

2544381\_1.TXT  
SEQUENCE LISTING

<110> Sanofi-Pasteur  
Imperial Innovations Limited

<120> Induction of cross-reactive cellular response against rhinovirus  
antigens

<130> BET12P1418

<160> 41

<170> PatentIn version 3.5

<210> 1  
<211> 69  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> HRV16 VP4 peptide

<400> 1

Met Gly Ala Gln Val Ser Arg Gln Asn Val Gly Thr His Ser Thr Gln  
1 5 10 15

Asn Met Val Ser Asn Gly Ser Ser Leu Asn Tyr Phe Asn Ile Asn Tyr  
20 25 30

Phe Lys Asp Ala Ala Ser Ser Gly Ala Ser Arg Leu Asp Phe Ser Gln  
35 40 45

Asp Pro Ser Lys Phe Thr Asp Pro Val Lys Asp Val Leu Glu Lys Gly  
50 55 60

Ile Pro Thr Leu Gln  
65

<210> 2  
<211> 69  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> HRV14 VP4 peptide

<400> 2

Met Gly Ala Gln Val Ser Thr Gln Lys Ser Gly Ser His Glu Asn Gln  
1 5 10 15

Asn Ile Leu Thr Asn Gly Ser Asn Gln Thr Phe Thr Val Ile Asn Tyr  
20 25 30

Tyr Lys Asp Ala Ala Ser Thr Ser Ser Ala Gly Gln Ser Leu Ser Met  
35 40 45

Asp Pro Ser Lys Phe Thr Glu Pro Val Lys Asp Leu Met Leu Lys Gly  
50 55 60

Ala Pro Ala Leu Asn  
65

<210> 3  
<211> 260  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> HRV16 VP2 peptide

<400> 3

Ser Pro Ser Val Glu Ala Cys Gly Tyr Ser Asp Arg Ile Ile Gln Ile  
1 5 10 15

Thr Arg Gly Asp Ser Thr Ile Thr Ser Gln Asp Val Ala Asn Ala Val  
20 25 30

Val Gly Tyr Gly Val Trp Pro His Tyr Leu Thr Pro Gln Asp Ala Thr  
35 40 45

Ala Ile Asp Lys Pro Thr Gln Pro Asp Thr Ser Ser Asn Arg Phe Tyr  
50 55 60

Thr Leu Asp Ser Lys Met Trp Asn Ser Thr Ser Lys Gly Trp Trp Trp  
65 70 75 80

Lys Leu Pro Asp Ala Leu Lys Asp Met Gly Ile Phe Gly Glu Asn Met  
85 90 95

Phe Tyr His Phe Leu Gly Arg Ser Gly Tyr Thr Val His Val Gln Cys  
100 105 110

Asn Ala Ser Lys Phe His Gln Gly Thr Leu Leu Val Val Met Ile Pro  
115 120 125

Glu His Gln Leu Ala Thr Val Asn Lys Gly Asn Val Asn Ala Gly Tyr  
130 135 140

Lys Tyr Thr His Pro Gly Glu Ala Gly Arg Glu Val Gly Thr Gln Val  
145 150 155 160

Glu Asn Glu Lys Gln Pro Ser Asp Asp Asn Trp Leu Asn Phe Asp Gly  
165 170 175

Thr Leu Leu Gly Asn Leu Leu Ile Phe Pro His Gln Phe Ile Asn Leu  
180 185 190

Arg Ser Asn Asn Ser Ala Thr Leu Ile Val Pro Tyr Val Asn Ala Val  
195 200 205

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Pro Met Asp Ser Met Val Arg His Asn Asn Trp Ser Leu Val Ile Ile  
210 215 220

Pro Val Cys Gln Leu Gln Ser Asn Asn Ile Ser Asn Ile Val Pro Ile  
225 230 235 240

Thr Val Ser Ile Ser Pro Met Cys Ala Glu Phe Ser Gly Ala Arg Ala  
245 250 255

Lys Thr Val Val  
260

<210> 4  
<211> 260  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> HRV14 VP2 peptide

<400> 4

Ser Pro Asn Val Glu Ala Cys Gly Tyr Ser Asp Arg Val Gln Gln Ile  
1 5 10 15

Thr Leu Gly Asn Ser Thr Ile Thr Thr Gln Glu Ala Ala Asn Ala Val  
20 25 30

Val Cys Tyr Ala Glu Trp Pro Glu Tyr Leu Pro Asp Val Asp Ala Ser  
35 40 45

Asp Val Asn Lys Thr Ser Lys Pro Asp Thr Ser Val Cys Arg Phe Tyr  
50 55 60

Thr Leu Asp Ser Lys Thr Trp Thr Thr Gly Ser Lys Gly Trp Cys Trp  
65 70 75 80

Lys Leu Pro Asp Ala Leu Lys Asp Met Gly Val Phe Gly Gln Asn Met  
85 90 95

Phe Phe His Ser Leu Gly Arg Ser Gly Tyr Thr Val His Val Gln Cys  
100 105 110

Asn Ala Thr Lys Phe His Ser Gly Cys Leu Leu Val Val Val Ile Pro  
115 120 125

Glu His Gln Leu Ala Ser His Glu Gly Gly Asn Val Ser Val Lys Tyr  
130 135 140

Thr Phe Thr His Pro Gly Glu Arg Gly Ile Asp Leu Ser Ser Ala Asn  
145 150 155 160

Glu Val Gly Gly Pro Val Lys Asp Val Ile Tyr Asn Met Asn Gly Thr  
165 170 175

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Leu Leu Gly Asn Leu Leu Ile Phe Pro His Gln Phe Ile Asn Leu Arg  
180 185 190

Thr Asn Asn Thr Ala Thr Ile Val Ile Pro Tyr Ile Asn Ser Val Pro  
195 200 205

Ile Asp Ser Met Thr Arg His Asn Asn Val Ser Leu Met Val Ile Pro  
210 215 220

Ile Ala Pro Leu Thr Val Pro Thr Gly Ala Thr Pro Ser Leu Pro Ile  
225 230 235 240

Thr Val Thr Ile Ala Pro Met Cys Thr Glu Phe Ser Gly Ile Arg Ser  
245 250 255

Lys Ser Ile Val  
260

<210> 5  
<211> 135  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> HRV16 VP135

