

SEQUENCE LISTING

<110> OSAKA UNIVERSITY

<120> Antibody

<130> P16-107W0

<150> @JP 2015-159240

<151> @2015-08-11

<160> 31

<170> PatentIn version 3.5

<210> 1

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> VH CDR1 of MMG49 antibody

<400> 1

Gly Tyr Thr Phe Ser Ser Tyr Trp
1 5

<210> 2

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> VH CDR2 of MMG49 Antibody

<400> 2

Met Leu Pro Gly Ser Gly Ser Ser
1 5

<210> 3

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> VH CDR3 of MMG49 Antibody

<400> 3

Ala Arg Gly Asp Gly Asn Tyr Trp Tyr Phe Asp Val
1 5 10

<210> 4

<211> 131
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> VH of MMG49 Antibody

<400> 4

Met Glu Trp Thr Trp Val Phe Leu Phe Leu Leu Ser Val Thr Ala Gly
 1 5 10 15

Val His Ser Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Met Lys
 20 25 30

Pro Gly Ala Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe
 35 40 45

Ser Ser Tyr Trp Ile Glu Trp Val Lys Gln Arg Pro Gly His Gly Leu
 50 55 60

Glu Trp Ile Gly Glu Met Leu Pro Gly Ser Gly Ser Ser Asn Tyr Asn
 65 70 75 80

Glu Lys Phe Lys Gly Lys Ala Thr Phe Thr Ala Asp Thr Ser Ser Asn
 85 90 95

Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val
 100 105 110

Tyr Tyr Cys Ala Arg Gly Asp Gly Asn Tyr Trp Tyr Phe Asp Val Trp
 115 120 125

Gly Ala Gly
 130

<210> 5
 <211> 461
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Heavy Chain of MMG49 Antibody

