Claims

1. A nucleic acid molecule for use as a medicament, wherein said nucleic acid molecule encodes a polypeptide that is able to induce an anti-inflammatory response, and wherein said nucleic acid molecule is represented by a nucleotide sequence selected from the group consisting of:

i. nucleotide sequences encoding a polypeptide comprising an amino acid sequence that has at least 50% sequence identity with the amino acid sequence of SEQ ID NO:1,

ii. nucleotide sequences comprising a nucleotide sequence that has at least 50% sequence identity with the nucleotide sequence of SEQ ID NO:2,

iii. nucleotide sequences the complementary strand of which hybridizes to a nucleic acid molecule of sequence of (i) or (ii) and

iv. nucleotide sequences the sequences of which differs from the sequence of a nucleic acid molecule of (iii) due to the degeneracy of the genetic code.

2. A nucleic acid molecule according to claim 1, wherein said_nucleic acid molecule is represented by a nucleotide sequence selected from the group consisting of:

i. nucleotide sequences encoding a polypeptide comprising an amino acid sequence that has at least 70% sequence identity with the amino acid sequence of SEQ ID NO:1,

ii. nucleotide sequences comprising a nucleotide sequence that has at least 70% sequence identity with the nucleotide sequence of SEQ ID NO:2,

iii. nucleotide sequences the complementary strand of which hybridizes to a nucleic acid molecule of sequence of (i) or (ii) and

iv. nucleotide sequences the sequences of which differs from the sequence of a nucleic acid molecule of (iii) due to the degeneracy of the genetic code.

3. A polypeptide encoded by a nucleic acid molecule as identified in claim 1 or 2 for use as a medicament.

4. A nucleic acid molecule or a polypeptide according to any one of claims 1 or 3, wherein said nucleic acid molecule or polypeptide derives from or originates from

Leishmania major, Leishmania braziliensis, Leishmania infantum, Leishmania Mexicana or Leishmania donovani.

5. A nucleic acid molecule according to claims 1, 2, or 4, wherein the nucleic acid molecule is an oligonucleotide comprising at least 8, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100 or more contiguous nucleotides of SEQ ID NO:2.

6. A polypeptide according to claims 3 or 4, wherein the polypeptide is a protein fragment comprising at least 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 265, or 267 contiguous amino acids of SEQ ID NO:1.

7. A protein fragment according to claim6, comprising at least 14 contiguous amino acids of SEQ ID NO:1 and comprising SEQ ID NO: 31, 32, 55, 42, 43, 44, 56, 53, 54 and/or 57.

8. A composition comprising at least a nucleic acid molecule and/or a polypeptide as defined in any one of preceding claims, wherein the composition is preferably a pharmaceutical composition said pharmaceutical composition comprising a pharmaceutically acceptable carrier, adjuvant, salt, diluent and/or excipient.

9. A composition according to claim 8, for use as a medicament.

10. Use of a composition as defined in claims 8 or 9, or a nucleic acid molecule and/or a polypeptide as defined in any one of claims 1 to 7 in the manufacture of a medicament for preventing or treating an inflammatory disorder in an individual.

11. Use according to claim 10, wherein the inflammatory disorder is rheumatoid arthritis (RA), juvenile rheumatoid arthritis, psoriasis, psoriatic arthritis, ankylosing spondylitis, inflammatory bowel disease including Crohn's disease or ulcerative colitis, hepatitis, sepsis, alcoholic liver disease, and non-alcoholic steatosis autoimmune diabetes, diabetes mellitus, uveitis, multiple sclerosis, Controlling Allograft Rejection after organ transplantation, graft versus host disease (GVHD), inflammatory lung diseases including asthma and chronic obstructive pulmonary disease (COPD) (2), cancer (4) systemic lupus erythematosus, SLE, sarcoidosis, atopic dermatitis and cancer.

Claims

1. A nucleic acid molecule for use as a medicament, wherein said nucleic acid molecule encodes a polypeptide that is able to induce an anti-inflammatory response, and wherein said nucleic acid molecule is represented by a nucleotide sequence selected from the group consisting of:

i. nucleotide sequences encoding a polypeptide comprising an amino acid sequence that has at least 70% sequence identity with the amino acid sequence of SEQ ID NO:1,

ii. nucleotide sequences comprising a nucleotide sequence that has at least 70% sequence identity with the nucleotide sequence of SEQ ID NO:2,

iii. nucleotide sequences the complementary strand of which hybridizes to a nucleic acid molecule of sequence of (i) or (ii) and

iv. nucleotide sequences the sequences of which differs from the sequence of a nucleic acid molecule of (iii) due to the degeneracy of the genetic code.

2. A polypeptide encoded by a nucleic acid molecule as identified in claim 1 for use as a medicament.

3. A nucleic acid molecule or a polypeptide according to any one of claims 1 or 2, wherein said nucleic acid molecule or polypeptide derives from or originates from *Leishmania major, Leishmania braziliensis, Leishmania infantum, Leishmania Mexicana or Leishmania donovani.*

4. A nucleic acid molecule according to any one of claims 1 or 3, wherein the nucleic acid molecule is an oligonucleotide comprising at least 8, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100 or more contiguous nucleotides of SEQ ID NO:2.

5. A polypeptide according to any one of claims 2 or 3, wherein the polypeptide is a protein fragment comprising at least 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 265, or 267 contiguous amino acids of SEQ ID NO:1.

6. A protein fragment according to claim 5, comprising at least 14 contiguous amino acids of SEQ ID NO:1 and comprising SEQ ID NO: 31, 32, 55, 42, 43, 44, 56, 53, 54 and/or 57.

7. A pharmaceutical composition comprising at least a nucleic acid molecule and/or a polypeptide as defined in any one of preceding claims, wherein said pharmaceutical composition comprises a pharmaceutically acceptable carrier, adjuvant, salt, diluent and/or excipient.

8. A pharmaceutical composition as defined in claim 7 for use as a medicament.

9. Use of a composition as defined in claim 7 or 8, or of a nucleic acid molecule and/or a polypeptide as defined in any one of claims 1 to 6 in the manufacture of a medicament, wherein the medicament is for preventing or treating an inflammatory disorder in an individual.

10. Use according to claim 9, wherein the inflammatory disorder is rheumatoid arthritis (RA), juvenile rheumatoid arthritis, psoriasis, psoriatic arthritis, ankylosing spondylitis, inflammatory bowel disease including Crohn's disease or ulcerative colitis, hepatitis, sepsis, alcoholic liver disease, and non-alcoholic steatosis autoimmune diabetes, diabetes mellitus, uveitis, multiple sclerosis, Controlling Allograft Rejection after organ transplantation, graft versus host disease (GVHD), inflammatory lung diseases including asthma and chronic obstructive pulmonary disease (COPD) (2), cancer (4) systemic lupus erythematosus, SLE, sarcoidosis, atopic dermatitis and cancer.

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<151> 2011-05-09

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Phe Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ala Arg Trp Arg
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100 105 110

Lys Lys Ile Asp Arg His Val Tyr Arg Asp Leu Tyr Val Arg Ala Lys
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Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Met Glu His Ile His Lys
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eolf-seql

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Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Val Glu His Ile His Lys
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Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ser Ser Ile Leu Ser
1 5 10 15

Cys Gly Arg Ala Arg Val Trp Leu Asp Pro Asn Glu Ala Met Glu Ile
20 25 30

Gln Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
35 40 45

Phe Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ala Arg Trp Arg
50 55 60

Lys Met Lys Glu Ala Lys Asp Met Gly Arg His Asn Gly Val Gly Arg
65 70 75 80

Arg Glu Gly Ser Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
85 90 95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Ala Asp
100 105 110

Lys Lys Ile Asp Arg His Val Tyr Arg Asp Leu Tyr Met Arg Ala Lys
115 120 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Val Glu Tyr Ile His Lys
130 135 140

Ile Lys Asn Glu Lys Lys Lys Ala Arg Gln Leu Ala Glu Gln Leu Ala
145 150 155 160

Ala Lys His Leu Arg Asp Glu Gln Asn Arg Asn Lys Ala Arg Lys Gln
165 170 175

Glu Leu Arg Lys Arg Glu Lys Glu Arg Glu Arg Ala Lys Arg Asp Asp
180 185 190

Ala Ala Ala Ala Ala Gln Lys Lys Lys Ala Asp Ala Ala Lys Lys Ser
195 200 205

Ala Ala Pro Ala Ala Lys Ser Ala Ala Pro Ala Ala Lys Ala Ala Ala
210 215 220

Pro Val Ala Lys Ala Ala Ala Ala Ala Pro Ala Ala Lys Gly Ala Ala
225 230 235 240

Pro Val Lys Lys Ser Lys Lys
245

<210> 16
<211> 744
<212> DNA
<213> Leishmania mexicana

<400> 16
atggtgtctc tgaagctgca agctcggctt gcgtcgagca tcctcagctg cggccgcgcc 60

cgcgtgtggc tggaccccaa cgaggcgatg gagatccaga acgcgaactc gcgcaagagc 120

gtgcgcaagc tgatcaagga tggcttcatc atccgcaagc cggtgaaggt gcactcgcgc 180

gcgcggtggc gtaaaatgaa ggaggcgaag gacatggggc gccacaacgg cgttggccgc 240

cgcgagggta gccgcgaggc ccgcatgccg agcaaggagt tgtggatgcg ccgcctgcgc 300

attctgcgcc gcctgctgcg caagtaccgc gcggacaaga agatcgaccg ccacgtgtac 360

cgagacctgt acatgcgcgc gaagggtaac gtgttccgca acaagcgcaa ccttgtggag 420

tacatccaca agatcaagaa tgagaagaag aaggcgcgcc agctggcgga gcagcttgcg 480

gcgaagcacc tgcgcgacga gcagaaccgc aacaaggctc gcaagcagga gctgcggaag 540

cgcgagaagg agcgcgagcg cgcgaagcgc gacgacgctg ctgccgctgc gcagaagaag 600

aaggcggacg ccgcgaagaa gtccgccgcg cctgctgcga agtccgccgc gcctgccgcg 660

aaggctgctg cccccgtcgc gaaggccgct gctgctgccc ccgcggcgaa gggtgctgcg 720

ccggtgaaga agtcgaagaa gtaa 744

<210> 17
<211> 247
<212> PRT
<213> Leishmania mexicana

<400> 17

Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ser Ser Ile Leu Ser
1 5 10 15

Cys Gly Arg Ala Arg Val Trp Leu Asp Pro Asn Glu Ala Met Glu Ile
20 25 30

Gln Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
35 40 45

```
Phe Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ala Arg Trp Arg
    50                  55                  60

Lys Met Lys Glu Ala Lys Asp Met Gly Arg His Asn Gly Val Gly Arg
65                  70                  75                  80

Arg Glu Gly Ser Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
                85                  90                  95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Ala Asp
            100                 105                 110

Lys Lys Ile Asp Arg His Val Tyr Arg Asp Leu Tyr Met Arg Ala Lys
        115                 120                 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Val Glu Tyr Ile His Lys
    130                 135                 140

Ile Lys Asn Glu Lys Lys Lys Ala Arg Gln Leu Ala Glu Gln Leu Ala
145                 150                 155                 160

Ala Lys His Leu Arg Asp Glu Gln Asn Arg Asn Lys Ala Arg Lys Gln
                165                 170                 175

Glu Leu Arg Lys Arg Glu Lys Glu Arg Glu Arg Ala Lys Arg Asp Asp
            180                 185                 190

Ala Ala Ala Ala Ala Gln Lys Lys Lys Ala Asp Ala Ala Lys Lys Ser
        195                 200                 205

Ala Ala Pro Ala Ala Lys Ser Ala Ala Pro Ala Ala Lys Ala Ala Ala
    210                 215                 220

Pro Val Ala Lys Ala Ala Ala Ala Ala Pro Ala Ala Lys Gly Ala Ala
225                 230                 235                 240

Pro Val Lys Lys Ser Lys Lys
                245
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<210> 18
<211> 744
<212> DNA
<213> Leishmania mexicana

<400> 18

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atggtgtctc tgaagctgca agctcggctt gcgtcgagca tcctcagctg cggccgcgcc     60

cgcgtgtggc tggaccccaa cgaggcgatg gagatccaga acgcgaactc gcgcaagagc    120

gtgcgcaagc tgatcaagga tggcttcatc atccgcaagc cggtgaaggt gcactcgcgc    180

gcgcggtggc gtaaaatgaa ggaggcgaag gacatggggc gccacaacgg cgttggccgc    240

cgcgagggta gccgcgaggc ccgcatgccg agcaaggagt tgtggatgcg ccgcctgcgc    300
```

attctgcgcc gcctgctgcg caagtaccgc gcggacaaga agatcgaccg ccacgtgtac 360

cgagacctgt acatgcgcgc gaagggtaac gtgttccgca acaagcgcaa ccttgtggag 420

tacatccaca agatcaagaa tgagaagaag aaggcgcgcc agctggcgga gcagcttgcg 480

gcgaagcacc tgcgcgacga gcagaaccgc aacaaggctc gcaagcagga gctgcggaag 540

cgcgagaagg agcgcgagcg cgcgaagcgc gacgacgctg ctgccgctgc gcagaagaag 600

aaggcggacg ccgcgaagaa gtccgccgcg cctgctgcga agtccgccgc gcctgccgcg 660

aaggctgctg cccccgtcgc gaaggccgct gctgctgccc ccgcggcgaa gggtgctgcg 720

ccggtgaaga agtcgaagaa gtaa 744

<210> 19
<211> 245
<212> PRT
<213> Leishmania donovani

<400> 19

Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ser Ser Ile Leu Gly
1 5 10 15