<400> 5

Met Gly Ala Gln Val Ser Arg Gln Asn Val Gly Thr His Ser Thr Gln  
1 5 10 15

Asn Met Val Ser Asn Gly Ser Ser Leu Asn Tyr Phe Asn Ile Asn Tyr  
20 25 30

Phe Lys Asp Ala Ala Ser Ser Gly Ala Ser Arg Leu Asp Phe Ser Gln  
35 40 45

Asp Pro Ser Lys Phe Thr Asp Pro Val Lys Asp Val Leu Glu Lys Gly  
50 55 60

Ile Pro Thr Leu Gln Ser Pro Ser Val Glu Ala Cys Gly Tyr Ser Asp  
65 70 75 80

Arg Ile Ile Gln Ile Thr Arg Gly Asp Ser Thr Ile Thr Ser Gln Asp  
85 90 95

Val Ala Asn Ala Val Val Gly Tyr Gly Val Trp Pro His Tyr Leu Thr  
100 105 110

Pro Gln Asp Ala Thr Ala Ile Asp Lys Pro Thr Gln Pro Asp Thr Ser  
115 120 125

Ser Asn Arg Phe Tyr Thr Leu  
130 135

<210> 6  
<211> 329  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> HRV16 VP0 polyprotein

<400> 6

Met Gly Ala Gln Val Ser Arg Gln Asn Val Gly Thr His Ser Thr Gln  
1 5 10 15

Asn Met Val Ser Asn Gly Ser Ser Leu Asn Tyr Phe Asn Ile Asn Tyr  
20 25 30

Phe Lys Asp Ala Ala Ser Ser Gly Ala Ser Arg Leu Asp Phe Ser Gln  
35 40 45

Asp Pro Ser Lys Phe Thr Asp Pro Val Lys Asp Val Leu Glu Lys Gly  
50 55 60

Ile Pro Thr Leu Gln Ser Pro Ser Val Glu Ala Cys Gly Tyr Ser Asp  
65 70 75 80

Arg Ile Ile Gln Ile Thr Arg Gly Asp Ser Thr Ile Thr Ser Gln Asp  
85 90 95

Val Ala Asn Ala Val Val Gly Tyr Gly Val Trp Pro His Tyr Leu Thr  
100 105 110

Pro Gln Asp Ala Thr Ala Ile Asp Lys Pro Thr Gln Pro Asp Thr Ser  
115 120 125

Ser Asn Arg Phe Tyr Thr Leu Asp Ser Lys Met Trp Asn Ser Thr Ser  
130 135 140

Lys Gly Trp Trp Trp Lys Leu Pro Asp Ala Leu Lys Asp Met Gly Ile  
145 150 155 160

Phe Gly Glu Asn Met Phe Tyr His Phe Leu Gly Arg Ser Gly Tyr Thr  
165 170 175

Val His Val Gln Cys Asn Ala Ser Lys Phe His Gln Gly Thr Leu Leu  
180 185 190

Val Val Met Ile Pro Glu His Gln Leu Ala Thr Val Asn Lys Gly Asn  
195 200 205

Val Asn Ala Gly Tyr Lys Tyr Thr His Pro Gly Glu Ala Gly Arg Glu  
210 215 220

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Val Gly Thr Gln Val Glu Asn Glu Lys Gln Pro Ser Asp Asp Asn Trp  
225 230 235 240

Leu Asn Phe Asp Gly Thr Leu Leu Gly Asn Leu Leu Ile Phe Pro His  
245 250 255

Gln Phe Ile Asn Leu Arg Ser Asn Asn Ser Ala Thr Leu Ile Val Pro  
260 265 270

Tyr Val Asn Ala Val Pro Met Asp Ser Met Val Arg His Asn Asn Trp  
275 280 285

Ser Leu Val Ile Ile Pro Val Cys Gln Leu Gln Ser Asn Asn Ile Ser  
290 295 300

Asn Ile Val Pro Ile Thr Val Ser Ile Ser Pro Met Cys Ala Glu Phe  
305 310 315 320

Ser Gly Ala Arg Ala Lys Thr Val Val  
325

<210> 7  
<211> 135  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> HRV14 VP135

<400> 7

Met Gly Ala Gln Val Ser Thr Gln Lys Ser Gly Ser His Glu Asn Gln  
1 5 10 15

Asn Ile Leu Thr Asn Gly Ser Asn Gln Thr Phe Thr Val Ile Asn Tyr  
20 25 30

Tyr Lys Asp Ala Ala Ser Thr Ser Ser Ala Gly Gln Ser Leu Ser Met  
35 40 45

Asp Pro Ser Lys Phe Thr Glu Pro Val Lys Asp Leu Met Leu Lys Gly  
50 55 60

Ala Pro Ala Leu Asn Ser Pro Asn Val Glu Ala Cys Gly Tyr Ser Asp  
65 70 75 80

Arg Val Gln Gln Ile Thr Leu Gly Asn Ser Thr Ile Thr Thr Gln Glu  
85 90 95

Ala Ala Asn Ala Val Val Cys Tyr Ala Glu Trp Pro Glu Tyr Leu Pro  
100 105 110

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Asp Val Asp Ala Ser Asp Val Asn Lys Thr Ser Lys Pro Asp Thr Ser  
115 120 125

Val Cys Arg Phe Tyr Thr Leu  
130 135

<210> 8  
<211> 329  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> HRV14 VP0 polyprotein

<220>  
<221> SITE  
<222> (1)..(171)  
<223> pool E

<400> 8

Met Gly Ala Gln Val Ser Thr Gln Lys Ser Gly Ser His Glu Asn Gln  
1 5 10 15

Asn Ile Leu Thr Asn Gly Ser Asn Gln Thr Phe Thr Val Ile Asn Tyr  
20 25 30

Tyr Lys Asp Ala Ala Ser Thr Ser Ser Ala Gly Gln Ser Leu Ser Met  
35 40 45

Asp Pro Ser Lys Phe Thr Glu Pro Val Lys Asp Leu Met Leu Lys Gly  
50 55 60

Ala Pro Ala Leu Asn Ser Pro Asn Val Glu Ala Cys Gly Tyr Ser Asp  
65 70 75 80

Arg Val Gln Gln Ile Thr Leu Gly Asn Ser Thr Ile Thr Thr Gln Glu  
85 90 95

Ala Ala Asn Ala Val Val Cys Tyr Ala Glu Trp Pro Glu Tyr Leu Pro  
100 105 110

Asp Val Asp Ala Ser Asp Val Asn Lys Thr Ser Lys Pro Asp Thr Ser  
115 120 125

Val Cys Arg Phe Tyr Thr Leu Asp Ser Lys Thr Trp Thr Thr Gly Ser  
130 135 140

Lys Gly Trp Cys Trp Lys Leu Pro Asp Ala Leu Lys Asp Met Gly Val  
145 150 155 160

Phe Gly Gln Asn Met Phe Phe His Ser Leu Gly Arg Ser Gly Tyr Thr  
165 170 175

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Val His Val Gln Cys Asn Ala Thr Lys Phe His Ser Gly Cys Leu Leu  
180 185 190

