu

245 250

<210> 683
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 683

```
atg acc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Thr Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggg cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac gct tcg gct cga gct ggg gct tgt tcc cta gct aat gct cta tcg      480
Tyr Ala Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205
```

```
caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ctg tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Leu Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 684
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 684

```
Met Thr Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ala Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Leu Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 685
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 685

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ctg cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Leu Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
```

```
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 686
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 686

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Leu Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 687
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 687

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
```

```
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ctg cat cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Leu His Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 688
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 688

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

```
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Leu His Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 689
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 689

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct agt tct cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Ser Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

gga tcc
Gly Ser
255

<210> 690
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 690

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Ser Ser Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 691
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 691

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agt gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ctg cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Leu Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct gtt gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Val Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ctg ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 692
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 692

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Leu Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Val Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 693
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 693

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
```

```
                100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ctg ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act ctg gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag aac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu Asn Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 694
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 694

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu Asn Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 695
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 695

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

```
gaa agc ttt aaa cag aaa gat gaa gtc gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Val Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ctg cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Leu Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ctg ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag aac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu Asn Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag ctg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Leu Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 696
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 696

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Val Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Leu Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu Asn Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Leu Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 697
<211> 774

<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 697

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa gtc gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Val Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ctg ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg ggg aac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Thr Asn Pro Gly Asn Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
```

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 698
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 698

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Val Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
Lys Thr Asn Pro Gly Asn Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 699
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 699

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa gtc gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Val Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cgt cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Pro Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag ttg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Leu Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
```

```
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag aac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu Asn Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ctg tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Leu Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 700
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 700

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Val Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Leu Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu Asn Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Leu Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 701
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 701

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
atc ttt gct cca aaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Lys Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta ggg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Gly
            100                 105                 110

aat gct ggg gct tcg caa atg aag aac caa aag acg gtg cac atc atc      384
Asn Ala Gly Ala Ser Gln Met Lys Asn Gln Lys Thr Val His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc gca tcg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Ala Ser Trp Lys Glu Leu Ser Thr
    130                 135                 140

cac act tct gct cga gct ggg ggt tgt act cta act aat gct cta tcg      480
His Thr Ser Ala Arg Ala Gly Gly Cys Thr Leu Thr Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta ggg gag tac aat atg ccg gag cta gct atc gag gcg aat      528
Lys Glu Leu Gly Glu Tyr Asn Met Pro Glu Leu Ala Ile Glu Ala Asn
                165                 170                 175

tac cta cac tcg ggg gat tca tcg gac ttc tac acg act gag ccg agg      576
Tyr Leu His Ser Gly Asp Ser Ser Asp Phe Tyr Thr Thr Glu Pro Arg
            180                 185                 190

aag act aat ccg gag aac gtg ctt cac ctg aag aag gtg act ggt cta      624
Lys Thr Asn Pro Glu Asn Val Leu His Leu Lys Lys Val Thr Gly Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ctg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gaa tca ggc tct tgt gat tat ttg act ggc cag gtg ctt tgc ttg cca      720
Glu Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Leu Cys Leu Pro
225                 230                 235                 240

ggc ggc ttt ccc ctg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 702
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 702

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
```

50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Lys Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Gly
100 105 110

Asn Ala Gly Ala Ser Gln Met Lys Asn Gln Lys Thr Val His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Ala Ser Trp Lys Glu Leu Ser Thr
130 135 140

His Thr Ser Ala Arg Ala Gly Gly Cys Thr Leu Thr Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Met Pro Glu Leu Ala Ile Glu Ala Asn
165 170 175

Tyr Leu His Ser Gly Asp Ser Ser Asp Phe Tyr Thr Thr Glu Pro Arg
180 185 190

Lys Thr Asn Pro Glu Asn Val Leu His Leu Lys Lys Val Thr Gly Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Glu Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Leu Cys Leu Pro
225 230 235 240

Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 703
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 703
atg agc acc gct atc gtc act aac gtc aaa cat ttt ggt ggt atg ggt 48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

```
agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag aac gtg gct cac gtg aag aag gtg act gct cta       624
Lys Thr Asn Pro Glu Asn Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 704
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 704

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu Asn Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 705
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 705

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atg agc acc gct atc gtc acc aac gtc aaa cat ttc gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cac aaa gat gat ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gcc gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc cag gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg tct act ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ser Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg agc gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac atg gct cac gtg aag aag gtg act gct cta       624
Lys Thr Asn Pro Glu His Met Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
```

```
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag atg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Met Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 706
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 706

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Asp Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ser Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Met Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Met Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 707
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 707

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atg agc acc gct atc gtc acc aat gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cac aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gac aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aaa cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca cgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Arg Lys Glu Leu Ser Thr
    130                 135                 140
```

```
tac act tcg gct cgg gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac atg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Met Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc cta ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 708
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 708

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
```

```
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Arg Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Met Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Leu Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 709
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 709