Cys Gly Arg Ala Arg Val Trp Leu Asp Pro Asn Glu Ala Val Glu Ile
20 25 30

Gln Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
35 40 45

Phe Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ala Arg Trp Arg
50 55 60

Lys Met Lys Glu Ala Lys Asp Met Gly Arg His Asn Gly Val Gly Arg
65 70 75 80

Arg Glu Gly Ser Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
85 90 95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Ala Asp
100 105 110

Lys Lys Ile Asp Arg His Val Tyr Arg Asp Leu Tyr Val Arg Ala Lys
115 120 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Val Glu His Ile His Lys
130 135 140

Ile Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu Ala
145 150 155 160

Ala Lys His Leu Arg Asp Glu Gln Asn Arg Asn Lys Ala Arg Lys Gln
165 170 175

Glu Leu Arg Lys Arg Glu Lys Glu Arg Glu Arg Ala Arg Arg Asp Asp
180 185 190

Ala Ala Ala Ala Ala Gln Lys Lys Lys Ala Asp Ala Ala Lys Lys Ser
195 200 205

Ala Ala Ser Ala Ala Lys Ser Ala Ala Pro Ala Ala Lys Ser Ala Ala
210 215 220

Pro Ala Ala Lys Val Ala Ala Pro Ala Thr Lys Gly Ala Ala Pro Val
225 230 235 240

Lys Lys Ser Lys Lys
245

<210> 20
<211> 738
<212> DNA
<213> Leishmania donovani

<400> 20
atggtgtctc tgaagctgca ggctcgcctt gcgtcgagca tcctcggctg cggccgcgcc 60

cgcgtgtggc tggaccccaa cgaggcggtg gagatccaga atgcgaactc gcgcaagagc 120

gtgcgcaagc tgatcaagga tggcttcatc atccgcaagc cggtgaaggt gcactcgcgc 180

gcgcggtggc gtaaaatgaa ggaggcgaag gacatggggc gccacaacgg cgttggccgc 240

cgcgagggta gccgcgaggc ccgcatgccg agcaaggagt tgtggatgcg ccgcctgcgc 300

attctgcgcc gcctgctgcg caagtaccgc gcggacaaga agatcgaccg ccacgtgtac 360

cgagacctgt acgtgcgcgc gaagggtaat gtgttccgca acaagcgcaa ccttgtggag 420

cacatccaca agatcaagaa tgagaagaag aaggagcgcc agctggcgga gcagcttgcg 480

gcgaagcacc tgcgcgacga gcagaaccgc aacaaggctc gcaagcagga gctgaggaag 540

cgcgagaagg agcgcgagcg cgcgaggcgc gacgacgctg ctgccgctgc gcagaagaag 600

aaggcggacg ccgcgaagaa gtctgccgcg tctgctgcga agtctgccgc gcctgctgcg 660

aagtctgccg cgcctgccgc gaaggttgct gcccccgcca cgaagggtgc tgcgccggtg 720

aagaagtcga agaagtaa 738

<210> 21
<211> 372
<212> PRT
<213> Trypanosoma cruzi

<400> 21

Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ala Asp Ile Leu Arg
1 5 10 15

Cys Gly Arg His Arg Val Trp Leu Asp Pro Asn Glu Ala Ser Glu Ile
20 25 30

```
Ser Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
        35                  40                  45

Leu Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ser Arg Trp Arg
    50                  55                  60

His Met Lys Glu Ala Lys Ser Met Gly Arg His Glu Gly Ala Gly Arg
65                  70                  75                  80

Arg Glu Gly Thr Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
                85                  90                  95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Glu Glu
            100                 105                 110

Lys Lys Ile Asp Arg His Ile Tyr Arg Glu Leu Tyr Val Lys Ala Lys
        115                 120                 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Met Glu His Ile His Lys
    130                 135                 140

Val Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu Ala
145                 150                 155                 160

Ala Lys Arg Leu Lys Asp Glu Gln His Arg His Lys Ala Arg Lys Gln
                165                 170                 175

Glu Leu Arg Lys Arg Glu Lys Asp Arg Glu Arg Ala Arg Arg Glu Asp
            180                 185                 190

Ala Ala Ala Ala Ala Ala Ala Lys Gln Lys Ala Ala Ala Lys Lys Ala
        195                 200                 205

Ala Ala Pro Ser Gly Lys Lys Ser Ala Lys Ala Ala Thr Ala Pro Ala
    210                 215                 220

Lys Ala Ala Ala Ala Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys Ala
225                 230                 235                 240

Ala Ala Ala Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys Ala Ala Ala
                245                 250                 255

Ala Pro Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala Ala Ala Ala Pro
            260                 265                 270

Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys
        275                 280                 285

Ala Ala Ala Ala Pro Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala Ala
    290                 295                 300
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Ala Ala Pro Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala Ala Ala Ala
305 310 315 320

Pro Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala Ala Ala Ala Pro Ala
325 330 335

Lys Ala Ala Ala Ala Pro Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala
340 345 350

Ala Thr Ala Pro Ala Lys Ala Ala Thr Ala Pro Val Gly Lys Lys Ala
355 360 365

Gly Gly Lys Lys
370

<210> 22
<211> 1119
<212> DNA
<213> Trypanosoma cruzi

<400> 22
atggtgtcgc tgaagctgca ggctcgtttg gcggcggaca ttctccgctg cggtcgccac 60

cgtgtgtggc tggatcctaa tgaggcctct gagatttcca atgcaaactc gcgcaagagc 120

gtgcgcaagt tgatcaagga tggtctgatt attcgcaagc ctgtcaaggt gcactcgcgc 180

tcccgctggc gccacatgaa ggaggcgaag agcatgggcc gccacgaggg cgctgggcgc 240

cgcgagggta cccgcgaagc ccgcatgccg agcaaggagc tgtggatgcg ccgtctgcgc 300

attctccgcc gcctgctgcg caagtaccgc gaggagaaga agattgaccg ccacatctac 360

cgcgagctgt acgtgaaggc gaaggggaac gtgtttcgca acaagcgtaa cctcatggag 420

cacatccaca aggtgaagaa cgagaagaag aaggaaaggc agctggctga gcagctcgcg 480

gcgaagcgcc tgaaggatga gcagcaccgt cacaaggccc gcaagcagga gctgcgtaag 540

cgcgagaagg accgcgagcg tgcgcgtcgc gaagatgctg ccgctgccgc cgccgcgaag 600

cagaaagctg ctgcgaagaa ggccgctgct ccctctggca agaagtccgc gaaggctgct 660

actgcacctg cgaaggccgc tgctgcacct gcgaaggccg ctgctgcacc tgcgaaggct 720

gctgctgcac ctgcgaaggc tgctgctgca cctgcgaagg ctgctgctgc acctgcgaag 780

gctgctactg cacctgcgaa ggccgctgct gcacctgcga aggctgctac tgcacctgcg 840

aaggccgctg ctgcacctgc gaaggctgct gctgcacctg cgaaggctgc tactgcacct 900

gcgaaggccg ctgctgcacc tgcgaaggct gctactgcac ctgcgaaggc cgctgctgca 960

cctgcgaagg ctgctactgc acctgcgaag gccgctgctg cacctgcgaa ggccgctgct 1020

gcacctgcga aggctgctac tgcacctgcg aaggccgcta ctgcacctgc gaaggctgct 1080

actgcacccg ttggaaagaa ggctggtggc aagaagtga 1119

<210> 23
<211> 356

<212> PRT
<213> Trypanosoma cruzi

<400> 23

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Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ala Asp Ile Leu Arg
1               5                  10                  15

Cys Gly Arg His Arg Val Trp Leu Asp Pro Asn Glu Ala Ser Glu Ile
            20                  25                  30

Ser Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
        35                  40                  45

Leu Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ser Arg Trp Arg
    50                  55                  60

His Met Lys Glu Ala Lys Ser Met Gly Arg His Glu Gly Ala Gly Arg
65                  70                  75                  80

Arg Glu Gly Thr Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
                85                  90                  95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Glu Glu
            100                 105                 110

Lys Lys Ile Asp Arg His Ile Tyr Arg Glu Leu Tyr Val Lys Ala Lys
        115                 120                 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Met Glu His Ile His Lys
    130                 135                 140

Val Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu Ala
145                 150                 155                 160

Ala Lys Arg Leu Lys Asp Glu Gln His Arg His Lys Ala Arg Lys Gln
                165                 170                 175

Glu Leu Arg Lys Arg Glu Lys Asp Arg Glu Arg Ala Arg Arg Glu Asp
            180                 185                 190

Ala Ala Ala Ala Ala Ala Ala Lys Gln Lys Ala Ala Ala Lys Lys Ala
        195                 200                 205

Ala Ala Pro Ser Gly Lys Lys Ser Ala Lys Ala Ala Ala Pro Ala Lys
    210                 215                 220

Ala Ala Ala Ala Pro Ala Lys Ala Ala Ala Pro Pro Ala Lys Thr Ala
225                 230                 235                 240

Ala Ala Pro Ala Lys Ala Ala Ala Pro Ala Lys Ala Ala Ala Pro Pro
                245                 250                 255
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Ala Lys Ala Ala Ala Pro Pro Ala Lys Thr Ala Ala Pro Pro Ala Lys
260 265 270

Thr Ala Ala Pro Pro Ala Lys Ala Ala Ala Pro Pro Ala Lys Ala Ala
275 280 285

Ala Pro Pro Ala Lys Ala Ala Ala Pro Pro Ala Lys Ala Ala Ala Ala
290 295 300

Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys Ala Ala Ala Pro Pro Ala
305 310 315 320

Lys Ala Ala Ala Pro Pro Ala Lys Ala Ala Ala Pro Pro Ala Lys Ala
325 330 335

Ala Ala Pro Pro Ala Lys Ala Ala Ala Ala Pro Val Gly Lys Lys Ala
340 345 350

Gly Gly Lys Lys
355

<210> 24
<211> 1071
<212> DNA
<213> Trypanosoma cruzi

<400> 24
atggtgtcgc tgaagctgca ggctcgtttg gcggcggaca ttctccgctg cggtcgccac 60

cgtgtgtggc tggaccctaa tgaggcctct gagatttcca atgcaaactc gcgcaagagc 120

gtgcgcaagt tgatcaagga tggtctgatt attcgcaagc ctgtcaaggt gcactcgcgc 180

tcccgctggc gccacatgaa ggaggcgaag agcatgggcc gccacgaggg cgctgggcgc 240

cgcgagggta cccgcgaagc ccgcatgccg agcaaggagc tgtggatgcg ccgtctgcgc 300

attctccgcc gcctgctgcg caagtaccgc gaggagaaga agattgaccg ccacatttac 360

cgcgagctgt acgtgaaggc gaaggggaac gtgtttcgca acaagcgtaa cctcatggag 420

cacatccaca aggtgaagaa cgagaagaag aaggaaaggc agctggctga gcagctcgcg 480

gcgaagcgcc tgaaggatga gcagcaccgt cacaaggccc gcaagcagga gctgcgtaag 540

cgcgagaagg accgcgagcg tgcgcgtcgc gaagatgctg ccgctgccgc cgccgcgaag 600

cagaaagctg ctgcgaagaa ggccgctgct ccctctggca agaagtccgc gaaggctgct 660

gcacccgcga aggctgctgc tgcacccgcg aaggccgctg ctccacccgc gaagaccgct 720

gctgcacccg cgaaggctgc tgcacctgcc aaggctgctg ctccacccgc gaaggctgct 780

gctccacccg cgaagaccgc tgctccaccc gcgaagaccg ctgctccacc cgcgaaggct 840

gctgctccac ccgcgaaggc cgctgctcca cccgcgaagg ccgctgctcc acccgcgaag 900

gccgctgctg cacccgcgaa ggccgctgct gcacccgcga aggctgctgc tccacccgcg 960

aaggccgctg ctccacccgc gaaggctgct gctccacccg cgaaggctgc tgctccaccc 1020

gcgaaggctg ctgctgctcc cgttggaaag aaggctggtg gcaagaagtg a 1071

<210> 25
<211> 343
<212> PRT
<213> Trypanosoma crusi

<400> 25

Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ala Asp Ile Leu Arg
1 5 10 15

Cys Gly Arg His Arg Val Trp Leu Asp Pro Asn Glu Ala Ser Glu Ile
20 25 30

Ser Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
35 40 45

Leu Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ser Arg Trp Arg
50 55 60

His Met Lys Glu Ala Lys Ser Met Gly Arg His Glu Gly Ala Gly Arg
65 70 75 80

Arg Glu Gly Thr Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
85 90 95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Glu Glu
100 105 110

Lys Lys Ile Asp Arg His Ile Tyr Arg Glu Leu Tyr Val Lys Ala Lys
115 120 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Met Glu His Ile His Lys
130 135 140

Val Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu Ala
145 150 155 160

Ala Lys Arg Leu Lys Asp Glu Gln His Arg His Lys Ala Arg Lys Gln
165 170 175

Glu Leu Arg Lys Arg Glu Lys Asp Arg Glu Arg Ala Arg Arg Glu Asp
180 185 190

Ala Ala Ala Ala Ala Ala Ala Lys Gln Lys Ala Ala Ala Lys Lys Ala
195 200 205

Ala Ala Pro Ser Gly Lys Lys Ser Ala Lys Ala Ala Ile Ala Pro Ala
210 215 220

Lys Ala Ala Ala Ala Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys Ala

225 230 235 240

Ala Ala Ala Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys Ala Ala Ala
245 250 255

Ala Pro Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala Ala Ala Ala Pro
260 265 270

Ala Lys Thr Ala Ala Ala Pro Ala Lys Ala Ala Ala Pro Ala Lys Ala
275 280 285

Ala Ala Ala Pro Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala Ala Ala
290 295 300

Ala Pro Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala Ala Thr Ala Pro
305 310 315 320

Ala Lys Ala Ala Ala Ala Pro Ala Lys Ala Ala Thr Ala Pro Val Gly
325 330 335

Lys Lys Ala Gly Gly Lys Lys
340

<210> 26
<211> 1032
<212> DNA
<213> Trypanosoma cruzi

<400> 26
atggtgtcgc tgaagctgca ggctcgtttg gcggcggaca ttctccgctg cggtcgccac 60

cgtgtgtggc tggaccctaa tgaggcctct gagatttcca atgcaaactc gcgcaagagc 120

gtgcgcaagt tgatcaagga tggtctgatt attcgcaagc ctgtcaaggt gcactcgcgc 180

tcccgctggc gccacatgaa ggaggcgaag agcatgggcc gccacgaggg cgctgggcgc 240

cgcgagggta cccgcgaagc ccgcatgccg agcaaggagc tgtggatgcg ccgtctgcgc 300

attctccgcc gcctgctgcg caagtaccgc gaggagaaga agattgaccg ccacatctac 360

cgcgagctgt acgtgaaggc gaaggggaac gtgtttcgca acaagcgtaa cctcatggag 420

cacatccaca aggtgaagaa cgagaagaag aaggaaaggc agctggctga gcagctcgcg 480

gcgaagcgcc tgaaggatga gcagcaccgt cacaaggccc gcaagcagga gctgcgtaag 540

cgcgagaagg accgcgagcg tgcgcgtcgc gaagatgctg ccgctgccgc cgccgcgaag 600

cagaaagctg ctgcgaagaa ggccgctgct ccctctggca agaagtccgc gaaggctgct 660

attgcacctg cgaaggccgc tgctgcacct gcgaaggccg ctgctgcacc tgcgaaggct 720

gctgctgcac ctgcgaaggc cgctgctgca cctgcgaagg ctgctgctgc acctgcgaag 780

gctgctactg cacctgcgaa ggctgctgct gcacctgcca agaccgctgc tgcacctgcg 840

aaggctgctg cacctgcgaa ggccgctgct gcacctgcga aggccgctac tgcacctgcg 900

aaggctgctg ctgcacctgc gaaggccgct actgcacctg cgaaggctgc tactgcacct 960

gcgaaggctg ctgctgcacc tgcgaaggcc gctactgcac ccgttggaaa gaaggctggt 1020

ggcaagaagt ga 1032

<210> 27
<211> 357
<212> PRT
<213> Trypanosoma cruzi

<400> 27

Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ala Asp Ile Leu Arg
1 5 10 15

Cys Gly Arg His Arg Val Trp Leu Asp Pro Asn Glu Ala Ser Glu Ile
20 25 30

Ser Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
35 40 45

Leu Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ser Arg Trp Arg
50 55 60

His Met Lys Glu Ala Lys Ser Met Gly Arg His Glu Gly Ala Gly Arg
65 70 75 80

Arg Glu Gly Thr Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
85 90 95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Glu Glu
100 105 110

Lys Lys Ile Asp Arg His Ile Tyr Arg Glu Leu Tyr Val Lys Ala Lys
115 120 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Met Glu His Ile His Lys
130 135 140

Val Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu Ala
145 150 155 160

Ala Lys Arg Leu Lys Asp Glu Gln His Arg His Lys Ala Arg Lys Gln
165 170 175

Glu Leu Arg Lys Arg Glu Lys Asp Arg Glu Arg Ala Arg Arg Glu Asp
180 185 190

Ala Ala Ala Ala Ala Ala Ala Lys Gln Lys Ala Ala Ala Lys Lys Ala
195 200 205

Ala Ala Pro Ser Gly Lys Lys Ser Ala Lys Ala Ala Ala Pro Ala Lys
210 215 220

