

SEQUENCE LISTING

<110> NEON THERAPEUTICS, INC.

<120> METHOD AND SYSTEMS FOR PREDICTION OF HLA CLASS II-SPECIFIC
EPITOPES AND CHARACTERIZATION OF CD4+ T CELLS

<130> 50401-735.601

<140> PCT/US2019/068084

<141> 2019-12-20

<150> 62/891,101

<151> 2019-08-23

<150> 62/855,379

<151> 2019-05-31

<150> 62/826,827

<151> 2019-03-29

<150> 62/783,914

<151> 2018-12-21

<160> 96

<170> PatentIn version 3.5

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peptide

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Pro	Val	Ser	Lys	Met	Arg	Met	Ala	Thr	Pro	Leu	Leu	Met	Gln	Ala
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<211> 15

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peptide

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Pro	Glu	Ala	Ser	Leu	Tyr	Gly	Ala	Leu	Ser	Lys	Gly	Ser	Gly	Gly
1				5					10				15	

<210> 3

<211> 15

<212> PRT
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 <400> 3
 Pro Ala Thr Tyr Ile Leu Ile Leu Lys Glu Phe Cys Leu Val Gly
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 <210> 4
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 <223> This sequence may encompass 4-15 residues

 <400> 4
 His His His His His His His His His His His His His His His
 1 5 10 15

 <210> 5
 <211> 8
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 1 5

 <210> 6
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 <220>
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 <400> 6
 Glu Gly Arg Gly Ser Leu Thr Cys Gly Asp Val Glu Asn Pro Gly Pro
 1 5 10 15

<210> 7
<211> 17
<212> PRT
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<220>
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peptide

<400> 7
Ala Thr Asn Phe Ser Leu Lys Gln Ala Gly Asp Val Glu Asn Pro Gly
1 5 10 15

Pro

<210> 8
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peptide

<400> 8
Gln Cys Thr Asn Tyr Ala Leu Lys Leu Ala Gly Asp Val Glu Ser Asn
1 5 10 15

Pro Gly Pro

<210> 9
<211> 21
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peptide

<400> 9
Val Lys Gln Thr Leu Asn Phe Asp Leu Lys Leu Ala Gly Asp Val Glu
1 5 10 15

Ser Asn Pro Gly Pro
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<210> 10
<211> 11

<212> PRT
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<220>

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<400> 10

Gly Ser Gly Gly Ser Gly Gly Ser Ala Gly Gly
1 5 10

<210> 11

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 11

Gly Leu Asn Asp Ile Phe Glu Ala Gln Lys Ile Glu Trp His Glu
1 5 10 15

<210> 12

<211> 25

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<223> Description of Artificial Sequence: Synthetic peptide

<400> 12

Ser Gly Gly Ser Gly Gly Ser Ala Gly Gly Gly Leu Asn Asp Ile Phe
1 5 10 15

Glu Ala Gln Lys Ile Glu Trp His Glu
20 25

<210> 13

<211> 22

<212> PRT

<213> Artificial Sequence

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<400> 13

Val Lys Gln Thr Leu Asn Phe Asp Leu Leu Lys Leu Ala Gly Asp Val
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Glu Ser Asn Pro Gly Pro
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peptide

<400> 14
Gly Ser Tyr Pro Tyr Asp Val Pro Asp Tyr Ala
1 5 10

<210> 15
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1 5

<210> 16
<211> 18
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<220>
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peptide

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Gly Lys Ala Pro Ile Leu Ile Ala Thr Asp Val Ala Ser Arg Gly Leu
1 5 10 15

Asp Val

<210> 17
<211> 17
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<220>
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peptide

<400> 17
 Gly Lys Ala Pro Ile Leu Ile Ala Thr Asp Val Ala Ser Arg Gly Leu
 1 5 10 15

Asp

<210> 18
 <211> 17
 <212> PRT
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<220>
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 Lys Ala Pro Ile Leu Ile Ala Thr Asp Val Ala Ser Arg Gly Leu Asp
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Val

<210> 19
 <211> 16
 <212> PRT
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<220>
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 peptide

<400> 19
 Lys Ala Pro Ile Leu Ile Ala Thr Asp Val Ala Ser Arg Gly Leu Asp
 1 5 10 15

<210> 20
 <211> 10
 <212> PRT
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<400> 20
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 1 5 10