<400> 5

Met Glu Trp Thr Trp Val Phe Leu Phe Leu Leu Ser Val Thr Ala Gly
 1 5 10 15

Val His Ser Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Met Lys
20 25 30

Pro Gly Ala Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45

Ser Ser Tyr Trp Ile Glu Trp Val Lys Gln Arg Pro Gly His Gly Leu
50 55 60

Glu Trp Ile Gly Glu Met Leu Pro Gly Ser Gly Ser Ser Asn Tyr Asn
65 70 75 80

Glu Lys Phe Lys Gly Lys Ala Thr Phe Thr Ala Asp Thr Ser Ser Asn
85 90 95

Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val
100 105 110

Tyr Tyr Cys Ala Arg Gly Asp Gly Asn Tyr Trp Tyr Phe Asp Val Trp
115 120 125

Gly Ala Gly Ala Lys Thr Thr Ala Pro Ser Val Tyr Pro Leu Ala Pro
130 135 140

Val Cys Gly Asp Thr Thr Gly Ser Ser Val Thr Leu Gly Cys Leu Val
145 150 155 160

Lys Gly Tyr Phe Pro Glu Pro Val Thr Leu Thr Trp Asn Ser Gly Ser
165 170 175

Leu Ser Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Asp Leu
180 185 190

Tyr Thr Leu Ser Ser Ser Val Thr Val Thr Ser Ser Thr Trp Pro Ser
195 200 205

Gln Ser Ile Thr Cys Asn Val Ala His Pro Ala Ser Ser Thr Lys Val
210 215 220

Asp Lys Lys Ile Glu Pro Arg Gly Pro Thr Ile Lys Pro Cys Pro Pro
225 230 235 240

Cys Lys Cys Pro Ala Pro Asn Leu Leu Gly Gly Pro Ser Val Phe Ile

245										250					255				
Phe	Pro	Pro	Lys	Ile	Lys	Asp	Val	Leu	Met	Ile	Ser	Leu	Ser	Pro	Ile				
			260					265					270						
Val	Thr	Cys	Val	Val	Val	Asp	Val	Ser	Glu	Asp	Asp	Pro	Asp	Val	Gln				
		275					280					285							
Ile	Ser	Trp	Phe	Val	Asn	Asn	Val	Glu	Val	His	Thr	Ala	Gln	Thr	Gln				
	290					295					300								
Thr	His	Arg	Glu	Asp	Tyr	Asn	Ser	Thr	Leu	Arg	Val	Val	Ser	Ala	Leu				
305					310					315					320				
Pro	Ile	Gln	His	Gln	Asp	Trp	Met	Ser	Gly	Lys	Glu	Phe	Lys	Cys	Lys				
				325					330					335					
Val	Asn	Asn	Lys	Asp	Leu	Pro	Ala	Pro	Ile	Glu	Arg	Thr	Ile	Ser	Lys				
			340					345					350						
Pro	Lys	Gly	Ser	Val	Arg	Ala	Pro	Gln	Val	Tyr	Val	Leu	Pro	Pro	Pro				
		355					360					365							
Glu	Glu	Glu	Met	Thr	Lys	Lys	Gln	Val	Thr	Leu	Thr	Cys	Met	Val	Thr				
	370					375					380								
Asp	Phe	Met	Pro	Glu	Asp	Ile	Tyr	Val	Glu	Trp	Thr	Asn	Asn	Gly	Lys				
385					390					395					400				
Thr	Glu	Leu	Asn	Tyr	Lys	Asn	Thr	Glu	Pro	Val	Leu	Asp	Ser	Asp	Gly				
			405						410					415					
Ser	Tyr	Phe	Met	Tyr	Ser	Lys	Leu	Arg	Val	Glu	Lys	Lys	Asn	Trp	Val				
			420					425					430						
Glu	Arg	Asn	Ser	Tyr	Ser	Cys	Ser	Val	Val	His	Glu	Gly	Leu	His	Asn				
		435					440					445							
His	His	Thr	Thr	Lys	Ser	Phe	Ser	Arg	Thr	Pro	Gly	Lys							
	450					455					460								

<210> 6
 <211> 5
 <212> PRT

<213> Artificial Sequence

<220>

<223> VL CDR1 of MMG49 Antibody

<400> 6

Ser Ser Val Gly Tyr
1 5

<210> 7

<211> 3

<212> PRT

<213> Artificial Sequence

<220>

<223> VL CDR2 of MMG49 Antibody

<400> 7

Ala Thr Ser
1

<210> 8

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> VL CDR3 of MMG49

<400> 8

Gln Gln Trp Ser Ser Asp Pro Pro Thr
1 5

<210> 9

<211> 128

<212> PRT

<213> Artificial Sequence

<220>

<223> VL of MMG49 ANTibody

<400> 9

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

Val Ile Met Ser Arg Gly Gln Ile Val Leu Ser Gln Ser Pro Ala Ile
20 25 30

Leu Ser Ala Ser Pro Gly Glu Lys Val Thr Met Thr Cys Arg Ala Ser

35 40 45
 Ser Ser Val Gly Tyr Met His Trp Phe Gln Gln Lys Pro Gly Ser Ser
 50 55 60
 Pro Lys Pro Trp Ile Tyr Ala Thr Ser Asn Leu Ala Ser Gly Val Pro
 65 70 75 80
 Ala Arg Phe Ser Gly Ser Glu Ser Gly Thr Ser Tyr Ser Leu Thr Ile
 85 90 95
 Ser Arg Val Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp
 100 105 110
 Ser Ser Asp Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
 115 120 125
 <210> 10
 <211> 234
 <212> PRT
 <213> Artificial Sequence
 <220>
 <223> Light Chain of MMG49 Antibody
 <400> 10
 Met Asp Phe Gln Val Gln Ile Phe Ser Phe Leu Leu Ile Ser Ala Ser
 1 5 10 15
 Val Ile Met Ser Arg Gly Gln Ile Val Leu Ser Gln Ser Pro Ala Ile
 20 25 30
 Leu Ser Ala Ser Pro Gly Glu Lys Val Thr Met Thr Cys Arg Ala Ser
 35 40 45
 Ser Ser Val Gly Tyr Met His Trp Phe Gln Gln Lys Pro Gly Ser Ser
 50 55 60
 Pro Lys Pro Trp Ile Tyr Ala Thr Ser Asn Leu Ala Ser Gly Val Pro
 65 70 75 80
 Ala Arg Phe Ser Gly Ser Glu Ser Gly Thr Ser Tyr Ser Leu Thr Ile
 85 90 95
 Ser Arg Val Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp

	100		105			110											
Ser	Ser	Asp	Pro	Pro	Thr	Phe	Gly	Gly	Gly	Thr	Lys	Leu	Glu	Ile	Lys		
		115					120					125					
Ala	Asp	Ala	Ala	Pro	Thr	Val	Ser	Ile	Phe	Pro	Pro	Ser	Ser	Glu	Gln		
	130					135					140						
Leu	Thr	Ser	Gly	Gly	Ala	Ser	Val	Val	Cys	Phe	Leu	Asn	Asn	Phe	Tyr		
145					150					155					160		
Pro	Lys	Asp	Ile	Asn	Val	Lys	Trp	Lys	Ile	Asp	Gly	Ser	Glu	Arg	Gln		
				165					170					175			
Asn	Gly	Val	Leu	Asn	Ser	Trp	Thr	Asp	Gln	Asp	Ser	Lys	Asp	Ser	Thr		
			180					185					190				
Tyr	Ser	Met	Ser	Ser	Thr	Leu	Thr	Leu	Thr	Lys	Asp	Glu	Tyr	Glu	Arg		
		195					200					205					
His	Asn	Ser	Tyr	Thr	Cys	Glu	Ala	Thr	His	Lys	Thr	Ser	Thr	Ser	Pro		
	210					215					220						
Ile	Val	Lys	Ser	Phe	Asn	Arg	Asn	Glu	Cys								
225					230												

<210> 11
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> VH CDR1 of MMG49 Antibody

<400> 11
 ggctacacat tcagtagcta ctgg
 24

<210> 12
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> VH CDR2 of MMG49 Antibody

<400> 12

atgttacctg gaagtggtag ttct
24

<210> 13
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> VH CDR3 of MMG49 Antibody