```
Ala Ala Ala Ala Pro Ala Lys Thr Ala Ala Pro Pro Ala Lys Ala Ala
225                 230                 235                 240

Ala Pro Pro Ala Lys Ala Ala Ala Pro Pro Ala Lys Ala Ala Ala Pro
                245                 250                 255

Pro Ala Lys Ala Ala Ala Pro Pro Ala Lys Ala Ala Ala Pro Pro Ala
            260                 265                 270

Lys Ala Ala Ala Pro Pro Ala Lys Ala Ala Ala Pro Pro Ala Lys Ala
        275                 280                 285

Ala Ala Pro Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys Thr Ala Ala
    290                 295                 300

Pro Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys Thr Ala Ala Pro Pro
305                 310                 315                 320

Ala Lys Thr Ala Ala Pro Pro Ala Lys Ala Ala Thr Pro Pro Ala Lys
                325                 330                 335

Ala Ala Ala Pro Pro Ala Lys Ala Ala Ala Ala Pro Val Gly Lys Lys
            340                 345                 350

Ala Gly Gly Lys Lys
        355
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<210> 28
<211> 1074
<212> DNA
<213> Trypanosoma cruzi

<400> 28

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atggtgtcgc tgaagctgca ggctcgtttg gcggcggaca ttctccgctg cggtcgccac     60

cgtgtgtggc tggaccctaa tgaggcctct gagatttcca atgcaaactc gcgcaagagc    120

gtgcgcaagt tgatcaagga tggtctgatt attcgcaagc ctgtcaaggt gcactcgcgc    180

tcccgctggc gccacatgaa ggaggcgaag agcatgggcc gccacgaggg cgctgggcgc    240

cgcgagggta cccgcgaagc ccgcatgccg agcaaggagc tgtggatgcg ccgtctgcgc    300

attctccgcc gcctgctgcg caagtaccgc gaggagaaga agattgaccg ccacatttac    360

cgcgagctgt acgtgaaggc gaaggggaac gtgtttcgca acaagcgtaa cctcatggag    420

cacatccaca aggtgaagaa cgagaagaag aaggaaaggc agctggctga gcagctcgcg    480

gcgaagcgcc tgaaggatga gcagcaccgt cacaaggccc gcaagcagga gctgcgtaag    540

cgcgagaagg accgcgagcg tgcgcgtcgc gaagatgctg ccgctgccgc cgccgcgaag    600

cagaaagctg ctgcgaagaa ggccgctgct ccctctggca agaagtccgc gaaggctgct    660

gcacctgcca aggctgctgc tgcacccgcg aagaccgctg ctccacccgc gaaggccgct    720

gctccacccg cgaaggctgc tgctccaccc gcgaaggctg ctgctccacc cgcgaaggct    780
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gctgctccac ccgcgaaggc tgctgctcca cccgcgaagg ctgctgctcc acccgcgaag 840

gctgctgctc cacccgcgaa ggctgctgct ccacccgcga aggctgctgc tgcacccgcg 900

aagaccgctg ctccacccgc gaaggctgct gctgcacccg cgaagaccgc tgctccaccc 960

gcgaagaccg ctgctccacc cgcgaaggcc gctactccac ccgcgaaggc tgctgctcca 1020

cccgcgaagg ctgctgctgc tcccgttgga aagaaggctg gtggcaagaa gtga 1074

<210> 29
<211> 260
<212> PRT
<213> Trypanosoma brucei

<400> 29

Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ala Asp Ile Leu Arg
1 5 10 15

Cys Gly Arg Gly Arg Val Trp Leu Asp Pro Asn Glu Ala Val Glu Ile
20 25 30

Arg Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
35 40 45

Leu Val Met Arg Lys Pro Val Lys Val His Ser Arg Ser Arg Trp Arg
50 55 60

Gln Met Lys Leu Ala Lys Ser Met Gly Arg His Glu Gly Thr Gly Arg
65 70 75 80

Arg Glu Gly Thr Arg Glu Ala Arg Met Pro Ser Lys Asp Leu Trp Met
85 90 95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Glu Glu
100 105 110

Lys Lys Ile Asp Arg His Ile Tyr Arg Glu Leu Tyr Met Lys Ala Lys
115 120 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Met Glu His Ile His Lys
130 135 140

Val Lys Asn Glu Lys Lys Lys Ala Arg Gln Leu Ala Glu Gln Leu Ala
145 150 155 160

Ala Lys Arg Leu Lys Asp Glu Gln Asn Arg Arg Lys Ala Arg Lys Gln
165 170 175

Glu Leu Lys Lys Arg Glu Lys Glu Arg Glu Arg Ala Arg Arg Asp Asp
180 185 190

Ala Ala Ala Ala Ala Ala Ala Lys Gln Arg Ala Ala Ala Lys Lys Ala

eolf-seql

195 200 205

Ala Ala Pro Ala Ala Lys Lys Gly Gly Lys Ala Val Ala Pro Ala Thr
210 215 220

Pro Ala Lys Ala Ala Pro Ala Lys Ala Ala Ala Ala Lys Val Ala Pro
225 230 235 240

Ala Lys Ala Ala Pro Ala Lys Ala Ala Ser Pro Ala Gly Lys Lys Ala
245 250 255

Ala Gly Lys Lys
260

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<212> DNA
<213> Trypanosoma brucei