<210> 21
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<212> PRT
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 Leu Leu Met Gln Ala Leu Pro Met
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 <210> 22
 <211> 14
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 <210> 23
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 <400> 23
 Pro Lys Tyr Val Lys Gln Asn Thr Leu Lys Leu Ala Thr
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 <210> 24
 <211> 17
 <212> PRT
 <213> Artificial Sequence

 <220>
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 <400> 24
 Pro Val Val His Phe Phe Lys Asn Ile Val Thr Pro Arg Thr Pro Pro
 1 5 10 15

Tyr

<210> 25
<211> 17
<212> PRT
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<400> 25
Tyr Ala Thr Phe Phe Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr
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Glu

<210> 26
<211> 16
<212> PRT
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<400> 26
Thr Leu Ser Val Thr Phe Ile Gly Ala Ala Pro Leu Ile Leu Ser Tyr
1 5 10 15

<210> 27
<211> 17
<212> PRT
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<220>
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<400> 27
Pro Val Val His Phe Phe Lys Asn Ile Val Thr Pro Arg Thr Pro Pro
1 5 10 15

Tyr

<210> 28
<211> 15
<212> PRT
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<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 28

Tyr	Ala	Arg	Ile	Arg	Arg	Asp	Gly	Cys	Leu	Leu	Arg	Leu	Val	Asp
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<210> 29

<211> 16

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<400> 29

Thr	Leu	Ser	Val	Thr	Phe	Ile	Gly	Ala	Ala	Pro	Lys	Ile	Leu	Ser	Tyr
1				5					10					15	

<210> 30

<211> 15

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<400> 30

Tyr	Ala	Arg	Ile	Lys	Arg	Asp	Gly	Cys	Leu	Leu	Arg	Leu	Val	Asp
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<210> 31

<211> 15

<212> PRT

<213> Artificial Sequence

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<400> 31

Pro	Pro	Ile	Asp	Gly	Tyr	Pro	Asn	His	Pro	Cys	Phe	Glu	Pro	Glu
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<210> 32

<211> 15

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<400> 32

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<210> 33

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<400> 33

Pro	Gln	Leu	Arg	Gln	Trp	Trp	Ala	Gln	Gly	Ala	Asp	Pro	Leu	Ala
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<210> 34

<211> 15

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<400> 34

Leu	Leu	Arg	Pro	Gly	Gln	Ile	Val	Ala	Phe	Asp	Ser	Thr	Ala	Gln
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<210> 35

<211> 15

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<220>

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<400> 35

Ala	Ser	Leu	Arg	Ser	Trp	Pro	Ser	Thr	Trp	Ala	Pro	Trp	Ala	Ser
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<210> 36

<211> 9

<212> PRT

<213> Artificial Sequence

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<400> 36
 Gly Lys Ser Val Val Cys Glu Ala Leu
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<210> 37
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 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
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<400> 37
 Leu Pro Asn Gly Gly Phe Ala Ser Ile Leu Leu Tyr Lys Ile Glu
 1 5 10 15

<210> 38
 <211> 16
 <212> PRT
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<220>
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<400> 38
 Phe Cys Lys Gly Ser Phe Ala Ser Ile Leu Lys Leu Leu Gly Glu Phe
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<210> 39
 <211> 42
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 Gly Asp Thr Gly Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 1 5 10 15

Xaa Xaa Xaa Gly Gly Gly Gly Ser Leu Val Pro Arg Gly Ser Gly Gly
 20 25 30

Gly Gly Ser Gly Asp Thr Arg Pro Arg Phe
35 40

<210> 40
<211> 13
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<400> 40
Asp Arg Tyr Glu Met Glu Asp Gly Lys Val Ile Glu Arg
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<210> 41
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 41
Gly Gly His Met Thr Thr Leu Ser Gly Glu Glu Ile Ser Tyr Thr Gly
1 5 10 15

<210> 42
<211> 14
<212> PRT
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<220>
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peptide

<400> 42
Lys Thr Phe Asp Gln Leu Thr Pro Glu Glu Ser Lys Glu Arg
1 5 10

<210> 43
<211> 14
<212> PRT
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<220>
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<400> 43
Leu Pro Arg Tyr Glu Ala Leu Arg Gly Glu Gln Pro Pro Asp
1 5 10

<210> 44
 <211> 16
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 <220>
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 <400> 44
 Asp Lys Lys Asn Ile Ile Leu Glu Glu Gly Lys Glu Ile Leu Val Gly
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 <210> 45
 <211> 14
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 Lys Glu Ala Ala Tyr His Pro Glu Val Ala Pro Asp Val Arg
 1 5 10

