

SEQUENCE LISTING

<110> PATHOVAX LLC

<120> CHIMERIC VIRUS-LIKE PARTICLES AND USES THEREOF AS
ANTIGEN-SPECIFIC REDIRECTORS OF IMMUNE RESPONSES

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<150> 62/676,566

<151> 2018-05-25

<150> 62/524,308

<151> 2017-06-23

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<170> PatentIn version 3.5

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Arg	Tyr	Trp	Ala	Ile	Arg	Thr	Arg
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<210> 134

<211> 9

<212> PRT

<213> Influenza A virus

<400> 134

Ser	Arg	Tyr	Trp	Ala	Ile	Arg	Thr	Arg
1				5				

<210> 135

<211> 9

<212> PRT

<213> Influenza A virus

<400> 135

Val	Ser	Asp	Gly	Gly	Pro	Asn	Leu	Tyr
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<210> 136

<211> 9

<212> PRT

<213> Influenza A virus

<400> 136

Phe Met Tyr Ser Asp Phe His Phe Ile
1 5

<210> 137

<211> 10

<212> PRT

<213> Influenza A virus

<400> 137

Ile Leu Gly Phe Val Phe Thr Leu Thr Val
1 5 10

<210> 138

<211> 9

<212> PRT

<213> Influenza A virus

<400> 138

Asn Met Leu Ser Thr Val Leu Gly Val
1 5

<210> 139

<211> 10

<212> PRT

<213> Influenza A virus

<400> 139

Arg Met Val Leu Ala Ser Thr Thr Ala Lys
1 5 10

<210> 140

<211> 9

<212> PRT

<213> Influenza A virus

<400> 140

Ser Ile Ile Pro Ser Gly Pro Leu Lys
1 5

<210> 141

<211> 9

<212> PRT

<213> Influenza A virus

<400> 141

Ser Leu Glu Asn Phe Arg Ala Tyr Val

1

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<210> 142

<211> 20

<212> PRT

<213> Influenza A virus

<400> 142

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

Glu Arg Gly Leu
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<210> 143

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 143

Gly Leu Cys Thr Leu Val Ala Met Leu
1 5

<210> 144

<211> 14

<212> PRT

<213> Human cytomegalovirus

<400> 144

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

<210> 145

<211> 15

<212> PRT

<213> Human cytomegalovirus

<400> 145

Arg Lys Thr Pro Arg Val Thr Gly Gly Gly Ala Met Ala Gly Ala
1 5 10 15

<210> 146

<211> 15

<212> PRT

<213> Human cytomegalovirus

<400> 146

Gln Glu Phe Phe Trp Asp Ala Asn Asp Ile Tyr Arg Ile Phe Ala

1	5	10	15
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<210> 147
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 <212> PRT
 <213> Human cytomegalovirus

<400> 147
 Ala Arg Asn Leu Val Pro Met Val Ala Thr Val Gln Gly Gln Asn
 1 5 10 15

<210> 148
 <211> 12
 <212> PRT
 <213> Human cytomegalovirus

<400> 148
 Tyr Tyr Thr Ser Ala Phe Val Phe Pro Thr Lys Asp
 1 5 10

<210> 149
 <211> 11
 <212> PRT
 <213> Human cytomegalovirus

<400> 149
 Val Phe Pro Thr Lys Asp Val Ala Leu Arg His
 1 5 10

<210> 150
 <211> 15
 <212> PRT
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<400> 150
 Asp Asp Val Trp Thr Ser Gly Ser Asp Ser Asp Glu Glu Leu Val
 1 5 10 15

<210> 151
 <211> 9
 <212> PRT
 <213> Human cytomegalovirus

<400> 151
 Asn Leu Val Pro Met Val Ala Thr Val
 1 5

<210> 152

<211> 18
<212> PRT
<213> Polio virus

<400> 152
Val Ala Ile Ile Glu Val Asp Asn Glu Gln Pro Thr Thr Arg Ala Gln
1 5 10 15

Lys Leu

<210> 153
<211> 18
<212> PRT
<213> Polio virus

<400> 153
Thr Arg Ala Gln Lys Leu Phe Ala Met Trp Arg Ile Thr Tyr Lys Asp
1 5 10 15