<400> 30
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cgcgagctgt acatgaaggc aaagggcaac gtgttccgca acaagcgcaa ccttatggag 420

cacatccaca aggtgaagaa cgagaagaag aaggctcgtc agcttgctga gcaactcgcg 480

gcgaaacgcc taaaggacga gcagaaccgc cgcaaggcac gaaagcagga gctgaagaag 540

cgtgagaagg aacgtgagcg tgcacgccgt gacgatgccg ctgctgctgc cgctgccaaa 600

caacgagctg ccgcgaagaa ggctgccgct cccgctgcca agaagggtgg caaggctgtt 660

gcccccgcca ctcctgcgaa ggccgccctt gcaaaggccg ccgctgcgaa ggttgcccca 720

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tga 783

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<400> 31

Met Thr Pro Leu Ser Leu Ser Ser Ser Arg His Ser Phe Lys Gln Asn
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Glu Thr Gln Asn
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<220>
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<400> 32

Ser Phe Lys Gln Asn Glu Thr Gln Asn Met Val Ser Leu Lys Leu Gln
1 5 10 15

Ala Arg Leu Ala
20

<210> 33
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 3

<400> 33

Ser Leu Lys Leu Gln Ala Arg Leu Ala Ser Ser Ile Leu Gly Cys Gly
1 5 10 15

Arg Ala Arg Val
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<210> 34
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 4

<400> 34

Ile Leu Gly Cys Gly Arg Ala Arg Val Trp Leu Asp Pro Asn Glu Ala
1 5 10 15

Val Glu Ile Gln
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<210> 35
<211> 20
<212> PRT
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<220>
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<400> 35

eolf-seql

Asp Pro Asn Glu Ala Val Glu Ile Gln Asn Ala Asn Ser Arg Lys Ser
1 5 10 15

Val Arg Lys Leu
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<210> 36
<211> 20
<212> PRT
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<220>
<223> peptide 6

<400> 36

Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly Phe Ile Ile
1 5 10 15

Arg Lys Pro Val
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<210> 37
<211> 20
<212> PRT
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<220>
<223> peptide 7

<400> 37

Asp Gly Phe Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ala Arg
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Trp Arg Lys Met
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<210> 38
<211> 20
<212> PRT
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<220>
<223> peptide 8

<400> 38

His Ser Arg Ala Arg Trp Arg Lys Met Lys Glu Ala Lys Asp Met Gly
1 5 10 15

Arg His Asn Gly
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<210> 39
<211> 20
<212> PRT
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<220>

<223> peptide 9

<400> 39

Ala Lys Asp Met Gly Arg His Asn Gly Val Gly Arg Arg Glu Gly Ser
1 5 10 15

Arg Glu Ala Arg
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<400> 40

Arg Arg Glu Gly Ser Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp
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Met Arg Arg Leu
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<220>
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<400> 41

Ser Lys Glu Leu Trp Met Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu
1 5 10 15

Arg Lys Tyr Arg
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<400> 42

Leu Arg Arg Leu Leu Arg Lys Tyr Arg Ala Asp Lys Lys Ile Asp Arg
1 5 10 15

His Val Tyr Arg
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<210> 43
<211> 20

<212> PRT
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<220>
<223> peptide 13

<400> 43

Lys Lys Ile Asp Arg His Val Tyr Arg Asp Leu Tyr Met Arg Ala Lys
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Gly Asn Val Phe
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<220>
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<400> 44

Tyr Met Arg Ala Lys Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Val
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Glu His Ile His
20

<210> 45
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<212> PRT
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<220>
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<400> 45

Lys Arg Asn Leu Val Glu His Ile His Lys Ile Lys Asn Glu Lys Lys
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Lys Glu Arg Gln
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<210> 46
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 16

<400> 46

Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu Ala Ala
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Lys His Leu Arg
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<210> 47
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 17

<400> 47

Glu Gln Leu Ala Ala Lys His Leu Arg Asp Glu Gln Asn Arg Asn Lys
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Ala Arg Lys Gln
20

<210> 48
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 18

<400> 48

Gln Asn Arg Asn Lys Ala Arg Lys Gln Glu Leu Lys Lys Arg Glu Lys
1 5 10 15

Glu Arg Glu Arg
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<210> 49
<211> 20
<212> PRT
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<220>
<223> peptide 19

<400> 49

Lys Lys Arg Glu Lys Glu Arg Glu Arg Ala Arg Arg Asp Asp Ala Ala
1 5 10 15

Ala Ala Ala Gln
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<211> 20
<212> PRT
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<220>
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<400> 50

Arg Asp Asp Ala Ala Ala Ala Ala Gln Lys Lys Lys Ala Asp Ala Ala
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Lys Lys Ser Ala
20

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<211> 20
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<220>
<223> peptide 21

<400> 51

Lys Ala Asp Ala Ala Lys Lys Ser Ala Ala Pro Ala Ala Lys Ser Ala
1 5 10 15

Ala Pro Ala Ala
20

<210> 52
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 22

<400> 52

Ala Ala Lys Ser Ala Ala Pro Ala Ala Lys Ala Ala Ala Pro Ala Thr
1 5 10 15

Lys Ala Ala Ala
20

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<211> 20
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<213> artificial

<220>
<223> peptide 23

<400> 53

Ala Ala Pro Ala Thr Lys Ala Ala Ala Ala Ala Pro Ala Thr Lys Gly
1 5 10 15

Ala Ala Pro Val
20

<210> 54
<211> 14
<212> PRT
<213> artificial

<220>
<223> peptide 24

<400> 54

Pro Ala Thr Lys Gly Ala Ala Pro Val Lys Lys Ser Lys Lys
1 5 10

<210> 55
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<212> PRT
<213> artificial

<220>
<223> peptide 1-2

<400> 55

Met Thr Pro Leu Ser Leu Ser Ser Ser Arg His Ser Phe Lys Gln Asn
1 5 10 15

Glu Thr Gln Asn Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala
20 25 30

<210> 56
<211> 42
<212> PRT
<213> artificial

<220>
<223> peptide 12-13-14

<400> 56

Leu Arg Arg Leu Leu Arg Lys Tyr Arg Ala Asp Lys Lys Ile Asp Arg
1 5 10 15

His Val Tyr Arg Asp Leu Tyr Met Arg Ala Lys Gly Asn Val Phe Arg
20 25 30

Asn Lys Arg Asn Leu Val Glu His Ile His
35 40

<210> 57
<211> 25
<212> PRT
<213> artificial

<220>
<223> peptide 23-24

<400> 57

Ala Ala Pro Ala Thr Lys Ala Ala Ala Ala Ala Pro Ala Thr Lys Gly
1 5 10 15

Ala Ala Pro Val Lys Lys Ser Lys Lys
20 25

SEQUENCE LISTING

<110> Laboratorios LETI SL

<120> Molecule for treating an inflammatory disorder

<130> P6032062PCT

<150> EP 11165248.3
<151> 2011-05-09

<150> US 61/484,67
<151> 2011-05-09

<160> 57

<170> PatentIn version 3.3

<210> 1
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<212> PRT
<213> Leishmania major

<400> 1

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Glu Thr Gln Asn Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ser
            20                  25                  30

Ser Ile Leu Gly Cys Gly Arg Ala Arg Val Trp Leu Asp Pro Asn Glu
        35                  40                  45

Ala Val Glu Ile Gln Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu
    50                  55                  60

Ile Lys Asp Gly Phe Ile Ile Arg Lys Pro Val Lys Val His Ser Arg
65                  70                  75                  80

Ala Arg Trp Arg Lys Met Lys Glu Ala Lys Asp Met Gly Arg His Asn
                85                  90                  95

Gly Val Gly Arg Arg Glu Gly Ser Arg Glu Ala Arg Met Pro Ser Lys
            100                 105                 110

Glu Leu Trp Met Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys
        115                 120                 125

Tyr Arg Ala Asp Lys Lys Ile Asp Arg His Val Tyr Arg Asp Leu Tyr
    130                 135                 140

Met Arg Ala Lys Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Val Glu
145                 150                 155                 160
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His Ile His Lys Ile Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala
                165                 170                 175

Glu Gln Leu Ala Ala Lys His Leu Arg Asp Glu Gln Asn Arg Asn Lys
            180                 185                 190

Ala Arg Lys Gln Glu Leu Lys Lys Arg Glu Lys Glu Arg Glu Arg Ala
        195                 200                 205

Arg Arg Asp Asp Ala Ala Ala Ala Ala Gln Lys Lys Lys Ala Asp Ala
    210                 215                 220

Ala Lys Lys Ser Ala Ala Pro Ala Ala Lys Ser Ala Ala Pro Ala Ala
225                 230                 235                 240

Lys Ala Ala Ala Pro Ala Thr Lys Ala Ala Ala Ala Ala Pro Ala Thr
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Lys Gly Ala Ala Pro Val Lys Lys Ser Lys Lys
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<210> 2
<211> 804
<212> DNA
<213> Leishmania major

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cgcgtgtggc tggaccccaa cgaggcggtg gagatccaga acgcgaactc gcgcaagagc    180
gtgcgcaagc tgatcaagga tggcttcatc atccgcaagc cggtgaaggt gcactcgcgc    240
gcgcggtggc gtaaaatgaa ggaggcgaag gacatggggc gccacaacgg cgttgggcgc    300
cgcgagggta gccgcgaggc ccgcatgccg agcaaggagt tgtggatgcg ccgcctgcgc    360
attctgcgcc gcctgctgcg caagtaccgc gcggacaaga agattgaccg ccacgtgtac    420
cgcgacctgt acatgcgcgc gaagggtaac gtgttccgca acaagcgcaa ccttgtggag    480
cacatccaca agatcaagaa tgagaagaag aaggagcgcc agctggcgga gcagctcgcg    540
gcgaagcacc tgcgcgacga gcagaaccgc aacaaggctc gcaagcagga gctgaagaag    600
cgcgagaagg agcgcgagcg cgcgaggcgc gacgacgctg ctgccgctgc gcagaagaag    660
aaggcggacg ccgcgaagaa gtccgccgcg cctgctgcga agtccgccgc gcctgccgcg    720
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<212> DNA
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<210> 4
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<220>
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<400> 4
cccaagcttt tacttcttcg acttcttcac 30

<210> 5
<211> 250
<212> PRT
<213> Leishmania braziliensis

<400> 5

Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ser Ser Ile Leu Gly
1 5 10 15

Cys Gly Arg Ala Arg Val Trp Leu Asp Pro Asn Glu Ala Met Glu Ile
20 25 30

Gln Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
35 40 45

Phe Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ala Arg Trp Arg
50 55 60

Lys Met Lys Glu Ala Lys Asp Met Gly Arg His Ser Gly Val Gly Arg
65 70 75 80

Arg Glu Gly Ser Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
85 90 95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Ala Asp
100 105 110

Lys Lys Ile Asp Arg His Val Tyr Arg Asp Leu Tyr Val Arg Ala Lys
115 120 125

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Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Met Glu His Ile His Lys
    130                 135                 140

Ile Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu Ala
145                 150                 155                 160

Ala Lys His Gln Arg Asp Glu Gln His Arg Asn Lys Ala Arg Lys Gln
                165                 170                 175

Glu Leu Lys Lys Arg Glu Lys Glu Arg Glu Arg Ala Arg Arg Asp Asp
            180                 185                 190

Ala Ala Ala Ala Ala Gln Lys Lys Lys Ala Asp Val Ala Lys Lys Ser
        195                 200                 205

Ala Ala Pro Ala Thr Lys Ala Ala Ala Val Ser Ala Ala Lys Ala Ala
    210                 215                 220

Ala Val Ser Val Ser Arg Ala Ala Ala Ala Val Ala Pro Ala Ala Lys
225                 230                 235                 240

Pro Ala Val Pro Ala Lys Lys Ser Lys Lys
                245                 250
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<212> DNA
<213> Leishmania braziliensis