<400> 13
gcaagggggg atggtaacta ctggtacttc gatgtc
36

<210> 14
<211> 393
<212> DNA
<213> Artificial Sequence

<220>
<223> VH of MMG49 Antibody

<400> 14
atggaatgga cctgggtctt tctcttcctc ctgtcagtaa ctgcaggtgt ccaactcccag
60

gttcagctgc agcagtctgg agctgagctg atgaagcctg gggcctcagt gaagatatcc
120

tgcaaggctt ctggctacac attcagtagc tactggatag agtgggtaaa gcagaggcct
180

ggacatggcc ttgagtggat tggagagatg ttacctggaa gtggtagttc taactacaat
240

gagaagttca agggcaaggc cacattcact gcagatacat cctccaacac agcctacatg
300

caactcagca gcctgacatc tgaggactct gccgtctatt actgtgcaag gggggatggt
360

aactactggt acttcgatgt ctggggcgca ggg
393

<210> 15
<211> 1383
<212> DNA
<213> Artificial Sequence

<220>
<223> Heavy Chain of MMG49 Antibody

<400> 15

atggaatgga cctgggtctt tctcttcctc ctgtcagtaa ctgcagggtg cactcccag
60

gttcagctgc agcagtctgg agctgagctg atgaagcctg gggcctcagt gaagatatcc
120

tgcaaggctt ctggctacac attcagtagc tactggatag agtgggtaaa gcagaggcct
180

ggacatggcc ttgagtggat tggagagatg ttacctggaa gtggtagttc taactacaat
240

gagaagttca agggcaaggc cacattcact gcagatacat cctccaacac agcctacatg
300

caactcagca gcctgacatc tgaggactct gccgtctatt actgtgcaag gggggatggg
360

aactactggg acttcgatgt ctggggcgca ggggctaaaa caacagcccc atcgggtctat
420

ccactggccc ctgtgtgtgg agatacaact ggctcctcgg tgactctagg atgcctgggc
480

aagggttatt tccctgagcc agtgacctg acctggaact ctggatccct gtccagtggg
540

gtgcacacct tcccagctgt cctgcagtct gacctctaca ccctcagcag ctcaagtact
600

gtaacctcga gcacctggcc cagccagtcc atcacctgca atgtggccca cccggcaagc
660

agcaccaagg tggacaagaa aattgagccc agagggccca caatcaagcc ctgtcctcca
720

tgcaaatgcc cagcacctaa cctcttgggt ggaccatccg tcttcatctt ccctccaaag
780

atcaaggatg tactcatgat ctccctgagc cccatagtca catgtgtggg ggtggatgtg
840

agcgaggatg acccagatgt ccagatcagc tggtttgtga acaacgtgga agtacacaca
900

gctcagacac aaacccatag agaggattac aacagtactc tccgggtggg cagtgcctc
960

cccatccagc accaggactg gatgagtggc aaggagtcca aatgcaaggc caacaacaaa
1020

gacctcccag cgcccatcga gagaaccatc taaaaccca aagggtcagt aagagctcca
1080

caggatatg tcttgctcc accagaagaa gagatgacta agaaacaggc cactctgacc
1140

tgcatgggtca cagacttcat gcctgaagac atttacgtgg agtggacca caacgggaaa
1200

acagagctaa actacaagaa cactgaacca gtcctggact ctgatgggtc ttacttcatg
1260

tacagcaagc tgagagtgga aaagaagaac tgggtggaaa gaaatagcta ctctgttca
1320

gtgggtccacg aggggtctgca caatcaccac acgactaaga gcttctcccg gactccgggt
1380

aaa
1383

<210> 16
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> VL CDR1 of MMG49 Antibody

<400> 16
tcaagtgtag gttac
15

<210> 17
<211> 9
<212> DNA
<213> Artificial Sequence

<220>
<223> VL CDR2 of MMG49 Antibody

<400> 17
gccacatcc
9

<210> 18
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> VL CDR3 of MMG49 Antibody