Thr Val

<210> 154
<211> 39
<212> PRT
<213> Polio virus

<400> 154
Gly Ala Cys Val Ala Ile Ile Glu Val Asp Asn Glu Gln Pro Thr Thr
1 5 10 15

Arg Ala Gln Lys Leu Phe Ala Met Trp Arg Ile Thr Tyr Lys Asp Thr
20 25 30

Val Gln Leu Arg Arg Lys Leu
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<213> Epstein Barr virus

<400> 155
His Pro Val Gly Glu Ala Asp Tyr Phe Glu Tyr
1 5 10

<210> 156
<211> 10
<212> PRT
<213> Epstein Barr virus

<400> 156
Asp Thr Pro Leu Ile Pro Leu Thr Ile Phe
1 5 10

<210> 157
<211> 9
<212> PRT
<213> Epstein Barr virus

<400> 157
Gln Ala Lys Trp Arg Leu Gln Thr Leu
1 5

<210> 158
<211> 9
<212> PRT
<213> Epstein Barr virus

<400> 158
Ala Tyr Ser Ser Trp Met Tyr Ser Tyr
1 5

<210> 159
<211> 8
<212> PRT
<213> Epstein Barr virus

<400> 159
Arg Tyr Ser Ile Phe Phe Asp Tyr
1 5

<210> 160
<211> 9
<212> PRT
<213> Epstein Barr virus

<400> 160
Phe Leu Arg Gly Arg Ala Tyr Gly Leu
1 5

<210> 161
<211> 9
<212> PRT

<213> Epstein Barr virus

<400> 161

Arg Pro Pro Ile Phe Ile Arg Arg Leu
1 5

<210> 162

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 162

Leu Glu Lys Ala Arg Gly Ser Thr Tyr
1 5

<210> 163

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 163

His Leu Ala Ala Gln Gly Met Ala Tyr
1 5

<210> 164

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 164

Tyr Pro Leu His Glu Gln His Gly Met
1 5

<210> 165

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 165

Val Phe Ser Asp Gly Arg Val Ala Cys
1 5

<210> 166

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 166

Val Pro Ala Pro Ala Gly Pro Ile Val

1

5

<210> 167

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 167

Ser Val Arg Asp Arg Leu Ala Arg Leu

1

5

<210> 168

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 168

Arg Leu Arg Ala Glu Ala Gln Val Lys

1

5

<210> 169

<211> 15

<212> PRT

<213> Epstein Barr virus

<400> 169

Asn Pro Thr Gln Ala Pro Val Ile Gln Leu Val His Ala Val Tyr

1

5

10

15

<210> 170

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 170

His Arg Cys Gln Ala Ile Arg Lys Lys

1

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<210> 171

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 171

Thr Tyr Ser Ala Gly Ile Val Gln Ile

1

5

<210> 172

<211> 11
<212> PRT
<213> Epstein Barr virus

<400> 172
Arg Arg Ala Arg Ser Leu Ser Ala Glu Arg Tyr
1 5 10

<210> 173
<211> 10
<212> PRT
<213> Epstein Barr virus

<400> 173
Ala Val Phe Asp Arg Lys Ser Asp Ala Lys
1 5 10

<210> 174
<211> 9
<212> PRT
<213> Epstein Barr virus

<400> 174
Ile Val Thr Asp Phe Ser Val Ile Lys
1 5

<210> 175
<211> 15
<212> PRT
<213> Epstein Barr virus

<400> 175
Leu Pro Gly Pro Gln Val Thr Ala Val Leu Leu His Glu Glu Ser
1 5 10 15

<210> 176
<211> 9
<212> PRT
<213> Epstein Barr virus

<400> 176
Ala Val Leu Leu His Glu Glu Ser Met
1 5

<210> 177
<211> 14
<212> PRT
<213> Epstein Barr virus

