

eo1f-othd-000001.txt  
SEQUENCE LISTING

<110> GlaxoSmithKline Biologicals SA  
<120> METHOD FOR PREPARING PROTEIN CONJUGATES  
<130> VB62590P  
<160> 18  
<170> PatentIn version 3.3  
<210> 1  
<211> 20  
<212> DNA  
<213> Artificial  
<220>  
<223> immunostimulatory CpG containing oligonucleotide  
<400> 1  
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<210> 2  
<211> 18  
<212> DNA  
<213> artificial  
<220>  
<223> immunostimulatory CpG containing oligonucleotide  
<400> 2  
tctcccagcg tgcgccat 18  
  
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<213> Artificial  
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<223> immunostimulatory CpG containing oligonucleotide  
<400> 3  
accgatgacg tcgccggtga cggcaccacg 30  
  
<210> 4  
<211> 24  
<212> DNA  
<213> Artificial  
<220>  
<223> immunostimulatory CpG containing oligonucleotide  
<400> 4  
tcgtcgtttt gtcgttttgt cggt 24  
  
<210> 5  
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<212> DNA  
<213> Artificial  
<220>  
<223> immunostimulatory CpG containing oligonucleotide  
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tccatgacgt tcctgatgct

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&lt;210&gt; 6

&lt;211&gt; 22

&lt;212&gt; DNA

&lt;213&gt; Artificial

&lt;220&gt;

&lt;223&gt; immunostimulatory CpG containing oligonucleotide

&lt;400&gt; 6

tcgacgtttt cggcgcgcgcg cg

22

&lt;210&gt; 7

&lt;211&gt; 69

&lt;212&gt; PRT

&lt;213&gt; Shigella dysenteriae

&lt;400&gt; 7

Thr Pro Asp Cys Val Thr Gly Lys Val Glu Tyr Thr Lys Tyr Asn Asp  
 1 5 10 15

Asp Asp Thr Phe Thr Val Lys Val Gly Asp Lys Glu Leu Phe Thr Asn  
 20 25 30

Arg Trp Asn Leu Gln Ser Leu Leu Leu Ser Ala Gln Ile Thr Gly Met  
 35 40 45

Thr Val Thr Ile Lys Thr Asn Ala Cys His Asn Gly Gly Gly Phe Ser  
 50 55 60

Glu Val Ile Phe Arg  
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&lt;210&gt; 8

&lt;211&gt; 70

&lt;212&gt; PRT

&lt;213&gt; Shigella dysenteriae

&lt;400&gt; 8

Thr Pro Asp Cys Val Thr Gly Lys Val Glu Tyr Thr Lys Tyr Asn Asp  
 1 5 10 15

Asp Asp Thr Phe Thr Val Lys Val Gly Asp Lys Glu Leu Phe Thr Asn  
 20 25 30

Arg Trp Asn Leu Gln Ser Leu Leu Leu Ser Ala Gln Ile Thr Gly Met  
 35 40 45

Thr Val Thr Ile Lys Thr Asn Ala Cys His Asn Gly Gly Gly Phe Ser  
 50 55 60

Glu Val Ile Phe Arg Cys  
 65 70

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<210> 9
<211> 103
<212> PRT
<213> Escherichia coli

<400> 9
Ala Pro Gln Ser Ile Thr Glu Leu Cys Ser Glu Tyr Arg Asn Thr Gln
1 5 10 15
Ile Tyr Thr Ile Asn Asp Lys Ile Leu Ser Tyr Thr Glu Ser Met Ala
20 25 30
Gly Lys Arg Glu Met Val Ile Ile Thr Phe Lys Ser Gly Ala Thr Phe
35 40 45
Gln Val Glu Val Pro Gly Ser Gln His Ile Asp Ser Gln Lys Lys Ala
50 55 60
Ile Glu Arg Met Lys Asp Thr Leu Arg Ile Thr Tyr Leu Thr Glu Thr
65 70 75 80
Lys Ile Asp Lys Leu Cys Val Trp Asn Asn Lys Thr Pro Asn Ser Ile
85 90 95
Ala Ala Ile Ser Met Glu Asn
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<210> 10
<211> 103
<212> PRT
<213> Vibrio cholerae

