

# SEQUENCE LISTING

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<120> PEPTIDE IMMUNOGENS AND FORMULATIONS THEREOF TARGETING  
MEMBRANE-BOUND IGE FOR TREATMENT OF IGE MEDIATED

<130> 1004263.217W01 (2038-WO)

<140> PCT/US2017/069174

<141> 2017-12-31

<160> 130

<170> PatentIn version 3.5

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<213> Homo sapiens

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Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp Arg Val  
1 5 10 15

Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly  
20 25 30

Ser Val Pro His Pro Arg Cys His Cys Gly Ala Gly Arg Ala Asp Trp  
35 40 45

Pro Gly Pro Pro Glu Leu Asp Val Cys Val Glu Glu Ala Glu Gly Glu  
50 55 60

Ala Pro Trp  
65

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Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp Arg Val  
1 5 10 15

Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly  
20 25 30

Ser Val Pro His Pro Arg Cys His Cys Gly Ala Gly Arg Ala Asp Trp  
35 40 45

Pro Gly Pro Pro

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1

5

10

15

Ala Gln Ser Gln Arg Ala Pro Asp Arg Val Leu Cys His Ser Gly Gln

20

25

30

Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly Ser Val Pro His Pro Arg

35

40

45

Cys His Cys Gly Ala Gly Arg Ala Asp Trp Pro Gly Pro Pro Glu Leu

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55

60

Asp Val Cys Val Glu Glu Ala Glu Gly Glu Ala Pro Trp

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70

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Thr Val Gln Arg Ala Val Ser Val Asn Pro Gly Leu Ala Gly Gly Ser  
1 5 10 15

Ala Gln Ser Gln Arg Ala Pro Asp Arg Val Leu Cys His Ser Gly Gln  
20 25 30

Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly Ser Val Pro His Pro Arg  
35 40 45

Cys His Cys Gly Ala Gly Arg Ala Asp Trp Pro Gly Pro Pro  
50 55 60

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Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly  
20 25 30

Ser Val Pro His Pro Arg Cys  
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Ala Gln Ser Gln Arg Ala Pro Asp Arg Val Leu Cys His Ser Gly Gln  
1 5 10 15

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

Cys His

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Leu

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His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly Ser Val

1 5 10 15

Pro His Pro Arg  
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1 5 10 15

Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly  
20 25 30

Ser Val Pro His Pro Arg Cys His  
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Arg Ala Val Ser Val Asn Pro Gly Leu Ala

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Val Ser Val Asn Pro Gly Leu Ala Gly Gly  
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Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln  
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Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg

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Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala

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Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro  
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Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp  
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Ala Gln Ser Gln Arg Ala Pro Asp Arg Val  
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Gln Ser Gln Arg Ala Pro Asp Arg Val Leu  
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Ser Gln Arg Ala Pro Asp Arg Val Leu Cys  
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Arg Ala Pro Asp Arg Val Leu Cys His Ser

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<223> IgE-EMPD 12-21

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Ala Pro Asp Arg Val Leu Cys His Ser Gly

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<222> (1)..(10)

<223> IgE-EMPD 13-22

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Pro Asp Arg Val Leu Cys His Ser Gly Gln

1 5 10

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<211> 10

<212> PRT

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<222> (1)..(10)

<223> IgE-EMPD 14-23

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Asp Arg Val Leu Cys His Ser Gly Gln Gln

1 5 10

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<211> 10

<212> PRT

<213> Homo sapiens

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<222> (1)..(10)

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Arg Val Leu Cys His Ser Gly Gln Gln Gln  
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Val Leu Cys His Ser Gly Gln Gln Gln Gly  
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Leu Cys His Ser Gly Gln Gln Gln Gly Leu  
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Cys His Ser Gly Gln Gln Gln Gly Leu Pro  
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His Ser Gly Gln Gln Gln Gly Leu Pro Arg  
1 5 10

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Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala  
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Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala  
1 5 10

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Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly  
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Gln Gly Leu Pro Arg Ala Ala Gly Gly Ser  
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Gly Leu Pro Arg Ala Ala Gly Gly Ser Val  
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<222> (1)..(10)

<223> IgE-EMPD 26-35

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Leu Pro Arg Ala Ala Gly Gly Ser Val Pro  
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Pro Arg Ala Ala Gly Gly Ser Val Pro His  
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Arg Ala Ala Gly Gly Ser Val Pro His Pro  
1 5 10

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Ala Ala Gly Gly Ser Val Pro His Pro Arg  
1 5 10

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Ala Gly Gly Ser Val Pro His Pro Arg Cys  
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Gly Gly Ser Val Pro His Pro Arg Cys His

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<222> (1)..(10)

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Gly Ser Val Pro His Pro Arg Cys His Cys

1 5 10

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Ser Val Pro His Pro Arg Cys His Cys Gly  
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Val Pro His Pro Arg Cys His Cys Gly Ala  
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Pro Arg Cys His Cys Gly Ala Gly Arg Ala  
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Arg Cys His Cys Gly Ala Gly Arg Ala Asp  
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Cys His Cys Gly Ala Gly Arg Ala Asp Trp  
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His Cys Gly Ala Gly Arg Ala Asp Trp Pro  
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Cys Gly Ala Gly Arg Ala Asp Trp Pro Gly  
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<213> Clostridium tetani

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Lys Lys Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu  
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Leu

<210> 60

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<213> Measles virus

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Leu Ser Glu Ile Lys Gly Val Ile Val His Arg Leu Glu Gly Val  
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<213> Bordetella pertussis