<400> 177

Asp Glu Pro Ala Ser Thr Glu Pro Val His Asp Gln Leu Leu
1 5 10

<210> 178

<211> 10

<212> PRT

<213> Epstein Barr virus

<400> 178

Val Glu Ile Thr Pro Tyr Lys Pro Thr Trp
1 5 10

<210> 179

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 179

Gly Gln Gly Gly Ser Pro Thr Ala Met
1 5

<210> 180

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 180

Glu Gly Gly Val Gly Trp Arg His Trp
1 5

<210> 181

<211> 10

<212> PRT

<213> Epstein Barr virus

<400> 181

Gln Asn Gly Ala Leu Ala Ile Asn Thr Phe
1 5 10

<210> 182

<211> 10

<212> PRT

<213> Epstein Barr virus

<400> 182

Leu Arg Gly Lys Trp Gln Arg Arg Tyr Arg
1 5 10

<210> 183
<211> 9
<212> PRT
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<400> 183
Arg Arg Ile Tyr Asp Leu Ile Glu Leu
1 5

<210> 184
<211> 8
<212> PRT
<213> Epstein Barr virus

<400> 184
His His Ile Trp Gln Asn Leu Leu
1 5

<210> 185
<211> 10
<212> PRT
<213> Epstein Barr virus

<400> 185
Glu Glu Asn Leu Leu Asp Phe Val Arg Phe
1 5 10

<210> 186
<211> 10
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<213> Epstein Barr virus

<400> 186
Leu Leu Asp Phe Val Arg Phe Met Gly Val
1 5 10

<210> 187
<211> 9
<212> PRT
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<400> 187
Lys Glu His Val Ile Gln Asn Ala Phe
1 5

<210> 188
<211> 9
<212> PRT

<213> Epstein Barr virus

<400> 188

Phe Arg Lys Ala Gln Ile Gln Gly Leu
1 5

<210> 189

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 189

Gln Pro Arg Ala Pro Ile Arg Pro Ile
1 5

<210> 190

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 190

Pro Tyr Leu Phe Trp Leu Ala Ala Ile
1 5

<210> 191

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 191

Ile Glu Asp Pro Pro Phe Asn Ser Leu
1 5

<210> 192

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 192

Arg Arg Arg Trp Arg Arg Leu Thr Val
1 5

<210> 193

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 193

Leu Leu Trp Thr Leu Val Val Leu Leu

1

5

<210> 194

<211> 11

<212> PRT

<213> Epstein Barr virus

<400> 194

Ser Ser Cys Ser Ser Cys Pro Leu Ser Lys Ile

1

5

10

<210> 195

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 195

Thr Tyr Gly Pro Val Phe Met Cys Leu

1

5

<210> 196

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 196

Cys Leu Gly Gly Leu Leu Thr Met Val

1

5

<210> 197

<211> 10

<212> PRT

<213> Epstein Barr virus

<400> 197

Val Met Ser Asn Thr Leu Leu Ser Ala Trp

1

5

10

<210> 198

<211> 9

<212> PRT

<213> Epstein Barr virus

<400> 198

Leu Thr Ala Gly Phe Leu Ile Phe Leu

1

5

<210> 199

<211> 8
<212> PRT
<213> Epstein Barr virus

<400> 199
Arg Ala Lys Phe Lys Gln Leu Leu
1 5

<210> 200
<211> 16
<212> PRT
<213> Epstein Barr virus

<400> 200
Arg Lys Cys Cys Arg Ala Lys Phe Lys Gln Leu Leu Gln His Tyr Arg
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<210> 201
<211> 9
<212> PRT
<213> Epstein Barr virus

