

17-05-2010 M1013PCT_ST25.txt
SEQUENCE LISTING

<110> Medizinische Hochschule Hannover
Axel, Schambach, Dr.
Christopher, Baum, Prof. Dr.
Julia, Sürth

<120> ASLV Vektorsystem

<130> M1013PCT

<160> 16

<170> PatentIn version 3.5

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 <223> EGFP: kodierende Sequenz für eGFP

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<223> EGFP: kodierende Sequenz für eGFP

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Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
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Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
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Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
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Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
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Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
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Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
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Leu Gln Lys Glu Gly Leu Leu Met Ser Pro Ser Asp Leu Tyr Ser Pro
35 40 45

Gly Ser Trp Asp Pro Ile Thr Ala Ala Leu Ser Gln Arg Ala Met Val
50 55 60

Leu Gly Lys Ser Gly Glu Leu Lys Thr Trp Gly Leu Val Leu Gly Ala
65 70 75 80

Leu Lys Ala Ala Arg Glu Glu Gln Val Thr Ser Glu Gln Ala Lys Phe
85 90 95

Trp Leu Gly Leu Gly Gly Gly Arg Val Ser Pro Pro Gly Pro Glu Cys
100 105 110

Ile Glu Lys₁₁₅ Pro Ala Thr Glu Arg₁₂₀ Arg Ile Asp Lys Gly₁₂₅ Glu Glu Val
 Gly Glu₁₃₀ Thr Thr Val Gln Arg₁₃₅ Asp Ala Lys Met Ala₁₄₀ Pro Glu Glu Ala
 Ala₁₄₅ Thr Pro Lys Thr Val₁₅₀ Gly Thr Ser Cys Tyr₁₅₅ His Cys Gly Thr Ala₁₆₀
 Val Gly Cys Asn Cys₁₆₅ Ala Thr Ala Thr Ala₁₇₀ Ser Ala Pro Pro₁₇₅ Pro
 Tyr Val Gly Ser₁₈₀ Gly Leu Tyr Pro Ser₁₈₅ Leu Ala Gly Val Gly₁₉₀ Glu Gln
 Gln Gly Gln₁₉₅ Gly Asp Asn Thr Ser₂₀₀ Arg Gly Ala Glu Gln₂₀₅ Pro Arg Glu
 Glu Pro₂₁₀ Gly His Ala Gly Gln₂₁₅ Ala Pro Gly Pro Ala₂₂₀ Leu Thr Asp Trp
 Ala₂₂₅ Arg Val Arg Glu Glu₂₃₀ Leu Ala Ser Thr Gly₂₃₅ Pro Pro Val Val Ala₂₄₀
 Met Pro Val Val Ile₂₄₅ Lys Thr Glu Gly Pro₂₅₀ Ala Trp Thr Pro Leu₂₅₅ Glu
 Pro Lys Leu Ile₂₆₀ Thr Arg Leu Ala Asp₂₆₅ Thr Val Arg Thr Lys₂₇₀ Gly Leu
 Arg Ser Pro₂₇₅ Ile Thr Met Ala Glu₂₈₀ Val Glu Ala Leu Met₂₈₅ Ser Ser Pro
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 Ala₃₀₅ Pro Tyr Ala Leu Trp₃₁₀ Met Asp Ala Trp Gly₃₁₅ Val Gln Leu Gln Thr₃₂₀
 Val Ile Ala Ala Ala₃₂₅ Thr Arg Asp Pro Arg₃₃₀ His Pro Ala Asn Gly₃₃₅ Gln
 Gly Arg Gly Glu₃₄₀ Arg Thr Asn Leu Asp₃₄₅ Arg Leu Lys Gly Leu₃₅₀ Ala Asp
 Gly Met Val₃₅₅ Gly Asn Pro Gln Gly₃₆₀ Gln Ala Ala Leu Leu₃₆₅ Arg Pro Gly
 Glu Leu Val Ala Ile Thr Ala₃₇₅ Ser Ala Leu Gln Ala₃₈₀ Phe Arg Glu Val
 Ala Arg Leu Ala Glu Pro Ala Gly Pro Trp Ala Asp Ile Thr Gln Gly