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

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Asp Ser Glu Thr Ala Asp Asn Leu Glu Lys Thr Val Ala Ala Leu Ser  
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Ile Leu Pro Gly His Gly Cys  
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<213> Plasmodium falciparum

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Asp His Glu Lys Lys His Ala Lys Met Glu Lys Ala Ser Ser Val Phe  
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Asn Val Val Asn Ser  
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Lys Trp Phe Lys Thr Asn Ala Pro Asn Gly Val Asp Glu Lys His Arg  
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<213> Cholera Toxin

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Ala Leu Asn Ile Trp Asp Arg Phe Asp Val Phe Cys Thr Leu Gly Ala  
1 5 10 15

Thr Thr Gly Tyr Leu Lys Gly Asn Ser

20

25

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| Ile | Ser | Glu | Ile | Lys | Gly | Val | Ile | Val | His | Lys | Ile | Glu | Gly | Ile |
| 1   |     |     | 5   |     |     |     | 10  |     |     |     |     | 15  |     |     |

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Ile Glu Xaa Ile Leu Phe

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<400> 69

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Xaa Xaa Xaa Thr Xaa Pro Xaa Ser  
1 5 10 15

Xaa Xaa

<210> 70

<211> 19

<212> PRT

<213> Measles virus

<220>

<221> PEPTIDE

<222> (1)..(19)

<223> MvF 4 Th

<220>

<221> SITE

<222> (4)..(4)

<223> S or T

<220>

<221> SITE

<222> (7)..(7)

<223> K or R

<220>

<221> SITE

<222> (8)..(8)

<223> G or T

<220>

<221> SITE

<222> (12)..(12)

<223> H or T

<220>

<221> SITE

<222> (13)..(13)

<223> K or R

<400> 70

Ile Ser Ile Xaa Glu Ile Xaa Xaa Val Ile Val Xaa Xaa Ile Glu Thr  
1 5 10 15

Ile Leu Phe

<210> 71

<211> 18

<212> PRT

<213> Hepatitis B virus

<220>

<221> PEPTIDE

<222> (1)..(18)

<223> HBsAg 2 Th

<220>

<221> SITE

<222> (4)..(4)

<223> I or F

<220>

<221> SITE

<222> (5)..(5)

<223> I or F

<220>  
<221> SITE  
<222> (6) .. (6)  
<223> T or L

<220>  
<221> SITE  
<222> (7) .. (7)  
<223> I or L

<220>  
<221> SITE  
<222> (11) .. (11)  
<223> I or L

<220>  
<221> SITE  
<222> (14) .. (14)  
<223> P or I

<220>  
<221> SITE  
<222> (15) .. (15)  
<223> Q or T

<220>  
<221> SITE  
<222> (16) .. (16)  
<223> S or T

<220>  
<221> SITE  
<222> (17) .. (17)  
<223> L or I

<400> 71

Lys Lys Lys Xaa Xaa Xaa Xaa Thr Arg Ile Xaa Thr Ile Xaa Xaa Xaa  
1 5 10 15

Xaa Asp

<210> 72  
<211> 19  
<212> PRT  
<213> Measles virus

<220>  
<221> PEPTIDE  
<222> (1)..(19)  
<223> MvF 5 Th

<400> 72

Ile Ser Ile Thr Glu Ile Lys Gly Val Ile Val His Arg Ile Glu Thr  
1 5 10 15

Ile Leu Phe

<210> 73  
<211> 18  
<212> PRT  
<213> Hepatitis B virus

<220>  
<221> PEPTIDE  
<222> (1)..(18)

<223> HBsAg 3 Th

<400> 73

Lys Lys Lys Ile Ile Thr Ile Thr Arg Ile Ile Thr Ile Ile Thr Thr  
1 5 10 15

Ile Asp

<210> 74

<211> 11

<212> PRT

<213> Influenza virus

<220>

<221> PEPTIDE

<222> (1)..(11)

<223> Influenza Matrix protein 1 \_1 Th

<220>

<221> PEPTIDE

<222> (1)..(11)

<223> Influenza Matrix protein 1\_1 Th

<400> 74

Phe Val Phe Thr Leu Thr Val Pro Ser Glu Arg  
1 5 10

<210> 75

<211> 15

<212> PRT

<213> Influenza virus

<220>  
<221> PEPTIDE  
<222> (1)..(15)  
<223> Influenza Matrix protein 1\_2 Th  
  
<400> 75

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

<210> 76  
<211> 9  
<212> PRT  
<213> Influenza virus

<220>  
<221> PEPTIDE  
<222> (1)..(9)  
<223> Influenza Non-structural protein 1 Th  
  
<400> 76

Asp Arg Leu Arg Arg Asp Gln Lys Ser  
1 5

<210> 77  
<211> 19  
<212> PRT  
<213> Epstein-Barr virus

<220>  
<221> PEPTIDE

<222> (1)..(19)

<223> EBV BHRF1 Th

<400> 77

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

Ser Arg Gly

<210> 78

<211> 15

<212> PRT

<213> Clostridium tetani

<220>

<221> PEPTIDE

<222> (1)..(15)

<223> Clostridium tetani TT1 Th

<400> 78

Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu  
1 5 10 15

<210> 79

<211> 20

<212> PRT

<213> Epstein-Barr virus

<220>

<221> PEPTIDE

<222> (1)..(20)

<223> EBV EBNA-1 Th

<400> 79

Pro Gly Pro Leu Arg Glu Ser Ile Val Cys Tyr Phe Met Val Phe Leu  
1 5 10 15

Gln Thr His Ile  
20

<210> 80

<211> 21

<212> PRT

<213> Clostridium tetani

<220>

<221> PEPTIDE

<222> (1)..(21)