<400> 201
Lys Asp Thr Trp Leu Asp Ala Arg Met
1 5

<210> 202
<211> 9
<212> PRT
<213> Epstein Barr virus

<400> 202
Asp Glu Val Glu Phe Leu Gly His Tyr
1 5

<210> 203
<211> 15
<212> PRT
<213> Epstein Barr virus

<400> 203
Phe Arg Asn Leu Ala Tyr Gly Arg Thr Cys Val Leu Gly Lys Glu
1 5 10 15

<210> 204
<211> 9
<212> PRT
<213> Epstein Barr virus

<400> 204

Tyr Arg Ser Gly Ile Ile Ala Val Val
1 5

<210> 205

<211> 505

<212> PRT

<213> Human papillomavirus

<400> 205

Met Ser Leu Trp Leu Pro Ser Glu Ala Thr Val Tyr Leu Pro Pro Val
1 5 10 15

Pro Val Ser Lys Val Val Ser Thr Asp Glu Tyr Val Ala Arg Thr Asn
20 25 30

Ile Tyr Tyr His Ala Gly Thr Ser Arg Leu Leu Ala Val Gly His Pro
35 40 45

Tyr Phe Pro Ile Lys Lys Pro Asn Asn Asn Lys Ile Leu Val Pro Lys
50 55 60

Val Ser Gly Leu Gln Tyr Arg Val Phe Arg Ile His Leu Pro Asp Pro
65 70 75 80

Asn Lys Phe Gly Phe Pro Asp Thr Ser Phe Tyr Asn Pro Asp Thr Gln
85 90 95

Arg Leu Val Trp Ala Cys Val Gly Val Glu Val Gly Arg Gly Gln Pro
100 105 110

Leu Gly Val Gly Ile Ser Gly His Pro Leu Leu Asn Lys Leu Asp Asp
115 120 125

Thr Glu Asn Ala Ser Ala Tyr Ala Ala Asn Ala Gly Val Asp Asn Arg
130 135 140

Glu Cys Ile Ser Met Asp Tyr Lys Gln Thr Gln Leu Cys Leu Ile Gly
145 150 155 160

Cys Lys Pro Pro Ile Gly Glu His Trp Gly Lys Gly Ser Pro Cys Thr
165 170 175

Asn Val Ala Val Asn Pro Gly Asp Cys Pro Pro Leu Glu Leu Ile Asn
180 185 190

Thr Val Ile Gln Asp Gly Asp Met Val Asp Thr Gly Phe Gly Ala Met
195 200 205

Asp Phe Thr Thr Leu Gln Ala Asn Lys Ser Glu Val Pro Leu Asp Ile
210 215 220

Cys Thr Ser Ile Cys Lys Tyr Pro Asp Tyr Ile Lys Met Val Ser Glu
225 230 235 240

Pro Tyr Gly Asp Ser Leu Phe Phe Tyr Leu Arg Arg Glu Gln Met Phe
245 250 255

Val Arg His Leu Phe Asn Arg Ala Gly Thr Val Gly Glu Asn Val Pro
260 265 270

Asp Asp Leu Tyr Ile Lys Gly Ser Gly Ser Thr Ala Asn Leu Ala Ser
275 280 285

Ser Asn Tyr Phe Pro Thr Pro Ser Gly Ser Met Val Thr Ser Asp Ala
290 295 300

Gln Ile Phe Asn Lys Pro Tyr Trp Leu Gln Arg Ala Gln Gly His Asn
305 310 315 320

Asn Gly Ile Cys Trp Gly Asn Gln Leu Phe Val Thr Val Val Asp Thr
325 330 335

Thr Arg Ser Thr Asn Met Ser Leu Cys Ala Ala Ile Ser Thr Ser Glu
340 345 350

Thr Thr Tyr Lys Asn Thr Asn Phe Lys Glu Tyr Leu Arg His Gly Glu
355 360 365

Glu Tyr Asp Leu Gln Phe Ile Phe Gln Leu Cys Lys Ile Thr Leu Thr
370 375 380

Ala Asp Val Met Thr Tyr Ile His Ser Met Asn Ser Thr Ile Leu Glu

385		390		395		400									
Asp	Trp	Asn	Phe	Gly	Leu	Gln	Pro	Pro	Pro	Gly	Gly	Thr	Leu	Glu	Asp
				405					410					415	
Thr	Tyr	Arg	Phe	Val	Thr	Ser	Gln	Ala	Ile	Ala	Cys	Gln	Lys	His	Thr
			420					425					430		
Pro	Pro	Ala	Pro	Lys	Glu	Asp	Pro	Leu	Lys	Lys	Tyr	Thr	Phe	Trp	Glu
		435					440					445			
Val	Asn	Leu	Lys	Glu	Lys	Phe	Ser	Ala	Asp	Leu	Asp	Gln	Phe	Pro	Leu
	450					455					460				
Gly	Arg	Lys	Phe	Leu	Leu	Gln	Ala	Gly	Leu	Lys	Ala	Lys	Pro	Lys	Phe
465					470					475					480
Thr	Leu	Gly	Lys	Arg	Lys	Ala	Thr	Pro	Thr	Thr	Ser	Ser	Thr	Ser	Thr
				485					490					495	
Thr	Ala	Lys	Arg	Lys	Lys	Arg	Lys	Leu							
			500					505							

