

674-18 Seq_ST25.txt
SEQUENCE LISTING

<110> BioNTech AG et al.

<120> CLONAL EXPANSION OF B CELLS

<130> 674-18PCT

<160> 19

<170> PatentIn version 3.4

<150> EP 09 013 690.4

<151> 2009-10-30

<210> 1

<211> 62

<212> PRT

<213> Homo sapiens

<400> 1

Lys Lys Val Ala Lys Lys Pro Thr Asn Lys Ala Pro His Pro Lys Gln
1 5 10 15

Glu Pro Gln Glu Ile Asn Phe Pro Asp Asp Leu Pro Gly Ser Asn Thr
20 25 30

Ala Ala Pro Val Gln Glu Thr Leu His Gly Cys Gln Pro Val Thr Gln
35 40 45

Glu Asp Gly Lys Glu Ser Arg Ile Ser Val Gln Glu Arg Gln
50 55 60

<210> 2

<211> 241

<212> PRT

<213> Homo sapiens

<400> 2

Arg Ser Asp Lys Lys Val Glu Pro Lys Ser Ser Asp Lys Thr His Thr
1 5 10 15

Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe
20 25 30

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
35 40 45

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
50 55 60

Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
65 70 75 80

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Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val
 85 90 95

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
 100 105 110

Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
 115 120 125

Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
 130 135 140

Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
 145 150 155 160

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
 165 170 175

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
 180 185 190

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
 195 200 205

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
 210 215 220

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Glu Leu Gln Leu
 225 230 235 240

Glu

<210> 3
 <211> 21
 <212> PRT
 <213> Homo sapiens

<400> 3

Ile Thr Ile Phe Ile Thr Leu Phe Leu Leu Ser Val Cys Tyr Ser Ala
 1 5 10 15

Thr Val Thr Phe Phe
 20

<210> 4
 <211> 22
 <212> PRT
 <213> Homo sapiens

<400> 4

Ala Leu Val Val Ile Pro Ile Ile Phe Gly Ile Leu Phe Ala Ile Leu
 1 5 10 15

Leu Val Leu Val Phe Ile
 20

<210> 5

<211> 386

<212> PRT

<213> Artificial

<220>

<223> recombinant protein BZ1

<400> 5

Met Tyr Arg Met Gln Leu Leu Ser Cys Ile Ala Leu Ser Leu Ala Leu
 1 5 10 15

Val Thr Asn Ser Ala Pro Thr Gly Ser Glu Gln Lys Leu Ile Ser Glu
 20 25 30

Glu Asp Leu Tyr Pro Tyr Asp Val Pro Asp Tyr Ala Glu Gln Lys Leu
 35 40 45

Ile Ser Glu Glu Asp Leu Arg Ser Asp Lys Lys Val Glu Pro Lys Ser
 50 55 60

Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu
 65 70 75 80

Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
 85 90 95

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
 100 105 110

His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu
 115 120 125

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr
 130 135 140

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
 145 150 155 160

Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro
 165 170 175

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Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
 180 185 190

Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val
 195 200 205

Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val
 210 215 220

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
 225 230 235 240

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr
 245 250 255

Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val
 260 265 270

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
 275 280 285

Ser Pro Glu Leu Gln Leu Glu Gly Pro Gln Asp Arg Leu Arg Ala Leu
 290 295 300

Val Val Ile Pro Ile Ile Phe Gly Ile Leu Phe Ala Ile Leu Leu Val
 305 310 315 320

Leu Val Phe Ile Lys Lys Val Ala Lys Lys Pro Thr Asn Lys Ala Pro
 325 330 335

His Pro Lys Gln Glu Pro Gln Glu Ile Asn Phe Pro Asp Asp Leu Pro
 340 345 350

Gly Ser Asn Thr Ala Ala Pro Val Gln Glu Thr Leu His Gly Cys Gln
 355 360 365

Pro Val Thr Gln Glu Asp Gly Lys Glu Ser Arg Ile Ser Val Gln Glu
 370 375 380

Arg Gln
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<210> 6
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 <213> Artificial