<400> 10
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1 5 10 15
Ile Tyr Thr Leu Asn Asp Lys Ile Phe Ser Tyr Thr Glu Ser Leu Ala
20 25 30
Gly Lys Arg Glu Met Ala Ile Ile Thr Phe Lys Asn Gly Ala Ile Phe
35 40 45
Gln Val Glu Val Pro Gly Ser Gln His Ile Asp Ser Gln Lys Lys Ala
50 55 60
Ile Glu Arg Met Lys Asp Thr Leu Arg Ile Ala Tyr Leu Thr Glu Ala
65 70 75 80
Lys Val Glu Lys Leu Cys Val Trp Asn Asn Lys Thr Pro His Ala Ile
85 90 95
Ala Ala Ile Ser Met Ala Asn
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<210> 11  
 <211> 1315  
 <212> PRT  
 <213> Clostridium tetani

<400> 11

Met Pro Ile Thr Ile Asn Asn Phe Arg Tyr Ser Asp Pro Val Asn Asn  
 1 5 10 15

Asp Thr Ile Ile Met Met Glu Pro Pro Tyr Cys Lys Gly Leu Asp Ile  
 20 25 30

Tyr Tyr Lys Ala Phe Lys Ile Thr Asp Arg Ile Trp Ile Val Pro Glu  
 35 40 45

Arg Tyr Glu Phe Gly Thr Lys Pro Glu Asp Phe Asn Pro Pro Ser Ser  
 50 55 60

Leu Ile Glu Gly Ala Ser Glu Tyr Tyr Asp Pro Asn Tyr Leu Arg Thr  
 65 70 75 80

Asp Ser Asp Lys Asp Arg Phe Leu Gln Thr Met Val Lys Leu Phe Asn  
 85 90 95

Arg Ile Lys Asn Asn Val Ala Gly Glu Ala Leu Leu Asp Lys Ile Ile  
 100 105 110

Asn Ala Ile Pro Tyr Leu Gly Asn Ser Tyr Ser Leu Leu Asp Lys Phe  
 115 120 125

Asp Thr Asn Ser Asn Ser Val Ser Phe Asn Leu Leu Glu Gln Asp Pro  
 130 135 140

Ser Gly Ala Thr Thr Lys Ser Ala Met Leu Thr Asn Leu Ile Ile Phe  
 145 150 155 160

Gly Pro Gly Pro Val Leu Asn Lys Asn Glu Val Arg Gly Ile Val Leu  
 165 170 175

Arg Val Asp Asn Lys Asn Tyr Phe Pro Cys Arg Asp Gly Phe Gly Ser  
 180 185 190

Ile Met Gln Met Ala Phe Cys Pro Glu Tyr Val Pro Thr Phe Asp Asn  
 195 200 205

Val Ile Glu Asn Ile Thr Ser Leu Thr Ile Gly Lys Ser Lys Tyr Phe  
 210 215 220

Gln Asp Pro Ala Leu Leu Leu Met His Glu Leu Ile His Val Leu His  
 225 230 235 240