<210> 206
 <211> 1518
 <212> DNA
 <213> Human papillomavirus

<400> 206	
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gttgtaagca cggatgaata tgttgacgcg acaaacatat attatcatgc aggaacatcc	120
agactacttg cagttggaca tccctatfff cctattaaaa aacctaacaa taacaaaata	180
ttagttccta aagtatcagg attacaatac agggatatta gaatacattt acctgacccc	240
aataagtttg gttttcctga cacctcattt tataatccag atacacagcg gctggtttgg	300
gcctgtgtag gtgttgaggt aggtcgtggg cagccattag gtgtgggcat tagtggccat	360
cctttattaa ataaattgga tgacacagaa aatgctagtg cttatgcagc aaatgcaggt	420
gtggataata gagaatgtat atctatggat taaaacaaa cacaattgtg ttttaattggt	480
tgcaaaccac ctatagggga aactggggc aaaggatccc catgtaccaa tgttgcagta	540

aatccaggtg attgtccacc attagagtta ataaacacag ttattcagga tggatgatg	600
gttgatactg gctttggtgc tatggacttt actacattac aggctaaca aagtgaagtt	660
ccactggata tttgtacatc tatttgcaaa tatccagatt atattaaaat ggtgtcagaa	720
ccatatggcg acagcttatt tttttattta cgaagggaac aaatgtttgt tagacattta	780
tttaataggg ctggtactgt tggtgaaaat gtaccagacg atttatacat taaaggctct	840
gggtctactg caaathtagc cagttcaaat tattttccta cacctagtgg ttctatggtt	900
acctctgatg cccaaatatt caataaacct tattggttac aacgagcaca gggccacaat	960
aatggcattt gttggggtaa ccaactattt gttactgttg ttgatactac acgcagtaca	1020
aatatgtcat tatgtgctgc catatctact tcagaaacta catataaaaa tactaacttt	1080
aaggagtacc tacgacatgg ggaggaatat gatttacagt ttatTTTTca actgtgcaaa	1140
ataaccttaa ctgcagacgt tatgacatac atacattcta tgaattccac tattttggag	1200
gactggaatt ttggtctaca acctccccca ggaggcacac tagaagatac ttataggttt	1260
gtaacatccc aggcaattgc ttgtcaaaaa catacacctc cagcacctaa agaagatccc	1320
cttaaaaaat acactttttg ggaagtaaat ttaaaggaaa agttttctgc agacctagat	1380
cagtttcctt taggacgcaa atttttacta caagcaggat tgaaggccaa accaaaattt	1440
acattaggaa aacgaaaagc tacaccacc acctcatcta cctctacaac tgctaaacgc	1500
aaaaaacgta agctgtaa	1518

<210> 207
 <211> 473
 <212> PRT
 <213> Human papillomavirus

<400> 207
 Met Arg His Lys Arg Ser Ala Lys Arg Thr Lys Arg Ala Ser Ala Thr
 1 5 10 15