385 390 395 400

Pro Ser Glu Ser Phe Val Asp Phe Ala Asn Arg Leu Ile Lys Ala Val
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Glu Gly Ser Asp Leu Pro Pro Ser Ala Arg Ala Pro Val Ile Ile Asp
420 425 430

Cys Phe Arg Gln Lys Ser Gln Pro Asp Ile Gln Gln Leu Ile Arg Ala
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Ala Pro Ser Thr Leu Thr Thr Pro Gly Glu Ile Ile Lys Tyr Val Leu
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Asp Arg Gln Lys Ile Ala Pro Leu Thr Asp Gln Gly Ile Ala Ala Ala
465 470 475 480

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

Arg Asp Gly Gln Thr Gly Ser Gly Gly Arg Ala Arg Gly Leu Cys Tyr
500 505 510

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

Lys Ser Gly Asn Ser Arg Glu Arg Cys Gln Leu Cys Asp Gly Met Gly
530 535 540

His Asn Ala Lys Gln Cys Arg Lys Arg Asp Gly Asn Gln Gly Gln Arg
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Pro Gly Arg Gly Leu Ser Ser Gly Pro Trp Pro Gly Pro Glu Gln Pro
565 570 575

Ala Val Ser Leu Ala Met Thr Met Glu His Lys Asp Arg Pro Leu Val
580 585 590

Arg Val Ile Leu Thr Asn Thr Gly Ser His Pro Val Lys Gln Arg Ser
595 600 605

Val Tyr Ile Thr Ala Leu Leu Asp Ser Gly Ala Asp Ile Thr Ile Ile
610 615 620

Ser Glu Glu Asp Trp Pro Thr Asp Trp Pro Val Val Asp Thr Ala Asn
625 630 635 640

Pro Gln Ile His Gly Ile Gly Gly Gly Ile Pro Met Arg Lys Ser Arg
645 650 655

Asp Met Ile Glu Val Gly Val Ile Asn Arg Asp Gly Ser Leu Glu Arg
660 665 670

Pro Leu Leu Leu Phe Pro Ala Val Ala Met Val Arg Gly Ser Ile Leu
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<211> 895
<212> PRT
<213> Artificial Sequence

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Ala Leu Thr Gln Leu Val Glu Lys Glu Leu Gln Leu Gly His Ile Glu
35 40 45