<400> 6

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gcgcggtggc gtaagatgaa ggaggcgaag gacatggggc gccacagcgg cgttggccgg    240

cgcgagggta gccgcgaggc ccgcatgccg agcaaggagc tgtggatgcg ccgcctgcgc    300

attctgcgtc gcctgctgcg caagtaccgc gcggacaaga agatcgaccg ccacgtgtac    360

cgcgacctgt acgtgcgcgc gaagggtaac gtgttccgca acaagcgcaa ccttatggag    420

cacatccaca agatcaagaa cgagaagaag aaggagcggc agctggcgga gcagcttgcg    480

gcgaagcacc agcgcgacga gcagcaccgc aacaaggctc gcaagcagga gctgaagaag    540

cgcgagaagg agcgcgagcg cgcgaggcgc gacgacgctg ctgctgctgc gcagaagaag    600

aaggcggacg ttgcgaagaa gtctgctgcc cctgctacga aggctgctgc tgtctccgcc    660

gcgaaggctg ctgctgtctc cgtctcgagg gctgctgctg ctgtggctcc cgctgcgaag    720
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cctgctgtgc cggcgaagaa gtcgaagaag taa 753

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<212> PRT
<213> Leishmania braziliensis

<400> 7

Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ser Ser Ile Leu Gly
1 5 10 15

Cys Gly Arg Ala Arg Val Trp Leu Asp Pro Asn Glu Ala Met Glu Ile
20 25 30

Gln Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
35 40 45

Phe Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ala Arg Trp Arg
50 55 60

Lys Met Lys Glu Ala Lys Asp Met Gly Arg His Ser Gly Val Gly Arg
65 70 75 80

Arg Glu Gly Ser Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
85 90 95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Ala Asp
100 105 110

Lys Lys Ile Asp Arg His Val Tyr Arg Asp Leu Tyr Val Arg Ala Lys
115 120 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Met Glu His Ile His Lys
130 135 140

Ile Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu Ala
145 150 155 160

Ala Lys His Gln Arg Asp Glu Gln His Arg Asn Lys Ala Arg Lys Gln
165 170 175

Glu Leu Lys Lys Arg Glu Lys Glu Arg Glu Arg Ala Arg Arg Asp Asp
180 185 190

Ala Ala Ala Ala Ala Gln Lys Lys Lys Ala Asp Val Ala Lys Lys Ser
195 200 205

Ala Ala Pro Ala Thr Lys Ala Ala Ala Val Ser Ala Ala Lys Ala Ala
210 215 220

Ala Val Ser Ala Ala Lys Ala Ala Ala Val Ser Val Ser Arg Ala Ala
225 230 235 240

Ala Ala Val Ala Pro Ala Ala Lys Pro Ala Val Pro Ala Lys Ala Ala
245 250 255

Ala Pro Ala Ala Lys Gly Ala Val Pro Ala Lys Lys Ser Lys Lys
260 265 270

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<212> DNA
<213> Leishmania braziliensis

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cgcgtgtggc tggaccccaa cgaggcgatg gagatccaga acgcaaactc gcgcaagagc 120

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gcgcggtggc gtaagatgaa ggaggcgaag gacatggggc gccacagcgg cgttggccgg 240

cgcgagggta gccgcgaggc ccgcatgccg agcaaggagc tgtggatgcg ccgcctgcgc 300

attctgcgtc gcctgctgcg caagtaccgc gcggacaaga agatcgaccg ccacgtgtac 360

cgcgacctgt acgtgcgcgc gaagggtaac gtgttccgca acaagcgcaa ccttatggag 420

cacatccaca agatcaagaa cgagaagaag aaggagcggc agctggcgga gcagcttgcg 480

gcgaagcacc agcgcgacga gcagcaccgc aacaaggctc gcaagcagga gctgaagaag 540

cgcgagaagg agcgcgagcg cgcgaggcgc gacgacgctg ctgctgctgc gcagaagaag 600

aaggcggacg ttgcgaagaa gtctgctgcc cctgctacga aggctgctgc tgtctccgcc 660

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aagggtgctg tgccggcgaa gaagtcgaag aagtaa 816

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<212> PRT
<213> Leishmania braziliensis

<400> 9

Met Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Ala
1 5 10 15

Asp Lys Lys Ile Asp Arg His Val Tyr Arg Asp Leu Tyr Val Arg Ala

20 25 30

Lys Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Met Glu His Ile His
35 40 45

Lys Ile Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu
50 55 60

Ala Ala Lys His Gln Arg Asp Glu Gln His Arg Asn Lys Ala Arg Lys
65 70 75 80

Gln Glu Leu Lys Lys Arg Glu Lys Glu Arg Glu Arg Ala Arg Arg Asp
85 90 95

Asp Ala Ala Ala Ala Ala Gln Lys Lys Lys Ala Asp Val Ala Lys Lys
100 105 110

Ser Ala Ala Pro Ala Thr Lys Ala Ala Ala Val Ser Ala Ala Lys Ala
115 120 125

Ala Ala Val Ser Ala Ala Lys Ala Ala Ala Val Ser Val Ser Arg Ala
130 135 140

Ala Ala Ala Val Ala Pro Ala Ala Lys Pro Ala Val Pro Ala Lys Ala
145 150 155 160

Ala Ala Pro Ala Ala Lys Gly Ala Val Pro Ala Lys Lys Ser Lys Lys
165 170 175

<210> 10
<211> 531
<212> DNA
<213> Leishmania braziliensis

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cgcaacctta tggagcacat ccacaagatc aagaacgaga agaagaagga gcggcagctg 180

gcggagcagc ttgcggcgaa gcaccagcgc gacgagcagc accgcaacaa ggctcgcaag 240

caggagctga agaagcgcga gaaggagcgc gagcgcgcga ggcgcgacga cgctgctgct 300

gctgcgcaga agaagaaggc ggacgttgcg aagaagtctg ctgcccctgc tacgaaggct 360

gctgctgtct ccgccgcgaa ggctgctgct gtctccgccg cgaaggctgc tgctgtctcc 420

gtctcgaggg ctgctgctgc tgtggctccc gctgcgaagc ctgctgtgcc ggcgaaggct 480

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<211> 245
<212> PRT
<213> Leishmania infantum

<400> 11

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Cys Gly Arg Ala Arg Val Trp Leu Asp Pro Asn Glu Ala Val Glu Ile
20 25 30

Gln Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
35 40 45

Phe Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ala Arg Trp Arg
50 55 60

Lys Met Lys Glu Ala Lys Asp Met Gly Arg His Asn Gly Val Gly Arg
65 70 75 80

Arg Glu Gly Ser Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
85 90 95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Ala Asp
100 105 110

Lys Lys Ile Asp Arg His Val Tyr Arg Asp Leu Tyr Val Arg Ala Lys
115 120 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Val Glu His Ile His Lys
130 135 140

Ile Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu Ala
145 150 155 160

Ala Lys His Leu Arg Asp Glu Gln Asn Arg Asn Lys Ala Arg Lys Gln
165 170 175

Glu Leu Arg Lys Arg Glu Lys Glu Arg Glu Arg Ala Arg Arg Asp Asp
180 185 190

Ala Ala Ala Ala Ala Gln Lys Lys Lys Ala Asp Ala Ala Lys Lys Ser
195 200 205

Ala Ala Pro Ala Ala Lys Ser Ala Ala Pro Ala Ala Lys Ser Ala Ala
210 215 220

Pro Ala Ala Lys Val Ala Ala Pro Ala Thr Lys Gly Ala Ala Pro Val
225 230 235 240

Lys Lys Ser Lys Lys
245

<210> 12
<211> 738
<212> DNA
<213> Leishmania infantum

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gtgcgcaagc tgatcaagga tggcttcatc atccgcaagc cggtgaaggt gcactcgcgc 180

gcgcggtggc gtaaaatgaa ggaggcgaag gacatggggc gccacaacgg cgttggccgc 240

cgcgagggta gccgcgaggc ccgcatgccg agcaaggagt tgtggatgcg ccgcctgcgc 300

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cacatccaca agatcaagaa tgagaagaag aaggagcgcc agctggcgga gcagcttgcg 480

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cgcgagaagg agcgcgagcg cgcgaggcgc gacgacgctg ctgccgctgc gcagaagaag 600

aaggcggacg ccgcgaagaa gtctgccgcg cctgccgcga agtctgccgc gcctgccgcg 660

aagtctgccg cgcctgccgc gaaggttgct gcccccgcca cgaagggtgc tgcgccggtg 720

aagaagtcga agaagtaa 738

<210> 13
<211> 238
<212> PRT
<213> Leishmania infantum

<400> 13

Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ser Ser Ile Leu Gly
1 5 10 15

Cys Gly Arg Ala Arg Val Trp Leu Asp Pro Asn Glu Ala Val Glu Ile
20 25 30

Gln Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
35 40 45

Phe Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ala Arg Trp Arg
50 55 60

Lys Met Lys Glu Ala Lys Asp Met Gly Arg His Asn Gly Val Gly Arg
65 70 75 80

Arg Glu Gly Ser Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
85 90 95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Ala Asp
100 105 110

Lys Lys Ile Asp Arg His Val Tyr Arg Asp Leu Tyr Val Arg Ala Lys
115 120 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Val Glu His Ile His Lys
130 135 140

Ile Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu Ala
145 150 155 160

Ala Lys His Leu Arg Asp Glu Gln Asn Arg Asn Lys Ala Arg Lys Gln
165 170 175

Glu Leu Arg Lys Arg Glu Lys Glu Arg Glu Arg Ala Arg Arg Asp Asp
180 185 190

Ala Ala Ala Ala Ala Gln Lys Lys Lys Ala Asp Ala Ala Lys Lys Ser
195 200 205

Ala Ala Pro Ala Ala Lys Ser Ala Ala Pro Ala Ala Lys Val Ala Ala
210 215 220

Pro Ala Thr Lys Gly Ala Ala Pro Val Lys Lys Ser Lys Lys
225 230 235

<210> 14
<211> 717
<212> DNA
<213> Leishmania infantum

<400> 14
atggtgtctc tgaagctgca ggctcgcctt gcgtcgagca tcctcggctg cggccgcgcc 60

cgcgtgtggc tggaccccaa cgaggcggtg gagatccaga acgcgaactc gcgcaagagc 120

gtgcgcaagc tgatcaagga tggcttcatc atccgcaagc cggtgaaggt gcactcgcgc 180

gcgcggtggc gtaaaatgaa ggaggcgaag gacatggggc gccacaacgg cgttggccgc 240

cgcgagggta gccgcgaggc ccgcatgccg agcaaggagt tgtggatgcg ccgcctgcgc 300

attctgcgcc gcctgctgcg caagtaccgc gcggacaaga agatcgaccg ccacgtgtac 360

cgagacctgt acgtgcgcgc gaagggtaat gtgttccgca acaagcgcaa ccttgtggag 420

cacatccaca agatcaagaa tgagaagaag aaggagcgcc agctggcgga gcagcttgcg 480

gcgaagcacc tgcgcgacga gcagaaccgc aacaaggctc gcaagcagga gctgaggaag 540

cgcgagaagg agcgcgagcg cgcgaggcgc gacgacgctg ctgccgctgc gcagaagaag 600

aaggcggacg ccgcgaagaa gtctgccgcg cctgccgcga agtctgccgc gcctgccgcg 660

aaggttgctg cccccgccac gaagggtgct gcgccggtga agaagtcgaa gaagtaa 717

<210> 15
<211> 247
<212> PRT
<213> Leishmania mexicana

<400> 15

Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ser Ser Ile Leu Ser
1 5 10 15

Cys Gly Arg Ala Arg Val Trp Leu Asp Pro Asn Glu Ala Met Glu Ile
20 25 30

Gln Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
35 40 45

Phe Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ala Arg Trp Arg
50 55 60

Lys Met Lys Glu Ala Lys Asp Met Gly Arg His Asn Gly Val Gly Arg
65 70 75 80

Arg Glu Gly Ser Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
85 90 95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Ala Asp
100 105 110

Lys Lys Ile Asp Arg His Val Tyr Arg Asp Leu Tyr Met Arg Ala Lys
115 120 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Val Glu Tyr Ile His Lys
130 135 140