Val Val Val Ile Pro Glu His Gln Leu Ala Ser His Glu Gly Gly Asn  
195 200 205

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

Leu Ser Ser Ala Asn Glu Val Gly Gly Pro Val Lys Asp Val Ile Tyr  
225 230 235 240

Asn Met Asn Gly Thr Leu Leu Gly Asn Leu Leu Ile Phe Pro His Gln  
245 250 255

Phe Ile Asn Leu Arg Thr Asn Asn Thr Ala Thr Ile Val Ile Pro Tyr  
260 265 270

Ile Asn Ser Val Pro Ile Asp Ser Met Thr Arg His Asn Asn Val Ser  
275 280 285

Leu Met Val Ile Pro Ile Ala Pro Leu Thr Val Pro Thr Gly Ala Thr  
290 295 300

Pro Ser Leu Pro Ile Thr Val Thr Ile Ala Pro Met Cys Thr Glu Phe  
305 310 315 320

Ser Gly Ile Arg Ser Lys Ser Ile Val  
325

<210> 9  
<211> 105  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> last 105 amino acids of HRV16 RNA polymerase  
<400> 9

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

Phe Leu Lys Arg Gly Phe Arg Gln Asp Asp Lys Tyr Lys Phe Leu Ile  
20 25 30

His Pro Thr Phe Pro Val Glu Glu Ile Tyr Glu Ser Ile Arg Trp Thr  
35 40 45

Lys Lys Pro Ser Gln Met Gln Glu His Val Leu Ser Leu Cys His Leu  
50 55 60

Met Trp His Asn Gly Pro Glu Ile Tyr Lys Asp Phe Glu Thr Lys Ile  
65 70 75 80



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Arg Ser Val Ser Ala Gly Arg Ala Leu Tyr Ile Pro Pro Tyr Glu Leu  
85 90 95

Leu Arg His Glu Trp Tyr Glu Lys Phe  
100 105

<210> 10  
<211> 105  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> last 105 amino acids of HRV14 RNA polymerase

<400> 10

Pro Asp Lys Ser Glu Thr Phe Thr Lys Met Thr Trp Glu Asn Leu Thr  
1 5 10 15

Phe Leu Lys Arg Tyr Phe Lys Pro Asp Gln Gln Phe Pro Phe Leu Val  
20 25 30

His Pro Val Met Pro Met Lys Asp Ile His Glu Ser Ile Arg Trp Thr  
35 40 45

Lys Asp Pro Lys Asn Thr Gln Asp His Val Arg Ser Leu Cys Met Leu  
50 55 60

Ala Trp His Ser Gly Glu Lys Glu Tyr Asn Glu Phe Ile Gln Lys Ile  
65 70 75 80

Arg Thr Thr Asp Ile Gly Lys Cys Leu Ile Leu Pro Glu Tyr Ser Val  
85 90 95

Leu Arg Arg Arg Trp Leu Asp Leu Phe  
100 105

<210> 11  
<211> 240  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> HRV16 VP-pol fusion peptide

<400> 11

Met Gly Ala Gln Val Ser Arg Gln Asn Val Gly Thr His Ser Thr Gln  
1 5 10 15

Asn Met Val Ser Asn Gly Ser Ser Leu Asn Tyr Phe Asn Ile Asn Tyr  
20 25 30

Phe Lys Asp Ala Ala Ser Ser Gly Ala Ser Arg Leu Asp Phe Ser Gln  
35 40 45

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Asp Pro Ser Lys Phe Thr Asp Pro Val Lys Asp Val Leu Glu Lys Gly  
50 55 60

Ile Pro Thr Leu Gln Ser Pro Ser Val Glu Ala Cys Gly Tyr Ser Asp  
65 70 75 80

Arg Ile Ile Gln Ile Thr Arg Gly Asp Ser Thr Ile Thr Ser Gln Asp  
85 90 95

Val Ala Asn Ala Val Val Gly Tyr Gly Val Trp Pro His Tyr Leu Thr  
100 105 110

Pro Gln Asp Ala Thr Ala Ile Asp Lys Pro Thr Gln Pro Asp Thr Ser  
115 120 125

Ser Asn Arg Phe Tyr Thr Leu Ala Asp Lys Ser Ser Glu Phe Lys Glu  
130 135 140

Leu Asp Tyr Gly Asn Val Thr Phe Leu Lys Arg Gly Phe Arg Gln Asp  
145 150 155 160

Asp Lys Tyr Lys Phe Leu Ile His Pro Thr Phe Pro Val Glu Glu Ile  
165 170 175

Tyr Glu Ser Ile Arg Trp Thr Lys Lys Pro Ser Gln Met Gln Glu His  
180 185 190

Val Leu Ser Leu Cys His Leu Met Trp His Asn Gly Pro Glu Ile Tyr  
195 200 205

Lys Asp Phe Glu Thr Lys Ile Arg Ser Val Ser Ala Gly Arg Ala Leu  
210 215 220

Tyr Ile Pro Pro Tyr Glu Leu Leu Arg His Glu Trp Tyr Glu Lys Phe  
225 230 235 240

<210> 12  
<211> 240  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> HRV14 VP-Pol fusion peptide

<400> 12

Met Gly Ala Gln Val Ser Thr Gln Lys Ser Gly Ser His Glu Asn Gln  
1 5 10 15

Asn Ile Leu Thr Asn Gly Ser Asn Gln Thr Phe Thr Val Ile Asn Tyr  
20 25 30

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Tyr Lys Asp Ala Ala Ser Thr Ser Ala Gly Gln Ser Leu Ser Met  
35 40 45

Asp Pro Ser Lys Phe Thr Glu Pro Val Lys Asp Leu Met Leu Lys Gly  
50 55 60

Ala Pro Ala Leu Asn Ser Pro Asn Val Glu Ala Cys Gly Tyr Ser Asp  
65 70 75 80

Arg Val Gln Gln Ile Thr Leu Gly Asn Ser Thr Ile Thr Thr Gln Glu  
85 90 95

Ala Ala Asn Ala Val Val Cys Tyr Ala Glu Trp Pro Glu Tyr Leu Pro  
100 105 110

Asp Val Asp Ala Ser Asp Val Asn Lys Thr Ser Lys Pro Asp Thr Ser  
115 120 125

Val Cys Arg Phe Tyr Thr Leu Pro Asp Lys Ser Glu Thr Phe Thr Lys  
130 135 140

Met Thr Trp Glu Asn Leu Thr Phe Leu Lys Arg Tyr Phe Lys Pro Asp  
145 150 155 160