Pro Ser Leu Ser Cys Trp Asn Thr Pro Val Phe Val Ile Arg Lys Ala
50 55 60

Ser Gly Ser Tyr Arg Leu Leu His Asp Leu Arg Ala Val Asn Ala Lys
65 70 75 80

Leu Val Pro Phe Gly Ala Val Gln Gln Gly Ala Pro Val Leu Ser Ala
85 90 95

Leu Pro Arg Gly Trp Pro Leu Met Val Leu Asp Leu Lys Asp Cys Phe
100 105 110

Phe Ser Ile Pro Leu Ala Glu Gln Asp Arg Glu Ala Phe Ala Phe Thr
115 120 125

Leu Pro Ser Val Asn Asn Gln Ala Pro Ala Arg Arg Phe Gln Trp Lys
130 135 140

Val Leu Pro Gln Gly Met Thr Cys Ser Pro Thr Ile Cys Gln Leu Val
145 150 155 160

Val Gly Gln Val Leu Glu Pro Leu Arg Leu Lys His Pro Ala Leu Arg
165 170 175

Met Leu His Tyr Met Asp Asp Leu Leu Leu Ala Ala Ser Ser His Asp
180 185 190

Gly Leu Glu Ala Ala Gly Lys Glu Val Ile Gly Thr Leu Glu Arg Ala

195

200

205

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

Tyr Leu Gly Tyr Lys Leu Gly Ser Thr Tyr Val Ala Pro Val Gly Leu
 225 230 235 240

Val Ala Glu Pro Arg Ile Ala Thr Leu Trp Asp Val Gln Lys Leu Val
 245 250 255

Gly Ser Leu Gln Trp Leu Arg Pro Ala Leu Gly Ile Pro Pro Arg Leu
 260 265 270

Met Gly Pro Phe Tyr Glu Gln Leu Arg Gly Ser Asp Pro Asn Glu Ala
 275 280 285

Arg Glu Trp Asn Leu Asp Met Lys Met Ala Trp Arg Glu Ile Val Gln
 290 295 300

Leu Ser Thr Thr Ala Ala Leu Glu Arg Trp Asp Pro Ala Gln Pro Leu
 305 310 315 320

Glu Gly Ala Val Ala Arg Cys Glu Gln Gly Ala Ile Gly Val Leu Gly
 325 330 335

Gln Gly Leu Ser Thr His Pro Arg Pro Cys Leu Trp Leu Phe Ser Thr
 340 345 350

Gln Pro Thr Lys Ala Phe Thr Ala Trp Leu Glu Val Leu Thr Leu Leu
 355 360 365

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

Asp Ile Leu Leu Leu Pro Ala Cys Phe Arg Glu Asp Leu Pro Leu Pro
 385 390 395 400

Glu Gly Ile Leu Leu Ala Leu Arg Gly Phe Ala Gly Lys Ile Arg Ser
 405 410 415

Ser Asp Thr Pro Ser Ile Phe Asp Ile Ala Arg Pro Leu His Val Ser
 420 425 430

Leu Lys Val Arg Val Thr Asp His Pro Val Pro Gly Pro Thr Val Phe
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Thr Asp Ala Ser Ser Ser Thr His Lys Gly Val Val Val Trp Arg Glu
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Gly Pro Arg Trp Glu Ile Lys Glu Ile Val Asp Leu Gly Ala Ser Val
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Gln Gln Leu Glu Ala Arg Ala Val Ala Met Ala Leu Leu Leu Trp Pro
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 Ile Leu Glu Asp Ala Leu Ser Gln Arg Ser Ala Met Ala Ala Val Leu
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 Ala Lys Asp Leu His Thr Ala Leu His Ile Gly Pro Arg Ala Leu Ser
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 Cys Pro His Cys Asn Ser Ala Pro Ala Leu Glu Ala Gly Val Asn Pro
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 690 695 700
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Pro Ala Ser Lys Gln Gly Glu Leu Leu Ala Lys Ala Met Tyr Ala Leu
755 760 765

Asn His Phe Glu Arg Gly Glu Asn Thr Lys Thr Pro Val Gln Lys His
770 775 780

Trp Arg Pro Thr Val Leu Thr Glu Gly Pro Pro Val Lys Ile Arg Ile
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Glu Thr Gly Glu Trp Glu Lys Gly Trp Asn Val Leu Val Trp Gly Arg
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Gly Tyr Ala Ala Val Lys Asn Arg Asp Thr Asp Lys Val Ile Trp Val
820 825 830

Pro Ser Arg Lys Val Lys Pro Asp Val Thr Gln Lys Asp Glu Val Thr
835 840 845

Lys Lys Asp Glu Ala Ser Pro Leu Phe Ala Gly Ile Ser Asp Trp Ile
850 855 860

Pro Trp Glu Asp Glu Gln Glu Gly Leu Gln Gly Glu Thr Ala Ser Asn
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Lys Gln Glu Arg Pro Gly Glu Asp Thr Leu Ala Ala Asn Glu Ser
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<210> 14
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<223> /note="Seq.-ID Nr. 14: 1. Helferplasmid für kodonoptimiertes gag-pol "

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<223> Promoter von CMV

<220>
<221> Intron
<222> (907)..(1463)
<223> Intron von beta Globin

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<221> CDS
<222> (1475)..(3586)
<223> gal: kodierende Sequenz für Gal, kodonoptimiert

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<221> misc_feature
<222> (3437)..(3737)
<223> Übergangsbereich zwischen für gag und pol kodierenden Bereichen (wildtyp)

<220>

<221> misc_feature
 <222> (3574)..(3723)
 <223> Signal für Änderung des Leserahmens (frameshift signal)

<220>
 <221> CDS
 <222> (3604)..(6291)
 <223> pol: Kodierende Sequenz für Pol, kodonoptimiert