<223> Clostridium tetani TT2 Th

<400> 80

Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser  
1 5 10 15

Ala Ser His Leu Glu  
20

<210> 81

<211> 16

<212> PRT

<213> Clostridium tetani

<220>

<221> PEPTIDE

<222> (1)..(16)

<223> Clostridium tetani TT3 Th

<400> 81

Lys Phe Ile Ile Lys Arg Tyr Thr Pro Asn Asn Glu Ile Asp Ser Phe  
1 5 10 15

<210> 82

<211> 16

<212> PRT

<213> Clostridium tetani

<220>

<221> PEPTIDE

<222> (1)..(16)

<223> Clostridium tetani TT4 Th

<400> 82

Val Ser Ile Asp Lys Phe Arg Ile Phe Cys Lys Ala Leu Asn Pro Lys  
1 5 10 15

<210> 83

<211> 18

<212> PRT

<213> Epstein-Barr virus

<220>

<221> PEPTIDE

<222> (1)..(18)

<223> EBV CP Th

<400> 83

Val Pro Gly Leu Tyr Ser Pro Cys Arg Ala Phe Phe Asn Lys Glu Glu  
1 5 10 15

Leu Leu

<210> 84

<211> 14

<212> PRT

<213> Human cytomegalovirus

<220>

<221> PEPTIDE

<222> (1)..(14)

<223> HCMV IE1 Th

<400> 84

Asp Lys Arg Glu Met Trp Met Ala Cys Ile Lys Glu Leu His  
1 5 10

<210> 85

<211> 15

<212> PRT

<213> Epstein-Barr virus

<220>

<221> PEPTIDE

<222> (1)..(15)

<223> EBV GP340 Th

<400> 85

Thr Gly His Gly Ala Arg Thr Ser Thr Glu Pro Thr Thr Asp Tyr

1

5

10

15

<210> 86

<211> 13

<212> PRT

<213> Epstein-Barr virus

<220>

<221> PEPTIDE

<222> (1)..(13)

<223> EBV BPLF1 Th

<400> 86

Lys Glu Leu Lys Arg Gln Tyr Glu Lys Lys Leu Arg Gln

1

5

10

<210> 87

<211> 11

<212> PRT

<213> Epstein-Barr virus

<220>

<221> PEPTIDE

<222> (1)..(11)

<223> EBV EBNA-2 Th

<400> 87

Thr Val Phe Tyr Asn Ile Pro Pro Met Pro Leu  
1 5 10

<210> 88  
<211> 59  
<212> PRT  
<213> Homo sapiens

<220>  
<221> PEPTIDE  
<222> (1)..(39)  
<223> IgE-EMPD 1-39

<220>  
<221> SITE  
<222> (40)..(40)  
<223> epsilon K as a spacer

<220>  
<221> PEPTIDE  
<222> (41)..(59)  
<223> UBITH(R)1

<400> 88

Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp Arg Val  
1 5 10 15

Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly  
20 25 30

Ser Val Pro His Pro Arg Cys Lys Ile Ser Ile Thr Glu Ile Lys Gly  
35 40 45

Val Ile Val His Arg Ile Glu Thr Ile Leu Phe  
50 55

<210> 89  
<211> 59  
<212> PRT  
<213> Homo sapiens

<220>  
<221> PEPTIDE  
<222> (1)..(19)  
<223> UBITH(R)1

<220>  
<221> SITE  
<222> (20)..(20)  
<223> epsilon K as a spacer

<220>  
<221> PEPTIDE  
<222> (21)..(59)  
<223> IgE-EMPD 1-39

<400> 89

Ile Ser Ile Thr Glu Ile Lys Gly Val Ile Val His Arg Ile Glu Thr  
1 5 10 15

Ile Leu Phe Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala  
20 25 30

Pro Asp Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg

35

40

45

Ala Ala Gly Gly Ser Val Pro His Pro Arg Cys  
50 55

<210> 90

<211> 79

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(19)

<223> UBITH(R) 1

<220>

<221> SITE

<222> (20)..(20)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (21)..(59)

<223> IgE-EMPD 1-39

<220>

<221> SITE

<222> (60)..(60)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (61)..(79)

<223> UBITH(R) 1

<400> 90

Ile Ser Ile Thr Glu Ile Lys Gly Val Ile Val His Arg Ile Glu Thr  
1 5 10 15

Ile Leu Phe Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala  
20 25 30

Pro Asp Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg  
35 40 45

Ala Ala Gly Gly Ser Val Pro His Pro Arg Cys Lys Ile Ser Ile Thr  
50 55 60

Glu Ile Lys Gly Val Ile Val His Arg Ile Glu Thr Ile Leu Phe  
65 70 75

<210> 91

<211> 54

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(34)

<223> IgE-EMPD 7-40

<220>

<221> SITE

<222> (35)..(35)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (36) .. (54)

<223> UBITH(R) 1

<400> 91

Ala Gln Ser Gln Arg Ala Pro Asp Arg Val Leu Cys His Ser Gly Gln  
1 5 10 15

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

Cys His Lys Ile Ser Ile Thr Glu Ile Lys Gly Val Ile Val His Arg  
35 40 45

Ile Glu Thr Ile Leu Phe  
50

<210> 92

<211> 54

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1) .. (19)

<223> UBITH(R) 1

<220>

<221> SITE

<222> (20) .. (20)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (21) .. (54)