<400> 18
cagcagtgga gtagtgaccc accgacg
27

<210> 19
<211> 384
<212> DNA

<213> Artificial Sequence

<220>

<223> VL of MMG49 Antibody

<400> 19

atggattttc aagtgcagat tttcagcttc ctgctaataca gtgcttcagt cataatgtcc
60

agaggacaaa ttgttctctc ccagtctcca gcaatcctgt ctgcatctcc aggggagaag
120

gtcacaatga cttgcagggc cagctcaagt gtaggttaca tgcactgggt ccagcagaag
180

ccaggatcct cccccaacc ctggatttat gccacatcca acctggcttc tggagtcctt
240

gctcgcttca gtggcagtga gtctgggacc tcttactctc tcacaatcag cagagtggag
300

gctgaagatg ctgccactta ttactgccag cagtggagta gtgaccacc gacgttcggt
360

ggaggcacca agctggaaat caaa
384

<210> 20

<211> 702

<212> DNA

<213> Artificial Sequence

<220>

<223> Light Chain of MMG49 Antibody

<400> 20

atggattttc aagtgcagat tttcagcttc ctgctaataca gtgcttcagt cataatgtcc
60

agaggacaaa ttgttctctc ccagtctcca gcaatcctgt ctgcatctcc aggggagaag
120

gtcacaatga cttgcagggc cagctcaagt gtaggttaca tgcactgggt ccagcagaag
180

ccaggatcct cccccaacc ctggatttat gccacatcca acctggcttc tggagtcctt
240

gctcgcttca gtggcagtga gtctgggacc tcttactctc tcacaatcag cagagtggag
300

gctgaagatg ctgccactta ttactgccag cagtggagta gtgaccacc gacgttcggt
360

ggaggcacca agctggaaat caaagcagat gctgcaccaa ctgtatccat cttccacca
420

tccagtgagc agttaacatc tggaggtgcc tcagtcgtgt gcttcttgaa caacttctac
480

cccaaagaca tcaatgtcaa gtggaagatt gatggcagtg aacgacaaaa tggcgtcctg
540

aacagttgga ctgatacagga cagcaaagac agcacctaca gcatgagcag caccctcacg
600

ttgaccaagg acgagtatga acgacataac agctatacct gtgaggccac tcacaagaca
660

tcaacttcac ccattgtcaa gagcttcaac aggaatgagt gt
702

<210> 21

<211> 485

<212> PRT

<213> Artificial Sequence

<220>

<223> CAR described in example

<400> 21

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

Val Ile Met Ser Arg Gly Gln Ile Val Leu Ser Gln Ser Pro Ala Ile
20 25 30

Leu Ser Ala Ser Pro Gly Glu Lys Val Thr Met Thr Cys Arg Ala Ser
35 40 45

Ser Ser Val Gly Tyr Met His Trp Phe Gln Gln Lys Pro Gly Ser Ser
50 55 60

Pro Lys Pro Trp Ile Tyr Ala Thr Ser Asn Leu Ala Ser Gly Val Pro
65 70 75 80

Ala Arg Phe Ser Gly Ser Glu Ser Gly Thr Ser Tyr Ser Leu Thr Ile
85 90 95

Ser Arg Val Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp
100 105 110

Ser Ser Asp Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
115 120 125

Arg Gly Ser Thr Ser Gly Ser Gly Lys Pro Gly Ser Gly Glu Gly Ser
 130 135 140

Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Met Lys Pro Gly Ala
 145 150 155 160

Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Ser Ser Tyr
 165 170 175

Trp Ile Glu Trp Val Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile
 180 185 190

Gly Glu Met Leu Pro Gly Ser Gly Ser Ser Asn Tyr Asn Glu Lys Phe
 195 200 205

Lys Gly Lys Ala Thr Phe Thr Ala Asp Thr Ser Ser Asn Thr Ala Tyr
 210 215 220

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
 225 230 235 240

Ala Arg Gly Asp Gly Asn Tyr Trp Tyr Phe Asp Val Trp Gly Ala Gly
 245 250 255

Thr Thr Val Thr Val Ser Ser Ala Ala Ala Ile Glu Val Met Tyr Pro
 260 265 270

Pro Pro Tyr Leu Asp Asn Glu Lys Ser Asn Gly Thr Ile Ile His Val
 275 280 285

Lys Gly Lys His Leu Cys Pro Ser Pro Leu Phe Pro Gly Pro Ser Lys
 290 295 300

Pro Phe Trp Val Leu Val Val Val Gly Gly Val Leu Ala Cys Tyr Ser
 305 310 315 320

Leu Leu Val Thr Val Ala Phe Ile Ile Phe Trp Val Arg Ser Lys Arg
 325 330 335

Ser Arg Leu Leu His Ser Asp Tyr Met Asn Met Thr Pro Arg Arg Pro
 340 345 350

Gly Pro Thr Arg Lys His Tyr Gln Pro Tyr Ala Pro Pro Arg Asp Phe
 355 360 365

Ala Ala Tyr Arg Ser Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro
 370 375 380

Ala Tyr Gln Gln Gly Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly
 385 390 395 400

Arg Arg Glu Glu Tyr Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro
 405 410 415

Glu Met Gly Gly Lys Pro Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr
 420 425 430

Asn Glu Leu Gln Lys Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly
 435 440 445

Met Lys Gly Glu Arg Arg Arg Gly Lys Gly His Asp Gly Leu Tyr Gln
 450 455 460

Gly Leu Ser Thr Ala Thr Lys Asp Thr Tyr Asp Ala Leu His Met Gln
 465 470 475 480

Ala Leu Pro Pro Arg
 485

<210> 22
 <211> 1468
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> CAR described in example

<400> 22
 gaattccacc atggattttc aagtgcagat tttcagcttc ctgctaata gtcgttcagt
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cataatgtcc agaggacaaa ttgttctctc ccagtctcca gcaatcctgt ctgcatctcc
 120