Gln Gln Phe Pro Phe Leu Val His Pro Val Met Pro Met Lys Asp Ile  
165 170 175

His Glu Ser Ile Arg Trp Thr Lys Asp Pro Lys Asn Thr Gln Asp His  
180 185 190

Val Arg Ser Leu Cys Met Leu Ala Trp His Ser Gly Glu Lys Glu Tyr  
195 200 205

Asn Glu Phe Ile Gln Lys Ile Arg Thr Thr Asp Ile Gly Lys Cys Leu  
210 215 220

Ile Leu Pro Glu Tyr Ser Val Leu Arg Arg Arg Trp Leu Asp Leu Phe  
225 230 235 240

<210> 13  
<211> 363  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> C-ter domain of HRV16 RNA polymerase

<400> 13

Glu Asp Ser Val Phe Gly Met Asp Gly Leu Glu Ala Leu Asp Leu Asn  
1 5 10 15

Thr Ser Ala Gly Tyr Pro Tyr Val Thr Leu Gly Ile Lys Lys Lys Asp  
20 25 30

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Leu Ile Asn Asn Lys Thr Lys Asp Ile Ser Lys Leu Lys Leu Ala Leu  
 35 40 45  
 Asp Lys Tyr Asp Val Asp Leu Pro Met Ile Thr Phe Leu Lys Asp Glu  
 50 55 60  
 Leu Arg Lys Lys Asp Lys Ile Ala Ala Gly Lys Thr Arg Val Ile Glu  
 65 70 75 80  
 Ala Ser Ser Ile Asn Asp Thr Ile Leu Phe Arg Thr Val Tyr Gly Asn  
 85 90 95  
 Leu Phe Ser Lys Phe His Leu Asn Pro Gly Val Val Thr Gly Cys Ala  
 100 105 110  
 Val Gly Cys Asp Pro Glu Thr Phe Trp Ser Lys Ile Pro Leu Met Leu  
 115 120 125  
 Asp Gly Asp Cys Ile Met Ala Phe Asp Tyr Thr Asn Tyr Asp Gly Ser  
 130 135 140  
 Ile His Pro Ile Trp Phe Lys Ala Leu Gly Met Val Leu Asp Asn Leu  
 145 150 155 160  
 Ser Phe Asn Pro Thr Leu Ile Asn Arg Leu Cys Asn Ser Lys His Ile  
 165 170 175  
 Phe Lys Ser Thr Tyr Tyr Glu Val Glu Gly Gly Val Pro Ser Gly Cys  
 180 185 190  
 Ser Gly Thr Ser Ile Phe Asn Ser Met Ile Asn Asn Ile Ile Ile Arg  
 195 200 205  
 Thr Leu Val Leu Asp Ala Tyr Lys His Ile Asp Leu Asp Lys Leu Lys  
 210 215 220  
 Ile Ile Ala Tyr Gly Asp Asp Val Ile Phe Ser Tyr Lys Tyr Lys Leu  
 225 230 235 240  
 Asp Met Glu Ala Ile Ala Lys Glu Gly Gln Lys Tyr Gly Leu Thr Ile  
 245 250 255  
 Thr Pro Ala Asp Lys Ser Ser Glu Phe Lys Glu Leu Asp Tyr Gly Asn  
 260 265 270  
 Val Thr Phe Leu Lys Arg Gly Phe Arg Gln Asp Asp Lys Tyr Lys Phe  
 275 280 285  
 Leu Ile His Pro Thr Phe Pro Val Glu Glu Ile Tyr Glu Ser Ile Arg  
 290 295 300

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Trp Thr Lys Lys Pro Ser Gln Met Gln Glu His Val Leu Ser Leu Cys  
305 310 315 320

His Leu Met Trp His Asn Gly Pro Glu Ile Tyr Lys Asp Phe Glu Thr  
325 330 335

Lys Ile Arg Ser Val Ser Ala Gly Arg Ala Leu Tyr Ile Pro Pro Tyr  
340 345 350

Glu Leu Leu Arg His Glu Trp Tyr Glu Lys Phe  
355 360

<210> 14

<211> 363

<212> PRT

<213> Artificial Sequence

<220>

<223> C-terminal domain of HRV14 RNA polymerase

<220>

<221> SITE

<222> (186)..(363)

<223> Pool F

<400> 14

Lys Glu Ala Leu Tyr Gly Val Asp Gly Leu Glu Pro Ile Asp Ile Thr  
1 5 10 15

Thr Ser Ala Gly Phe Pro Tyr Val Ser Leu Gly Ile Lys Lys Arg Asp  
20 25 30

Ile Leu Asn Lys Glu Thr Gln Asp Thr Glu Lys Met Lys Phe Tyr Leu  
35 40 45

Asp Lys Tyr Gly Ile Asp Leu Pro Leu Val Thr Tyr Ile Lys Asp Glu  
50 55 60

Leu Arg Ser Val Asp Lys Val Arg Leu Gly Lys Ser Arg Leu Ile Glu  
65 70 75 80

Ala Ser Ser Leu Asn Asp Ser Val Asn Met Arg Met Lys Leu Gly Asn  
85 90 95

Leu Tyr Lys Ala Phe His Gln Asn Pro Gly Val Leu Thr Gly Ser Ala  
100 105 110

Val Gly Cys Asp Pro Asp Val Phe Trp Ser Val Ile Pro Cys Leu Met  
115 120 125

Asp Gly His Leu Met Ala Phe Asp Tyr Ser Asn Phe Asp Ala Ser Leu  
130 135 140

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Ser Pro Val Trp Phe Val Cys Leu Glu Lys Val Leu Thr Lys Leu Gly  
145 150 155 160

Phe Ala Gly Ser Ser Leu Ile Gln Ser Ile Cys Asn Thr His His Ile  
165 170 175

Phe Arg Asp Glu Ile Tyr Val Val Glu Gly Gly Met Pro Ser Gly Cys  
180 185 190

Ser Gly Thr Ser Ile Phe Asn Ser Met Ile Asn Asn Ile Ile Ile Arg  
195 200 205

Thr Leu Ile Leu Asp Ala Tyr Lys Gly Ile Asp Leu Asp Lys Leu Lys  
210 215 220

Ile Leu Ala Tyr Gly Asp Asp Leu Ile Val Ser Tyr Pro Tyr Glu Leu  
225 230 235 240

Asp Pro Gln Val Leu Ala Thr Leu Gly Lys Asn Tyr Gly Leu Thr Ile  
245 250 255

Thr Pro Pro Asp Lys Ser Glu Thr Phe Thr Lys Met Thr Trp Glu Asn  
260 265 270

Leu Thr Phe Leu Lys Arg Tyr Phe Lys Pro Asp Gln Gln Phe Pro Phe  
275 280 285

Leu Val His Pro Val Met Pro Met Lys Asp Ile His Glu Ser Ile Arg  
290 295 300

Trp Thr Lys Asp Pro Lys Asn Thr Gln Asp His Val Arg Ser Leu Cys  
305 310 315 320