<223> IgE-EMPD 7-40

<400> 92

Ile Ser Ile Thr Glu Ile Lys Gly Val Ile Val His Arg Ile Glu Thr  
1 5 10 15

Ile Leu Phe Lys Ala Gln Ser Gln Arg Ala Pro Asp Arg Val Leu Cys  
20 25 30

His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly Ser Val  
35 40 45

Pro His Pro Arg Cys His  
50

<210> 93

<211> 74

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1) .. (19)

<223> UBITH(R) 1

<220>

<221> SITE

<222> (20) .. (20)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (21)..(54)

<223> IgE-EMPD 7-40

<220>

<221> SITE

<222> (55)..(55)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (56)..(74)

<223> UBITH(R)1

<400> 93

Ile Ser Ile Thr Glu Ile Lys Gly Val Ile Val His Arg Ile Glu Thr  
1 5 10 15

Ile Leu Phe Lys Ala Gln Ser Gln Arg Ala Pro Asp Arg Val Leu Cys  
20 25 30

His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly Ser Val  
35 40 45

Pro His Pro Arg Cys His Lys Ile Ser Ile Thr Glu Ile Lys Gly Val  
50 55 60

Ile Val His Arg Ile Glu Thr Ile Leu Phe  
65 70

<210> 94  
<211> 62  
<212> PRT  
<213> Homo sapiens

<220>  
<221> PEPTIDE  
<222> (1)..(19)  
<223> UBITH(R)1

<220>  
<221> PEPTIDE  
<222> (20)..(23)  
<223> epsilon K-KKK as a spacer

<220>  
<221> SITE  
<222> (20)..(20)  
<223> epsilon-K

<220>  
<221> PEPTIDE  
<222> (24)..(62)  
<223> IgE-EMPD 1-39

<400> 94

Ile Ser Ile Thr Glu Ile Lys Gly Val Ile Val His Arg Ile Glu Thr  
1 5 10 15

Ile Leu Phe Lys Lys Lys Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser  
20 25 30

Gln Arg Ala Pro Asp Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly

35

40

45

Leu Pro Arg Ala Ala Gly Gly Ser Val Pro His Pro Arg Cys  
50 55 60

<210> 95

<211> 61

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(18)

<223> UBITH(R) 2

<220>

<221> PEPTIDE

<222> (19)..(22)

<223> epsilon K-KKK as a spacer

<220>

<221> SITE

<222> (19)..(19)

<223> epsilon-K

<220>

<221> PEPTIDE

<222> (23)..(61)

<223> IgE-EMPD 1-39

<400> 95

Lys Lys Lys Ile Ile Thr Ile Thr Arg Ile Ile Thr Ile Ile Thr Thr  
1 5 10 15

Ile Asp Lys Lys Lys Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln  
20 25 30

Arg Ala Pro Asp Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu  
35 40 45

Pro Arg Ala Ala Gly Gly Ser Val Pro His Pro Arg Cys  
50 55 60

<210> 96  
<211> 40  
<212> PRT  
<213> Homo sapiens

<220>  
<221> PEPTIDE  
<222> (1) .. (19)  
<223> UBITH(R) 1

<220>  
<221> PEPTIDE  
<222> (20) .. (23)  
<223> epsilon K-KKK as a spacer

<220>  
<221> SITE  
<222> (20) .. (20)  
<223> epsilon-K

<220>  
<221> PEPTIDE  
<222> (24) .. (40)  
<223> IgE-EMPD 1-17

<400> 96

Ile Ser Ile Thr Glu Ile Lys Gly Val Ile Val His Arg Ile Glu Thr  
1 5 10 15

Ile Leu Phe Lys Lys Lys Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser  
20 25 30

Gln Arg Ala Pro Asp Arg Val Leu  
35 40

<210> 97

<211> 43

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(19)

<223> UBITH(R)1

<220>

<221> PEPTIDE

<222> (20)..(23)

<223> epsilon K-KKK as a spacer

<220>

<221> SITE

<222> (20)..(20)

<223> epsilon-K

<220>

<221> PEPTIDE

<222> (24)..(43)

<223> IgE-EMPD 19-38

<400> 97

Ile Ser Ile Thr Glu Ile Lys Gly Val Ile Val His Arg Ile Glu Thr  
1 5 10 15

Ile Leu Phe Lys Lys Lys Lys His Ser Gly Gln Gln Gln Gly Leu Pro  
20 25 30

Arg Ala Ala Gly Gly Ser Val Pro His Pro Arg  
35 40

<210> 98

<211> 57

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(17)

<223> Clostridium tetani 1 Th

<220>

<221> SITE

<222> (18)..(18)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (19)..(57)

<223> IgE-EMPD 1-39

<400> 98

Lys Lys Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu  
1 5 10 15

Leu Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp  
20 25 30

Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala  
35 40 45

Gly Gly Ser Val Pro His Pro Arg Cys  
50 55

<210> 99

<211> 55

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(15)

<223> MvF1 Th

<220>

<221> SITE

<222> (16)..(16)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (17)..(55)

<223> IgE-EMPD 1-39

<400> 99

Leu Ser Glu Ile Lys Gly Val Ile Val His Arg Leu Glu Gly Val Lys  
1 5 10 15

Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp Arg Val  
20 25 30

Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly  
35 40 45

Ser Val Pro His Pro Arg Cys  
50 55

<210> 100

<211> 64

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(24)

<223> Bordetella pertussis Th

<220>

<221> SITE

<222> (25)..(25)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (26)..(64)