aggggagaag gtcacaatga cttgcagggc cagctcaagt gtaggttaca tgcactgggt
 180

ccagcagaag ccaggatcct cccccaacc ctggatttat gccacatcca acctggcttc
 240

tggagtcctt gctcgcttca gtggcagtga gtctgggacc tcttactctc tcacaatcag
 300

cagagtggag gctgaagatg ctgccactta ttactgccag cagtggagta gtgaccacc
360

gacgttcggt ggaggcacca agctggaaat caaacggggc tccactagcg gttccggcaa
420

acctggcagc ggagaaggca gccaggttca gctgcagcag tctggagctg agctgatgaa
480

gcctggggcc tcagtgaaga tctcctgcaa ggcttctggc tacacattca gtagctactg
540

gatagagtgg gtaaagcaga ggcttgaca tggccttgag tggattggag agatgttacc
600

tggaagtggg agttctaact acaatgagaa gttcaagggc aaggccacat tctactgaga
660

tacatcctcc aacacagcct acatgcaact cagcagcctg acatctgagg actctgccgt
720

ctattactgt gcaagggggg atggtaacta ctggtacttc gatgtctggg gcgcaggac
780

cacggtcacc gtctcctcag cggccgcaat tgaagttatg tctcctcctc cttacctaga
840

caatgagaag agcaatggaa ccattatcca tgtgaaaggg aaacaccttt gtccaagtcc
900

cctatttccc ggaccttcta agcccttttg ggtgctgggtg gtgggtgggtg gagtccctggc
960

ttgctatagc ttgctagtaa cagtggcctt tattattttc tgggtgagga gtaagaggag
1020

caggctcctg cacagtgact acatgaacat gactccccgc cggcccgggc ccacccgcaa
1080

gcattaccag ccctatgccc caccacgcga cttcgcagcc tatcgctcca gagtgaagtt
1140

cagcaggagc gcagacgccc ccgcgtacca gcagggccag aaccagctct ataacgagct
1200

caatctagga cgaagagagg agtacgatgt tttggacaag agacgtggcc gggaccctga
1260

gatgggggga aagccgagaa ggaagaaccc tcaggaaggc ctgtacaatg aactgcagaa
1320

agataagatg gcggaggcct acagtgatg tgggatgaaa ggcgagcgcc ggaggggcaa
1380

ggggcacgat ggcctttacc agggctctcag tacagccacc aaggacacct acgacgcct
1440

tcacatgcag gccctgcccc ctcgctaa
1468

<210> 23
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 23
gaattccacc atggattttc aagtcagat t
31

<210> 24
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 24
gccggaaccg ctagtggagc cccgtttgat ttccagcttg gt
42

<210> 25
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 25
gctgccttct ccgctgccag gtttgccgga accgctagtg gagcc
45

<210> 26
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 26
aaacctggca gcggagaagg cagccagggtt cagctgcagc agtc
44

<210> 27
<211> 20

<212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 27
 tgaggagacg gtagccgtgg
 20

<210> 28
 <211> 44
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 28
 atacataact tcaattgcgg ccgctgagga gacggtgacc gtgg
 44

<210> 29
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 29
 ctaggcgccg gaattccacc atggattttc
 30

<210> 30
 <211> 29
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 30
 aatgtcgacc tcgagtggct gttagcgag
 29

<210> 31
 <211> 798
 <212> PRT
 <213> Homo sapiens

<400> 31

Met Val Ala Leu Pro Met Val Leu Val Leu Leu Val Leu Ser Arg

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Gly	Glu Ser	Glu Leu Asp Ala Lys Ile Pro Ser Thr	Gly Asp Ala Thr
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Glu Trp	Arg Asn Pro His Leu Ser Met Leu Gly Ser	Cys Gln Pro Ala	
	35	40	45
Pro Ser	Cys Gln Lys Cys Ile Leu Ser His Pro Ser	Cys Ala Trp Cys	
	50	55	60
Lys Gln Leu Asn Phe Thr Ala Ser Gly Glu	Ala Glu Ala Arg Arg Cys		
65	70	75	80
Ala Arg Arg Glu Glu Leu Leu Ala Arg Gly Cys Pro Leu Glu Glu Leu			
	85	90	95
Glu Glu Pro Arg Gly Gln Gln Glu Val Leu Gln Asp Gln Pro Leu Ser			
	100	105	110
Gln Gly Ala Arg Gly Glu Gly Ala Thr Gln Leu Ala Pro Gln Arg Val			
	115	120	125
Arg Val Thr Leu Arg Pro Gly Glu Pro Gln Gln Leu Gln Val Arg Phe			
	130	135	140
Leu Arg Ala Glu Gly Tyr Pro Val Asp Leu Tyr Tyr Leu Met Asp Leu			
145	150	155	160
Ser Tyr Ser Met Lys Asp Asp Leu Glu Arg Val Arg Gln Leu Gly His			
	165	170	175
Ala Leu Leu Val Arg Leu Gln Glu Val Thr His Ser Val Arg Ile Gly			
	180	185	190
Phe Gly Ser Phe Val Asp Lys Thr Val Leu Pro Phe Val Ser Thr Val			
	195	200	205
Pro Ser Lys Leu Arg His Pro Cys Pro Thr Arg Leu Glu Arg Cys Gln			
	210	215	220
Ser Pro Phe Ser Phe His His Val Leu Ser Leu Thr Gly Asp Ala Gln			
225	230	235	240