 <210> 46
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 <400> 46
 Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val His His Gln
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 Gly His Pro Asp Leu Gln Gly Gln Pro Ala Glu Glu Ile Phe Glu Ser
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<210> 48
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 Leu Gly Lys Asn Phe Asp Phe Gln Lys Ser Asp Arg Ile Asn Ser Glu
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 <400> 49
 Met Pro Ser Phe Val Pro Ser Asp Gly Arg Gln Ala Ala Asp
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 <210> 50
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 Gly Leu Arg Tyr Lys Lys Leu His Asp Pro Lys Gly Trp Ile Thr
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 Thr Ile Glu Lys Phe Glu Lys Glu Ala Ala Glu Met Gly Lys Gly
 1 5 10 15

 <210> 52
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<212> PRT
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 Gly Val Gln Arg Gly Leu Val Gly Glu Ile Ile Lys Arg
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 <210> 53
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 Thr Trp Phe Asn Gln Pro Ala Arg Lys Ile Arg
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 Glu Phe Lys Lys Tyr Glu Met Met Lys Glu His Glu Arg Arg
 1 5 10

 <210> 55
 <211> 15
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 <400> 55
 Ser Pro His Ala Phe Lys Thr Glu Ser Gly Glu Glu Thr Asp Leu
 1 5 10 15

 <210> 56
 <211> 13
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<220>
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<400> 56
Asn Asn Leu Cys Pro Ser Gly Ser Asn Ile Ile Ser Asn
1 5 10

<210> 57
<211> 14
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<220>
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Glu Arg Pro Tyr Trp Asp Met Ser Asn Gln Asp Val Ile Asn
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<210> 58
<211> 14
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<220>
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<400> 58
Val Gly Gly Thr Met Val Arg Ser Gly Gln Asp Pro Tyr Ala
1 5 10

<210> 59
<211> 13
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<220>
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<400> 59
Lys Glu Ala Leu Glu Pro Ser Gly Glu Asn Val Ile Gln
1 5 10

<210> 60
<211> 15
<212> PRT
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<220>

<223> Description of Artificial Sequence: Synthetic peptide

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Arg Gln Arg Arg Leu Leu Gly Ser Val Gln Gln Asp Leu Glu Arg
1 5 10 15

<210> 61

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 61

Ile Asp Arg Ala Leu Asn Glu Ala Cys Glu Ser Val Ile Gln
1 5 10

<210> 62

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 62

Asn Glu Asn Asn Leu Glu Ser Ala Lys Gly Leu Leu Asp Asp Leu Arg
1 5 10 15

<210> 63

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 63

Asp Ser Lys Ser Leu Arg Thr Ala Leu Gln Lys Glu Ile Thr Thr Arg
1 5 10 15

<210> 64

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 64
Thr Gly Gly Asp Ile Asn Ala Ala Ile Glu Arg Leu Leu
1 5 10

<210> 65
<211> 16
<212> PRT
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<220>
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peptide

<400> 65
Ser Leu Asp Asn Leu Lys Ala Ser Val Ser Gln Val Glu Ala Asp Leu
1 5 10 15

<210> 66
<211> 14
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 66
Asp Glu Arg Arg Phe Lys Ala Ala Asp Leu Asn Gly Asp Leu
1 5 10

<210> 67
<211> 15
<212> PRT
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<220>
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<400> 67
Lys Pro Ala Pro Ala Leu Arg Ser Ala Arg Ser Ala Pro Glu Asn
1 5 10 15

<210> 68
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<220>
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peptide

<400> 68

Arg Thr Ser Tyr Val Thr Ser Val Glu Glu Asn Thr Val Asp
1 5 10

<210> 69
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 69
Arg Ala Val Glu Phe Gln Glu Ala Gln Ala Tyr Ala Asp Asp Asn
1 5 10 15

<210> 70
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
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peptide

<400> 70
Arg Asp Leu Ala Gln Tyr Asp Ala Ala His His Glu Glu Phe
1 5 10

<210> 71
<211> 13
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 71
Gly Gln Gln Trp Thr Tyr Glu Gln Arg Lys Ile Val Glu
1 5 10

<210> 72
<211> 14
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 72
Glu Gly Glu Tyr Gln Gly Ile Pro Arg Ala Glu Ser Gly Gly
1 5 10

<210> 73
<211> 16
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<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 73
Ser Pro Glu Glu Phe Asp Glu Val Ser Arg Ile Val Gly Ser Val Glu
1 5 10 15