Met Leu Ala Trp His Ser Gly Glu Lys Glu Tyr Asn Glu Phe Ile Gln  
325 330 335

Lys Ile Arg Thr Thr Asp Ile Gly Lys Cys Leu Ile Leu Pro Glu Tyr  
340 345 350

Ser Val Leu Arg Arg Arg Trp Leu Asp Leu Phe  
355 360

<210> 15  
<211> 460  
<212> PRT  
<213> Artificial sequence

<220>  
<223> HRV16 RNA polymerase

<400> 15

Gly Gln Ile Gln Ile Ser Lys His Val Lys Asp Val Gly Leu Pro Ser  
 1 5 10 15  
 Ile His Thr Pro Thr Lys Thr Lys Leu Gln Pro Ser Val Phe Tyr Asp  
 20 25 30  
 Ile Phe Pro Gly Ser Lys Glu Pro Ala Val Leu Thr Glu Lys Asp Pro  
 35 40 45  
 Arg Leu Lys Val Asp Phe Asp Ser Ala Leu Phe Ser Lys Tyr Lys Gly  
 50 55 60  
 Asn Thr Glu Cys Ser Leu Asn Glu His Ile Gln Val Ala Val Ala His  
 65 70 75 80  
 Tyr Ser Ala Gln Leu Ala Thr Leu Asp Ile Asp Pro Gln Pro Ile Ala  
 85 90 95  
 Met Glu Asp Ser Val Phe Gly Met Asp Gly Leu Glu Ala Leu Asp Leu  
 100 105 110  
 Asn Thr Ser Ala Gly Tyr Pro Tyr Val Thr Leu Gly Ile Lys Lys Lys  
 115 120 125  
 Asp Leu Ile Asn Asn Lys Thr Lys Asp Ile Ser Lys Leu Lys Leu Ala  
 130 135 140  
 Leu Asp Lys Tyr Asp Val Asp Leu Pro Met Ile Thr Phe Leu Lys Asp  
 145 150 155 160  
 Glu Leu Arg Lys Lys Asp Lys Ile Ala Ala Gly Lys Thr Arg Val Ile  
 165 170 175  
 Glu Ala Ser Ser Ile Asn Asp Thr Ile Leu Phe Arg Thr Val Tyr Gly  
 180 185 190  
 Asn Leu Phe Ser Lys Phe His Leu Asn Pro Gly Val Val Thr Gly Cys  
 195 200 205  
 Ala Val Gly Cys Asp Pro Glu Thr Phe Trp Ser Lys Ile Pro Leu Met  
 210 215 220  
 Leu Asp Gly Asp Cys Ile Met Ala Phe Asp Tyr Thr Asn Tyr Asp Gly  
 225 230 235 240  
 Ser Ile His Pro Ile Trp Phe Lys Ala Leu Gly Met Val Leu Asp Asn  
 245 250 255  
 Leu Ser Phe Asn Pro Thr Leu Ile Asn Arg Leu Cys Asn Ser Lys His  
 260 265 270

Ile Phe Lys Ser Thr Tyr Tyr Glu Val Glu Gly Gly Val Pro Ser Gly  
 275 280 285

Cys Ser Gly Thr Ser Ile Phe Asn Ser Met Ile Asn Asn Ile Ile Ile  
 290 295 300

Arg Thr Leu Val Leu Asp Ala Tyr Lys His Ile Asp Leu Asp Lys Leu  
 305 310 315 320

Lys Ile Ile Ala Tyr Gly Asp Asp Val Ile Phe Ser Tyr Lys Tyr Lys  
 325 330 335

Leu Asp Met Glu Ala Ile Ala Lys Glu Gly Gln Lys Tyr Gly Leu Thr  
 340 345 350

Ile Thr Pro Ala Asp Lys Ser Ser Glu Phe Lys Glu Leu Asp Tyr Gly  
 355 360 365

Asn Val Thr Phe Leu Lys Arg Gly Phe Arg Gln Asp Asp Lys Tyr Lys  
 370 375 380

Phe Leu Ile His Pro Thr Phe Pro Val Glu Glu Ile Tyr Glu Ser Ile  
 385 390 395 400

Arg Trp Thr Lys Lys Pro Ser Gln Met Gln Glu His Val Leu Ser Leu  
 405 410 415

Cys His Leu Met Trp His Asn Gly Pro Glu Ile Tyr Lys Asp Phe Glu  
 420 425 430

Thr Lys Ile Arg Ser Val Ser Ala Gly Arg Ala Leu Tyr Ile Pro Pro  
 435 440 445

Tyr Glu Leu Leu Arg His Glu Trp Tyr Glu Lys Phe  
 450 455 460

<210> 16

<211> 460

<212> PRT

<213> Artificial Sequence

<220>

<223> HRV14 RNA polymerase

<400> 16

Gly Gln Val Ile Ala Arg His Lys Val Arg Glu Phe Asn Ile Asn Pro  
 1 5 10 15

Val Asn Thr Pro Thr Lys Ser Lys Leu His Pro Ser Val Phe Tyr Asp  
 20 25 30

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



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Arg Leu Glu Val Lys Leu Thr Glu Ser Leu Phe Ser Lys Tyr Lys Gly  
50 55 60

Asn Val Asn Thr Glu Pro Thr Glu Asn Met Leu Val Ala Val Asp His  
65 70 75 80

Tyr Ala Gly Gln Leu Leu Ser Leu Asp Ile Pro Thr Ser Glu Leu Thr  
85 90 95

Leu Lys Glu Ala Leu Tyr Gly Val Asp Gly Leu Glu Pro Ile Asp Ile  
100 105 110

Thr Thr Ser Ala Gly Phe Pro Tyr Val Ser Leu Gly Ile Lys Lys Arg  
115 120 125

Asp Ile Leu Asn Lys Glu Thr Gln Asp Thr Glu Lys Met Lys Phe Tyr  
130 135 140

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

Glu Leu Arg Ser Val Asp Lys Val Arg Leu Gly Lys Ser Arg Leu Ile  
165 170 175

Glu Ala Ser Ser Leu Asn Asp Ser Val Asn Met Arg Met Lys Leu Gly  
180 185 190

Asn Leu Tyr Lys Ala Phe His Gln Asn Pro Gly Val Leu Thr Gly Ser  
195 200 205

Ala Val Gly Cys Asp Pro Asp Val Phe Trp Ser Val Ile Pro Cys Leu  
210 215 220

Met Asp Gly His Leu Met Ala Phe Asp Tyr Ser Asn Phe Asp Ala Ser  
225 230 235 240