Gln Leu Tyr Lys Thr Cys Lys Gln Ala Gly Thr Cys Pro Pro Asp Ile
 20 25 30

Ile Pro Lys Val Glu Gly Lys Thr Ile Ala Asp Gln Ile Leu Gln Tyr
 35 40 45

Gly Ser Met Gly Val Phe Phe Gly Gly Leu Gly Ile Gly Thr Gly Ser
50 55 60

Gly Thr Gly Gly Arg Thr Gly Tyr Ile Pro Leu Gly Thr Arg Pro Pro
65 70 75 80

Thr Ala Thr Asp Thr Leu Ala Pro Val Arg Pro Pro Leu Thr Val Asp
85 90 95

Pro Val Gly Pro Ser Asp Pro Ser Ile Val Ser Leu Val Glu Glu Thr
100 105 110

Ser Phe Ile Asp Ala Gly Ala Pro Thr Ser Val Pro Ser Ile Pro Pro
115 120 125

Asp Val Ser Gly Phe Ser Ile Thr Thr Ser Thr Asp Thr Thr Pro Ala
130 135 140

Ile Leu Asp Ile Asn Asn Thr Val Thr Thr Val Thr Thr His Asn Asn
145 150 155 160

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

Thr Gly Gly His Phe Thr Leu Ser Ser Ser Thr Ile Ser Thr His Asn
180 185 190

Tyr Glu Glu Ile Pro Met Asp Thr Phe Ile Val Ser Thr Asn Pro Asn
195 200 205

Thr Val Thr Ser Ser Thr Pro Ile Pro Gly Ser Arg Pro Val Ala Arg
210 215 220

Leu Gly Leu Tyr Ser Arg Thr Thr Gln Gln Val Lys Val Val Asp Pro
225 230 235 240

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

Tyr Glu Gly Ile Asp Val Asp Asn Thr Leu Tyr Phe Ser Ser Asn Asp
260 265 270

Asn Ser Ile Asn Ile Ala Pro Asp Pro Asp Phe Leu Asp Ile Val Ala
275 280 285

Leu His Arg Pro Ala Leu Thr Ser Arg Arg Thr Gly Ile Arg Tyr Ser
290 295 300

Arg Ile Gly Asn Lys Gln Thr Leu Arg Thr Arg Ser Gly Lys Ser Ile
305 310 315 320

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

Glu Glu Ile Glu Leu Gln Thr Ile Thr Pro Ser Thr Tyr Thr Thr Thr
340 345 350

Ser His Ala Ala Ser Pro Thr Ser Ile Asn Asn Gly Leu Tyr Asp Ile
355 360 365

Tyr Ala Asp Asp Phe Ile Thr Asp Thr Ser Thr Thr Pro Val Pro Ser
370 375 380

Val Pro Ser Thr Ser Leu Ser Gly Tyr Ile Pro Ala Asn Thr Thr Ile
385 390 395 400

Pro Phe Gly Gly Ala Tyr Asn Ile Pro Leu Val Ser Gly Pro Asp Ile
405 410 415

Pro Ile Asn Ile Thr Asp Gln Ala Pro Ser Leu Ile Pro Ile Val Pro
420 425 430

Gly Ser Pro Gln Tyr Thr Ile Ile Ala Asp Ala Gly Asp Phe Tyr Leu
435 440 445

His Pro Ser Tyr Tyr Met Leu Arg Lys Arg Arg Lys Arg Leu Pro Tyr
450 455 460

Phe Phe Ser Asp Val Ser Leu Ala Ala
465 470

<210> 208
<211> 1416
<212> DNA
<213> Human papillomavirus

<400> 208
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attgctgatac aaatattaca atatggaagt atgggtgtat tttttggtgg gtttaggaatt 180
ggaacagggt cgggtacagg cggacgcact gggtatatct cattgggaac aaggcctccc 240
acagctacag atacacttgc tcctgtaaga ccccttttaa cagtagatcc tgtgggccct 300
tctgatcctt ctatagtttc tttagtggaa gaaactagtt ttattgatgc tgggtgcacca 360
acatctgtac cttccattcc ccagatgta tcaggattta gtattactac ttcaactgat 420
accacacctg ctatattaga tattaataat actgttacta ctgttactac acataataat 480
cccactttca ctgaccatc tgtattgcag cctccaacac ctgcagaaac tggaggggcat 540
tttacacttt catcatccac tattagtaca cataattatg aagaaattcc tatggataca 600
tttattgtta gcacaaacc taacacagta actagtagca caccataacc agggctctgc 660
ccagtggcac gcctaggatt atatagtcgc acaacacaac aagttaaagt ttagaccct 720
gcttttgtaa ccactccac taaacttatt acatatgata atcctgcata tgaaggatata 780
gatgtggata atacattata tttttctagt aatgataata gtattaatat agctccagat 840
cctgactttt tggatatagt tgctttacat aggccagcat taacctctag gcgtactggc 900
ataaggatca gtagaattgg taataaaca acactacgta ctcgtagtgg aaaatctata 960
gggtgctaagg tacattatta ttatgatttt agtaccattg atcctgcaga agaaatagaa 1020
ttacaaacta taacaccttc tacatatact accacttcac atgcagcctc acctacttct 1080
attaataatg gattatatga tttttatgca gatgacttta ttacagatac ttctacaacc 1140
ccggtaccat ctgtaccctc tacatcttta tcaggttata ttcctgcaa tacaacaatt 1200
ccttttggtg gtgcatacaa tattccttta gtatcaggct ctgatatacc cattaatata 1260
actgaccaag ctccttcatt aattcctata gttccagggt ctccacaata tacaattatt 1320
gctgatgcag gtgactttta tttacatcct agttattaca tgttacgaaa acgacgtaaa 1380
cgtttaccat attttttttc agatgtctct ttggct 1416