<223> IgE-EMPD 1-39

<400> 100

Gly Ala Tyr Ala Arg Cys Pro Asn Gly Thr Arg Ala Leu Thr Val Ala  
1 5 10 15

Glu Leu Arg Gly Asn Ala Glu Leu Lys Gly Leu Ala Gly Gly Ser Ala  
20 25 30

Gln Ser Gln Arg Ala Pro Asp Arg Val Leu Cys His Ser Gly Gln Gln  
35 40 45

Gln Gly Leu Pro Arg Ala Ala Gly Gly Ser Val Pro His Pro Arg Cys  
50 55 60

<210> 101

<211> 57

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(17)

<223> Clostridium tetani 2 Th

<220>

<221> SITE

<222> (18)..(18)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (19)..(57)

<223> IgE-EMPD 1-39

<400> 101

Trp Val Arg Asp Ile Ile Asp Asp Phe Thr Asn Glu Ser Ser Gln Lys  
1 5 10 15

Thr Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp  
20 25 30

Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala  
35 40 45

Gly Gly Ser Val Pro His Pro Arg Cys  
50 55

<210> 102

<211> 63

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(23)

<223> Diphtheria Th

<220>

<221> SITE

<222> (24)..(24)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (25)..(63)

<223> IgE-EMPD 1-39

<400> 102

Asp Ser Glu Thr Ala Asp Asn Leu Glu Lys Thr Val Ala Ala Leu Ser  
1 5 10 15

Ile Leu Pro Gly His Gly Cys Lys Gly Leu Ala Gly Gly Ser Ala Gln  
20 25 30

Ser Gln Arg Ala Pro Asp Arg Val Leu Cys His Ser Gly Gln Gln Gln  
35 40 45

Gly Leu Pro Arg Ala Ala Gly Gly Ser Val Pro His Pro Arg Cys  
50 55 60

<210> 103

<211> 61

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(21)

<223> Plasmodium falciparum Th

<220>

<221> SITE

<222> (22)..(22)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (23)..(61)

<223> IgE-EMPD 1-39

<400> 103

Asp His Glu Lys Lys His Ala Lys Met Glu Lys Ala Ser Ser Val Phe  
1 5 10 15

Asn Val Val Asn Ser Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln  
20 25 30

Arg Ala Pro Asp Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu  
35 40 45

Pro Arg Ala Ala Gly Gly Ser Val Pro His Pro Arg Cys  
50 55 60

<210> 104

<211> 57

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(17)

<223> Schistosoma mansoni Th

<220>

<221> SITE

<222> (18)..(18)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (19)..(57)

<223> IgE-EMPD 1-39

<400> 104

Lys Trp Phe Lys Thr Asn Ala Pro Asn Gly Val Asp Glu Lys His Arg  
1 5 10 15

His Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp  
20 25 30

Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala  
35 40 45

Gly Gly Ser Val Pro His Pro Arg Cys  
50 55

<210> 105

<211> 65

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(25)

<223> Cholera Toxin Th

<220>

<221> SITE

<222> (26)..(26)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (27)..(65)

<223> IgE-EMPD 1-39

<400> 105

Ala Leu Asn Ile Trp Asp Arg Phe Asp Val Phe Cys Thr Leu Gly Ala  
1 5 10 15

Thr Thr Gly Tyr Leu Lys Gly Asn Ser Lys Gly Leu Ala Gly Gly Ser  
20 25 30

Ala Gln Ser Gln Arg Ala Pro Asp Arg Val Leu Cys His Ser Gly Gln  
35 40 45

Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly Ser Val Pro His Pro Arg  
50 55 60

Cys

65

<210> 106

<211> 55

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(15)

<223> MvF 2 Th

<220>

<221> SITE

<222> (16)..(16)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (17)..(55)

<223> IgE-EMPD 1-39

<400> 106

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Ser | Glu | Ile | Lys | Gly | Val | Ile | Val | His | Lys | Ile | Glu | Gly | Ile | Lys |
| 1   |     |     | 5   |     |     |     | 10  |     |     |     |     | 15  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Leu | Ala | Gly | Gly | Ser | Ala | Gln | Ser | Gln | Arg | Ala | Pro | Asp | Arg | Val |
|     |     |     | 20  |     |     |     | 25  |     |     |     |     | 30  |     |     |     |

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Cys | His | Ser | Gly | Gln | Gln | Gln | Gly | Leu | Pro | Arg | Ala | Ala | Gly | Gly |
|     |     |     | 35  |     |     |     | 40  |     |     |     | 45  |     |     |     |     |

|     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|
| Ser | Val | Pro | His | Pro | Arg | Cys |
|     |     |     | 50  |     |     | 55  |

<210> 107

<211> 62

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(22)  
<223> KKKMvF 3 Th

<220>  
<221> SITE  
<222> (7)..(7)  
<223> S or T

<220>  
<221> SITE  
<222> (10)..(10)  
<223> K or R

<220>  
<221> SITE  
<222> (11)..(11)  
<223> G or T

<220>  
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<222> (15)..(15)  
<223> H or T

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<223> K or R

<220>  
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<222> (19)..(19)  
<223> G or T

<220>  
<221> SITE  
<222> (23)..(23)  
<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (24) .. (62)

<223> IgE-EMPD 1-39

<400> 107

Lys Lys Lys Ile Ser Ile Xaa Glu Ile Xaa Xaa Val Ile Val Xaa Xaa  
1 5 10 15

Ile Glu Xaa Ile Leu Phe Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser  
20 25 30

Gln Arg Ala Pro Asp Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly  
35 40 45