Leu Ser Pro Val Trp Phe Val Cys Leu Glu Lys Val Leu Thr Lys Leu  
245 250 255

Gly Phe Ala Gly Ser Ser Leu Ile Gln Ser Ile Cys Asn Thr His His  
260 265 270

Ile Phe Arg Asp Glu Ile Tyr Val Val Glu Gly Gly Met Pro Ser Gly  
275 280 285

Cys Ser Gly Thr Ser Ile Phe Asn Ser Met Ile Asn Asn Ile Ile Ile  
290 295 300

Arg Thr Leu Ile Leu Asp Ala Tyr Lys Gly Ile Asp Leu Asp Lys Leu  
305 310 315 320

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Lys Ile Leu Ala Tyr Gly Asp Asp Leu Ile Val Ser Tyr Pro Tyr Glu  
325 330 335

Leu Asp Pro Gln Val Leu Ala Thr Leu Gly Lys Asn Tyr Gly Leu Thr  
340 345 350

Ile Thr Pro Pro Asp Lys Ser Glu Thr Phe Thr Lys Met Thr Trp Glu  
355 360 365

Asn Leu Thr Phe Leu Lys Arg Tyr Phe Lys Pro Asp Gln Gln Phe Pro  
370 375 380

Phe Leu Val His Pro Val Met Pro Met Lys Asp Ile His Glu Ser Ile  
385 390 395 400

Arg Trp Thr Lys Asp Pro Lys Asn Thr Gln Asp His Val Arg Ser Leu  
405 410 415

Cys Met Leu Ala Trp His Ser Gly Glu Lys Glu Tyr Asn Glu Phe Ile  
420 425 430

Gln Lys Ile Arg Thr Thr Asp Ile Gly Lys Cys Leu Ile Leu Pro Glu  
435 440 445

Tyr Ser Val Leu Arg Arg Arg Trp Leu Asp Leu Phe  
450 455 460

<210> 17  
<211> 332  
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<213> Artificial Sequence

<220>  
<223> HRV1B VP0 polyprotein

<220>  
<221> SITE  
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<223> Pool C

<220>  
<221> SITE  
<222> (172)..(332)  
<223> Pool D

<400> 17

Met Gly Ala Gln Val Ser Arg Gln Asn Val Gly Thr His Ser Thr Gln  
1 5 10 15

Asn Ser Val Ser Asn Gly Ser Ser Leu Asn Tyr Phe Asn Ile Asn Tyr  
20 25 30

Phe Lys Asp Ala Ala Ser Ser Gly Ala Ser Arg Leu Asp Phe Ser Gln  
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35

40

45

Asp Pro Ser Lys Phe Thr Asp Pro Val Lys Asp Val Leu Glu Lys Gly  
 50 55 60  
 Ile Pro Thr Leu Gln Ser Pro Ser Val Glu Ala Cys Gly Tyr Ser Asp  
 65 70 75 80  
 Arg Ile Ile Gln Ile Thr Arg Gly Asp Ser Thr Ile Thr Ser Gln Asp  
 85 90 95  
 Val Ala Asn Ala Val Val Gly Tyr Gly Val Trp Pro His Tyr Leu Thr  
 100 105 110  
 Pro Gln Asp Ala Thr Ala Ile Asp Lys Pro Thr Gln Pro Asp Thr Ser  
 115 120 125  
 Ser Asn Arg Phe Tyr Thr Leu Glu Ser Lys His Trp Asn Gly Asp Ser  
 130 135 140  
 Lys Gly Trp Trp Trp Lys Leu Pro Asp Ala Leu Lys Glu Met Gly Ile  
 145 150 155 160  
 Phe Gly Glu Asn Met Tyr Tyr His Phe Leu Gly Arg Ser Gly Tyr Thr  
 165 170 175  
 Val His Val Gln Cys Asn Ala Ser Lys Phe His Gln Gly Thr Leu Leu  
 180 185 190  
 Val Ala Met Ile Pro Glu His Gln Leu Ala Ser Ala Lys Asn Gly Ser  
 195 200 205  
 Val Thr Ala Gly Tyr Asn Leu Thr His Pro Gly Glu Ala Gly Arg Val  
 210 215 220  
 Val Gly Gln Gln Arg Asp Ala Asn Leu Arg Gln Pro Ser Asp Asp Ser  
 225 230 235 240  
 Trp Leu Asn Phe Asp Gly Thr Leu Leu Gly Asn Leu Leu Ile Phe Pro  
 245 250 255  
 His Gln Phe Ile Asn Leu Arg Ser Asn Asn Ser Ala Thr Leu Ile Val  
 260 265 270  
 Pro Tyr Val Asn Ala Val Pro Met Asp Ser Met Leu Arg His Asn Asn  
 275 280 285  
 Trp Ser Leu Val Ile Ile Pro Ile Ser Pro Leu Arg Ser Glu Thr Thr  
 290 295 300  
 Ser Ser Asn Ile Arg Pro Ile Thr Val Ser Ile Ser Pro Met Cys Ala

305 310 315 320

Glu Phe Ser Gly Ala Arg Ala Lys Asn Val Arg Gln  
325 330

<210> 18  
<211> 365  
<212> PRT  
<213> Artificial Sequence

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<223> HRV1B RNA polymerase

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<223> Pool A

<220>  
<221> SITE  
<222> (188)..(365)  
<223> Pool B

<400> 18

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

Leu Asn Thr Ser Ala Gly Phe Pro Tyr Val Thr Met Gly Ile Lys Lys  
20 25 30

Arg Asp Leu Ile Asn Asn Lys Thr Lys Asp Ile Ser Arg Leu Lys Glu  
35 40 45

Ala Leu Asp Lys Tyr Gly Val Asp Leu Pro Met Ile Thr Phe Leu Lys  
50 55 60

Asp Glu Leu Arg Lys Lys Glu Lys Ile Ser Ala Gly Lys Thr Arg Val  
65 70 75 80

Ile Glu Ala Ser Ser Ile Asn Asp Thr Ile Leu Phe Arg Thr Thr Phe  
85 90 95

Gly Asn Leu Phe Ser Lys Phe His Leu Asn Pro Gly Val Val Thr Gly  
100 105 110

Ser Ala Val Gly Cys Asp Pro Glu Thr Phe Trp Ser Lys Ile Pro Val  
115 120 125

Met Leu Asp Gly Asp Cys Ile Met Ala Phe Asp Tyr Thr Asn Tyr Asp  
130 135 140

Gly Ser Ile His Pro Val Trp Phe Gln Ala Leu Lys Lys Val Leu Glu  
145 150 155 160

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Asn Leu Ser Phe Gln Ser Asn Leu Ile Asp Arg Leu Cys Tyr Ser Lys  
165 170 175

