

Sequence listing-02APR15_ST25
SEQUENCE LISTING

<110> The Trustees of the University of Pennsylvania
MASON, Nicola
PATERSON, Yvonne

<120> COMBINATION IMMUNO THERAPY AND RADIOTHERAPY FOR THE TREATMENT OF
HER-2-POSITIVE CANCERS

<130> P-73423-PC3

<140> PCT/US15/999999
<141> 2015-04-02

<150> 14/669,629
<151> 2015-03-26

<150> 14/268,436
<151> 2014-05-02

<150> PCT/US15/17559
<151> 2015-02-25

<150> 62/076,411
<151> 2014-11-06

<160> 74

<170> PatentIn version 3.5

<210> 1
<211> 1263
<212> DNA
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<220>
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Ser Phe Leu Gln Asp Ile Gln Glu Val Gln Gly Tyr Val Leu Ile Ala	35 40 45
His Asn Gln Val Arg Gln Val Pro Leu Gln Arg Leu Arg Ile Val Arg	50 55 60
Gly Thr Gln Leu Phe Glu Asp Asn Tyr Ala Leu Ala Val Leu Asp Asn	65 70 75 80
Gly Asp Pro Leu Asn Asn Thr Thr Pro Val Thr Gly Ala Ser Pro Gly	85 90 95
Gly Leu Arg Glu Leu Gln Leu Arg Ser Leu Thr Glu Ile Leu Lys Gly	100 105 110
Gly Val Leu Ile Gln Arg Asn Pro Gln Leu Cys Tyr Gln Asp Thr Ile	115 120 125

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Leu Trp Lys Asn Ile Gln Glu Phe Ala Gly Cys Lys Lys Ile Phe Gly
130 135 140

Ser Leu Ala Phe Leu Pro Glu Ser Phe Asp Gly Asp Pro Ala Ser Asn
145 150 155 160

Thr Ala Pro Leu Gln Pro Glu Gln Leu Gln Val Phe Glu Thr Leu Glu
165 170 175

Glu Ile Thr Gly Tyr Leu Tyr Ile Ser Ala Trp Pro Asp Ser Leu Pro
180 185 190

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

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

Leu Gly Leu Arg Ser Leu Arg Glu Leu Gly Ser Gly Leu Ala Leu Ile
225 230 235 240

His His Asn Thr His Leu Cys Phe Val His Thr Val Pro Trp Asp Gln
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Leu Phe Arg Asn Pro His Gln Ala Leu Leu His Thr Ala Asn Arg Pro
260 265 270

Glu Asp Glu Cys Val Gly Glu Gly Leu Ala Cys His Gln Leu Cys Ala
275 280 285

Arg Gly Gln Gln Lys Ile Arg Lys Tyr Thr Met Arg Arg Leu Leu Gln
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Glu Thr Glu Leu Val Glu Pro Leu Thr Pro Ser Gly Ala Met Pro Asn
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Gln Ala Gln Met Arg Ile Leu Lys Glu Thr Glu Leu Arg Lys Val Lys
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340 345 350

Pro Asp Gly Glu Asn Val Lys Ile Pro Val Ala Ile Lys Val Leu Arg
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Glu Asn Thr Ser Pro Lys Ala Asn Lys Glu Ile Leu Asp Glu Ala Tyr
370 375 380

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Val Met Ala Gly Val Gly Ser Pro Tyr Val Ser Arg Leu Leu Gly Ile
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Cys Leu Leu Asp
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<210> 3
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<212> DNA
<213> *Listeria monocytogenes*

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<210> 4
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 <213> *Listeria monocytogenes*

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Glu Asn Ser Ile Ser Ser Met Ala Pro Pro Ala Ser Pro Pro Ala Ser
 35 40 45