```
atg agc acc gct atc gtc act aac gtc aaa cat ttt ggt ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac atg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Met Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 710
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 710

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30
```

```
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Met Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 711
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS

<222> (1)..(774)

<400> 711

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atg agc acc gct atc gtc act aac gtc aaa cat ttt ggt ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag ctg ggt aag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Lys Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac atg gct cac gtg aag aag gtg act gct cta       624
Lys Thr Asn Pro Glu His Met Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                               774
Gly Ser
```

255

<210> 712
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 712

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Lys Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Met Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 713
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 713

```
atg agc acc gct atc gtc act aac gtc aaa cat ttt ggt ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa       192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat       288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct ctg atg       336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Met
            100                 105                 110

aat gct gtg act tct caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Thr Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg ccg tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg       480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190
```

```
aag act aat ccg gag cac atg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Met Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 714
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 714

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Met
            100                 105                 110

Asn Ala Val Thr Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
```

```
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Met Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 715
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 715

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atg agc acc gtc atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Val Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt ctg acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly Leu Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac     144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa     192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat     240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat     288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg     336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110
```

```
aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac atg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Met Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg acc      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Thr
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 716
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 716

```
Met Ser Thr Val Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly Leu Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80
```

```
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Met Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Thr
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 717
<211> 768
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(768)

<400> 717

```
atg agc acc gcc att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa ctg gaa gct ttt gct gaa acc tac      144
```

```
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa gaa gag ttg ggg gaa ttg gtg aca ttt ttg      672
Gln Arg Leu Gly Thr Gln Glu Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc gga ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 718
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 718

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15
```

```
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Glu Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 719
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 719
atg agc acc gct acc gtc acc aac gtc aaa cat ttt gga ggt atg ggt 48
Met Ser Thr Ala Thr Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat 96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac 144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa 192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat 240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

atc ttt gct cca gaa ctg cgt cca atc gat aaa tac gct gtc gaa gat 288
Ile Phe Ala Pro Glu Leu Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg 336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc 384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

ttc atc act tcg gct act ccg ctg ggg cca tgg aag gag cta tcg act 432
Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg 480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat 528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg 576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta 624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

caa cga cta ggg act caa gaa gag ttg ggg gaa ttg gtg gca ttt ttg 672
Gln Arg Leu Gly Thr Gln Glu Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

gca tct ggc tct tgt gat tat ttg act ggc cag ctg ttt tgg ttg gca 720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Leu Phe Trp Leu Ala
225 230 235 240

ggc ggc ttc ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga 768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

gga tcc
Gly Ser
255

<210> 720
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 720

Met Ser Thr Ala Thr Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Leu Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Thr Pro Leu Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Glu Glu Leu Gly Glu Leu Val Ala Phe Leu

```
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Leu Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 721
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 721

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc cag gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct agt ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ser Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt tcc cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175
```

```
tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa gaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Glu Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 722
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 722

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ser Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Glu Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 723
<211> 774
<212> DNA
<213> Artificial

<220>
<223> Comment

<220>
<221> CDS
<222> (1)..(774)

<400> 723

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gcg ttt gcc gaa acc tac     144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa     192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat     240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aga tac gct gtc gag gat     288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Arg Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg     336
```

```
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act tct ctg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Leu Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa gaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Glu Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg aca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Thr
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                             774
Gly Ser
255
```

<210> 724
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 724

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Arg Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Ser Leu Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Glu Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Thr
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 725
<211> 768
<212> DNA
<213> Artificial

<220>
<223>

<220>
<221> CDS
<222> (1)..(768)

<400> 725

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
```

```
            20                  25                  30

gaa agc ttt aag cat cag gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg atc cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cag gtc gat gta ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc tat cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Tyr Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ctg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg aca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Thr
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 726
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 726

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Tyr Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Thr
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 727
<211> 765
<212> DNA
<213> Artificial

<220>
<223>

<220>
<221> CDS
<222> (1)..(765)

<400> 727

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atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gct ccg ttc ggg cca tgg aaa gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttc ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240
```

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa 765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 728
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 728

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
180 185 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

```
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 729
<211> 768
<212> DNA
<213> Artificial

<220>
<223>

<220>
<221> CDS
<222> (1)..(768)