<220>
 <223> recombinant protein BZ2

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 20 25 30

Glu Asp Leu Tyr Pro Tyr Asp Val Pro Asp Tyr Ala Glu Gln Lys Leu
 35 40 45

Ile Ser Glu Glu Asp Leu Arg Ser Asp Lys Lys Val Glu Pro Lys Ser
 50 55 60

Ser Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu
 65 70 75 80

Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
 85 90 95

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
 100 105 110

His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu
 115 120 125

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr
 130 135 140

Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
 145 150 155 160

Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro
 165 170 175

Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
 180 185 190

Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val
 195 200 205

Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val
 210 215 220

Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
 225 230 235 240

Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr
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245

250

255

Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val
 260 265 270

Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
 275 280 285

Ser Pro Glu Leu Gln Leu Glu Glu Ser Cys Ala Glu Ala Gln Asp Gly
 290 295 300

Glu Leu Asp Gly Leu Trp Thr Thr Ile Thr Ile Phe Ile Thr Leu Phe
 305 310 315 320

Leu Leu Ser Val Cys Tyr Ser Ala Thr Val Thr Phe Phe Lys Lys Val
 325 330 335

Ala Lys Lys Pro Thr Asn Lys Ala Pro His Pro Lys Gln Glu Pro Gln
 340 345 350

Glu Ile Asn Phe Pro Asp Asp Leu Pro Gly Ser Asn Thr Ala Ala Pro
 355 360 365

Val Gln Glu Thr Leu His Gly Cys Gln Pro Val Thr Gln Glu Asp Gly
 370 375 380

Lys Glu Ser Arg Ile Ser Val Gln Glu Arg Gln
 385 390 395

<210> 7
 <211> 10
 <212> PRT
 <213> Artificial

<220>
 <223> myc-tag

<400> 7

Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
 1 5 10

<210> 8
 <211> 9
 <212> PRT
 <213> Artificial

<220>
 <223> HA-tag

<400> 8

Tyr Pro Tyr Asp Val Pro Asp Tyr Ala

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1 5

<210> 9
 <211> 30
 <212> PRT
 <213> Homo sapiens

<400> 9

Gly Glu Leu Asp Gly Leu Trp Thr Thr Ile Thr Ile Phe Ile Thr Leu
 1 5 10 15

Phe Leu Leu Ser Val Cys Tyr Ser Ala Thr Val Thr Phe Phe
 20 25 30

<210> 10
 <211> 1159
 <212> DNA
 <213> Artificial

<220>
 <223> nucleic acid sequence encoding recombinant protein BZ1

<400> 10
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 gccccaccg gatccgagca gaagctgac agcgaagagg acctgtacc ctacgacgtg 120
 cccgactacg ccgaacagaa actgatctct gaagaggatc tgagatctga caagaaggtg 180
 gagccaaga gcagcgacaa gaccacacc tgccccct gccctgcccc tgagctcctg 240
 gggggacca gcgtgttct gttcccccc aagccaagg acaccctgat gatcagccgg 300
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 aattggtacg tggacggcgt ggaggtgcac aacgccaaga ccaagcccag agaggaacag 420
 tacaacagca cctaccgggt ggtgtccgtg ctgaccgtgc tgcaccagga ctggctgaac 480
 ggcaaagaat acaagtgcaa ggtgtccaac aaggccctgc ctgccccat cgagaaaacc 540
 atcagcaagg ccaagggcca gcctcgggag cccaggtgt acaccctgcc cccctcccgg 600
 gatgagctga ccaagaacca ggtgtccctg acctgcctgg tgaagggctt ctaccccagc 660
 gacatcgcg tggagtggga gagcaacggc cagcccagaga acaactaaa gaccacccc 720
 cctgtgctgg acagcgacgg cagcttcttc ctgtacagca agctgaccgt ggacaagagc 780
 cgggtggcagc agggcaacgt gttctcctgc tccgtgatgc acgaggccct gcacaaccac 840
 tacaccaga agtccctgtc cctgagcccc gaactccagc tcgagggacc acaggaccgg 900
 ctgagggccc tgggtggtgat cccatcatc ttcggcatcc tgttcgcat cctgctggtg 960
 ctggtgttca tcaagaaagt ggccaaaaa cctacaaaca aagcccctca ccctaaacag 1020
 gaacctcagg aaattaactt tccagacgat ctgcctggct ccaatacagc cgccccagtg 1080
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tctgtgcagg aacgccagt