<210> 74
<211> 15
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 74
Ile Ala Gly Glu Trp Gln Val Leu His Arg Glu Gly Ala Ile Thr
1 5 10 15

<210> 75
<211> 15
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 75
Glu Pro Ala Glu Phe Ile Ile Asp Thr Arg Asp Ala Gly Tyr Gly
1 5 10 15

<210> 76
<211> 15
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 76
Asp Leu Glu Glu Leu Glu Val Leu Glu Arg Lys Pro Ala Ala Gly
1 5 10 15

<210> 77
 <211> 16
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 <220>
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 <400> 77
 Gly Met Asn Ile Val Glu Ala Met Glu Arg Phe Gly Ser Arg Asn Gly
 1 5 10 15

 <210> 78
 <211> 15
 <212> PRT
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 <220>
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 <400> 78
 Gly Phe Asn Trp Asn Trp Ile Asn Lys Gln Gln Gly Lys Arg Gly
 1 5 10 15

 <210> 79
 <211> 13
 <212> PRT
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 <220>
 <223> Description of Artificial Sequence: Synthetic peptide

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 Gly Pro Phe Ser Phe Ser Val Ile Asp Lys Pro Pro Gly
 1 5 10

 <210> 80
 <211> 14
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 <220>
 <223> Description of Artificial Sequence: Synthetic peptide

 <400> 80
 Leu Asn Glu Leu Lys Pro Ile Ser Lys Gly Gly His Ser Ser
 1 5 10

 <210> 81
 <211> 15

<212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic peptide

 <400> 81
 Asp Val Asn Glu Tyr Ala Pro Val Phe Lys Glu Lys Ser Tyr Lys
 1 5 10 15

 <210> 82
 <211> 15
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 <220>
 <223> Description of Artificial Sequence: Synthetic peptide

 <400> 82
 Leu Ala Pro Thr Trp Glu Glu Leu Ser Lys Lys Glu Phe Pro Gly
 1 5 10 15

 <210> 83
 <211> 15
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic peptide

 <400> 83
 Thr Arg Asn Glu Val Ile Pro Met Ser His Pro Gly Ala Val Asp
 1 5 10 15

 <210> 84
 <211> 14
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic peptide

 <400> 84
 Glu Asn Pro Tyr Phe Ala Pro Asn Pro Lys Ile Ile Arg Gln
 1 5 10

 <210> 85
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic peptide

<400> 85
 Tyr Glu Asp Lys Phe Arg Asn Asn Leu Lys Gly Lys Arg Leu Asp
 1 5 10 15

<210> 86
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic peptide

<400> 86
 Lys Asn Gly Ala Tyr Lys Val Glu Thr Lys Lys Tyr Asp Phe Tyr
 1 5 10 15

<210> 87
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic peptide

<400> 87
 Gly Glu Gly Leu Phe Gln Pro Ala His Arg Tyr Pro Asp Ala Gly
 1 5 10 15

<210> 88
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic peptide

<400> 88
 Arg Asn Gln Trp Lys Cys Leu Gly Lys Pro Val Gly Ala Glu Met
 1 5 10 15

<210> 89
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 89

Val	Pro	Ala	Trp	Thr	Arg	Ala	Trp	Arg	Asn	Ser	Ser	Pro	Lys	Gly
1				5					10					15

<210> 90

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 90

Leu	His	Pro	Glu	Leu	Leu	Pro	Leu	Trp	Arg	Leu	Leu	Pro	Asp	Gly
1				5					10					15

<210> 91

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 91

Asp	Gly	Gly	Ser	Tyr	Phe	Ser	Leu	Trp	Lys	Ile	Trp	Thr	Gln	Val
1				5					10					15

<210> 92

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 92

His	Glu	Gly	Gly	Phe	Pro	Pro	Leu	Leu	Arg	Arg	Ala	Ala	Glu	Asp
1				5					10					15

<210> 93

<211> 15

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<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic peptide

<400> 93
Leu Ser Pro Val Trp Cys Leu Gln Trp Lys Leu Ser Gly Thr Asp
1 5 10 15

<210> 94
<211> 15
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<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 94
Lys Asn Thr Ile Val Tyr Thr Thr Lys Gln Val Gln Ser Cys Gln
1 5 10 15

<210> 95
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<220>
<223> Description of Artificial Sequence: Synthetic
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<223> Description of Artificial Sequence: Synthetic
peptide

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1 5 10 15