<220>
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 <222> (6368)..(6588)
 <223> poly Adenylierungssignal aus bGH

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                               Met Glu Ala Val Ile Lys Val
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atc agc agc gcc tgc aag acc tac tgc ggc aag atc agc ccc agc aag     1543
Ile Ser Ser Ala Cys Lys Thr Tyr Cys Gly Lys Ile Ser Pro Ser Lys

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10	15	20	
aaa gaa atc ggc gct atg ctg tct ctc ctg caa aag gaa ggc ctg ctg Lys Glu Ile Gly Ala Met Leu Ser Leu Leu Gln Lys Glu Gly Leu Leu	25	30	35
atg agc ccc agc gac ctg tac agc ccc ggc agc tgg gat cct atc aca Met Ser Pro Ser Asp Leu Tyr Ser Pro Gly Ser Trp Asp Pro Ile Thr	40	45	50
gcc gcc ctg agc cag agg gcc atg gtg ctg ggc aag agc ggc gag ctg Ala Ala Leu Ser Gln Arg Ala Met Val Leu Gly Lys Ser Gly Glu Leu	60	65	70
aaa acc tgg ggg ctg gtg ctg gga gcc ctg aag gcc gcc aga gaa gaa Lys Thr Trp Gly Leu Val Leu Gly Ala Leu Lys Ala Ala Arg Glu Glu	75	80	85
cag gtg acc agc gag cag gcc aag ttt tgg ctg ggc ctg ggc gga gga Gln Val Thr Ser Glu Gln Ala Lys Phe Trp Leu Gly Leu Gly Gly Gly	90	95	100
aga gtg tct ccc cct ggc ccc gag tgt atc gag aag ccc gcc acc gag Arg Val Ser Pro Pro Gly Pro Glu Cys Ile Glu Lys Pro Ala Thr Glu	105	110	115
cgg aga atc gac aag ggc gag gaa gtg ggc gag aca acc gtg cag cgg Arg Arg Ile Asp Lys Gly Glu Glu Val Gly Glu Thr Thr Val Gln Arg	120	125	130
gac gcc aag atg gcc cct gag gaa gcc gcc acc cct aag acc gtg ggc Asp Ala Lys Met Ala Pro Glu Glu Ala Ala Thr Pro Lys Thr Val Gly	140	145	150
acc agc tgc tac cac tgt ggc acc gcc gtg ggc tgt aat tgt gcc acc Thr Ser Cys Tyr His Cys Gly Thr Ala Val Gly Cys Asn Cys Ala Thr	155	160	165
gcc acc gcc tct gcc cct cct cct cct tac gtg ggc agc ggc ctg tat Ala Thr Ala Ser Ala Pro Pro Pro Tyr Val Gly Ser Thr Gly Leu Tyr	170	175	180
cct tct ctg gcc ggc gtg ggc gag cag cag gga cag ggc gac aat acc Pro Ser Leu Ala Gly Val Gly Glu Gln Gln Gly Gln Gly Asp Asn Thr	185	190	195
agc aga ggc gcc gag cag cct aga gag gaa cct gga cac gct ggc cag Ser Arg Gly Ala Glu Gln Pro Arg Glu Glu Pro Gly His Ala Gly Gln	200	205	210
gcc cca gga cct gcc ctg aca gat tgg gcc aga gtg cgg gag gaa ctg Ala Pro Gly Pro Ala Leu Thr Asp Trp Ala Arg Val Arg Glu Glu Leu	220	225	230
gcc tct acc gga ccc cct gtg gtg gcc atg ccc gtg gtg atc aag aca Ala Ser Thr Gly Pro Pro Val Val Ala Met Pro Val Val Ile Lys Thr	235	240	245
gag ggc cct gcc tgg acc cct ctg gaa ccc aag ctg atc acc cgg ctg Glu Gly Pro Ala Trp Thr Pro Leu Glu Pro Lys Leu Ile Thr Arg Leu	250	255	260
gcc gat aca gtg cgg acc aag ggc ctg aga agc ccc atc acc atg gcc Ala Asp Thr Val Arg Thr Lys Gly Leu Arg Ser Pro Ile Thr Met Ala	265	270	275
gag gtg gag gcc ctg atg agc agc ccc ctg ctg ccc cac gac gtg acc Glu Val Glu Ala Leu Met Ser Ser Pro Leu Leu Pro His Asp Val Thr	280	285	290
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Asp	Ala	Trp	Gly 315	Val	Gln	Leu	Gln	Thr 320	Val	Ile	Ala	Ala	Ala 325	Thr	Arg	
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Leu	Asp 345	Arg	Leu	Lys	Gly	Leu 350	Ala	Asp	Gly	Met	Val 355	Gly	Asn	Pro	Gln	
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Phe	Ala	Asn 410	Arg	Leu	Ile	Lys	Ala 415	Val	Glu	Gly	Ser	Asp 420	Leu	Pro	Pro	
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Tyr 520	Gln	Ala	Gln	Cys	Pro 525	Lys	Lys	Arg	Lys	Ser 530	Gly	Asn	Ser	Arg	Glu 535	
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gtg Val 1145	cct Pro	ggc Gly	ccc Pro	acc Thr
aag Lys 1160	ggc Gly	gtg Val	gtg Val	gtg Val
gaa Glu 1175	atc Ile	gtg Val	gac Asp	ctg Leu
gcc Ala 1190	gtg Val	gcc Ala	atg Met	gct Ala
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gat Asp 1235	gcc Ala	ctg Leu	tcc Ser	cag Gln
cgg Arg 1250	agc Ser	cac His	agc Ser	gag Glu
gtg Val 1265	gcc Ala	gac Asp	agc Ser	cag Gln
gcc Ala 1280	aag Lys	gac Asp	ctg Leu	cac His
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gtg Val 1325	aac Asn	cct Pro	aga Arg	ggc Gly
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acc Thr 1355	gtg Val	gat Asp	acc Thr	gcc Ala