Ile Lys Asn Glu Lys Lys Lys Ala Arg Gln Leu Ala Glu Gln Leu Ala
145 150 155 160

Ala Lys His Leu Arg Asp Glu Gln Asn Arg Asn Lys Ala Arg Lys Gln
165 170 175

Glu Leu Arg Lys Arg Glu Lys Glu Arg Glu Arg Ala Lys Arg Asp Asp
180 185 190

Ala Ala Ala Ala Ala Gln Lys Lys Lys Ala Asp Ala Ala Lys Lys Ser
195 200 205

Ala Ala Pro Ala Ala Lys Ser Ala Ala Pro Ala Ala Lys Ala Ala Ala
210 215 220

Pro Val Ala Lys Ala Ala Ala Ala Ala Pro Ala Ala Lys Gly Ala Ala
225 230 235 240

Pro Val Lys Lys Ser Lys Lys
245

<210> 16
<211> 744
<212> DNA
<213> Leishmania mexicana

<400> 16
atggtgtctc tgaagctgca agctcggctt gcgtcgagca tcctcagctg cggccgcgcc 60

cgcgtgtggc tggaccccaa cgaggcgatg gagatccaga acgcgaactc gcgcaagagc 120

gtgcgcaagc tgatcaagga tggcttcatc atccgcaagc cggtgaaggt gcactcgcgc 180

gcgcggtggc gtaaaatgaa ggaggcgaag gacatggggc gccacaacgg cgttggccgc 240

cgcgagggta gccgcgaggc ccgcatgccg agcaaggagt tgtggatgcg ccgcctgcgc 300

attctgcgcc gcctgctgcg caagtaccgc gcggacaaga agatcgaccg ccacgtgtac 360

cgagacctgt acatgcgcgc gaagggtaac gtgttccgca acaagcgcaa ccttgtggag 420

tacatccaca agatcaagaa tgagaagaag aaggcgcgcc agctggcgga gcagcttgcg 480

gcgaagcacc tgcgcgacga gcagaaccgc aacaaggctc gcaagcagga gctgcggaag 540

cgcgagaagg agcgcgagcg cgcgaagcgc gacgacgctg ctgccgctgc gcagaagaag 600

aaggcggacg ccgcgaagaa gtccgccgcg cctgctgcga agtccgccgc gcctgccgcg 660

aaggctgctg cccccgtcgc gaaggccgct gctgctgccc ccgcggcgaa gggtgctgcg 720

ccggtgaaga agtcgaagaa gtaa 744

<210> 17
<211> 247
<212> PRT
<213> Leishmania mexicana

<400> 17

Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ser Ser Ile Leu Ser

```
1               5                  10                  15

Cys Gly Arg Ala Arg Val Trp Leu Asp Pro Asn Glu Ala Met Glu Ile
            20                  25                  30

Gln Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
        35                  40                  45

Phe Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ala Arg Trp Arg
    50                  55                  60

Lys Met Lys Glu Ala Lys Asp Met Gly Arg His Asn Gly Val Gly Arg
65                  70                  75                  80

Arg Glu Gly Ser Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
                85                  90                  95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Ala Asp
            100                 105                 110

Lys Lys Ile Asp Arg His Val Tyr Arg Asp Leu Tyr Met Arg Ala Lys
        115                 120                 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Val Glu Tyr Ile His Lys
    130                 135                 140

Ile Lys Asn Glu Lys Lys Lys Ala Arg Gln Leu Ala Glu Gln Leu Ala
145                 150                 155                 160

Ala Lys His Leu Arg Asp Glu Gln Asn Arg Asn Lys Ala Arg Lys Gln
                165                 170                 175

Glu Leu Arg Lys Arg Glu Lys Glu Arg Glu Arg Ala Lys Arg Asp Asp
            180                 185                 190

Ala Ala Ala Ala Ala Gln Lys Lys Lys Ala Asp Ala Ala Lys Lys Ser
        195                 200                 205

Ala Ala Pro Ala Ala Lys Ser Ala Ala Pro Ala Ala Lys Ala Ala Ala
    210                 215                 220

Pro Val Ala Lys Ala Ala Ala Ala Ala Pro Ala Ala Lys Gly Ala Ala
225                 230                 235                 240

Pro Val Lys Lys Ser Lys Lys
                245
```

<210> 18
<211> 744
<212> DNA
<213> Leishmania mexicana

<400> 18
atggtgtctc tgaagctgca agctcggctt gcgtcgagca tcctcagctg cggccgcgcc 60

cgcgtgtggc tggaccccaa cgaggcgatg gagatccaga acgcgaactc gcgcaagagc 120

gtgcgcaagc tgatcaagga tggcttcatc atccgcaagc cggtgaaggt gcactcgcgc 180

gcgcggtggc gtaaaatgaa ggaggcgaag gacatggggc gccacaacgg cgttggccgc 240

cgcgagggta gccgcgaggc ccgcatgccg agcaaggagt tgtggatgcg ccgcctgcgc 300

attctgcgcc gcctgctgcg caagtaccgc gcggacaaga agatcgaccg ccacgtgtac 360

cgagacctgt acatgcgcgc gaagggtaac gtgttccgca acaagcgcaa ccttgtggag 420

tacatccaca agatcaagaa tgagaagaag aaggcgcgcc agctggcgga gcagcttgcg 480

gcgaagcacc tgcgcgacga gcagaaccgc aacaaggctc gcaagcagga gctgcggaag 540

cgcgagaagg agcgcgagcg cgcgaagcgc gacgacgctg ctgccgctgc gcagaagaag 600

aaggcggacg ccgcgaagaa gtccgccgcg cctgctgcga agtccgccgc gcctgccgcg 660

aaggctgctg cccccgtcgc gaaggccgct gctgctgccc ccgcggcgaa gggtgctgcg 720

ccggtgaaga agtcgaagaa gtaa 744

<210> 19
<211> 245
<212> PRT
<213> Leishmania donovani

<400> 19

Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ser Ser Ile Leu Gly
1 5 10 15

Cys Gly Arg Ala Arg Val Trp Leu Asp Pro Asn Glu Ala Val Glu Ile
20 25 30

Gln Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
35 40 45

Phe Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ala Arg Trp Arg
50 55 60

Lys Met Lys Glu Ala Lys Asp Met Gly Arg His Asn Gly Val Gly Arg
65 70 75 80

Arg Glu Gly Ser Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
85 90 95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Ala Asp
100 105 110

Lys Lys Ile Asp Arg His Val Tyr Arg Asp Leu Tyr Val Arg Ala Lys
115 120 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Val Glu His Ile His Lys
130 135 140

Ile Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu Ala
145 150 155 160

Ala Lys His Leu Arg Asp Glu Gln Asn Arg Asn Lys Ala Arg Lys Gln
165 170 175

Glu Leu Arg Lys Arg Glu Lys Glu Arg Glu Arg Ala Arg Arg Asp Asp
180 185 190

Ala Ala Ala Ala Ala Gln Lys Lys Lys Ala Asp Ala Ala Lys Lys Ser
195 200 205

Ala Ala Ser Ala Ala Lys Ser Ala Ala Pro Ala Ala Lys Ser Ala Ala
210 215 220

Pro Ala Ala Lys Val Ala Ala Pro Ala Thr Lys Gly Ala Ala Pro Val
225 230 235 240

Lys Lys Ser Lys Lys
245

<210> 20
<211> 738
<212> DNA
<213> Leishmania donovani

<400> 20
atggtgtctc tgaagctgca ggctcgcctt gcgtcgagca tcctcggctg cggccgcgcc 60

cgcgtgtggc tggaccccaa cgaggcggtg gagatccaga atgcgaactc gcgcaagagc 120

gtgcgcaagc tgatcaagga tggcttcatc atccgcaagc cggtgaaggt gcactcgcgc 180

gcgcggtggc gtaaaatgaa ggaggcgaag gacatggggc gccacaacgg cgttggccgc 240

cgcgagggta gccgcgaggc ccgcatgccg agcaaggagt tgtggatgcg ccgcctgcgc 300

attctgcgcc gcctgctgcg caagtaccgc gcggacaaga agatcgaccg ccacgtgtac 360

cgagacctgt acgtgcgcgc gaagggtaat gtgttccgca acaagcgcaa ccttgtggag 420

cacatccaca agatcaagaa tgagaagaag aaggagcgcc agctggcgga gcagcttgcg 480

gcgaagcacc tgcgcgacga gcagaaccgc aacaaggctc gcaagcagga gctgaggaag 540

cgcgagaagg agcgcgagcg cgcgaggcgc gacgacgctg ctgccgctgc gcagaagaag 600

aaggcggacg ccgcgaagaa gtctgccgcg tctgctgcga agtctgccgc gcctgctgcg 660

aagtctgccg cgcctgccgc gaaggttgct gcccccgcca cgaagggtgc tgcgccggtg 720

aagaagtcga agaagtaa 738

<210> 21
<211> 372
<212> PRT
<213> Trypanosoma cruzi

<400> 21

Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ala Asp Ile Leu Arg
1 5 10 15

Cys Gly Arg His Arg Val Trp Leu Asp Pro Asn Glu Ala Ser Glu Ile
20 25 30

Ser Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
35 40 45

Leu Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ser Arg Trp Arg
50 55 60

His Met Lys Glu Ala Lys Ser Met Gly Arg His Glu Gly Ala Gly Arg
65 70 75 80

Arg Glu Gly Thr Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
85 90 95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Glu Glu
100 105 110

Lys Lys Ile Asp Arg His Ile Tyr Arg Glu Leu Tyr Val Lys Ala Lys
115 120 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Met Glu His Ile His Lys
130 135 140

Val Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu Ala
145 150 155 160

Ala Lys Arg Leu Lys Asp Glu Gln His Arg His Lys Ala Arg Lys Gln
165 170 175

Glu Leu Arg Lys Arg Glu Lys Asp Arg Glu Arg Ala Arg Arg Glu Asp

180 185 190

Ala Ala Ala Ala Ala Ala Ala Lys Gln Lys Ala Ala Ala Lys Lys Ala
195 200 205

Ala Ala Pro Ser Gly Lys Lys Ser Ala Lys Ala Ala Thr Ala Pro Ala
210 215 220

Lys Ala Ala Ala Ala Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys Ala
225 230 235 240

Ala Ala Ala Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys Ala Ala Ala
245 250 255

Ala Pro Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala Ala Ala Ala Pro
260 265 270

Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys
275 280 285

Ala Ala Ala Ala Pro Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala Ala
290 295 300

Ala Ala Pro Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala Ala Ala Ala
305 310 315 320

Pro Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala Ala Ala Ala Pro Ala
325 330 335

Lys Ala Ala Ala Ala Pro Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala
340 345 350

Ala Thr Ala Pro Ala Lys Ala Ala Thr Ala Pro Val Gly Lys Lys Ala
355 360 365

Gly Gly Lys Lys
370

<210> 22
<211> 1119
<212> DNA
<213> Trypanosoma cruzi

<400> 22
atggtgtcgc tgaagctgca ggctcgtttg gcggcggaca ttctccgctg cggtcgccac 60

cgtgtgtggc tggatcctaa tgaggcctct gagatttcca atgcaaactc gcgcaagagc 120

gtgcgcaagt tgatcaagga tggtctgatt attcgcaagc ctgtcaaggt gcactcgcgc 180

tcccgctggc gccacatgaa ggaggcgaag agcatgggcc gccacgaggg cgctgggcgc 240

cgcgagggta cccgcgaagc ccgcatgccg agcaaggagc tgtggatgcg ccgtctgcgc 300

attctccgcc gcctgctgcg caagtaccgc gaggagaaga agattgaccg ccacatctac 360

cgcgagctgt acgtgaaggc gaaggggaac gtgtttcgca acaagcgtaa cctcatggag 420

cacatccaca aggtgaagaa cgagaagaag aaggaaaggc agctggctga gcagctcgcg 480

gcgaagcgcc tgaaggatga gcagcaccgt cacaaggccc gcaagcagga gctgcgtaag 540

cgcgagaagg accgcgagcg tgcgcgtcgc gaagatgctg ccgctgccgc cgccgcgaag 600

cagaaagctg ctgcgaagaa ggccgctgct ccctctggca agaagtccgc gaaggctgct 660

actgcacctg cgaaggccgc tgctgcacct gcgaaggccg ctgctgcacc tgcgaaggct 720

gctgctgcac ctgcgaaggc tgctgctgca cctgcgaagg ctgctgctgc acctgcgaag 780

gctgctactg cacctgcgaa ggccgctgct gcacctgcga aggctgctac tgcacctgcg 840

aaggccgctg ctgcacctgc gaaggctgct gctgcacctg cgaaggctgc tactgcacct 900

gcgaaggccg ctgctgcacc tgcgaaggct gctactgcac ctgcgaaggc cgctgctgca 960

cctgcgaagg ctgctactgc acctgcgaag gccgctgctg cacctgcgaa ggccgctgct 1020

gcacctgcga aggctgctac tgcacctgcg aaggccgcta ctgcacctgc gaaggctgct 1080

actgcacccg ttggaaagaa ggctggtggc aagaagtga 1119

<210> 23
<211> 356
<212> PRT
<213> Trypanosoma cruzi

<400> 23

Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ala Asp Ile Leu Arg
1 5 10 15