Pro Lys Thr Pro Ile Glu Lys Lys His Ala Asp Glu Ile Asp Lys Tyr
 50 55 60

Ile Gln Gly Leu Asp Tyr Asn Lys Asn Asn Val Leu Val Tyr His Gly
 65 70 75 80

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

Glu Tyr Ile Val Val Glu Lys Lys Lys Lys Ser Ile Asn Gln Asn Asn
 100 105 110

Ala Asp Ile Gln Val Val Asn Ala Ile Ser Ser Leu Thr Tyr Pro Gly
 115 120 125

Ala Leu Val Lys Ala Asn Ser Glu Leu Val Glu Asn Gln Pro Asp Val
 130 135 140

Leu Pro Val Lys Arg Asp Ser Leu Thr Leu Ser Ile Asp Leu Pro Gly
 145 150 155 160

Met Thr Asn Gln Asp Asn Lys Ile Val Val Lys Asn Ala Thr Lys Ser
 165 170 175

Asn Val Asn Asn Ala Val Asn Thr Leu Val Glu Arg Trp Asn Glu Lys
 180 185 190

Tyr Ala Gln Ala Tyr Pro Asn Val Ser Ala Lys Ile Asp Tyr Asp Asp
 195 200 205

Glu Met Ala Tyr Ser Glu Ser Gln Leu Ile Ala Lys Phe Gly Thr Ala
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210

215

220

Phe Lys Ala Val Asn Asn Ser Leu Asn Val Asn Phe Gly Ala Ile Ser
225 230 235 240

Glu Gly Lys Met Gln Glu Glu Val Ile Ser Phe Lys Gln Ile Tyr Tyr
245 250 255

Asn Val Asn Val Asn Glu Pro Thr Arg Pro Ser Arg Phe Phe Gly Lys
260 265 270

Ala Val Thr Lys Glu Gln Leu Gln Ala Leu Gly Val Asn Ala Glu Asn
275 280 285

Pro Pro Ala Tyr Ile Ser Ser Val Ala Tyr Gly Arg Gln Val Tyr Leu
290 295 300

Lys Leu Ser Thr Asn Ser His Ser Thr Lys Val Lys Ala Ala Phe Asp
305 310 315 320

Ala Ala Val Ser Gly Lys Ser Val Ser Gly Asp Val Glu Leu Thr Asn
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Ile Ile Lys Asn Ser Ser Phe Lys Ala Val Ile Tyr Gly Gly Ser Ala
340 345 350

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355 360 365

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

Ile Ala Tyr Thr Thr Asn Phe Leu Lys Asp Asn Glu Leu Ala Val Ile
385 390 395 400

Lys Asn Asn Ser Glu Tyr Ile Glu Thr Thr Ser Lys Ala Tyr Thr Asp
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<213> Listeria monocytogenes

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<213> *Listeria monocytogenes*

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<210> 7

<211> 20

<212> PRT

<213> *Listeria monocytogenes*

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Glu Glu Leu Arg
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<213> *Listeria monocytogenes*

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Asp Phe Thr Asp Asp Glu Asn Ser Glu Thr Thr Glu Glu Glu Ile Asp
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Arg

<210> 9

<211> 17

<212> PRT

<213> *Streptococcus pyogenes*

<400> 9

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Lys

<210> 10
<211> 17
<212> PRT
<213> Streptococcus equisimilis
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1 5 10 15

Lys

<210> 11
<211> 9
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<223> mapped HLA-A2 epitope located on extracellular domain of HER2
<400> 11

His Leu Tyr Gln Gly Cys Gln Val Val
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<210> 12
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<210> 13
<211> 9
<212> PRT
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<223> mapped HLA-A2 epitope located on intracellular domain of HER2
<400> 13

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<210> 14
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 <212> DNA
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 <223> Alignment of EC2 (975 -1029 bp of Her-2-neu)

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 <210> 15
 <211> 60
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 <220>
 <223> Alignment of EC2 (975 -1029 bp of Her-2-neu)

 <400> 15
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 <211> 60
 <212> DNA
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 <223> Alignment of EC2 (975 -1029 bp of Her-2-neu)

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 <210> 17
 <211> 60
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 <223> Alignment of EC2 (975 -1029 bp of Her-2-neu)

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

 <220>
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 <210> 19

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<211> 60
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<220>
 <223> Alignment of EC2 (975 -1029 bp of Her-2-neu)

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<220>
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<210> 23
 <211> 60
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<220>
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<220>
 <223> Alignment of IC1 (2114-3042 bp of Her-2-neu)

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<210> 26
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<220>
 <223> Alignment of IC1 (2114-3042 bp of Her-2-neu)