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gcc Ala 1385	gtg Val	ctg Leu	ggc Gly	aga Arg	ccc Pro 1390	aag Lys	gcc Ala	atc Ile	aag Lys	acc Thr 1395	gac Asp	aac Asn	ggc Gly	agc Ser	5691
tgc Cys 1400	ttc Phe	acc Thr	agc Ser	cgg Arg	tcc Ser 1405	acc Thr	aga Arg	gaa Glu	tgg Trp	ctg Leu 1410	gcc Ala	aga Arg	tgg Trp	ggc Gly	5736
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 <211> 703
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic Construct

<400> 15

Met Glu Ala Val Ile Lys Val Ile Ser Ser Ala Cys Lys Thr Tyr Cys
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Gly Lys Ile Ser Pro Ser Lys Lys Glu Ile Gly Ala Met Leu Ser Leu
20 25 30

Leu Gln Lys Glu Gly Leu Leu Met Ser Pro Ser Asp Leu Tyr Ser Pro
35 40 45

Gly Ser Trp Asp Pro Ile Thr Ala Ala Leu Ser Gln Arg Ala Met Val
50 55 60

Leu Gly Lys Ser Gly Glu Leu Lys Thr Trp Gly Leu Val Leu Gly Ala
65 70 75 80

Leu Lys Ala Ala Arg Glu Glu Gln Val Thr Ser Glu Gln Ala Lys Phe
85 90 95

Trp Leu Gly Leu Gly Gly Gly Arg Val Ser Pro Pro Gly Pro Glu Cys
100 105 110

Ile Glu Lys Pro Ala Thr Glu Arg Arg Ile Asp Lys Gly Glu Glu Val
115 120 125

Gly Glu Thr Thr Val Gln Arg Asp Ala Lys Met Ala Pro Glu Glu Ala
130 135 140

Ala Thr Pro Lys Thr Val Gly Thr Ser Cys Tyr His Cys Gly Thr Ala
145 150 155 160

Val Gly Cys Asn Cys Ala Thr Ala Thr Ala Ser Ala Pro Pro Pro Pro
165 170 175

Tyr Val Gly Ser Gly Leu Tyr Pro Ser Leu Ala Gly Val Gly Glu Gln
180 185 190

Gln Gly Gln Gly Asp Asn Thr Ser Arg Gly Ala Glu Gln Pro Arg Glu
195 200 205

Glu Pro Gly His Ala Gly Gln Ala Pro Gly Pro Ala Leu Thr Asp Trp
 210 215 220

Ala Arg Val Arg Glu Glu Leu Ala Ser Thr Gly Pro Pro Val Val Ala
 225 230 235 240

Met Pro Val Val Ile Lys Thr Glu Gly Pro Ala Trp Thr Pro Leu Glu
 245 250 255

Pro Lys Leu Ile Thr Arg Leu Ala Asp Thr Val Arg Thr Lys Gly Leu
 260 265 270

Arg Ser Pro Ile Thr Met Ala Glu Val Glu Ala Leu Met Ser Ser Pro
 275 280 285

Leu Leu Pro His Asp Val Thr Asn Leu Met Arg Val Ile Leu Gly Pro
 290 295 300