Leu Pro Arg Ala Ala Gly Gly Ser Val Pro His Pro Arg Cys  
50 55 60

<210> 108

<211> 58

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1) .. (18)

<223> HBsAg 1 Th

<220>

<221> SITE

<222> (1) .. (1)

<223> K or R

<220>

<221> SITE

<222> (2)..(2)

<223> K or R

<220>

<221> SITE

<222> (3)..(3)

<223> K or R

<220>

<221> SITE

<222> (4)..(4)

<223> L or I or V or F

<220>

<221> SITE

<222> (5)..(5)

<223> F or K or R

<220>

<221> SITE

<222> (6)..(6)

<223> L or I or V or F

<220>

<221> SITE

<222> (7)..(7)

<223> L or I or V or F

<220>

<221> SITE

<222> (9)..(9)

<223> K or R

<220>

<221> SITE

<222> (10)..(10)  
<223> L or I or V or F

<220>  
<221> SITE  
<222> (11)..(11)  
<223> L or I or V or F

<220>  
<221> SITE  
<222> (13)..(13)  
<223> L or I or V or F

<220>  
<221> SITE  
<222> (15)..(15)  
<223> Q or L or I or V or F

<220>  
<221> SITE  
<222> (17)..(17)  
<223> L or I or V or F

<220>  
<221> SITE  
<222> (18)..(18)  
<223> D or R

<220>  
<221> SITE  
<222> (19)..(19)  
<223> epsilon K as a spacer

<220>  
<221> PEPTIDE  
<222> (20)..(58)  
<223> IgE-EMPD 1-39

<400> 108

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Thr Xaa Xaa Xaa Thr Xaa Pro Xaa Ser  
1 5 10 15

Xaa Xaa Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro  
20 25 30

Asp Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala  
35 40 45

Ala Gly Gly Ser Val Pro His Pro Arg Cys  
50 55

<210> 109

<211> 59

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(19)

<223> MvF 4 Th

<220>

<221> SITE

<222> (4)..(4)

<223> S or T

<220>

<221> SITE

<222> (7)..(7)

<223> K or R

<220>

<221> SITE

<222> (8)..(8)

<223> G or T

<220>

<221> SITE

<222> (12)..(12)

<223> H or T

<220>

<221> SITE

<222> (13)..(13)

<223> K or R

<220>

<221> SITE

<222> (20)..(20)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (21)..(59)

<223> IgE-EMPD 1-39

<400> 109

Ile Ser Ile Xaa Glu Ile Xaa Xaa Val Ile Val Xaa Xaa Ile Glu Thr  
1 5 10 15

Ile Leu Phe Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala  
20 25 30

Pro Asp Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg  
35 40 45

Ala Ala Gly Gly Ser Val Pro His Pro Arg Cys  
50 55

<210> 110  
<211> 58  
<212> PRT  
<213> Homo sapiens

<220>  
<221> PEPTIDE  
<222> (1)..(18)  
<223> HBsAg 2 Th

<220>  
<221> SITE  
<222> (4)..(4)  
<223> I or F

<220>  
<221> SITE  
<222> (5)..(5)  
<223> I or F

<220>  
<221> SITE  
<222> (6)..(6)  
<223> T or L

<220>  
<221> SITE  
<222> (7)..(7)  
<223> I or L

<220>

<221> SITE  
<222> (11)..(11)  
<223> I or L

<220>  
<221> SITE  
<222> (14)..(14)  
<223> P or I

<220>  
<221> SITE  
<222> (15)..(15)  
<223> Q or T

<220>  
<221> SITE  
<222> (16)..(16)  
<223> S or T

<220>  
<221> SITE  
<222> (17)..(17)  
<223> L or I

<220>  
<221> SITE  
<222> (19)..(19)  
<223> epsilon K as a spacer

<220>  
<221> PEPTIDE  
<222> (20)..(58)  
<223> IgE-EMPD 1-39

<400> 110

Lys Lys Lys Xaa Xaa Xaa Xaa Thr Arg Ile Xaa Thr Ile Xaa Xaa Xaa  
1 5 10 15

Xaa Asp Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro  
20 25 30

Asp Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala  
35 40 45

Ala Gly Gly Ser Val Pro His Pro Arg Cys  
50 55

<210> 111  
<211> 51  
<212> PRT  
<213> Homo sapiens

<220>  
<221> PEPTIDE  
<222> (1)..(11)  
<223> Influenza MP1\_1 Th

<220>  
<221> SITE  
<222> (12)..(12)  
<223> epsilon K as a spacer

<220>  
<221> PEPTIDE  
<222> (13)..(51)  
<223> IgE-EMPD 1-39

<400> 111

Phe Val Phe Thr Leu Thr Val Pro Ser Glu Arg Lys Gly Leu Ala Gly

1                      5                      10                      15

Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp Arg Val Leu Cys His Ser  
                    20                      25                      30

Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly Ser Val Pro His  
                    35                      40                      45

Pro Arg Cys  
                    50

<210> 112  
<211> 55  
<212> PRT  
<213> Homo sapiens

<220>  
<221> PEPTIDE  
<222> (1)..(15)  
<223> Influenza MP1\_2 Th

<220>  
<221> SITE  
<222> (16)..(16)  
<223> epsilon K as a spacer

<220>  
<221> PEPTIDE  
<222> (17)..(55)  
<223> IgE-EMPD 1-39

<400> 112

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

Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp Arg Val  
20 25 30

Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly  
35 40 45

Ser Val Pro His Pro Arg Cys  
50 55

<210> 113  
<211> 49  
<212> PRT  
<213> Homo sapiens

<220>  
<221> PEPTIDE  
<222> (1)..(9)  
<223> Influenza NSP1 Th

<220>  
<221> SITE  
<222> (10)..(10)  
<223> epsilon K as a spacer

<220>  
<221> PEPTIDE  
<222> (11)..(49)  
<223> IgE-EMPD 1-39

<400> 113

Asp Arg Leu Arg Arg Asp Gln Lys Ser Lys Gly Leu Ala Gly Gly Ser  
1                    5                    10                    15