<210> 209
<211> 4
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown:
Furin Cleavage site

<220>
<221> MOD_RES
<222> (2)..(2)
<223> Any amino acid

<220>
<221> MOD_RES
<222> (3)..(3)
<223> Arg or Lys

<400> 209
Arg Xaa Xaa Arg
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<210> 210
<211> 4
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown:
Furin Cleavage site

<400> 210
Arg Val Lys Arg
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<210> 211
<211> 7
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown:
MMP-cleavable peptide substrate

<220>
<221> MOD_RES
<222> (3)..(3)
<223> Cit

<220>
<221> MOD_RES
<222> (5)..(5)
<223> Hof

<400> 211
Glu Pro Xaa Gly Xaa Tyr Leu
1 5

<210> 212
<211> 8
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown:
MMP-cleavable peptide substrate

<400> 212
Gly Pro Leu Gly Ile Ala Gly Gln
1 5

<210> 213
<211> 6
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown:
MMP-cleavable peptide substrate

<400> 213
Pro Val Gly Leu Ile Gly
1 5

<210> 214
<211> 9
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown:
Polyglutamic acid docking site

<400> 214
Glu Glu Glu Glu Glu Glu Glu Cys
1 5

<210> 215

<211> 10
<212> PRT
<213> Unknown

<220>
<223> Description of Unknown:
Polyglutamic acid docking site

<400> 215
Cys Glu Glu Glu Glu Glu Glu Glu Cys
1 5 10

<210> 216
<211> 10
<212> PRT
<213> Epstein Barr virus

<400> 216
Leu Leu Asp Arg Val Arg Phe Met Gly Val
1 5 10

<210> 217
<211> 12
<212> PRT
<213> Epstein Barr virus

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> May or may not be present

<220>
<221> MISC_FEATURE
<222> (11)..(12)
<223> May or may not be present

<400> 217
Lys Gly Ile Leu Gly Phe Val Phe Thr Leu Thr Val
1 5 10

<210> 218
<211> 9
<212> PRT
<213> Chicken pox virus

<400> 218
Ser Leu Pro Arg Ser Arg Thr Pro Ile
1 5

<210> 219
<211> 9
<212> PRT
<213> Chicken pox virus

<400> 219
Ser Ala Pro Leu Pro Ser Asn Arg Val
1 5

<210> 220
<211> 8
<212> PRT
<213> Gallus gallus

<400> 220
Ser Ile Ile Asn Phe Glu Lys Leu
1 5

<210> 221
<211> 527
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
RG-1 VLP sequence

<400> 221
Met Ser Leu Trp Leu Pro Ser Glu Ala Thr Val Tyr Leu Pro Pro Val
1 5 10 15