Gly Leu Tyr Gly Met Gln Val Ser Ser His Glu Ile Ile Pro Ser Lys

Gln Glu Ile Tyr<sub>260</sub> Met Gln His Thr Tyr<sub>265</sub> Pro Ile Ser Ala Glu<sub>270</sub> Glu Leu  
 Phe Thr Phe<sub>275</sub> Gly Gly Gln Asp Ala<sub>280</sub> Asn Leu Ile Ser Ile<sub>285</sub> Asp Ile Lys  
 Asn Asp<sub>290</sub> Leu Tyr Glu Lys Thr<sub>295</sub> Leu Asn Asp Tyr Lys<sub>300</sub> Ala Ile Ala Asn  
 Lys<sub>305</sub> Leu Ser Gln Val Thr<sub>310</sub> Ser Cys Asn Asp Pro<sub>315</sub> Asn Ile Asp Ile Asp<sub>320</sub>  
 Ser Tyr Lys Gln Ile<sub>325</sub> Tyr Gln Gln Lys Tyr<sub>330</sub> Gln Phe Asp Lys Asp<sub>335</sub> Ser  
 Asn Gly Gln Tyr<sub>340</sub> Ile Val Asn Glu Asp<sub>345</sub> Lys Phe Gln Ile Leu<sub>350</sub> Tyr Asn  
 Ser Ile Met<sub>355</sub> Tyr Gly Phe Thr Glu<sub>360</sub> Ile Glu Leu Gly Lys<sub>365</sub> Lys Phe Asn  
 Ile Lys<sub>370</sub> Thr Arg Leu Ser Tyr<sub>375</sub> Phe Ser Met Asn His<sub>380</sub> Asp Pro Val Lys  
 Ile<sub>385</sub> Pro Asn Leu Leu Asp<sub>390</sub> Asp Thr Ile Tyr Asn<sub>395</sub> Asp Thr Glu Gly Phe<sub>400</sub>  
 Asn Ile Glu Ser Lys<sub>405</sub> Asp Leu Lys Ser Glu<sub>410</sub> Tyr Lys Gly Gln Asn<sub>415</sub> Met  
 Arg Val Asn Thr<sub>420</sub> Asn Ala Phe Arg Asn<sub>425</sub> Val Asp Gly Ser Gly<sub>430</sub> Leu Val  
 Ser Lys Leu<sub>435</sub> Ile Gly Leu Cys Lys<sub>440</sub> Lys Ile Ile Pro Pro<sub>445</sub> Thr Asn Ile  
 Arg Glu<sub>450</sub> Asn Leu Tyr Asn Arg<sub>455</sub> Thr Ala Ser Leu Thr<sub>460</sub> Asp Leu Gly Gly  
 Glu<sub>465</sub> Leu Cys Ile Lys Ile<sub>470</sub> Lys Asn Glu Asp Leu<sub>475</sub> Thr Phe Ile Ala Glu<sub>480</sub>  
 Lys Asn Ser Phe Ser<sub>485</sub> Glu Glu Pro Phe Gln<sub>490</sub> Asp Glu Ile Val Ser<sub>495</sub> Tyr  
 Asn Thr Lys Asn<sub>500</sub> Lys Pro Leu Asn Phe<sub>505</sub> Asn Tyr Ser Leu Asp<sub>510</sub> Lys Ile  
 Ile Val Asp<sub>515</sub> Tyr Asn Leu Gln Ser<sub>520</sub> Lys Ile Thr Leu Pro<sub>525</sub> Asn Asp Arg

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Thr Thr Pro Val Thr Lys Gly Ile Pro Tyr Ala Pro Glu Tyr Lys Ser  
 530 535 540  
 Asn Ala Ala Ser Thr Ile Glu Ile His Asn Ile Asp Asp Asn Thr Ile  
 545 550 555 560  
 Tyr Gln Tyr Leu Tyr Ala Gln Lys Ser Pro Thr Thr Leu Gln Arg Ile  
 565 570 575  
 Thr Met Thr Asn Ser Val Asp Asp Ala Leu Ile Asn Ser Thr Lys Ile  
 580 585 590  
 Tyr Ser Tyr Phe Pro Ser Val Ile Ser Lys Val Asn Gln Gly Ala Gln  
 595 600 605  
 Gly Ile Leu Phe Leu Gln Trp Val Arg Asp Ile Ile Asp Asp Phe Thr  
 610 615 620  
 Asn Glu Ser Ser Gln Lys Thr Thr Ile Asp Lys Ile Ser Asp Val Ser  
 625 630 635 640  
 Thr Ile Val Pro Tyr Ile Gly Pro Ala Leu Asn Ile Val Lys Gln Gly  
 645 650 655  
 Tyr Glu Gly Asn Phe Ile Gly Ala Leu Glu Thr Thr Gly Val Val Leu  
 660 665 670  
 Leu Leu Glu Tyr Ile Pro Glu Ile Thr Leu Pro Val Ile Ala Ala Leu  
 675 680 685  
 Ser Ile Ala Glu Ser Ser Thr Gln Lys Glu Lys Ile Ile Lys Thr Ile  
 690 695 700  
 Asp Asn Phe Leu Glu Lys Arg Tyr Glu Lys Trp Ile Glu Val Tyr Lys  
 705 710 715 720  
 Leu Val Lys Ala Lys Trp Leu Gly Thr Val Asn Thr Gln Phe Gln Lys  
 725 730 735  
 Arg Ser Tyr Gln Met Tyr Arg Ser Leu Glu Tyr Gln Val Asp Ala Ile  
 740 745 750  
 Lys Lys Ile Ile Asp Tyr Glu Tyr Lys Ile Tyr Ser Gly Pro Asp Lys  
 755 760 765  
 Glu Gln Ile Ala Asp Glu Ile Asn Asn Leu Lys Asn Lys Leu Glu Glu  
 770 775 780  
 Lys Ala Asn Lys Ala Met Ile Asn Ile Asn Ile Phe Met Arg Glu Ser  
 785 790 795 800