Ala Gln Ser Gln Arg Ala Pro Asp Arg Val Leu Cys His Ser Gly Gln  
                  20                    25                    30

Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly Ser Val Pro His Pro Arg  
                  35                    40                    45

Cys

<210> 114  
<211> 59  
<212> PRT  
<213> Homo sapiens

<220>  
<221> PEPTIDE  
<222> (1)..(19)  
<223> EBV BHRF1 Th

<220>  
<221> SITE  
<222> (20)..(20)  
<223> epsilon K as a spacer

<220>  
<221> PEPTIDE  
<222> (21)..(59)  
<223> IgE-EMPD 1-39

<400> 114

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

Ser Arg Gly Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala  
20 25 30

Pro Asp Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg  
35 40 45

Ala Ala Gly Gly Ser Val Pro His Pro Arg Cys  
50 55

<210> 115

<211> 55

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(15)

<223> Clostridium tetani TT1 Th

<220>

<221> SITE

<222> (16)..(16)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (17)..(55)

<223> IgE-EMPD 1-39

<400> 115

Gln Tyr Ile Lys Ala Asn Ser Lys Phe Ile Gly Ile Thr Glu Leu Lys  
1 5 10 15

Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp Arg Val  
20 25 30

Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly  
35 40 45

Ser Val Pro His Pro Arg Cys  
50 55

<210> 116

<211> 60

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(20)

<223> EBV EBNA-1 Th

<220>

<221> SITE

<222> (21)..(21)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (22)..(60)

<223> IgE-EMPD 1-39

<400> 116

Pro Gly Pro Leu Arg Glu Ser Ile Val Cys Tyr Phe Met Val Phe Leu  
1 5 10 15

Gln Thr His Ile Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg  
20 25 30

Ala Pro Asp Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro  
35 40 45

Arg Ala Ala Gly Gly Ser Val Pro His Pro Arg Cys  
50 55 60

<210> 117

<211> 61

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(21)

<223> Clostridium tetani TT2 Th

<220>

<221> SITE

<222> (22)..(22)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (23)..(61)

<223> IgE-EMPD 1-39

<400> 117

Phe Asn Asn Phe Thr Val Ser Phe Trp Leu Arg Val Pro Lys Val Ser  
1 5 10 15

Ala Ser His Leu Glu Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln  
20 25 30

Arg Ala Pro Asp Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu  
35 40 45

Pro Arg Ala Ala Gly Gly Ser Val Pro His Pro Arg Cys  
50 55 60

<210> 118

<211> 56

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(16)

<223> Clostridium tetani TT3 Th

<220>

<221> SITE

<222> (17)..(17)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE  
<222> (18)..(56)  
<223> IgE-EMPD 1-39

<400> 118

Lys Phe Ile Ile Lys Arg Tyr Thr Pro Asn Asn Glu Ile Asp Ser Phe  
1 5 10 15

Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp Arg  
20 25 30

Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly  
35 40 45

Gly Ser Val Pro His Pro Arg Cys  
50 55

<210> 119  
<211> 56  
<212> PRT  
<213> Homo sapiens

<220>  
<221> PEPTIDE  
<222> (1)..(16)  
<223> Clostridium tetani TT4 Th

<220>  
<221> SITE  
<222> (17)..(17)  
<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (18)..(56)

<223> IgE-EMPD 1-39

<400> 119

Val Ser Ile Asp Lys Phe Arg Ile Phe Cys Lys Ala Leu Asn Pro Lys  
1 5 10 15

Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp Arg  
20 25 30

Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly  
35 40 45

Gly Ser Val Pro His Pro Arg Cys  
50 55

<210> 120

<211> 58

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(18)

<223> EBV CP Th

<220>

<221> SITE

<222> (19)..(19)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (20)..(58)

<223> IgE-EMPD 1-39

<400> 120

Val Pro Gly Leu Tyr Ser Pro Cys Arg Ala Phe Phe Asn Lys Glu Glu  
1 5 10 15

Leu Leu Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro  
20 25 30

Asp Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala  
35 40 45

Ala Gly Gly Ser Val Pro His Pro Arg Cys  
50 55

<210> 121

<211> 54

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(14)

<223> HCMV IE1 Th

<220>

<221> SITE

<222> (15)..(15)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (16)..(54)

<223> IgE-EMPD 1-39

<400> 121

Asp Lys Arg Glu Met Trp Met Ala Cys Ile Lys Glu Leu His Lys Gly  
1 5 10 15

Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp Arg Val Leu  
20 25 30

Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly Ser  
35 40 45

Val Pro His Pro Arg Cys  
50

<210> 122

<211> 55

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(15)