Pro Val Ser Lys Val Val Ser Thr Asp Glu Tyr Val Ala Arg Thr Asn
20 25 30

Ile Tyr Tyr His Ala Gly Thr Ser Arg Leu Leu Ala Val Gly His Pro
35 40 45

Tyr Phe Pro Ile Lys Lys Pro Asn Asn Asn Lys Ile Leu Val Pro Lys
50 55 60

Val Ser Gly Leu Gln Tyr Arg Val Phe Arg Ile His Leu Pro Asp Pro
65 70 75 80

Asn Lys Phe Gly Phe Pro Asp Thr Ser Phe Tyr Asn Pro Asp Thr Gln
85 90 95

Arg Leu Val Trp Ala Cys Val Gly Val Glu Val Gly Arg Gly Gln Pro
100 105 110

Leu Gly Val Gly Ile Ser Gly His Pro Leu Leu Asn Lys Leu Asp Asp
115 120 125

Thr Glu Asn Ala Ser Ala Tyr Ala Gln Leu Tyr Lys Thr Cys Lys Gln
130 135 140

Ala Gly Thr Cys Pro Pro Asp Ile Ile Pro Lys Val Ala Asn Ala Gly
145 150 155 160

Val Asp Asn Arg Glu Cys Ile Ser Met Asp Tyr Lys Gln Thr Gln Leu
165 170 175

Cys Leu Ile Gly Cys Lys Pro Pro Ile Gly Glu His Trp Gly Lys Gly
180 185 190

Ser Pro Cys Thr Asn Val Ala Val Asn Pro Gly Asp Cys Pro Pro Leu
195 200 205

Glu Leu Ile Asn Thr Val Ile Gln Asp Gly Asp Met Val Asp Thr Gly
210 215 220

Phe Gly Ala Met Asp Phe Thr Thr Leu Gln Ala Asn Lys Ser Glu Val
225 230 235 240

Pro Leu Asp Ile Cys Thr Ser Ile Cys Lys Tyr Pro Asp Tyr Ile Lys
245 250 255

Met Val Ser Glu Pro Tyr Gly Asp Ser Leu Phe Phe Tyr Leu Arg Arg
260 265 270

Glu Gln Met Phe Val Arg His Leu Phe Asn Arg Ala Gly Ala Val Gly
275 280 285

Glu Asn Val Pro Asp Asp Leu Tyr Ile Lys Gly Ser Gly Ser Thr Ala
290 295 300

Asn Leu Ala Ser Ser Asn Tyr Phe Pro Thr Pro Ser Gly Ser Met Val
305 310 315 320

Thr Ser Asp Ala Gln Ile Phe Asn Lys Pro Tyr Trp Leu Gln Arg Ala
325 330 335

Gln Gly His Asn Asn Gly Ile Cys Trp Gly Asn Gln Leu Phe Val Thr
340 345 350

Val Val Asp Thr Thr Arg Ser Thr Asn Met Ser Leu Cys Ala Ala Ile
355 360 365

Ser Thr Ser Glu Thr Thr Tyr Lys Asn Thr Asn Phe Lys Glu Tyr Leu
370 375 380

Arg His Gly Glu Glu Tyr Asp Leu Gln Phe Ile Phe Gln Leu Cys Lys
385 390 395 400

Ile Thr Leu Thr Ala Asp Val Met Thr Tyr Ile His Ser Met Asn Ser
405 410 415

Thr Ile Leu Glu Asp Trp Asn Phe Gly Leu Gln Pro Pro Pro Gly Gly
420 425 430

Thr Leu Glu Asp Thr Tyr Arg Phe Val Thr Ser Gln Ala Ile Ala Cys
435 440 445

Gln Lys His Thr Pro Pro Ala Pro Lys Glu Asp Pro Leu Lys Lys Tyr
450 455 460

Thr Phe Trp Glu Val Asn Leu Lys Glu Lys Phe Ser Ala Asp Leu Asp
465 470 475 480

Gln Phe Pro Leu Gly Arg Lys Phe Leu Leu Gln Ala Gly Leu Lys Ala
485 490 495

Lys Pro Lys Phe Thr Leu Gly Lys Arg Lys Ala Thr Pro Thr Thr Ser
500 505 510

Ser Thr Ser Thr Thr Ala Lys Arg Lys Lys Arg Lys Leu Ser Arg
515 520 525

<210> 222

<211> 20

<212> PRT

<213> Human papillomavirus

<400> 222

Gln	Leu	Tyr	Lys	Thr	Cys	Lys	Gln	Ala	Gly	Thr	Cys	Pro	Pro	Asp	Ile
1				5					10					15	

Ile	Pro	Lys	Val
			20