His Leu Phe Lys Ser Thr Tyr Tyr Glu Val Ala Gly Gly Val Pro Ser  
180 185 190

Gly Cys Ser Gly Thr Ser Ile Phe Asn Thr Met Ile Asn Asn Ile Ile  
195 200 205

Ile Arg Thr Leu Val Leu Asp Ala Tyr Lys Asn Ile Asp Leu Asp Lys  
210 215 220

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

Thr Leu Asp Met Glu Ala Ile Ala Asn Glu Gly Lys Lys Tyr Gly Leu  
245 250 255

Thr Ile Thr Pro Ala Asp Lys Ser Thr Glu Phe Lys Lys Leu Asp Tyr  
260 265 270

Asn Asn Val Thr Phe Leu Lys Arg Gly Phe Lys Gln Asp Glu Lys His  
275 280 285

Thr Phe Leu Ile His Pro Thr Phe Pro Val Glu Glu Ile Tyr Glu Ser  
290 295 300

Ile Arg Trp Thr Lys Lys Pro Ser Gln Met Gln Glu His Val Leu Ser  
305 310 315 320

Leu Cys His Leu Met Trp His Asn Gly Arg Lys Val Tyr Glu Asp Phe  
325 330 335

Ser Ser Lys Ile Arg Ser Val Ser Ala Gly Arg Ala Leu Tyr Ile Pro  
340 345 350

Pro Tyr Asp Leu Leu Lys His Glu Trp Tyr Glu Lys Phe  
355 360 365

<210> 19  
<211> 239  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> HRV1 VP-Pol fusion protein

<400> 19

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

Ser Val Ser Asn Gly Ser Ser Leu Asn Tyr Phe Asn Ile Asn Tyr Phe  
20 25 30

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Lys Asp Ala Ala Ser Ser Gly Ala Ser Arg Leu Asp Phe Ser Gln Asp  
 35 40 45  
 Pro Ser Lys Phe Thr Asp Pro Val Lys Asp Val Leu Glu Lys Gly Ile  
 50 55 60  
 Pro Thr Leu Gln Ser Pro Ser Val Glu Ala Cys Gly Tyr Ser Asp Arg  
 65 70 75 80  
 Ile Ile Gln Ile Thr Arg Gly Asp Ser Thr Ile Thr Ser Gln Asp Val  
 85 90 95  
 Ala Asn Ala Val Val Gly Tyr Gly Val Trp Pro His Tyr Leu Thr Pro  
 100 105 110  
 Gln Asp Ala Thr Ala Ile Asp Lys Pro Thr Gln Pro Asp Thr Ser Ser  
 115 120 125  
 Asn Arg Phe Tyr Thr Leu Ala Asp Lys Ser Thr Glu Phe Lys Lys Leu  
 130 135 140  
 Asp Tyr Asn Asn Val Thr Phe Leu Lys Arg Gly Phe Lys Gln Asp Glu  
 145 150 155 160  
 Lys His Thr Phe Leu Ile His Pro Thr Phe Pro Val Glu Glu Ile Tyr  
 165 170 175  
 Glu Ser Ile Arg Trp Thr Lys Lys Pro Ser Gln Met Gln Glu His Val  
 180 185 190  
 Leu Ser Leu Cys His Leu Met Trp His Asn Gly Arg Lys Val Tyr Glu  
 195 200 205  
 Asp Phe Ser Ser Lys Ile Arg Ser Val Ser Ala Gly Arg Ala Leu Tyr  
 210 215 220  
 Ile Pro Pro Tyr Asp Leu Leu Lys His Glu Trp Tyr Glu Lys Phe  
 225 230 235  
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 <212> PRT  
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 <223> HRV29 VP0 polyprotein  
 <400> 20  
 Gly Ala Gln Val Ser Arg Gln Asn Val Gly Thr His Ser Thr Gln Asn  
 1 5 10 15

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Ser Val Ser Asn Gly Ser Ser Leu Asn Tyr Phe Asn Ile Asn Tyr Phe  
20 25 30

Lys Asp Ala Ala Ser Ser Gly Ala Ser Lys Leu Glu Phe Ser Gln Asp  
35 40 45

Pro Ser Lys Phe Thr Asp Pro Val Lys Asp Val Leu Glu Lys Gly Ile  
50 55 60

Pro Thr Leu Gln Ser Pro Thr Val Glu Ala Cys Gly Tyr Ser Asp Arg  
65 70 75 80

Ile Met Gln Ile Thr Arg Gly Asp Ser Thr Ile Thr Ser Gln Asp Val  
85 90 95

Ala Asn Ala Val Ile Gly Tyr Gly Val Trp Pro His Tyr Leu Ser Ala  
100 105 110

Glu Asp Ala Thr Ala Ile Asp Lys Pro Thr Gln Pro Asp Thr Ser Ser  
115 120 125

Asn Arg Phe Tyr Thr Leu Glu Ser Lys Thr Trp Asp Arg Gln Ser Lys  
130 135 140

Gly Trp Trp Trp Lys Leu Pro Asp Ala Leu Lys Asp Met Gly Ile Phe  
145 150 155 160

Gly Glu Asn Met Tyr Tyr His Tyr Leu Gly Arg Ser Gly Tyr Thr Val  
165 170 175

His Val Gln Cys Asn Ala Ser Lys Phe His Gln Gly Thr Leu Leu Val  
180 185 190

Val Met Ile Leu Glu His Gln Leu Ala Ser Val Gly Thr Glu Lys Val  
195 200 205

Gly Pro Gly Tyr Asn Phe Thr His Pro Gly Glu Ala Gly Arg Gln Ile  
210 215 220

Gly Asn Val Ser Asp Arg Thr Ser Lys His Pro Ser Asp Asp Asn Trp  
225 230 235 240

Leu Asn Phe Asp Gly Thr Leu Leu Gly Asn Val Leu Ile Phe Pro His  
245 250 255

Gln Phe Ile Asn Leu Arg Ser Asn Asn Ser Ala Thr Ile Ile Val Pro  
260 265 270

Tyr Val Asn Ala Val Pro Met Asp Ser Met Leu Arg His Asn Asn Trp  
275 280 285

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

Asn Leu Thr Val Pro Ile Thr Val Ser Ile Ser Pro Met Phe Ala Glu  
305 310 315 320

Phe Ser Gly Ala Arg Ala Arg Pro Ala Arg Ala  
325 330

<210> 21  
<211> 362  
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<220>  
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<400> 21