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Ser Arg Ser Phe Leu Val Asn Gln Met Ile Asn Glu Ala Lys Lys Gln  
805 810 815

Leu Leu Glu Phe Asp Thr Gln Ser Lys Asn Ile Leu Met Gln Tyr Ile  
820 825 830

Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu Lys Lys Leu Glu  
835 840 845

Ser Lys Ile Asn Lys Val Phe Ser Thr Pro Ile Pro Phe Ser Tyr Ser  
850 855 860

Lys Asn Leu Asp Cys Trp Val Asp Asn Glu Glu Asp Ile Asp Val Ile  
865 870 875 880

Leu Lys Lys Ser Thr Ile Leu Asn Leu Asp Ile Asn Asn Asp Ile Ile  
885 890 895

Ser Asp Ile Ser Gly Phe Asn Ser Ser Val Ile Thr Tyr Pro Asp Ala  
900 905 910

Gln Leu Val Pro Gly Ile Asn Gly Lys Ala Ile His Leu Val Asn Asn  
915 920 925

Glu Ser Ser Glu Val Ile Val His Lys Ala Met Asp Ile Glu Tyr Asn  
930 935 940

Asp Met Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys  
945 950 955 960

Val Ser Ala Ser His Leu Glu Gln Tyr Gly Thr Asn Glu Tyr Ser Ile  
965 970 975

Ile Ser Ser Met Lys Lys His Ser Leu Ser Ile Gly Ser Gly Trp Ser  
980 985 990

Val Ser Leu Lys Gly Asn Asn Leu Ile Trp Thr Leu Lys Asp Ser Ala  
995 1000 1005

Gly Glu Val Arg Gln Ile Thr Phe Arg Asp Leu Pro Asp Lys Phe  
1010 1015 1020

Asn Ala Tyr Leu Ala Asn Lys Trp Val Phe Ile Thr Ile Thr Asn  
1025 1030 1035

Asp Arg Leu Ser Ser Ala Asn Leu Tyr Ile Asn Gly Val Leu Met  
1040 1045 1050

Gly Ser Ala Glu Ile Thr Gly Leu Gly Ala Ile Arg Glu Asp Asn  
1055 1060 1065

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 Asn Ile Thr Leu Lys Leu Asp Arg Cys Asn Asn Asn Asn Gln Tyr  
 1070 1075 1080  
 Val Ser Ile Asp Lys Phe Arg Ile Phe Cys Lys Ala Leu Asn Pro  
 1085 1090 1095  
 Lys Glu Ile Glu Lys Leu Tyr Thr Ser Tyr Leu Ser Ile Thr Phe  
 1100 1105 1110  
 Leu Arg Asp Phe Trp Gly Asn Pro Leu Arg Tyr Asp Thr Glu Tyr  
 1115 1120 1125  
 Tyr Leu Ile Pro Val Ala Ser Ser Ser Lys Asp Val Gln Leu Lys  
 1130 1135 1140  
 Asn Ile Thr Asp Tyr Met Tyr Leu Thr Asn Ala Pro Ser Tyr Thr  
 1145 1150 1155  
 Asn Gly Lys Leu Asn Ile Tyr Tyr Arg Arg Leu Tyr Asn Gly Leu  
 1160 1165 1170  
 Lys Phe Ile Ile Lys Arg Tyr Thr Pro Asn Asn Glu Ile Asp Ser  
 1175 1180 1185  
 Phe Val Lys Ser Gly Asp Phe Ile Lys Leu Tyr Val Ser Tyr Asn  
 1190 1195 1200  
 Asn Asn Glu His Ile Val Gly Tyr Pro Lys Asp Gly Asn Ala Phe  
 1205 1210 1215  
 Asn Asn Leu Asp Arg Ile Leu Arg Val Gly Tyr Asn Ala Pro Gly  
 1220 1225 1230  
 Ile Pro Leu Tyr Lys Lys Met Glu Ala Val Lys Leu Arg Asp Leu  
 1235 1240 1245  
 Lys Thr Tyr Ser Val Gln Leu Lys Leu Tyr Asp Asp Lys Asn Ala  
 1250 1255 1260  
 Ser Leu Gly Leu Val Gly Thr His Asn Gly Gln Ile Gly Asn Asp  
 1265 1270 1275  
 Pro Asn Arg Asp Ile Leu Ile Ala Ser Asn Trp Tyr Phe Asn His  
 1280 1285 1290  
 Leu Lys Asp Lys Ile Leu Gly Cys Asp Trp Tyr Phe Val Pro Thr  
 1295 1300 1305  
 Asp Glu Gly Trp Thr Asn Asp  
 1310 1315