1159

<210> 11
 <211> 1185
 <212> DNA
 <213> Artificial

<220>
 <223> nucleic acid sequence encoding recombinant protein BZ2

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 gccccaccg gatccgagca gaagctgatac agcgaagagg acctgtacc ctacgacgtg 120
 cccgactacg ccgaacagaa actgatctct gaagaggatc tgagatctga caagaagggtg 180
 gagcccaaga gcagcgacaa gaccacacc tgccccccct gccctgcccc tgagctcctg 240
 gggggaccca gcgtgttctt gttccccccc aagccaagg acaccctgat gatcagccgg 300
 acccccgagg tgacctgcgt ggtggtggac gtgagccacg aggaccctga ggtgaagtcc 360
 aattggtacg tggacggcgt ggaggtgcac aacgccaaga ccaagcccag agaggaacag 420
 tacaacagca cctaccgggt ggtgtccctg ctgaccgtgc tgcaccagga ctggctgaac 480
 ggcaaagaat acaagtgcaa ggtgtccaac aaggccctgc ctgcccccat cgagaaaacc 540
 atcagcaagg ccaagggcca gcctcgggag cccaggtgt acaccctgcc cccctcccgg 600
 gatgagctga ccaagaacca ggtgtccctg acctgcctgg tgaagggctt ctaccccagc 660
 gacatcgccg tggagtggga gagcaacggc cagcccagaga acaactacaa gaccaccccc 720
 cctgtgctgg acagcgacgg cagcttcttc ctgtacagca agctgaccgt ggacaagagc 780
 cgggtggcagc agggcaacgt gttctcctgc tccgtgatgc acgaggccct gcacaaccac 840
 tacaccaga agtcctgtc cctgagcccc gaactccagc tcgaggaaag ctgcgccgag 900
 gccaggacg gcgagctgga cggcctgtgg accaccatca ccatcttcat caccctgttt 960
 ctgctgtccg tgtgctacag cgccaccgtg acctttttta agaaggtggc caagaagccc 1020
 accaataagg cccccacc caagcaggaa cccagggaaa tcaacttccc cgacgacctg 1080
 cccggcagca acacagccgc cctgtgcag gaaaccctgc acggctgcca gccctgacc 1140
 caggaagatg gcaaagagtc ccgcatcagc gtccaggaac ggcag 1185

<210> 12
 <211> 599
 <212> PRT
 <213> Homo sapiens

<400> 12

Met Ser Val Ser Phe Leu Ile Phe Leu Pro Val Leu Gly Leu Pro Trp
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Gly Val Leu Ser Gln Val Gln Leu Gln Gln Ser Gly Pro Gly Leu Val
 20 25 30