<400> 729

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg       336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg       576
```

```
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 730
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 730

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160
```

```
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 731
<211> 768
<212> DNA
<213> Artificial

<220>
<223>

<220>
<221> CDS
<222> (1)..(768)

<400> 731

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg cgt cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Arg Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ttt ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
```

```
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag att aat ccg gag cac gtg act cac gtg cgt aag gtg act gct cta      624
Lys Ile Asn Pro Glu His Val Thr His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 732
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 732

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Arg Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Phe Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95
```

```
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Ile Asn Pro Glu His Val Thr His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 733
<211> 768
<212> DNA
<213> Artificial

<220>
<223>

<220>
<221> CDS
<222> (1)..(768)

<400> 733

```
atg agc acc gct att gtc acg aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat aaa gat gaa ctg gaa gct ttt gct gac gcc tac      144
Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Asp Ala Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
gct gtc acc agc gct ttt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc cgc cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 734
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 734

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Lys Asp Glu Leu Glu Ala Phe Ala Asp Ala Tyr
```

35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Phe Gly His Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 735
<211> 768
<212> DNA
<213> Artificial

<220>
<223>

<220>
<221> CDS
<222> (1)..(768)

<400> 735

```
atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt        48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat        96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa ctg gaa gct ttt gct gaa acc tac       144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa       192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cag gtc gat gtc ctg gtc agc aac gat       240
Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gct gct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat       288
Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg       336
Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc       384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca tgg aag gag cta tcg act       432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg       480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc gct ccg aat       528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac tat tac ccc tct gag ccg tgg       576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta       624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg aca ttt ttg       672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca       720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga       768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 736
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 736

Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1 5 10 15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
20 25 30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
35 40 45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
50 55 60

Ala Val Thr Ser Ala Leu Gly Gln Val Asp Val Leu Val Ser Asn Asp
65 70 75 80

Ile Ala Ala Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
85 90 95

Tyr Arg Gly Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
100 105 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
115 120 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
130 135 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145 150 155 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Ala Pro Asn
165 170 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
180 185 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
195 200 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
210 215 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225 230 235 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
245 250

<210> 737
<211> 774
<212> DNA
<213> Artificial

<220>
<223>

<220>
<221> CDS
<222> (1)..(774)

<400> 737

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atg agc acc gct att gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                  10                  15

agc gct ctg cgt ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aag cat cag gat gaa cta gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg ata cca atg agc gaa cag gaa cca gct gaa ctg att gaa      192
Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct ctt ggt cat gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc gcg cct gtg gaa tgg cgg cca atc gat aaa tac gct gtc gag gat      288
Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg gat act gtc gaa gct ctg cag atc aag cca ttt gct cta gtg      336
Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

aag gct gtc gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Lys Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gcc ccg ttc ggg cca cgt aag gag atc tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Arg Lys Glu Ile Ser Thr
    130                 135                 140

tac tct tcg gct cga gct ggg gct agt gca cta gct aat gct cta tcg      480
Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gta gac aat atc ccg gtg ttc gct atc gct ccg gag      528
Lys Glu Leu Gly Val Asp Asn Ile Pro Val Phe Ala Ile Ala Pro Glu
                165                 170                 175

tac cta cac tcg ggg gat tcg ccg tac tat tac ccc tct gag ccg tgg      576
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

aag act tct ccg gag cac gtg gct cac gtg cgt aag gtg act gct cta      624
Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg acg ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
```

```
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc gtc atc gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 738
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 738

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys His Gln Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Ile Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Leu Gly His Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Ala Pro Val Glu Trp Arg Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Asp Thr Val Glu Ala Leu Gln Ile Lys Pro Phe Ala Leu Val
            100                 105                 110

Lys Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Arg Lys Glu Ile Ser Thr
    130                 135                 140

Tyr Ser Ser Ala Arg Ala Gly Ala Ser Ala Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Val Asp Asn Ile Pro Val Phe Ala Ile Ala Pro Glu
                165                 170                 175
```

```
Tyr Leu His Ser Gly Asp Ser Pro Tyr Tyr Tyr Pro Ser Glu Pro Trp
            180                 185                 190

Lys Thr Ser Pro Glu His Val Ala His Val Arg Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Thr Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Val Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 739
<211> 774
<212> DNA
<213> Artificial

<220>
<223>

<220>
<221> CDS
<222> (1)..(774)

<400> 739

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt       48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat       96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac      144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa      192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc gaa gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct act ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140
```

```
tac act tcg gct cga gct ggg gct tgt act cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa tga      768
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250

gga tcc                                                              774
Gly Ser
255
```