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 <223> Alignment of IC1 (2114-3042 bp of Her-2-neu)

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 <212> DNA
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 <223> Alignment of IC1 (2114-3042 bp of Her-2-neu)

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 <211> 60
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 <223> Alignment of IC1 (2114-3042 bp of Her-2-neu)

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<220>
<223> Alignment of IC1 (2114-3042 bp of Her-2-neu)

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<223> Alignment of IC1 (2114-3042 bp of Her-2-neu)

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<210> 33
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<213> Artificial Sequence

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<223> Alignment of IC1 (2114-3042 bp of Her-2-neu)

<400> 34
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 <211> 59
 <212> DNA
 <213> Artificial Sequence

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 <210> 37
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 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Alignment of IC1 (2114-3042 bp of Her-2-neu)

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 <210> 38
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 <210> 39
 <211> 52
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Alignment of IC1 (2114-3042 bp of Her-2-neu)

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<211> 60
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 <213> Artificial Sequence

<220>
 <223> Alignment of EC1 (399-758 bp of Her-2-neu)

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<210> 41
 <211> 60
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Alignment of EC1 (399-758 bp of Her-2-neu)

<400> 41
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<210> 42
 <211> 60
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Alignment of EC1 (399-758 bp of Her-2-neu)

<400> 42
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<210> 43
 <211> 60
 <212> DNA
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<220>
 <223> Alignment of EC1 (399-758 bp of Her-2-neu)

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<210> 44
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 <212> DNA
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 <223> Alignment of EC1 (399-758 bp of Her-2-neu)

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<210> 45
 <211> 3716
 <212> DNA
 <213> Rattus norvegicus

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<211> 3798

<212> DNA

<213> Homo sapiens

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<220>
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<212> DNA

<213> Homo sapiens

<400> 54

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<212> DNA
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<210> 56
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<212> DNA
<213> Homo sapiens

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gaaggggct	1209

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<220>
 <223> Her-2-Chimera (F)

<400> 57	
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<210> 58
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 <223> HerEC1-EC2F (Junction)

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<210> 59
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<210> 60
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Sequence listing-02APR15_ST25

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 <223> Her- 2- EC2(R)

 <400> 66
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 <400> 67
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 <210> 68
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 <223> Her-2-IC1(R)

 <400> 68
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 <210> 69
 <211> 131
 <212> PRT
 <213> Homo sapiens

 <400> 69
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 Ile Ala His Asn Gln Val Arg Gln Val Pro Leu Gln Arg Leu Arg Ile
 20 25 30

 Val Arg Gly Thr Gln Leu Phe Glu Asp Asn Tyr Ala Leu Ala Val Leu
 35 40 45

 Asp Asn Gly Asp Pro Leu Asn Asn Thr Thr Pro Val Thr Gly Ala Ser
 50 55 60

 Pro Gly Gly Leu Arg Glu Leu Gln Leu Arg Ser Leu Thr Glu Ile Leu
 65 70 75 80

Sequence listing-02APR15_ST25

Lys Gly Gly Val Leu Ile Gln Arg Asn Pro Gln Leu Cys Tyr Gln Asp
85 90 95

Thr Ile Leu Trp Lys Asp Ile Phe His Lys Asn Asn Gln Leu Ala Leu
100 105 110

Thr Leu Ile Asp Thr Asn Arg Ser Arg Ala Cys His Pro Cys Ser Pro
115 120 125

Met Cys Lys
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<210> 70
<211> 131
<212> PRT
<213> Canis familiaris