Lys Pro Ala Gln Thr Leu Ser Leu Thr Cys Ala Ile Ser Gly Asp Ser
 35 40 45

Val Ser Ser Asn Ser Ala Thr Trp Asn Trp Ile Arg Gln Ser Pro Leu
 50 55 60

Arg Gly Leu Glu Trp Leu Gly Arg Thr Tyr Tyr Arg Ser Lys Trp Tyr
 65 70 75 80

Asn Asp Tyr Ala Val Ser Val Lys Ser Arg Ile Thr Ile Asn Pro Asp
 85 90 95

Thr Ser Lys Asn Gln Phe Ser Leu Gln Leu Asn Ser Val Thr Pro Glu
 100 105 110

Asp Thr Ala Val Tyr Tyr Cys Ala Arg Glu Asn Tyr Tyr Gly Ser Gly
 115 120 125

Arg Tyr Asn Trp Phe Asp Pro Trp Gly Gln Gly Thr Leu Val Thr Val
 130 135 140

Ser Ser Gly Ser Ala Ser Ala Pro Thr Leu Phe Pro Leu Val Ser Cys
 145 150 155 160

Glu Asn Ser Pro Ser Asp Thr Ser Ser Val Ala Val Gly Cys Leu Ala
 165 170 175

Gln Asp Phe Leu Pro Asp Ser Ile Thr Phe Ser Trp Lys Tyr Lys Asn
 180 185 190

Asn Ser Asp Ile Ser Ser Thr Arg Gly Phe Pro Ser Val Leu Arg Gly
 195 200 205

Gly Lys Tyr Ala Ala Thr Ser Gln Val Leu Leu Pro Ser Lys Asp Val
 210 215 220

Met Gln Gly Thr Asp Glu His Val Val Cys Lys Val Gln His Pro Asn
 225 230 235 240

Gly Asn Lys Glu Lys Asn Val Pro Leu Pro Val Ile Ala Glu Leu Pro
 245 250 255

Pro Lys Val Ser Val Phe Val Pro Pro Arg Asp Gly Phe Phe Gly Asn
 260 265 270

674-18 Seq_ST25.txt

Pro Arg Lys Ser Lys Leu Ile Cys Gln Ala Thr Gly Phe Ser Pro Arg
 275 280 285

Gln Ile Gln Val Ser Trp Leu Arg Glu Gly Lys Gln Val Gly Ser Gly
 290 295 300

Val Thr Thr Asp Gln Val Gln Ala Glu Ala Lys Glu Ser Gly Pro Thr
 305 310 315 320

Thr Tyr Lys Val Thr Ser Thr Leu Thr Ile Lys Glu Ser Asp Trp Leu
 325 330 335

Ser Gln Ser Met Phe Thr Cys Arg Val Asp His Arg Gly Leu Thr Phe
 340 345 350

Gln Gln Asn Ala Ser Ser Met Cys Val Pro Asp Gln Asp Thr Ala Ile
 355 360 365

Arg Val Phe Ala Ile Pro Pro Ser Phe Ala Ser Ile Phe Leu Thr Lys
 370 375 380

Ser Thr Lys Leu Thr Cys Leu Val Thr Asp Leu Thr Thr Tyr Asp Ser
 385 390 395 400

Val Thr Ile Ser Trp Thr Arg Gln Asn Gly Glu Ala Val Lys Thr His
 405 410 415

Thr Asn Ile Ser Glu Ser His Pro Asn Ala Thr Phe Ser Ala Val Gly
 420 425 430

Glu Ala Ser Ile Cys Glu Asp Asp Trp Asn Ser Gly Glu Arg Phe Thr
 435 440 445

Cys Thr Val Thr His Thr Asp Leu Pro Ser Pro Leu Lys Gln Thr Ile
 450 455 460

Ser Arg Pro Lys Gly Val Ala Leu His Arg Pro Asp Val Tyr Leu Leu
 465 470 475 480

Pro Pro Ala Arg Glu Gln Leu Asn Leu Arg Glu Ser Ala Thr Ile Thr
 485 490 495

Cys Leu Val Thr Gly Phe Ser Pro Ala Asp Val Phe Val Gln Trp Met
 500 505 510

Gln Arg Gly Gln Pro Leu Ser Pro Glu Lys Tyr Val Thr Ser Ala Pro
 515 520 525

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Met Pro Glu Pro Gln Ala Pro Gly Arg Tyr Phe Ala His Ser Ile Leu
 530 535 540

Thr Val Ser Glu Glu Glu Trp Asn Thr Gly Glu Thr Tyr Thr Cys Val
 545 550 555 560

Val Ala His Glu Ala Leu Pro Asn Arg Val Thr Glu Arg Thr Val Asp
 565 570 575

Lys Ser Thr Gly Lys Pro Thr Leu Tyr Asn Val Ser Leu Val Met Ser
 580 585 590

Asp Thr Ala Gly Thr Cys Tyr
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<210> 13
 <211> 509
 <212> PRT
 <213> Homo sapiens

<400> 13

Glu Glu Gln Leu Glu Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg
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Ser Leu Arg Leu Ser Cys Glu Ala Ser Gly Leu Arg Phe Ser Ile Tyr
 20 25 30