Cys Gly Arg His Arg Val Trp Leu Asp Pro Asn Glu Ala Ser Glu Ile
20 25 30

Ser Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
35 40 45

Leu Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ser Arg Trp Arg
50 55 60

His Met Lys Glu Ala Lys Ser Met Gly Arg His Glu Gly Ala Gly Arg
65 70 75 80

Arg Glu Gly Thr Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
85 90 95

```
Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Glu Glu
            100                 105                 110

Lys Lys Ile Asp Arg His Ile Tyr Arg Glu Leu Tyr Val Lys Ala Lys
        115                 120                 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Met Glu His Ile His Lys
    130                 135                 140

Val Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu Ala
145                 150                 155                 160

Ala Lys Arg Leu Lys Asp Glu Gln His Arg His Lys Ala Arg Lys Gln
                165                 170                 175

Glu Leu Arg Lys Arg Glu Lys Asp Arg Glu Arg Ala Arg Arg Glu Asp
            180                 185                 190

Ala Ala Ala Ala Ala Ala Ala Lys Gln Lys Ala Ala Ala Lys Lys Ala
        195                 200                 205

Ala Ala Pro Ser Gly Lys Lys Ser Ala Lys Ala Ala Ala Pro Ala Lys
    210                 215                 220

Ala Ala Ala Ala Pro Ala Lys Ala Ala Ala Pro Pro Ala Lys Thr Ala
225                 230                 235                 240

Ala Ala Pro Ala Lys Ala Ala Ala Pro Ala Lys Ala Ala Ala Pro Pro
                245                 250                 255

Ala Lys Ala Ala Ala Pro Pro Ala Lys Thr Ala Ala Pro Pro Ala Lys
            260                 265                 270

Thr Ala Ala Pro Pro Ala Lys Ala Ala Ala Pro Pro Ala Lys Ala Ala
        275                 280                 285

Ala Pro Pro Ala Lys Ala Ala Ala Pro Pro Ala Lys Ala Ala Ala Ala
    290                 295                 300

Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys Ala Ala Ala Pro Pro Ala
305                 310                 315                 320

Lys Ala Ala Ala Pro Pro Ala Lys Ala Ala Ala Pro Pro Ala Lys Ala
                325                 330                 335

Ala Ala Pro Pro Ala Lys Ala Ala Ala Ala Pro Val Gly Lys Lys Ala
            340                 345                 350
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Gly Gly Lys Lys
355

<210> 24
<211> 1071
<212> DNA
<213> Trypanosoma cruzi

<400> 24
atggtgtcgc tgaagctgca ggctcgtttg gcggcggaca ttctccgctg cggtcgccac 60

cgtgtgtggc tggaccctaa tgaggcctct gagatttcca atgcaaactc gcgcaagagc 120

gtgcgcaagt tgatcaagga tggtctgatt attcgcaagc ctgtcaaggt gcactcgcgc 180

tcccgctggc gccacatgaa ggaggcgaag agcatgggcc gccacgaggg cgctgggcgc 240

cgcgagggta cccgcgaagc ccgcatgccg agcaaggagc tgtggatgcg ccgtctgcgc 300

attctccgcc gcctgctgcg caagtaccgc gaggagaaga agattgaccg ccacatttac 360

cgcgagctgt acgtgaaggc gaaggggaac gtgtttcgca acaagcgtaa cctcatggag 420

cacatccaca aggtgaagaa cgagaagaag aaggaaaggc agctggctga gcagctcgcg 480

gcgaagcgcc tgaaggatga gcagcaccgt cacaaggccc gcaagcagga gctgcgtaag 540

cgcgagaagg accgcgagcg tgcgcgtcgc gaagatgctg ccgctgccgc cgccgcgaag 600

cagaaagctg ctgcgaagaa ggccgctgct ccctctggca agaagtccgc gaaggctgct 660

gcacccgcga aggctgctgc tgcacccgcg aaggccgctg ctccacccgc gaagaccgct 720

gctgcacccg cgaaggctgc tgcacctgcc aaggctgctg ctccacccgc gaaggctgct 780

gctccacccg cgaagaccgc tgctccaccc gcgaagaccg ctgctccacc cgcgaaggct 840

gctgctccac ccgcgaaggc cgctgctcca cccgcgaagg ccgctgctcc acccgcgaag 900

gccgctgctg cacccgcgaa ggccgctgct gcacccgcga aggctgctgc tccacccgcg 960

aaggccgctg ctccacccgc gaaggctgct gctccacccg cgaaggctgc tgctccaccc 1020

gcgaaggctg ctgctgctcc cgttggaaag aaggctggtg gcaagaagtg a 1071

<210> 25
<211> 343
<212> PRT
<213> Trypanosoma crusi

<400> 25

Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ala Asp Ile Leu Arg
1 5 10 15

Cys Gly Arg His Arg Val Trp Leu Asp Pro Asn Glu Ala Ser Glu Ile
20 25 30

```
Ser Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
        35                  40                  45

Leu Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ser Arg Trp Arg
    50                  55                  60

His Met Lys Glu Ala Lys Ser Met Gly Arg His Glu Gly Ala Gly Arg
65                  70                  75                  80

Arg Glu Gly Thr Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
                85                  90                  95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Glu Glu
            100                 105                 110

Lys Lys Ile Asp Arg His Ile Tyr Arg Glu Leu Tyr Val Lys Ala Lys
        115                 120                 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Met Glu His Ile His Lys
    130                 135                 140

Val Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu Ala
145                 150                 155                 160

Ala Lys Arg Leu Lys Asp Glu Gln His Arg His Lys Ala Arg Lys Gln
                165                 170                 175

Glu Leu Arg Lys Arg Glu Lys Asp Arg Glu Arg Ala Arg Arg Glu Asp
            180                 185                 190

Ala Ala Ala Ala Ala Ala Ala Lys Gln Lys Ala Ala Ala Lys Lys Ala
        195                 200                 205

Ala Ala Pro Ser Gly Lys Lys Ser Ala Lys Ala Ala Ile Ala Pro Ala
    210                 215                 220

Lys Ala Ala Ala Ala Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys Ala
225                 230                 235                 240

Ala Ala Ala Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys Ala Ala Ala
                245                 250                 255

Ala Pro Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala Ala Ala Ala Pro
            260                 265                 270

Ala Lys Thr Ala Ala Ala Pro Ala Lys Ala Ala Ala Pro Ala Lys Ala
        275                 280                 285
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Ala Ala Ala Pro Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala Ala Ala
290 295 300

Ala Pro Ala Lys Ala Ala Thr Ala Pro Ala Lys Ala Ala Thr Ala Pro
305 310 315 320

Ala Lys Ala Ala Ala Ala Pro Ala Lys Ala Ala Thr Ala Pro Val Gly
325 330 335

Lys Lys Ala Gly Gly Lys Lys
340

<210> 26
<211> 1032
<212> DNA
<213> Trypanosoma cruzi

<400> 26
atggtgtcgc tgaagctgca ggctcgtttg gcggcggaca ttctccgctg cggtcgccac 60

cgtgtgtggc tggaccctaa tgaggcctct gagatttcca atgcaaactc gcgcaagagc 120

gtgcgcaagt tgatcaagga tggtctgatt attcgcaagc ctgtcaaggt gcactcgcgc 180

tcccgctggc gccacatgaa ggaggcgaag agcatgggcc gccacgaggg cgctgggcgc 240

cgcgagggta cccgcgaagc ccgcatgccg agcaaggagc tgtggatgcg ccgtctgcgc 300

attctccgcc gcctgctgcg caagtaccgc gaggagaaga agattgaccg ccacatctac 360

cgcgagctgt acgtgaaggc gaaggggaac gtgtttcgca acaagcgtaa cctcatggag 420

cacatccaca aggtgaagaa cgagaagaag aaggaaaggc agctggctga gcagctcgcg 480

gcgaagcgcc tgaaggatga gcagcaccgt cacaaggccc gcaagcagga gctgcgtaag 540

cgcgagaagg accgcgagcg tgcgcgtcgc gaagatgctg ccgctgccgc cgccgcgaag 600

cagaaagctg ctgcgaagaa ggccgctgct ccctctggca agaagtccgc gaaggctgct 660

attgcacctg cgaaggccgc tgctgcacct gcgaaggccg ctgctgcacc tgcgaaggct 720

gctgctgcac ctgcgaaggc cgctgctgca cctgcgaagg ctgctgctgc acctgcgaag 780

gctgctactg cacctgcgaa ggctgctgct gcacctgcca agaccgctgc tgcacctgcg 840

aaggctgctg cacctgcgaa ggccgctgct gcacctgcga aggccgctac tgcacctgcg 900

aaggctgctg ctgcacctgc gaaggccgct actgcacctg cgaaggctgc tactgcacct 960

gcgaaggctg ctgctgcacc tgcgaaggcc gctactgcac ccgttggaaa gaaggctggt 1020

ggcaagaagt ga 1032

<210> 27
<211> 357

<212> PRT
<213> Trypanosoma cruzi

<400> 27

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Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ala Asp Ile Leu Arg
1               5                  10                  15

Cys Gly Arg His Arg Val Trp Leu Asp Pro Asn Glu Ala Ser Glu Ile
            20                  25                  30

Ser Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
        35                  40                  45

Leu Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ser Arg Trp Arg
    50                  55                  60

His Met Lys Glu Ala Lys Ser Met Gly Arg His Glu Gly Ala Gly Arg
65                  70                  75                  80

Arg Glu Gly Thr Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp Met
                85                  90                  95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Glu Glu
            100                 105                 110

Lys Lys Ile Asp Arg His Ile Tyr Arg Glu Leu Tyr Val Lys Ala Lys
        115                 120                 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Met Glu His Ile His Lys
    130                 135                 140

Val Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu Ala
145                 150                 155                 160

Ala Lys Arg Leu Lys Asp Glu Gln His Arg His Lys Ala Arg Lys Gln
                165                 170                 175

Glu Leu Arg Lys Arg Glu Lys Asp Arg Glu Arg Ala Arg Arg Glu Asp
            180                 185                 190

Ala Ala Ala Ala Ala Ala Ala Lys Gln Lys Ala Ala Ala Lys Lys Ala
        195                 200                 205

Ala Ala Pro Ser Gly Lys Lys Ser Ala Lys Ala Ala Ala Pro Ala Lys
    210                 215                 220