Ala Pro Tyr Ala Leu Trp Met Asp Ala Trp Gly Val Gln Leu Gln Thr
 305 310 315 320

Val Ile Ala Ala Ala Thr Arg Asp Pro Arg His Pro Ala Asn Gly Gln
 325 330 335

Gly Arg Gly Glu Arg Thr Asn Leu Asp Arg Leu Lys Gly Leu Ala Asp
 340 345 350

Gly Met Val Gly Asn Pro Gln Gly Gln Ala Ala Leu Leu Arg Pro Gly
 355 360 365

Glu Leu Val Ala Ile Thr Ala Ser Ala Leu Gln Ala Phe Arg Glu Val
 370 375 380

Ala Arg Leu Ala Glu Pro Ala Gly Pro Trp Ala Asp Ile Thr Gln Gly
 385 390 395 400

Pro Ser Glu Ser Phe Val Asp Phe Ala Asn Arg Leu Ile Lys Ala Val
 405 410 415

Glu Gly Ser Asp Leu Pro Pro Ser Ala Arg Ala Pro Val Ile Ile Asp
 420 425 430

Cys Phe Arg Gln Lys Ser Gln Pro Asp Ile Gln Gln Leu Ile Arg Ala
 435 440 445

Ala Pro Ser Thr Leu Thr Thr Pro Gly Glu Ile Ile Lys Tyr Val Leu
 450 455 460

Asp Arg Gln Lys Ile Ala Pro Leu Thr Asp Gln Gly Ile Ala Ala Ala
 465 470 475 480

Met Ser Ser Ala Ile Gln Pro Leu Val Met Ala Val Val Asn Arg Glu
 Seite 44

485

490

495

Arg Asp Gly Gln Thr Gly Ser Gly Gly Arg Ala Arg Gly Leu Cys Tyr
 500 505 510

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

Lys Ser Gly Asn Ser Arg Glu Arg Cys Gln Leu Cys Asp Gly Met Gly
 530 535 540

His Asn Ala Lys Gln Cys Arg Lys Arg Asp Gly Asn Gln Gly Gln Arg
 545 550 555 560

Pro Gly Arg Gly Leu Ser Ser Gly Pro Trp Pro Gly Pro Glu Gln Pro
 565 570 575

Ala Val Ser Leu Ala Met Thr Met Glu His Lys Asp Arg Pro Leu Val
 580 585 590

Arg Val Ile Leu Thr Asn Thr Gly Ser His Pro Val Lys Gln Arg Ser
 595 600 605

Val Tyr Ile Thr Ala Leu Leu Asp Ser Gly Ala Asp Ile Thr Ile Ile
 610 615 620

Ser Glu Glu Asp Trp Pro Thr Asp Trp Pro Val Val Asp Thr Ala Asn
 625 630 635 640

Pro Gln Ile His Gly Ile Gly Gly Gly Ile Pro Met Arg Lys Ser Arg
 645 650 655

Asp Met Ile Glu Val Gly Val Ile Asn Arg Asp Gly Ser Leu Glu Arg
 660 665 670

Pro Leu Leu Leu Phe Pro Ala Val Ala Met Val Arg Gly Ser Ile Leu
 675 680 685

Gly Arg Asp Cys Leu Gln Gly Leu Gly Leu Arg Leu Thr Asn Leu
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<210> 16