Gly Met Phe Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Leu
 35 40 45

Ala Leu Ile Trp Asn Asp Gly Ser Arg Lys His Tyr Ala Asp Ser Val
 50 55 60

Lys Gly Arg Phe Thr Val Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
 65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Asp Asp Thr Ala Val Tyr Phe Cys
 85 90 95

Gly Ser Gly Thr Thr Ala Phe Ser Gly Ala Ala Pro Asp Asn Tyr His
 100 105 110

Ile His Val Trp Gly Lys Gly Thr Thr Val Thr Val Ser Ser Ala Pro
 115 120 125

Thr Lys Ala Pro Asp Val Phe Pro Ile Ile Ser Gly Cys Arg His Pro
 130 135 140

674-18 Seq_ST25.txt

Lys Asp Asn Ser Pro Val Val Leu Ala Cys Leu Ile Thr Gly Tyr His
 145 150 155 160

Pro Thr Ser Val Thr Val Thr Trp Tyr Met Gly Thr Gln Ser Gln Pro
 165 170 175

Gln Arg Thr Phe Pro Glu Ile Gln Arg Arg Asp Ser Tyr Tyr Met Thr
 180 185 190

Ser Ser Gln Leu Ser Thr Pro Leu Gln Gln Trp Arg Gln Gly Glu Tyr
 195 200 205

Lys Cys Val Val Gln His Thr Ala Ser Lys Ser Lys Lys Glu Ile Phe
 210 215 220

Arg Trp Pro Glu Ser Pro Lys Ala Gln Ala Ser Ser Val Pro Thr Ala
 225 230 235 240

Gln Pro Gln Ala Glu Gly Ser Leu Ala Lys Ala Thr Thr Ala Pro Ala
 245 250 255

Thr Thr His Asn Thr Gly Arg Gly Gly Glu Glu Lys Lys Lys Glu Lys
 260 265 270

Glu Lys Glu Glu Gln Glu Glu Arg Glu Thr Lys Thr Pro Glu Cys Pro
 275 280 285

Ser His Thr Gln Pro Leu Gly Val Tyr Leu Leu Thr Pro Ala Val Gln
 290 295 300

Asp Leu Trp Leu Arg Asp Lys Ala Thr Phe Thr Cys Phe Val Val Gly
 305 310 315 320

Ser Asp Leu Lys Asp Ala His Leu Thr Trp Glu Val Ala Gly Lys Val
 325 330 335

Pro Thr Gly Gly Val Glu Glu Gly Leu Leu Glu Arg His Ser Asn Gly
 340 345 350

Ser Gln Ser Gln His Ser Arg Leu Thr Leu Pro Arg Ser Leu Trp Asn
 355 360 365

Ala Gly Thr Ser Val Thr Cys Thr Leu Asn His Pro Ser Leu Pro Pro
 370 375 380

Gln Arg Leu Met Ala Leu Arg Glu Pro Ala Ala Gln Ala Pro Val Lys
 385 390 395 400

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Leu Ser Leu Asn Leu Leu Ala Ser Ser Asp Pro Pro Glu Ala Ala Ser
 405 410 415

Trp Leu Leu Cys Glu Val Ser Gly Phe Ser Pro Pro Asn Ile Leu Leu
 420 425 430

Met Trp Leu Glu Asp Gln Arg Glu Val Asn Thr Ser Gly Phe Ala Pro
 435 440 445

Ala Arg Pro Pro Pro Gln Pro Gly Ser Thr Thr Phe Trp Ala Trp Ser
 450 455 460

Val Leu Arg Val Pro Ala Pro Pro Ser Pro Gln Pro Ala Thr Tyr Thr
 465 470 475 480

Cys Val Val Ser His Glu Asp Ser Arg Thr Leu Leu Asn Ala Ser Arg
 485 490 495

Ser Leu Glu Val Ser Tyr Val Thr Asp His Gly Pro Met
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<210> 14
 <211> 325
 <212> PRT
 <213> Homo sapiens

<400> 14

Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser
 1 5 10 15

Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe
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Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly
 35 40 45

Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu
 50 55 60

Ser Ser Val Val Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr
 65 70 75 80

Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Thr
 85 90 95

Val Glu Arg Lys Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro
 100 105 110