Ala Ala Ala Ala Pro Ala Lys Thr Ala Ala Pro Pro Ala Lys Ala Ala
225                 230                 235                 240
```

Ala Pro Pro Ala Lys Ala Ala Ala Pro Pro Ala Lys Ala Ala Ala Pro
245 250 255

Pro Ala Lys Ala Ala Ala Pro Pro Ala Lys Ala Ala Ala Pro Pro Ala
260 265 270

Lys Ala Ala Ala Pro Pro Ala Lys Ala Ala Ala Pro Pro Ala Lys Ala
275 280 285

Ala Ala Pro Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys Thr Ala Ala
290 295 300

Pro Pro Ala Lys Ala Ala Ala Ala Pro Ala Lys Thr Ala Ala Pro Pro
305 310 315 320

Ala Lys Thr Ala Ala Pro Pro Ala Lys Ala Ala Thr Pro Pro Ala Lys
325 330 335

Ala Ala Ala Pro Pro Ala Lys Ala Ala Ala Ala Pro Val Gly Lys Lys
340 345 350

Ala Gly Gly Lys Lys
355

<210> 28
<211> 1074
<212> DNA
<213> Trypanosoma cruzi

<400> 28
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gtgcgcaagt tgatcaagga tggtctgatt attcgcaagc ctgtcaaggt gcactcgcgc 180

tcccgctggc gccacatgaa ggaggcgaag agcatgggcc gccacgaggg cgctgggcgc 240

cgcgagggta cccgcgaagc ccgcatgccg agcaaggagc tgtggatgcg ccgtctgcgc 300

attctccgcc gcctgctgcg caagtaccgc gaggagaaga agattgaccg ccacatttac 360

cgcgagctgt acgtgaaggc gaaggggaac gtgtttcgca acaagcgtaa cctcatggag 420

cacatccaca aggtgaagaa cgagaagaag aaggaaaggc agctggctga gcagctcgcg 480

gcgaagcgcc tgaaggatga gcagcaccgt cacaaggccc gcaagcagga gctgcgtaag 540

cgcgagaagg accgcgagcg tgcgcgtcgc gaagatgctg ccgctgccgc cgccgcgaag 600

cagaaagctg ctgcgaagaa ggccgctgct ccctctggca agaagtccgc gaaggctgct 660

gcacctgcca aggctgctgc tgcacccgcg aagaccgctg ctccacccgc gaaggccgct 720

gctccacccg cgaaggctgc tgctccaccc gcgaaggctg ctgctccacc cgcgaaggct 780

gctgctccac ccgcgaaggc tgctgctcca cccgcgaagg ctgctgctcc acccgcgaag 840

gctgctgctc cacccgcgaa ggctgctgct ccacccgcga aggctgctgc tgcacccgcg 900

aagaccgctg ctccacccgc gaaggctgct gctgcacccg cgaagaccgc tgctccaccc 960

gcgaagaccg ctgctccacc cgcgaaggcc gctactccac ccgcgaaggc tgctgctcca 1020

cccgcgaagg ctgctgctgc tcccgttgga aagaaggctg gtggcaagaa gtga 1074

<210> 29
<211> 260
<212> PRT
<213> Trypanosoma brucei

<400> 29

Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala Ala Asp Ile Leu Arg
1 5 10 15

Cys Gly Arg Gly Arg Val Trp Leu Asp Pro Asn Glu Ala Val Glu Ile
20 25 30

Arg Asn Ala Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly
35 40 45

Leu Val Met Arg Lys Pro Val Lys Val His Ser Arg Ser Arg Trp Arg
50 55 60

Gln Met Lys Leu Ala Lys Ser Met Gly Arg His Glu Gly Thr Gly Arg
65 70 75 80

Arg Glu Gly Thr Arg Glu Ala Arg Met Pro Ser Lys Asp Leu Trp Met
85 90 95

Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu Arg Lys Tyr Arg Glu Glu
100 105 110

Lys Lys Ile Asp Arg His Ile Tyr Arg Glu Leu Tyr Met Lys Ala Lys
115 120 125

Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Met Glu His Ile His Lys
130 135 140

Val Lys Asn Glu Lys Lys Lys Ala Arg Gln Leu Ala Glu Gln Leu Ala
145 150 155 160

Ala Lys Arg Leu Lys Asp Glu Gln Asn Arg Arg Lys Ala Arg Lys Gln
165 170 175

Glu Leu Lys Lys Arg Glu Lys Glu Arg Glu Arg Ala Arg Arg Asp Asp
180 185 190

Ala Ala Ala Ala Ala Ala Ala Lys Gln Arg Ala Ala Ala Lys Lys Ala
195 200 205

Ala Ala Pro Ala Ala Lys Lys Gly Gly Lys Ala Val Ala Pro Ala Thr
210 215 220

Pro Ala Lys Ala Ala Pro Ala Lys Ala Ala Ala Ala Lys Val Ala Pro
225 230 235 240

Ala Lys Ala Ala Pro Ala Lys Ala Ala Ser Pro Ala Gly Lys Lys Ala
245 250 255

Ala Gly Lys Lys
260

<210> 30
<211> 783
<212> DNA
<213> Trypanosoma brucei

<400> 30
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gtacgcaagt tgatcaaaga cggtttggta atgcgaaagc ctgttaaggt gcattcgcgc 180

tcccgctggc gccagatgaa gttggcgaag agcatgggac gccacgaggg taccggccgc 240

cgcgagggta ctcgcgaagc acgcatgccc agcaaggacc tttggatgcg ccgacttcgc 300

attcttcgcc gtttgcttcg caagtaccgc gaagaaaaga agattgatcg gcacatctac 360

cgcgagctgt acatgaaggc aaagggcaac gtgttccgca acaagcgcaa ccttatggag 420

cacatccaca aggtgaagaa cgagaagaag aaggctcgtc agcttgctga gcaactcgcg 480

gcgaaacgcc taaaggacga gcagaaccgc cgcaaggcac gaaagcagga gctgaagaag 540

cgtgagaagg aacgtgagcg tgcacgccgt gacgatgccg ctgctgctgc cgctgccaaa 600

caacgagctg ccgcgaagaa ggctgccgct cccgctgcca agaagggtgg caaggctgtt 660

gcccccgcca ctcctgcgaa ggccgccccc gcaaaggccg ccgctgcgaa ggttgcccca 720

gcgaaggcgg ctcccgcaaa ggccgccagc cctgccggga agaaggcagc gggtaagaag 780

tga 783

<210> 31
<211> 20

<212> PRT
<213> artificial

<220>
<223> peptide 1

<400> 31

Met Thr Pro Leu Ser Leu Ser Ser Ser Arg His Ser Phe Lys Gln Asn
1 5 10 15

Glu Thr Gln Asn
20

<210> 32
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 2

<400> 32

Ser Phe Lys Gln Asn Glu Thr Gln Asn Met Val Ser Leu Lys Leu Gln
1 5 10 15

Ala Arg Leu Ala
20

<210> 33
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 3

<400> 33

Ser Leu Lys Leu Gln Ala Arg Leu Ala Ser Ser Ile Leu Gly Cys Gly
1 5 10 15

Arg Ala Arg Val
20

<210> 34
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 4

<400> 34

Ile Leu Gly Cys Gly Arg Ala Arg Val Trp Leu Asp Pro Asn Glu Ala

1 5 10 15

Val Glu Ile Gln
20

<210> 35
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 5

<400> 35

Asp Pro Asn Glu Ala Val Glu Ile Gln Asn Ala Asn Ser Arg Lys Ser
1 5 10 15

Val Arg Lys Leu
20

<210> 36
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 6

<400> 36

Asn Ser Arg Lys Ser Val Arg Lys Leu Ile Lys Asp Gly Phe Ile Ile
1 5 10 15

Arg Lys Pro Val
20

<210> 37
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 7

<400> 37

Asp Gly Phe Ile Ile Arg Lys Pro Val Lys Val His Ser Arg Ala Arg
1 5 10 15

Trp Arg Lys Met
20

<210> 38
<211> 20

<212> PRT
<213> artificial

<220>
<223> peptide 8

<400> 38

His Ser Arg Ala Arg Trp Arg Lys Met Lys Glu Ala Lys Asp Met Gly
1 5 10 15

Arg His Asn Gly
20

<210> 39
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 9

<400> 39

Ala Lys Asp Met Gly Arg His Asn Gly Val Gly Arg Arg Glu Gly Ser
1 5 10 15

Arg Glu Ala Arg
20

<210> 40
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 10

<400> 40

Arg Arg Glu Gly Ser Arg Glu Ala Arg Met Pro Ser Lys Glu Leu Trp
1 5 10 15

Met Arg Arg Leu
20

<210> 41
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 11

<400> 41

Ser Lys Glu Leu Trp Met Arg Arg Leu Arg Ile Leu Arg Arg Leu Leu

1 5 10 15

Arg Lys Tyr Arg
20

<210> 42
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 12

<400> 42

Leu Arg Arg Leu Leu Arg Lys Tyr Arg Ala Asp Lys Lys Ile Asp Arg
1 5 10 15

His Val Tyr Arg
20

<210> 43
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 13

<400> 43

Lys Lys Ile Asp Arg His Val Tyr Arg Asp Leu Tyr Met Arg Ala Lys
1 5 10 15

Gly Asn Val Phe
20

<210> 44
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 14

<400> 44

Tyr Met Arg Ala Lys Gly Asn Val Phe Arg Asn Lys Arg Asn Leu Val
1 5 10 15

Glu His Ile His
20

<210> 45
<211> 20

<212> PRT
<213> artificial

<220>
<223> peptide 15

<400> 45

Lys Arg Asn Leu Val Glu His Ile His Lys Ile Lys Asn Glu Lys Lys
1 5 10 15

Lys Glu Arg Gln
20

<210> 46
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 16

<400> 46

Lys Asn Glu Lys Lys Lys Glu Arg Gln Leu Ala Glu Gln Leu Ala Ala
1 5 10 15

Lys His Leu Arg
20

<210> 47
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 17

<400> 47

Glu Gln Leu Ala Ala Lys His Leu Arg Asp Glu Gln Asn Arg Asn Lys
1 5 10 15

Ala Arg Lys Gln
20

<210> 48
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 18

<400> 48

Gln Asn Arg Asn Lys Ala Arg Lys Gln Glu Leu Lys Lys Arg Glu Lys

1 5 10 15

Glu Arg Glu Arg
20

<210> 49
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 19

<400> 49

Lys Lys Arg Glu Lys Glu Arg Glu Arg Ala Arg Arg Asp Asp Ala Ala
1 5 10 15

Ala Ala Ala Gln
20

<210> 50
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 20

<400> 50

Arg Asp Asp Ala Ala Ala Ala Ala Gln Lys Lys Lys Ala Asp Ala Ala
1 5 10 15

Lys Lys Ser Ala
20

<210> 51
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 21

<400> 51

Lys Ala Asp Ala Ala Lys Lys Ser Ala Ala Pro Ala Ala Lys Ser Ala
1 5 10 15

Ala Pro Ala Ala
20

<210> 52
<211> 20

<212> PRT
<213> artificial

<220>
<223> peptide 22

<400> 52

Ala Ala Lys Ser Ala Ala Pro Ala Ala Lys Ala Ala Ala Pro Ala Thr
1 5 10 15

Lys Ala Ala Ala
20

<210> 53
<211> 20
<212> PRT
<213> artificial

<220>
<223> peptide 23

<400> 53

Ala Ala Pro Ala Thr Lys Ala Ala Ala Ala Ala Pro Ala Thr Lys Gly
1 5 10 15

Ala Ala Pro Val
20

<210> 54
<211> 14
<212> PRT
<213> artificial

<220>
<223> peptide 24

<400> 54

Pro Ala Thr Lys Gly Ala Ala Pro Val Lys Lys Ser Lys Lys
1 5 10

<210> 55
<211> 31
<212> PRT
<213> artificial

<220>
<223> peptide 1-2

<400> 55

Met Thr Pro Leu Ser Leu Ser Ser Ser Arg His Ser Phe Lys Gln Asn
1 5 10 15

Glu Thr Gln Asn Met Val Ser Leu Lys Leu Gln Ala Arg Leu Ala

20 25 30

<210> 56
<211> 42
<212> PRT
<213> artificial

<220>
<223> peptide 12-13-14

<400> 56

Leu Arg Arg Leu Leu Arg Lys Tyr Arg Ala Asp Lys Lys Ile Asp Arg
1 5 10 15

His Val Tyr Arg Asp Leu Tyr Met Arg Ala Lys Gly Asn Val Phe Arg
20 25 30

Asn Lys Arg Asn Leu Val Glu His Ile His
35 40

<210> 57
<211> 25
<212> PRT
<213> artificial

<220>
<223> peptide 23-24

<400> 57

Ala Ala Pro Ala Thr Lys Ala Ala Ala Ala Ala Pro Ala Thr Lys Gly
1 5 10 15

Ala Ala Pro Val Lys Lys Ser Lys Lys
20 25