<223> EBV GP340 Th

<220>

<221> SITE

<222> (16)..(16)  
<223> epsilon K as a spacer

<220>  
<221> PEPTIDE  
<222> (17)..(55)  
<223> IgE-EMPD 1-39

<400> 122

Thr Gly His Gly Ala Arg Thr Ser Thr Glu Pro Thr Thr Asp Tyr Lys  
1 5 10 15

Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp Arg Val  
20 25 30

Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly  
35 40 45

Ser Val Pro His Pro Arg Cys  
50 55

<210> 123  
<211> 53  
<212> PRT  
<213> Homo sapiens

<220>  
<221> PEPTIDE  
<222> (1)..(13)  
<223> EBV BPLF1 Th

<220>

<221> PEPTIDE  
<222> (14)..(14)  
<223> epsilon K as a spacer

<220>  
<221> PEPTIDE  
<222> (15)..(53)  
<223> IgE-EMPD 1-39

<400> 123

Lys Glu Leu Lys Arg Gln Tyr Glu Lys Lys Leu Arg Gln Lys Gly Leu  
1 5 10 15

Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp Arg Val Leu Cys  
20 25 30

His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly Ser Val  
35 40 45

Pro His Pro Arg Cys  
50

<210> 124  
<211> 51  
<212> PRT  
<213> Homo sapiens

<220>  
<221> PEPTIDE  
<222> (1)..(11)  
<223> EBV EBNA-2 Th

<220>  
<221> SITE  
<222> (12)..(12)  
<223> epsilon K as a spacer

<220>  
<221> PEPTIDE  
<222> (13)..(51)  
<223> IgE-EMPD 1-39

<400> 124

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

Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp Arg Val Leu Cys His Ser  
20 25 30

Gly Gln Gln Gln Gly Leu Pro Arg Ala Ala Gly Gly Ser Val Pro His  
35 40 45

Pro Arg Cys  
50

<210> 125  
<211> 74  
<212> PRT  
<213> Macaca fascicularis

<220>  
<221> PEPTIDE  
<222> (1)..(19)  
<223> UBITH(R) 1

<220>

<221> SITE

<222> (20)..(20)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (21)..(54)

<223> IgE-EMPD 7-40 (Macaca fascicularis)

<220>

<221> SITE

<222> (55)..(55)

<223> epsilon K as a spacer

<220>

<221> PEPTIDE

<222> (56)..(74)

<223> UB1Th(R)1

<400> 125

Ile Ser Ile Thr Glu Ile Lys Gly Val Ile Val His Arg Ile Glu Thr  
1 5 10 15

Ile Leu Phe Lys Ala Gln Ser Gln Arg Ala Pro Asp Arg Val Leu Cys  
20 25 30

His Ser Glu Gln Gln Gln Gly Leu Pro Arg Ala Ala Arg Gly Ser Val  
35 40 45

Pro Asp His Arg Cys His Lys Ile Ser Ile Thr Glu Ile Lys Gly Val  
50 55 60

Ile Val His Arg Ile Glu Thr Ile Leu Phe  
65 70

<210> 126  
<211> 59  
<212> PRT  
<213> Macaca fascicularis

<220>  
<221> PEPTIDE  
<222> (1)..(39)  
<223> IgE-EMPD 1-39 (Macaca fascicularis)

<220>  
<221> SITE  
<222> (40)..(40)  
<223> epsilon K as a spacer

<220>  
<221> PEPTIDE  
<222> (41)..(59)  
<223> UBITH(R)1

<400> 126

Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp Arg Val  
1 5 10 15

Leu Cys His Ser Glu Gln Gln Gln Gly Leu Pro Arg Ala Ala Arg Gly  
20 25 30

Ser Val Pro Asp His Arg Cys Lys Ile Ser Ile Thr Glu Ile Lys Gly  
35 40 45

Val Ile Val His Arg Ile Glu Thr Ile Leu Phe  
50 55

<210> 127  
<211> 52  
<212> PRT  
<213> *Macaca fascicularis*

<220>  
<221> PEPTIDE  
<222> (1)..(52)  
<223> IgE-EMPD 1-52 (*Macaca fascicularis*)

<400> 127

Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro Asp Arg Val  
1 5 10 15

Leu Cys His Ser Glu Gln Gln Gln Gly Leu Pro Arg Ala Ala Arg Gly  
20 25 30

Ser Val Pro Asp His Arg Cys His Cys Gly Ala Gly Arg Ala Asp Trp  
35 40 45

Pro Gly Leu Pro  
50

<210> 128  
<211> 6  
<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(6)

<223> Spacer 1

<220>

<221> SITE

<222> (3)..(3)

<223> Any amino acid

<220>

<221> SITE

<222> (5)..(5)

<223> Any amino acid

<400> 128

Pro Pro Xaa Pro Xaa Pro  
1 5

<210> 129

<211> 4

<212> PRT

<213> Homo sapiens

<220>

<221> PEPTIDE

<222> (1)..(4)

<223> Spacer 2

<220>

<221> SITE

<222> (1)..(1)

<223> epsilon K

<400> 129

Lys Lys Lys Lys

1

<210> 130

<211> 58

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic Peptide

<220>

<221> SITE

<222> (1)..(19)

<223> UBITH(R) 2

<220>

<221> SITE

<222> (20)..(20)

<223> epsilon K as a spacer

<220>

<221> SITE

<222> (21)..(58)

<223> IgEEMPD 1-39

<400> 130

Lys Lys Lys Ile Ile Thr Ile Thr Arg Ile Ile Thr Ile Ile Thr Thr

1

5

10

15

Ile Asp Lys Gly Leu Ala Gly Gly Ser Ala Gln Ser Gln Arg Ala Pro  
20 25 30

Asp Arg Val Leu Cys His Ser Gly Gln Gln Gln Gly Leu Pro Arg Ala  
35 40 45

Ala Gly Gly Ser Val Pro His Pro Arg Cys  
50 55