<400> 70

Ser Leu Ser Phe Leu Gln Asp Ile Gln Glu Val Gln Gly Tyr Val Leu
1 5 10 15

Ile Ala His Ser Gln Val Arg Gln Ile Pro Leu Gln Arg Leu Arg Ile
20 25 30

Val Arg Gly Thr Gln Leu Phe Glu Asp Asn Tyr Ala Leu Ala Val Leu
35 40 45

Asp Asn Gly Asp Pro Leu Glu Gly Gly Ile Pro Ala Pro Gly Ala Ala
50 55 60

Pro Gly Gly Leu Arg Glu Leu Gln Leu Arg Ser Leu Thr Glu Ile Leu
65 70 75 80

Lys Gly Gly Val Leu Ile Gln Arg Ser Pro Gln Leu Cys His Gln Asp
85 90 95

Thr Ile Leu Trp Lys Asp Val Phe His Lys Asn Asn Gln Leu Ala Leu
100 105 110

Thr Leu Ile Asp Thr Asn Arg Ser Arg Ala Cys Pro Pro Cys Ser Pro
115 120 125

Ala Cys Lys
130

<210> 71
<211> 75
<212> PRT

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<213> Homo sapiens

<400> 71

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Glu Ile Thr Gly Tyr Leu Tyr Ile Ser Ala Trp Pro Asp Ser Leu Pro
20 25 30
Asp Leu Ser Val Phe Gln Asn Leu Gln Val Ile Arg Gly Arg Ile Leu
35 40 45
His Asn Gly Ala Tyr Ser Leu Thr Leu Gln Gly Leu Gly Ile Ser Trp
50 55 60
Leu Gly Leu Arg Ser Leu Arg Glu Leu Gly Ser
65 70 75

<210> 72

<211> 75

<212> PRT

<213> Canis familiaris

<400> 72

Thr Ala Pro Leu Gln Pro Glu Gln Leu Arg Val Phe Glu Ala Leu Glu
1 5 10 15
Glu Ile Thr Gly Tyr Leu Tyr Ile Ser Ala Trp Pro Asp Ser Leu Pro
20 25 30
Asn Leu Ser Val Phe Gln Asn Leu Arg Val Ile Arg Gly Arg Val Leu
35 40 45
His Asp Gly Ala Tyr Ser Leu Thr Leu Gln Gly Leu Gly Ile Ser Trp
50 55 60
Leu Gly Leu Arg Ser Leu Arg Glu Leu Gly Ser
65 70 75

<210> 73

<211> 131

<212> PRT

<213> Homo sapiens

<400> 73

Asn Gln Ala Gln Met Arg Ile Leu Lys Glu Thr Glu Leu Arg Lys Val
1 5 10 15
Lys Val Leu Gly Ser Gly Ala Phe Gly Thr Val Tyr Lys Gly Ile Trp
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20

25

30

Ile Pro Asp Gly Glu Asn Val Lys Ile Pro Val Ala Ile Lys Val Leu
35 40 45

Arg Glu Asn Thr Ser Pro Lys Ala Asn Lys Glu Ile Leu Asp Glu Ala
50 55 60

Tyr Val Met Ala Gly Val Gly Ser Pro Tyr Val Ser Arg Leu Leu Gly
65 70 75 80

Ile Cys Leu Thr Ser Thr Val Gln Leu Val Thr Gln Leu Met Pro Tyr
85 90 95

Gly Cys Leu Leu Asp His Val Arg Glu Asn Arg Gly Arg Leu Gly Ser
100 105 110

Gln Asp Leu Leu Asn Trp Cys Met Gln Ile Ala Lys Gly Met Ser Tyr
115 120 125

Leu Glu Asp
130

<210> 74
<211> 131
<212> PRT
<213> Canis familiaris

<400> 74

Asn Gln Ala Gln Met Arg Ile Leu Lys Glu Thr Glu Leu Arg Lys Val
1 5 10 15

Lys Val Leu Gly Ser Gly Ala Phe Gly Thr Val Tyr Lys Gly Ile Trp
20 25 30

Ile Pro Asp Gly Glu Asn Val Lys Ile Pro Val Ala Ile Lys Val Leu
35 40 45

Arg Glu Asn Thr Ser Pro Lys Ala Asn Lys Glu Ile Leu Asp Glu Ala
50 55 60

Tyr Val Met Ala Gly Val Gly Ser Pro Tyr Val Ser Arg Leu Leu Gly
65 70 75 80

Ile Cys Leu Thr Ser Thr Val Gln Leu Val Thr Gln Leu Met Pro Tyr
85 90 95

Gly Cys Leu Leu Asp His Val Arg Glu Asn Arg Gly Arg Leu Gly Ser
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100

105

110

Gln Asp Leu Leu Asn Trp Cys Met Gln Ile Ala Lys Gly Met Ser Tyr
 115 120 125

Leu Glu Asp
 130