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

Ser Ala Gly Phe Pro Tyr Ile Ser Met Gly Ile Lys Lys Arg Asp Leu  
20 25 30

Ile Asn Lys Gln Thr Lys Asp Val Thr Lys Leu Lys Met Ala Leu Asp  
35 40 45

Lys Tyr Gly Val Asp Leu Pro Met Val Thr Phe Leu Lys Asp Glu Leu  
50 55 60

Arg Lys Arg Glu Lys Ile Cys Ala Gly Lys Thr Arg Val Ile Glu Ala  
65 70 75 80

Ser Ser Val Asn Asp Thr Ile Leu Phe Arg Thr Thr Phe Gly Asn Leu  
85 90 95

Phe Ser Lys Phe His Leu Asn Pro Gly Val Val Thr Gly Ser Ala Val  
100 105 110

Gly Cys Asp Pro Glu Thr Phe Trp Ser Lys Ile Pro Val Met Leu Asp  
115 120 125

Gly Glu Cys Ile Met Ala Phe Asp Tyr Thr Asn Tyr Asp Gly Ser Ile  
130 135 140

His Pro Ile Trp Phe Gln Ala Leu Lys Glu Val Leu Ala Asn Leu Ser  
145 150 155 160

Phe Glu Pro Ala Leu Ile Asp Arg Leu Cys Arg Ser Lys His Ile Phe  
165 170 175

Lys Asn Thr Tyr Tyr Glu Val Glu Gly Gly Ile Pro Ser Gly Cys Ser  
180 185 190



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Gly Thr Ser Ile Phe Asn Thr Met Ile Asn Asn Val Ile Ile Arg Thr  
195 200 205

Leu Val Leu Asp Ala Tyr Lys Asn Ile Asp Leu Asp Lys Leu Lys Ile  
210 215 220

Leu Ala Tyr Gly Asp Asp Val Ile Phe Ser Tyr Lys Tyr Gln Leu Asp  
225 230 235 240

Met Glu Ala Ile Ala Lys Glu Gly Thr Lys Tyr Gly Leu Thr Ile Thr  
245 250 255

Pro Ala Asp Lys Ser Asp Cys Phe Lys Gln Leu Asn Tyr Asn Asn Val  
260 265 270

Thr Phe Leu Lys Arg Gly Phe Arg Gln Asp Glu Lys His Asn Phe Leu  
275 280 285

Ile His Pro Thr Phe Pro Val Glu Glu Ile Gln Glu Ser Ile Arg Trp  
290 295 300

Thr Lys Lys Pro Ser Gln Met Gln Glu His Val Leu Ser Leu Cys His  
305 310 315 320

Leu Met Trp His Asn Gly Arg Asp Val Tyr Lys Gln Phe Glu Asp Arg  
325 330 335

Ile Arg Ser Val Ser Ala Gly Arg Ala Leu Tyr Ile Pro Pro Tyr Asp  
340 345 350

Leu Leu Leu His Glu Trp Tyr Glu Lys Phe  
355 360

<210> 22  
<211> 239  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> HRV29 VP-Pol fusion peptide

<400> 22

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

Ser Val Ser Asn Gly Ser Ser Leu Asn Tyr Phe Asn Ile Asn Tyr Phe  
20 25 30

Lys Asp Ala Ala Ser Ser Gly Ala Ser Lys Leu Glu Phe Ser Gln Asp  
35 40 45

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Pro Ser Lys Phe Thr Asp Pro Val Lys Asp Val Leu Glu Lys Gly Ile  
50 55 60

Pro Thr Leu Gln Ser Pro Thr Val Glu Ala Cys Gly Tyr Ser Asp Arg  
65 70 75 80

Ile Met Gln Ile Thr Arg Gly Asp Ser Thr Ile Thr Ser Gln Asp Val  
85 90 95

Ala Asn Ala Val Ile Gly Tyr Gly Val Trp Pro His Tyr Leu Ser Ala  
100 105 110

Glu Asp Ala Thr Ala Ile Asp Lys Pro Thr Gln Pro Asp Thr Ser Ser  
115 120 125

Asn Arg Phe Tyr Thr Leu Ala Asp Lys Ser Asp Cys Phe Lys Gln Leu  
130 135 140

Asn Tyr Asn Asn Val Thr Phe Leu Lys Arg Gly Phe Arg Gln Asp Glu  
145 150 155 160

Lys His Asn Phe Leu Ile His Pro Thr Phe Pro Val Glu Glu Ile Gln  
165 170 175

Glu Ser Ile Arg Trp Thr Lys Lys Pro Ser Gln Met Gln Glu His Val  
180 185 190

Leu Ser Leu Cys His Leu Met Trp His Asn Gly Arg Asp Val Tyr Lys  
195 200 205

Gln Phe Glu Asp Arg Ile Arg Ser Val Ser Ala Gly Arg Ala Leu Tyr  
210 215 220

Ile Pro Pro Tyr Asp Leu Leu Leu His Glu Trp Tyr Glu Lys Phe  
225 230 235

<210> 23  
<211> 19  
<212> DNA  
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<220>  
<223> IL-4 forward primer

<400> 23  
acaggagaag ggacgccat

19

<210> 24  
<211> 21  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> IL-4 reverse primer

<400> 24  
gaagccctac agacgagctc a 21

<210> 25  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> IL-4 probe

<400> 25  
tcctcacagc aacgaaga 18

<210> 26  
<211> 24  
<212> DNA  
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<220>  
<223> IFN-g forward primer

<400> 26  
tcaagtggca tagatgtgga agaa 24

<210> 27  
<211> 21  
<212> DNA  
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<220>  
<223> IFN-g reverse primer

<400> 27  
tggctctgca ggattttcat g 21

<210> 28  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> IFN-g probe

<400> 28  
tcaccatcct tttgccagtt 20

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<211> 22  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> IL-17a forward primer

<400> 29  
tcagactacc tcaaccgttc ca 22

<210> 30  
<211> 21  
<212> DNA  
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<220>  
 <223> IL-17a reverse primer  
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 agcttcccag atcacagagg g 21

<210> 31  
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 <212> DNA  
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 <223> IL-17a probe  
 <400> 31  
 tcaccctgga ctctccaccg ca 22

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<210> 33  
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<220>  
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 <400> 33  
 gctscagggt taaggtagc c 21

<210> 34  
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<220>  
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 <400> 34  
 tgagtcctcc ggcccctgaa tg 22

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 <212> DNA  
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<220>  
 <223> 18S forward primer  
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 cgccgctaga ggtgaaattc t 21

<210> 36  
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 <212> DNA  
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<220>  
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<400> 36  
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<210> 37  
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 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> 18S probe

<400> 37  
 accggcgcaa gacggaccag a 21

<210> 38  
 <211> 20  
 <212> DNA  
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<220>  
 <223> CpG ODN 1826

<400> 38  
 tccatgacgt tcctgacgtt 20

<210> 39  
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 <212> DNA  
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<220>  
 <223> CpG ODN 2216

<400> 39  
 gggggacgat cgtcggggg 19

<210> 40  
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 <212> DNA  
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<220>  
 <223> CpG 2336

<400> 40  
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<210> 41  
 <211> 24  
 <212> DNA  
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<220>  
 <223> CpG 7909

<400> 41  
tcgtcgtttt gtcgttttgt cgtt

24