Val Ala Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
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115

120

125

Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
 130 135 140

Ser His Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val
 145 150 155 160

Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser
 165 170 175

Thr Phe Arg Val Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu
 180 185 190

Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala
 195 200 205

Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro
 210 215 220

Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln
 225 230 235 240

Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala
 245 250 255

Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr
 260 265 270

Pro Pro Met Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu
 275 280 285

Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
 290 295 300

Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
 305 310 315 320

Leu Ser Pro Gly Lys
 325

<210> 15
 <211> 346
 <212> PRT
 <213> Homo sapiens

<400> 15

Phe Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser
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674-18 Seq_ST25.txt

Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe
 20 25 30

Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly
 35 40 45

Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu
 50 55 60

Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr
 65 70 75 80

Thr Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg
 85 90 95

Val Glu Leu Lys Thr Pro Leu Gly Asp Thr Pro Pro Pro Cys Pro Arg
 100 105 110

Cys Pro Glu Pro Lys Ser Cys Asp Thr Pro Pro Pro Cys Pro Arg Cys
 115 120 125

Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro
 130 135 140

Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys
 145 150 155 160

Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Gln Phe Lys Trp
 165 170 175

Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Leu Arg Glu
 180 185 190

Glu Gln Tyr Asn Ser Thr Phe Arg Val Val Ser Val Leu Thr Val Leu
 195 200 205

His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn
 210 215 220

Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly
 225 230 235 240

Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu
 245 250 255

Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr
 260 265 270

674-18 Seq_ST25.txt

Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn
 275 280 285

Asn Tyr Asn Thr Thr Pro Pro Met Leu Asp Ser Asp Gly Ser Phe Phe
 290 295 300

Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn
 305 310 315 320

Ile Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn Arg Tyr Thr
 325 330 335

Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
 340 345

<210> 16
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 <212> PRT
 <213> Homo sapiens

<220>
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 <222> (121)..(121)
 <223> Xaa can be any naturally occurring amino acid

<220>
 <221> misc_feature
 <222> (257)..(257)
 <223> Xaa can be any naturally occurring amino acid

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 <223> Xaa can be any naturally occurring amino acid

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 <223> Xaa can be any naturally occurring amino acid

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 <223> Xaa can be any naturally occurring amino acid

<400> 16

Tyr Thr Gln Arg Phe Lys Asp Lys Ala Lys Leu Thr Ala Val Thr Ser
 1 5 10 15

674-18 Seq_ST25.txt

Ala Asn Thr Ala Tyr Met Glu Leu Ser Ser Leu Thr Asn Glu Asp Ser
 20 25 30

Ala Val Tyr Tyr Cys Ser Ile Ile Tyr Phe Asp Tyr Ala Asp Phe Ile
 35 40 45

Met Asp Tyr Trp Gly Gln Gly Thr Thr Val Thr Val Ser Thr Ala Ser
 50 55 60

Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr
 65 70 75 80

Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro
 85 90 95

Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val
 100 105 110

His Thr Phe Pro Ala Val Leu Gln Xaa Ser Gly Leu Tyr Ser Leu Ser
 115 120 125

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

Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Arg Val
 145 150 155 160

Glu Ser Lys Tyr Gly Pro Pro Cys Pro Ser Cys Pro Ala Pro Glu Phe
 165 170 175

Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
 180 185 190

Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
 195 200 205

Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val
 210 215 220

Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser
 225 230 235 240

Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu
 245 250 255

Xaa Gly Lys Glu Tyr Lys Cys Lys Val Ser Xaa Lys Gly Leu Pro Ser
 260 265 270

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Ser Ile Glu Lys Thr Ile Ser Xaa Ala Xaa Gly Gln Pro Arg Glu Pro
 275 280 285

Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln
 290 295 300

Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala
 305 310 315 320

Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr
 325 330 335

Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu
 340 345 350

Thr Val Asp Lys Ser Xaa Trp Gln Glu Gly Asn Val Phe Ser Cys Ser
 355 360 365

Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
 370 375 380

Leu Ser Leu Gly Lys
 385

- <210> 17
- <211> 574
- <212> PRT
- <213> Homo sapiens

<400> 17

Met Asp Trp Thr Trp Ile Leu Phe Leu Val Ala Ala Ala Thr Arg Val
 1 5 10 15

His Ser Gln Thr Gln Leu Val Gln Ser Gly Ala Glu Val Arg Lys Pro
 20 25 30

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

Asp Ser Tyr Ile His Trp Ile Arg Gln Ala Pro Gly His Gly Leu Glu
 50 55 60

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

Arg Phe Gln Gly Arg Val Thr Met Thr Arg Asp Ala Ser Phe Ser Thr
 85 90 95

Ala Tyr Met Asp Leu Arg Ser Leu Arg Ser Asp Asp Ser Ala Val Phe
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100

105

110

Tyr Cys Ala Lys Ser Asp Pro Phe Trp Ser Asp Tyr Tyr Asn Phe Asp
 115 120 125

Tyr Ser Tyr Thr Leu Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val
 130 135 140

Ser Ser Ala Ser Thr Gln Ser Pro Ser Val Phe Pro Leu Thr Arg Cys
 145 150 155 160

Cys Lys Asn Ile Pro Ser Asn Ala Thr Ser Val Thr Leu Gly Cys Leu
 165 170 175

Ala Thr Gly Tyr Phe Pro Glu Pro Val Met Val Thr Trp Asp Thr Gly
 180 185 190

Ser Leu Asn Gly Thr Thr Met Thr Leu Pro Ala Thr Thr Leu Thr Leu
 195 200 205

Ser Gly His Tyr Ala Thr Ile Ser Leu Leu Thr Val Ser Gly Ala Trp
 210 215 220

Ala Lys Gln Met Phe Thr Cys Arg Val Ala His Thr Pro Ser Ser Thr
 225 230 235 240

Asp Trp Val Asp Asn Lys Thr Phe Ser Val Cys Ser Arg Asp Phe Thr
 245 250 255

Pro Pro Thr Val Lys Ile Leu Gln Ser Ser Cys Asp Gly Gly Gly His
 260 265 270

Phe Pro Pro Thr Ile Gln Leu Leu Cys Leu Val Ser Gly Tyr Thr Pro
 275 280 285

Gly Thr Ile Asn Ile Thr Trp Leu Glu Asp Gly Gln Val Met Asp Val
 290 295 300

Asp Leu Ser Thr Ala Ser Thr Thr Gln Glu Gly Glu Leu Ala Ser Thr
 305 310 315 320

Gln Ser Glu Leu Thr Leu Ser Gln Lys His Trp Leu Ser Asp Arg Thr
 325 330 335

Tyr Thr Cys Gln Val Thr Tyr Gln Gly His Thr Phe Glu Asp Ser Thr
 340 345 350

Lys Lys Cys Ala Asp Ser Asn Pro Arg Gly Val Ser Ala Tyr Leu Ser

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355

360

365

Arg Pro Ser Pro Phe Asp Leu Phe Ile Arg Lys Ser Pro Thr Ile Thr
370 375 380

Cys Leu Val Val Asp Leu Ala Pro Ser Lys Gly Thr Val Asn Leu Thr
385 390 395 400

Trp Ser Arg Ala Ser Gly Lys Pro Val Asn His Ser Thr Arg Lys Glu
405 410 415

Glu Lys Gln Arg Asn Gly Thr Leu Thr Val Thr Ser Thr Leu Pro Val
420 425 430

Gly Thr Arg Asp Trp Ile Glu Gly Glu Thr Tyr Gln Cys Arg Val Thr
435 440 445

His Pro His Leu Pro Arg Ala Leu Met Arg Ser Thr Thr Lys Thr Ser
450 455 460

Gly Pro Arg Ala Ala Pro Glu Val Tyr Ala Phe Ala Thr Pro Glu Trp
465 470 475 480

Pro Gly Ser Arg Asp Lys Arg Thr Leu Ala Cys Leu Ile Gln Asn Phe
485 490 495

Met Pro Glu Asp Ile Ser Val Gln Trp Leu His Asn Glu Val Gln Leu
500 505 510

Pro Asp Ala Arg His Ser Thr Thr Gln Pro Arg Lys Thr Lys Gly Ser
515 520 525

Gly Phe Phe Val Phe Ser Arg Leu Glu Val Thr Arg Ala Glu Trp Glu
530 535 540

Gln Lys Asp Glu Phe Ile Cys Arg Ala Val His Glu Ala Ala Ser Pro
545 550 555 560

Ser Gln Thr Val Gln Arg Ala Val Ser Val Asn Pro Gly Lys
565 570

<210> 18
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<212> PRT
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<400> 18