<210> 740
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 740

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Glu Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
```

```
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Thr Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Thr Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 741
<211> 765
<212> DNA
<213> Artificial

<220>
<223>

<220>
<221> CDS
<222> (1)..(765)

<400> 741

```
atg agc acc gct atc gtc acc aac gtc aaa cat ttt gga ggt atg ggt      48
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

agc gct ctg agg ctg agc gaa gct ggt cat acc gtc gct tgc cat gat      96
Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

gaa agc ttt aaa cag aaa gat gaa ctg gaa gct ttt gct gaa acc tac     144
Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45

cca cag ctg aaa cca atg agc gaa cag gaa cca gct gaa ctg atc gaa     192
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60
```

```
gct gtc acc agc gct tac ggt cag gtc gat gtc ctg gtc agc aac gat      240
Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

atc ttt gct cca gaa ttt cag cca atc gat aaa tac gct gtc cag gat      288
Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

tac agg ggt gct gtc gaa gct ctg cag atc agg cca ttt gct cta gtg      336
Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

aat gct gtg gct tcg caa atg aag aag cga aag tcg ggg cac atc atc      384
Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

ttc atc act tcg gct gct ccg ttc ggg cca tgg aag gag cta tcg act      432
Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

tac act tcg gct cga gct ggg gct tgt tcc cta gct aat gct cta tcg      480
Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

aag gag cta gga gag tac aat atc ccg gtg ttc gct atc ggg ccg aat      528
Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

tac cta cac tcg gag gat tcg ccg tac ttc tac ccg act gag ccg tgg      576
Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

aag act aat ccg gag cac gtg gct cac gtg aag aag gtg act gct cta      624
Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

caa cga cta ggg act caa aaa gag ttg ggg gaa ttg gtg gca ttt ttg      672
Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

gca tct ggc tct tgt gat tat ttg act ggc cag gtg ttt tgg ttg gca      720
Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

ggc ggc ttt ccc atg ata gaa cgt tgg ccc ggc atg ccc gaa taa          765
Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```

<210> 742
<211> 254
<212> PRT
<213> Artificial

<220>
<223> Synthetic Construct

<400> 742

```
Met Ser Thr Ala Ile Val Thr Asn Val Lys His Phe Gly Gly Met Gly
1               5                   10                  15

Ser Ala Leu Arg Leu Ser Glu Ala Gly His Thr Val Ala Cys His Asp
            20                  25                  30

Glu Ser Phe Lys Gln Lys Asp Glu Leu Glu Ala Phe Ala Glu Thr Tyr
        35                  40                  45
```

```
Pro Gln Leu Lys Pro Met Ser Glu Gln Glu Pro Ala Glu Leu Ile Glu
    50                  55                  60

Ala Val Thr Ser Ala Tyr Gly Gln Val Asp Val Leu Val Ser Asn Asp
65                  70                  75                  80

Ile Phe Ala Pro Glu Phe Gln Pro Ile Asp Lys Tyr Ala Val Gln Asp
                85                  90                  95

Tyr Arg Gly Ala Val Glu Ala Leu Gln Ile Arg Pro Phe Ala Leu Val
            100                 105                 110

Asn Ala Val Ala Ser Gln Met Lys Lys Arg Lys Ser Gly His Ile Ile
        115                 120                 125

Phe Ile Thr Ser Ala Ala Pro Phe Gly Pro Trp Lys Glu Leu Ser Thr
    130                 135                 140

Tyr Thr Ser Ala Arg Ala Gly Ala Cys Ser Leu Ala Asn Ala Leu Ser
145                 150                 155                 160

Lys Glu Leu Gly Glu Tyr Asn Ile Pro Val Phe Ala Ile Gly Pro Asn
                165                 170                 175

Tyr Leu His Ser Glu Asp Ser Pro Tyr Phe Tyr Pro Thr Glu Pro Trp
            180                 185                 190

Lys Thr Asn Pro Glu His Val Ala His Val Lys Lys Val Thr Ala Leu
        195                 200                 205

Gln Arg Leu Gly Thr Gln Lys Glu Leu Gly Glu Leu Val Ala Phe Leu
    210                 215                 220

Ala Ser Gly Ser Cys Asp Tyr Leu Thr Gly Gln Val Phe Trp Leu Ala
225                 230                 235                 240

Gly Gly Phe Pro Met Ile Glu Arg Trp Pro Gly Met Pro Glu
                245                 250
```