<211> 895

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Construct

<400> 16

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Thr Pro Val Trp Ile Asp Gln Trp Pro Leu Pro Glu Gly Lys Leu Val
 20 25 30

Ala Leu Thr Gln Leu Val Glu Lys Glu Leu Gln Leu Gly His Ile Glu
 35 40 45

Pro Ser Leu Ser Cys Trp Asn Thr Pro Val Phe Val Ile Arg Lys Ala
 50 55 60

Ser Gly Ser Tyr Arg Leu Leu His Asp Leu Arg Ala Val Asn Ala Lys
 65 70 75 80

Leu Val Pro Phe Gly Ala Val Gln Gln Gly Ala Pro Val Leu Ser Ala
 85 90 95

Leu Pro Arg Gly Trp Pro Leu Met Val Leu Asp Leu Lys Asp Cys Phe
 100 105 110

Phe Ser Ile Pro Leu Ala Glu Gln Asp Arg Glu Ala Phe Ala Phe Thr
 115 120 125

Leu Pro Ser Val Asn Asn Gln Ala Pro Ala Arg Arg Phe Gln Trp Lys
 130 135 140

Val Leu Pro Gln Gly Met Thr Cys Ser Pro Thr Ile Cys Gln Leu Val
 145 150 155 160

Val Gly Gln Val Leu Glu Pro Leu Arg Leu Lys His Pro Ala Leu Arg
 165 170 175

Met Leu His Tyr Met Asp Asp Leu Leu Leu Ala Ala Ser Ser His Asp
 180 185 190

Gly Leu Glu Ala Ala Gly Lys Glu Val Ile Gly Thr Leu Glu Arg Ala
 195 200 205

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

Tyr Leu Gly Tyr Lys Leu Gly Ser Thr Tyr Val Ala Pro Val Gly Leu
 225 230 235 240

Val Ala Glu Pro Arg Ile Ala Thr Leu Trp Asp Val Gln Lys Leu Val
 245 250 255

Gly Ser Leu Gln Trp Leu Arg Pro Ala Leu Gly Ile Pro Pro Arg Leu
 260 265 270

Met Gly Pro Phe Tyr Glu Gln Leu Arg Gly Ser Asp Pro Asn Glu Ala
 275 280 285

Arg Glu Trp Asn Leu Asp Met Lys Met Ala Trp Arg Glu Ile Val Gln
 Seite 46

290

295

300

Leu Ser Thr Thr Ala Ala Leu Glu Arg Trp Asp Pro Ala Gln Pro Leu
 305 310 315 320

Glu Gly Ala Val Ala Arg Cys Glu Gln Gly Ala Ile Gly Val Leu Gly
 325 330 335

Gln Gly Leu Ser Thr His Pro Arg Pro Cys Leu Trp Leu Phe Ser Thr
 340 345 350

Gln Pro Thr Lys Ala Phe Thr Ala Trp Leu Glu Val Leu Thr Leu Leu
 355 360 365

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

Asp Ile Leu Leu Leu Pro Ala Cys Phe Arg Glu Asp Leu Pro Leu Pro
 385 390 395 400

Glu Gly Ile Leu Leu Ala Leu Arg Gly Phe Ala Gly Lys Ile Arg Ser
 405 410 415

Ser Asp Thr Pro Ser Ile Phe Asp Ile Ala Arg Pro Leu His Val Ser
 420 425 430