<210> 12



&lt;211&gt; 514

&lt;212&gt; PRT

&lt;213&gt; Human immunodeficiency virus type 1

&lt;400&gt; 12

Met Lys Val Lys Glu Thr Arg Lys Asn Tyr Gln His Leu Trp Arg Trp  
1 5 10 15Gly Thr Met Leu Leu Gly Met Leu Met Ile Cys Ser Ala Ala Glu Gln  
20 25 30Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Thr  
35 40 45Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val  
50 55 60His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro  
65 70 75 80Gln Glu Val Val Leu Gly Asn Val Thr Glu Tyr Phe Asn Met Trp Lys  
85 90 95Asn Asn Met Val Asp Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp  
100 105 110Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu  
115 120 125Asp Cys Asp Asp Val Asn Thr Thr Asn Ser Thr Thr Thr Ser Asn  
130 135 140Gly Trp Thr Gly Glu Ile Arg Lys Gly Glu Ile Lys Asn Cys Ser Phe  
145 150 155 160Asn Ile Thr Thr Ser Ile Arg Asp Lys Val Gln Lys Glu Tyr Ala Leu  
165 170 175Phe Tyr Asn Leu Asp Val Val Pro Ile Asp Asp Asp Asn Ala Thr Thr  
180 185 190Lys Asn Lys Thr Thr Arg Asn Phe Arg Leu Ile His Cys Asn Ser Ser  
195 200 205Val Met Thr Gln Ala Cys Pro Lys Val Ser Phe Glu Pro Ile Pro Ile  
210 215 220His Tyr Cys Ala Pro Ala Gly Phe Ala Ile Leu Lys Cys Asn Asn Lys  
225 230 235 240Thr Phe Asp Gly Lys Gly Leu Cys Thr Asn Val Ser Thr Val Gln Cys  
245 250 255

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Thr His Gly Ile Arg Pro Val Val Ser Thr Gln Leu Leu Leu Asn Gly  
260 265 270

Ser Leu Ala Glu Glu Glu Val Val Ile Arg Ser Asp Asn Phe Met Asp  
275 280 285

Asn Thr Lys Thr Ile Ile Val Gln Leu Asn Glu Ser Val Ala Ile Asn  
290 295 300

Cys Thr Arg Pro Asn Asn Asn Thr Arg Lys Gly Ile His Ile Gly Pro  
305 310 315 320

Gly Arg Ala Phe Tyr Ala Ala Arg Lys Ile Ile Gly Asp Ile Arg Gln  
325 330 335

Ala His Cys Asn Leu Ser Arg Ala Gln Trp Asn Asn Thr Leu Lys Gln  
340 345 350

Ile Val Ile Lys Leu Arg Glu His Phe Gly Asn Lys Thr Ile Lys Phe  
355 360 365

Asn Gln Ser Ser Gly Gly Asp Pro Glu Ile Val Arg His Ser Phe Asn  
370 375 380

Cys Gly Gly Glu Phe Phe Tyr Cys Asp Thr Thr Gln Leu Phe Asn Ser  
385 390 395 400

Thr Trp Asn Gly Thr Glu Gly Asn Asn Thr Glu Gly Asn Ser Thr Ile  
405 410 415

Thr Leu Pro Cys Arg Ile Lys Gln Ile Ile Asn Met Trp Gln Glu Val  
420 425 430

Gly Lys Ala Met Tyr Ala Pro Pro Ile Gly Gly Gln Ile Arg Cys Ser  
435 440 445

Ser Asn Ile Thr Gly Leu Leu Leu Thr Arg Asp Gly Gly Thr Glu Gly  
450 455 460

Asn Gly Thr Glu Asn Glu Thr Glu Ile Phe Arg Pro Gly Gly Gly Asp  
465 470 475 480