465					470						475				480
Thr	Gln	Pro	Gln	Ala	Pro	His	Cys	Ser	Asp	Gly	Gln	Gly	His	Leu	Gln
				485					490					495	
Cys	Gly	Val	Cys	Ser	Cys	Ala	Pro	Gly	Arg	Leu	Gly	Arg	Leu	Cys	Glu
			500					505					510		
Cys	Ser	Val	Ala	Glu	Leu	Ser	Ser	Pro	Asp	Leu	Glu	Ser	Gly	Cys	Arg
		515					520					525			
Ala	Pro	Asn	Gly	Thr	Gly	Pro	Leu	Cys	Ser	Gly	Lys	Gly	His	Cys	Gln
	530					535					540				
Cys	Gly	Arg	Cys	Ser	Cys	Ser	Gly	Gln	Ser	Ser	Gly	His	Leu	Cys	Glu
545					550					555					560
Cys	Asp	Asp	Ala	Ser	Cys	Glu	Arg	His	Glu	Gly	Ile	Leu	Cys	Gly	Gly
				565					570					575	
Phe	Gly	Arg	Cys	Gln	Cys	Gly	Val	Cys	His	Cys	His	Ala	Asn	Arg	Thr
			580					585					590		
Gly	Arg	Ala	Cys	Glu	Cys	Ser	Gly	Asp	Met	Asp	Ser	Cys	Ile	Ser	Pro
		595					600					605			
Glu	Gly	Gly	Leu	Cys	Ser	Gly	His	Gly	Arg	Cys	Lys	Cys	Asn	Arg	Cys
	610					615					620				
Gln	Cys	Leu	Asp	Gly	Tyr	Tyr	Gly	Ala	Leu	Cys	Asp	Gln	Cys	Pro	Gly
625					630					635					640
Cys	Lys	Thr	Pro	Cys	Glu	Arg	His	Arg	Asp	Cys	Ala	Glu	Cys	Gly	Ala
				645					650					655	
Phe	Arg	Thr	Gly	Pro	Leu	Ala	Thr	Asn	Cys	Ser	Thr	Ala	Cys	Ala	His
			660					665					670		
Thr	Asn	Val	Thr	Leu	Ala	Leu	Ala	Pro	Ile	Leu	Asp	Asp	Gly	Trp	Cys
		675					680					685			
Lys	Glu	Arg	Thr	Leu	Asp	Asn	Gln	Leu	Phe	Phe	Phe	Leu	Val	Glu	Asp
	690					695					700				

Asp Ala Arg Gly Thr Val Val Leu Arg Val Arg Pro Gln Glu Lys Gly
 705 710 715 720

Ala Asp His Thr Gln Ala Ile Val Leu Gly Cys Val Gly Gly Ile Val
 725 730 735

Ala Val Gly Leu Gly Leu Val Leu Ala Tyr Arg Leu Ser Val Glu Ile
 740 745 750

Tyr Asp Arg Arg Glu Tyr Ser Arg Phe Glu Lys Glu Gln Gln Gln Leu
 755 760 765

Asn Trp Lys Gln Asp Ser Asn Pro Leu Tyr Lys Ser Ala Ile Thr Thr
 770 775 780

Thr Ile Asn Pro Arg Phe Gln Glu Ala Asp Ser Pro Thr Leu
 785 790 795