Leu Lys Val Arg Val Thr Asp His Pro Val Pro Gly Pro Thr Val Phe
 435 440 445

Thr Asp Ala Ser Ser Ser Thr His Lys Gly Val Val Val Trp Arg Glu
 450 455 460

Gly Pro Arg Trp Glu Ile Lys Glu Ile Val Asp Leu Gly Ala Ser Val
 465 470 475 480

Gln Gln Leu Glu Ala Arg Ala Val Ala Met Ala Leu Leu Leu Trp Pro
 485 490 495

Thr Thr Pro Thr Asn Val Val Thr Asp Ser Ala Phe Val Ala Lys Met
 500 505 510

Leu Leu Lys Met Gly Gln Glu Gly Val Pro Ser Thr Ala Ala Ala Phe
 515 520 525

Ile Leu Glu Asp Ala Leu Ser Gln Arg Ser Ala Met Ala Ala Val Leu
 530 535 540

His Val Arg Ser His Ser Glu Val Pro Gly Phe Phe Thr Glu Gly Asn
 545 550 555 560

Asp Val Ala Asp Ser Gln Ala Thr Phe Gln Ala Tyr Pro Leu Arg Glu
 565 570 575

Ala Lys Asp Leu₅₈₀ His Thr Ala Leu His₅₈₅ Ile Gly Pro Arg Ala₅₉₀ Leu Ser
 Lys Ala Cys₅₉₅ Asn Ile Ser Met Gln₆₀₀ Gln Ala Arg Glu Val₆₀₅ Val Gln Thr
 Cys Pro₆₁₀ His Cys Asn Ser Ala₆₁₅ Pro Ala Leu Glu Ala₆₂₀ Gly Val Asn Pro
 Arg Gly Leu Gly Pro Leu₆₃₀ Gln Ile Trp Gln Thr₆₃₅ Asp Phe Thr Leu Glu₆₄₀
 Pro Arg Met Ala Pro₆₄₅ Arg Ser Trp Leu Ala₆₅₀ Val Thr Val Asp Thr₆₅₅ Ala
 Ser Ser Ala Ile₆₆₀ Val Val Thr Gln His₆₆₅ Gly Arg Val Thr Ser₆₇₀ Val Ala
 Ala Gln His₆₇₅ His Trp Ala Thr Ala₆₈₀ Ile Ala Val Leu Gly₆₈₅ Arg Pro Lys
 Ala Ile₆₉₀ Lys Thr Asp Asn Gly₆₉₅ Ser Cys Phe Thr Ser₇₀₀ Arg Ser Thr Arg
 Glu Trp Leu Ala Arg Trp₇₁₀ Gly Ile Ala His Thr₇₁₅ Thr Gly Ile Pro Gly₇₂₀
 Asn Ser Gln Gly Gln₇₂₅ Ala Met Val Glu Arg₇₃₀ Ala Asn Arg Leu Leu₇₃₅ Lys
 Asp Lys Ile Arg₇₄₀ Val Leu Ala Glu Gly₇₄₅ Asp Gly Phe Met Lys₇₅₀ Arg Ile
 Pro Ala Ser₇₅₅ Lys Gln Gly Glu Leu₇₆₀ Leu Ala Lys Ala Met₇₆₅ Tyr Ala Leu
 Asn His₇₇₀ Phe Glu Arg Gly Glu₇₇₅ Asn Thr Lys Thr Pro₇₈₀ Val Gln Lys His
 Trp Arg Pro Thr Val Leu₇₉₀ Thr Glu Gly Pro Pro₇₉₅ Val Lys Ile Arg Ile₈₀₀
 Glu Thr Gly Glu Trp₈₀₅ Glu Lys Gly Trp Asn Val Leu Val Trp Gly₈₁₅ Arg
 Gly Tyr Ala Ala₈₂₀ Val Lys Asn Arg Asp₈₂₅ Thr Asp Lys Val Ile Trp Val
 Pro Ser Arg₈₃₅ Lys Val Lys Pro Asp₈₄₀ Val Thr Gln Lys Asp₈₄₅ Glu Val Thr

Lys Lys Asp Glu Ala Ser Pro Leu Phe Ala Gly Ile Ser Asp Trp Ile
850 855 860

Pro Trp Glu Asp Glu Gln Glu Gly Leu Gln Gly Glu Thr Ala Ser Asn
865 870 875 880

Lys Gln Glu Arg Pro Gly Glu Asp Thr Leu Ala Ala Asn Glu Ser
885 890 895