Met Arg Asp Asn Trp Arg Ser Glu Leu Tyr Lys Tyr Lys Val Val Lys  
485 490 495

Val Glu Pro Leu Gly Val Ala Pro Thr Arg Ala Lys Arg Arg Val Val  
500 505 510

Gln Arg

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<210> 13
<211> 1136
<212> PRT
<213> Human immunodeficiency virus type 1

<400> 13

Met Val Ile Val Gln Asn Ile Gln Gly Gln Met Val His Gln Ala Ile
1 5 10 15

Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu Glu Lys Ala
20 25 30

Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu Gly Ala
35 40 45

Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln
50 55 60

Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu Ala Ala Glu
65 70 75 80

Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala Pro Gly Gln
85 90 95

Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu
100 105 110

Gln Glu Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile Pro Val Gly
115 120 125

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

Met Tyr Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu
145 150 155 160

Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu Arg Ala Glu
165 170 175

Gln Ala Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr Leu Leu Val
180 185 190

Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro
195 200 205

Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly
210 215 220

Pro Gly His Lys Ala Arg Val Leu His Met Gly Pro Ile Ser Pro Ile
225 230 235 240

Glu Thr Val Ser Val Lys Leu Lys Pro Gly Met Asp Gly Pro Lys Val
245 250 255

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Lys Gln Trp Pro Leu Thr Glu Glu Lys Ile Lys Ala Leu Val Glu Ile  
 260 265 270  
 Cys Thr Glu Met Glu Lys Glu Gly Lys Ile Ser Lys Ile Gly Pro Glu  
 275 280 285  
 Asn Pro Tyr Asn Thr Pro Val Phe Ala Ile Lys Lys Lys Asp Ser Thr  
 290 295 300  
 Lys Trp Arg Lys Leu Val Asp Phe Arg Glu Leu Asn Lys Arg Thr Gln  
 305 310 315 320  
 Asp Phe Trp Glu Val Gln Leu Gly Ile Pro His Pro Ala Gly Leu Lys  
 325 330 335  
 Lys Lys Lys Ser Val Thr Val Leu Asp Val Gly Asp Ala Tyr Phe Ser  
 340 345 350  
 Val Pro Leu Asp Glu Asp Phe Arg Lys Tyr Thr Ala Phe Thr Ile Pro  
 355 360 365  
 Ser Ile Asn Asn Glu Thr Pro Gly Ile Arg Tyr Gln Tyr Asn Val Leu  
 370 375 380  
 Pro Gln Gly Trp Lys Gly Ser Pro Ala Ile Phe Gln Ser Cys Met Thr  
 385 390 395 400  
 Lys Ile Leu Glu Pro Phe Arg Lys Gln Asn Pro Asp Ile Val Ile Tyr  
 405 410 415  
 Gln Tyr Met Asp Asp Leu Tyr Val Gly Ser Asp Leu Glu Ile Gly Gln  
 420 425 430  
 His Arg Thr Lys Ile Glu Glu Leu Arg Gln His Leu Leu Arg Trp Gly  
 435 440 445  
 Leu Thr Thr Pro Asp Lys Lys His Gln Lys Glu Pro Pro Phe Leu Lys  
 450 455 460  
 Met Gly Tyr Glu Leu His Pro Asp Lys Trp Thr Val Gln Pro Ile Val  
 465 470 475 480  
 Leu Pro Glu Lys Asp Ser Trp Thr Val Asn Asp Ile Gln Lys Leu Val  
 485 490 495  
 Gly Lys Leu Asn Trp Ala Ser Gln Ile Tyr Pro Gly Ile Lys Val Arg  
 500 505 510  
 Gln Leu Cys Lys Leu Leu Arg Gly Thr Lys Ala Leu Thr Glu Val Ile  
 515 520 525

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Pro Leu Thr Glu Glu Ala Glu Leu Glu Leu Ala Glu Asn Arg Glu Ile  
530 535 540

Leu Lys Glu Pro Val His Gly Val Tyr Tyr Asp Pro Ser Lys Asp Leu  
545 550 555 560