Ala Ser Pro Thr Ser Pro Lys Val Phe Pro Leu Ser Leu Cys Ser Thr
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Gln Pro Asp Gly Asn Val Val Ile Ala Cys Leu Val Gln Gly Phe Phe
 20 25 30

Pro Gln Glu Pro Leu Ser Val Thr Trp Ser Glu Ser Gly Gln Gly Val
 35 40 45

Thr Ala Arg Asn Phe Pro Pro Ser Gln Asp Ala Ser Gly Asp Leu Tyr
 50 55 60

Thr Thr Ser Ser Gln Leu Thr Leu Pro Ala Thr Gln Cys Leu Ala Gly
 65 70 75 80

Lys Ser Val Thr Cys His Val Lys His Tyr Thr Asn Pro Ser Gln Asp
 85 90 95

Val Thr Val Pro Cys Pro Val Pro Ser Thr Pro Pro Thr Pro Ser Pro
 100 105 110

Ser Thr Pro Pro Thr Pro Ser Pro Ser Cys Cys His Pro Arg Leu Ser
 115 120 125

Leu His Arg Pro Ala Leu Glu Asp Leu Leu Leu Gly Ser Glu Ala Asn
 130 135 140

Leu Thr Cys Thr Leu Thr Gly Leu Arg Asp Ala Ser Gly Val Thr Phe
 145 150 155 160

Thr Trp Thr Pro Ser Ser Gly Lys Ser Ala Val Gln Gly Pro Pro Asp
 165 170 175

Arg Asp Leu Cys Gly Cys Tyr Ser Val Ser Ser Val Leu Ser Gly Cys
 180 185 190

Ala Glu Pro Trp Asn His Gly Lys Thr Phe Thr Cys Thr Ala Ala Tyr
 195 200 205

Pro Glu Ser Lys Thr Pro Leu Thr Ala Thr Leu Ser Lys Ser Gly Asn
 210 215 220

Thr Phe Arg Pro Glu Val His Leu Leu Pro Pro Pro Ser Glu Glu Leu
 225 230 235 240

Ala Leu Asn Glu Leu Val Thr Leu Thr Cys Leu Ala Arg Gly Phe Ser
 245 250 255

Pro Lys Asp Val Leu Val Arg Trp Leu Gln Gly Ser Gln Glu Leu Pro
 260 265 270

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Arg Glu Lys Tyr Leu Thr Trp Ala Ser Arg Gln Glu Pro Ser Gln Gly
 275 280 285

Thr Thr Thr Phe Ala Val Thr Ser Ile Leu Arg Val Ala Ala Glu Asp
 290 295 300

Trp Lys Lys Gly Asp Thr Phe Ser Cys Met Val Gly His Glu Ala Leu
 305 310 315 320

Pro Leu Ala Phe Thr Gln Lys Thr Ile Asp Arg Leu Ala Gly Lys Pro
 325 330 335

Thr His Val Asn Val Ser Val Val Met Ala Glu Val Asp Gly Thr Cys
 340 345 350

Tyr

<210> 19
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 <212> PRT
 <213> Homo sapiens

<400> 19

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

Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro
 35 40 45

Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val
 50 55 60

Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr
 65 70 75 80

Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val
 85 90 95

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
 100 105 110

Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
 115 120 125

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Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
 130 135 140

Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
 145 150 155 160

Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
 165 170 175

Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
 180 185 190

Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp
 195 200 205

Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
 210 215 220

Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Glu Leu Gln Leu
 225 230 235 240

Glu Glu Ser Cys Ala Glu Ala Gln Asp Gly Glu Leu Asp Gly Leu Trp
 245 250 255

Thr Thr