Ile Ala Glu Ile Gln Lys Gln Gly Gln Gly Gln Trp Thr Tyr Gln Ile  
565 570 575

Tyr Gln Glu Pro Phe Lys Asn Leu Lys Thr Gly Lys Tyr Ala Arg Met  
580 585 590

Arg Gly Ala His Thr Asn Asp Val Lys Gln Leu Thr Glu Ala Val Gln  
595 600 605

Lys Ile Thr Thr Glu Ser Ile Val Ile Trp Gly Lys Thr Pro Lys Phe  
610 615 620

Lys Leu Pro Ile Gln Lys Glu Thr Trp Glu Thr Trp Trp Thr Glu Tyr  
625 630 635 640

Trp Gln Ala Thr Trp Ile Pro Glu Trp Glu Phe Val Asn Thr Pro Pro  
645 650 655

Leu Val Lys Leu Trp Tyr Gln Leu Glu Lys Glu Pro Ile Val Gly Ala  
660 665 670

Glu Thr Phe Tyr Val Asp Gly Ala Ala Asn Arg Glu Thr Lys Leu Gly  
675 680 685

Lys Ala Gly Tyr Val Thr Asn Arg Gly Arg Gln Lys Val Val Thr Leu  
690 695 700

Thr Asp Thr Thr Asn Gln Lys Thr Glu Leu Gln Ala Ile Tyr Leu Ala  
705 710 715 720

Leu Gln Asp Ser Gly Leu Glu Val Asn Ile Val Thr Asp Ser Gln Tyr  
725 730 735

Ala Leu Gly Ile Ile Gln Ala Gln Pro Asp Gln Ser Glu Ser Glu Leu  
740 745 750

Val Asn Gln Ile Ile Glu Gln Leu Ile Lys Lys Glu Lys Val Tyr Leu  
755 760 765

Ala Trp Val Pro Ala His Lys Gly Ile Gly Gly Asn Glu Gln Val Asp  
770 775 780

Lys Leu Val Ser Ala Gly Ile Arg Lys Val Leu Ala Met Gly Gly Lys  
785 790 795 800

Trp Ser Lys Ser Ser Val Val Gly Trp Pro Thr Val Arg Glu Arg Met  
 805 810 815  
 Arg Arg Ala Glu Pro Ala Ala Asp Gly Val Gly Ala Ala Ser Arg Asp  
 820 825 830  
 Leu Glu Lys His Gly Ala Ile Thr Ser Ser Asn Thr Ala Ala Thr Asn  
 835 840 845  
 Ala Ala Cys Ala Trp Leu Glu Ala Gln Glu Glu Glu Glu Val Gly Phe  
 850 855 860  
 Pro Val Thr Pro Gln Val Pro Leu Arg Pro Met Thr Tyr Lys Ala Ala  
 865 870 875 880  
 Val Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly Leu Glu Gly Leu  
 885 890 895  
 Ile His Ser Gln Arg Arg Gln Asp Ile Leu Asp Leu Trp Ile Tyr His  
 900 905 910  
 Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr Pro Gly Pro Gly  
 915 920 925  
 Val Arg Tyr Pro Leu Thr Phe Gly Trp Cys Tyr Lys Leu Val Pro Val  
 930 935 940  
 Glu Pro Asp Lys Val Glu Glu Ala Asn Lys Gly Glu Asn Thr Ser Leu  
 945 950 955 960  
 Leu His Pro Val Ser Leu His Gly Met Asp Asp Pro Glu Arg Glu Val  
 965 970 975  
 Leu Glu Trp Arg Phe Asp Ser Arg Leu Ala Phe His His Val Ala Arg  
 980 985 990  
 Glu Leu His Pro Glu Tyr Phe Lys Asn Cys Arg Pro Met Gly Ala Arg  
 995 1000 1005  
 Ala Ser Val Leu Ser Gly Gly Glu Leu Asp Arg Trp Glu Lys Ile  
 1010 1015 1020  
 Arg Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys His Ile  
 1025 1030 1035  
 Val Trp Ala Ser Arg Glu Leu Glu Arg Phe Ala Val Asn Pro Gly  
 1040 1045 1050  
 Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu  
 1055 1060 1065  
 Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr  
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1070

1075

1080

Asn Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Ile  
 1085 1090 1095

Lys Asp Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn  
 1100 1105 1110

Lys Ser Lys Lys Lys Ala Gln Gln Ala Ala Ala Asp Thr Gly His  
 1115 1120 1125

Ser Asn Gln Val Ser Gln Asn Tyr  
 1130 1135

&lt;210&gt; 14

&lt;211&gt; 232

&lt;212&gt; PRT

&lt;213&gt; Human immunodeficiency virus type 1

&lt;400&gt; 14

Met Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His Gln Ala Ile  
 1 5 10 15

Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu Glu Lys Ala  
 20 25 30

Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu Gly Ala  
 35 40 45

Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln  
 50 55 60

Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu Ala Ala Glu  
 65 70 75 80

Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala Pro Gly Gln  
 85 90 95

Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu  
 100 105 110

Gln Glu Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile Pro Val Gly  
 115 120 125

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

Met Tyr Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu  
 145 150 155 160

Pro Phe Arg Asp Tyr Val Asp Arg Phe Tyr Lys Thr Leu Arg Ala Glu  
 165 170 175

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Gln Ala Ser Gln Glu Val Lys Asn Trp Met Thr Glu Thr Leu Leu Val  
180 185 190

Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala Leu Gly Pro  
195 200 205

Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly  
210 215 220

Pro Gly His Lys Ala Arg Val Leu  
225 230

<210> 15  
<211> 386  
<212> PRT  
<213> Gallus sp.

<400> 15

Met Gly Ser Ile Gly Ala Ala Ser Met Glu Phe Cys Phe Asp Val Phe  
1 5 10 15

Lys Glu Leu Lys Val His His Ala Asn Glu Asn Ile Phe Tyr Cys Pro  
20 25 30

Ile Ala Ile Met Ser Ala Leu Ala Met Val Tyr Leu Gly Ala Lys Asp  
35 40 45

Ser Thr Arg Thr Gln Ile Asn Lys Val Val Arg Phe Asp Lys Leu Pro  
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Gly Phe Gly Asp Ser Ile Glu Ala Gln Cys Gly Thr Ser Val Asn Val  
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His Ser Ser Leu Arg Asp Ile Leu Asn Gln Ile Thr Lys Pro Asn Asp  
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Val Tyr Ser Phe Ser Leu Ala Ser Arg Leu Tyr Ala Glu Glu Arg Tyr  
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Pro Ile Leu Pro Glu Tyr Leu Gln Cys Val Lys Glu Leu Tyr Arg Gly  
115 120 125

Gly Leu Glu Pro Ile Asn Phe Gln Thr Ala Ala Asp Gln Ala Arg Glu  
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Leu Ile Asn Ser Trp Val Glu Ser Gln Thr Asn Gly Ile Ile Arg Asn  
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Val Leu Gln Pro Ser Ser Val Asp Ser Gln Thr Ala Met Val Leu Val  
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Asn Ala Ile Val Phe Lys Gly Leu Trp Glu Lys Thr Phe Lys Asp Glu  
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180

185

190

Asp Thr Gln Ala Met Pro Phe Arg Val Thr Glu Gln Glu Ser Lys Pro  
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Val Gln Met Met Tyr Gln Ile Gly Leu Phe Arg Val Ala Ser Met Ala  
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Ser Glu Lys Met Lys Ile Leu Glu Leu Pro Phe Ala Ser Gly Thr Met  
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Ser Met Leu Val Leu Leu Pro Asp Glu Val Ser Gly Leu Glu Gln Leu  
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Glu Ser Ile Ile Asn Phe Glu Lys Leu Thr Glu Trp Thr Ser Ser Asn  
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Val Met Glu Glu Arg Lys Ile Lys Val Tyr Leu Pro Arg Met Lys Met  
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Glu Glu Lys Tyr Asn Leu Thr Ser Val Leu Met Ala Met Gly Ile Thr  
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Asp Val Phe Ser Ser Ser Ala Asn Leu Ser Gly Ile Ser Ser Ala Glu  
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Ser Leu Lys Ile Ser Gln Ala Val His Ala Ala His Ala Glu Ile Asn  
 325 330 335

Glu Ala Gly Arg Glu Val Val Gly Ser Ala Glu Ala Gly Val Asp Ala  
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Ala Ser Val Ser Glu Glu Phe Arg Ala Asp His Pro Phe Leu Phe Cys  
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Gly Lys Arg Glu Met Val Ile Ile Thr Phe Lys Ser Gly Ala Thr Phe  
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Gln Val Glu Val Pro Gly Ser Gln His Ile Asp Ser Gln Lys Lys Ala  
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Ile Glu Arg Met Lys Asp Thr Leu Arg Ile Thr Tyr Leu Thr Glu Thr  
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