

492-11 PCT Sequence listing.txt  
SEQUENCE LISTING

<110> European Molecular Biology Laboratory (EMBL)  
 <120> Soluble RNA Cap Binding Pocket Fragments And Their Use  
 <130> 492-11 PCT  
 <140>  
 <141> 2008/10/09  
 <160> 27  
 <170> PatentIn version 3.4  
 <210> 1  
 <211> 759  
 <212> PRT  
 <213> Influenza A virus  
 <220>  
 <221> PB2  
 <222> (1)..(759)  
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 1 5 10 15  
 Arg Glu Ile Leu Thr Lys Thr Thr Val Asp His Met Ala Ile Ile Lys  
 20 25 30  
 Lys Tyr Thr Ser Gly Arg Gln Glu Lys Asn Pro Ser Leu Arg Met Lys  
 35 40 45  
 Trp Met Met Ala Met Lys Tyr Pro Ile Thr Ala Asp Lys Arg Ile Thr  
 50 55 60  
 Glu Met Val Pro Glu Arg Asn Glu Gln Gly Gln Thr Leu Trp Ser Lys  
 65 70 75 80  
 Met Ser Asp Ala Gly Ser Asp Arg Val Met Val Ser Pro Leu Ala Val  
 85 90 95  
 Thr Trp Trp Asn Arg Asn Gly Pro Val Thr Ser Thr Val His Tyr Pro  
 100 105 110  
 Lys Val Tyr Lys Thr Tyr Phe Asp Lys Val Glu Arg Leu Lys His Gly  
 115 120 125  
 Thr Phe Gly Pro Val His Phe Arg Asn Gln Val Lys Ile Arg Arg Arg  
 130 135 140  
 Val Asp Ile Asn Pro Gly His Ala Asp Leu Ser Ala Lys Glu Ala Gln  
 145 150 155 160

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Asp Val Ile Met Glu Val Val Phe Pro Asn Glu Val Gly Ala Arg Ile  
165 170 175

Leu Thr Ser Glu Ser Gln Leu Thr Ile Thr Lys Glu Lys Lys Glu Glu  
180 185 190

Leu Gln Asp Cys Lys Ile Ser Pro Leu Met Val Ala Tyr Met Leu Glu  
195 200 205

Arg Glu Leu Val Arg Lys Thr Arg Phe Leu Pro Val Ala Gly Gly Thr  
210 215 220

Ser Ser Val Tyr Ile Glu Val Leu His Leu Thr Gln Gly Thr Cys Trp  
225 230 235 240

Glu Gln Met Tyr Thr Pro Gly Gly Glu Val Arg Asn Asp Asp Ile Asp  
245 250 255

Gln Ser Leu Ile Ile Ala Ala Arg Asn Ile Val Arg Arg Ala Ser Val  
260 265 270

Ser Ala Asp Pro Leu Ala Ser Leu Leu Glu Met Cys His Ser Thr Gln  
275 280 285

Ile Gly Gly Thr Arg Met Val Asp Ile Leu Arg Gln Asn Pro Thr Glu  
290 295 300

Glu Gln Ala Val Asp Ile Cys Lys Ala Ala Met Gly Leu Arg Ile Ser  
305 310 315 320

Ser Ser Phe Ser Phe Gly Gly Phe Thr Phe Lys Arg Thr Ser Gly Ser  
325 330 335

Ser Ile Lys Arg Glu Glu Glu Val Leu Thr Gly Asn Leu Gln Thr Leu  
340 345 350

Lys Ile Arg Val His Glu Gly Tyr Glu Glu Phe Thr Met Val Gly Lys  
355 360 365

Arg Ala Thr Ala Ile Leu Arg Lys Ala Thr Arg Arg Leu Val Gln Leu  
370 375 380

Ile Val Ser Gly Arg Asp Glu Gln Ser Ile Ala Glu Ala Ile Ile Val  
385 390 395 400

Ala Met Val Phe Ser Gln Glu Asp Cys Met Ile Lys Ala Val Arg Gly  
405 410 415

Asp Leu Asn Phe Val Asn Arg Ala Asn Gln Arg Leu Asn Pro Met His  
420 425 430

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Gln Leu Leu Arg His Phe Gln Lys Asp Ala Lys Val Leu Phe Gln Asn  
435 440 445

Trp Gly Ile Glu His Ile Asp Asn Val Met Gly Met Val Gly Val Leu  
450 455 460

Pro Asp Met Thr Pro Ser Thr Glu Met Ser Met Arg Gly Ile Arg Val  
465 470 475 480

Ser Lys Met Gly Val Asp Glu Tyr Ser Ser Thr Glu Arg Val Val Val  
485 490 495

Ser Ile Asp Arg Phe Leu Arg Val Arg Asp Gln Arg Gly Asn Val Leu  
500 505 510

Leu Ser Pro Glu Glu Val Ser Glu Thr His Gly Thr Glu Arg Leu Thr  
515 520 525

Ile Thr Tyr Ser Ser Ser Met Met Trp Glu Ile Asn Gly Pro Glu Ser  
530 535 540

Val Leu Val Asn Thr Tyr Gln Trp Ile Ile Arg Asn Trp Glu Thr Val  
545 550 555 560

Lys Ile Gln Trp Ser Gln Asn Pro Thr Met Leu Tyr Asn Lys Met Glu  
565 570 575

Phe Glu Pro Phe Gln Ser Leu Val Pro Lys Ala Ile Arg Gly Gln Tyr  
580 585 590

Ser Gly Phe Val Arg Thr Leu Phe Gln Gln Met Arg Asp Val Leu Gly  
595 600 605

Thr Phe Asp Thr Thr Gln Ile Ile Lys Leu Leu Pro Phe Ala Ala Ala  
610 615 620

Pro Pro Lys Gln Ser Arg Met Gln Phe Ser Ser Leu Thr Val Asn Val  
625 630 635 640

Arg Gly Ser Gly Met Arg Ile Leu Val Arg Gly Asn Ser Pro Val Phe  
645 650 655

Asn Tyr Asn Lys Thr Thr Lys Arg Leu Thr Ile Leu Gly Lys Asp Ala  
660 665 670

Gly Thr Leu Ile Glu Asp Pro Asp Glu Ser Thr Ser Gly Val Glu Ser  
675 680 685

Ala Val Leu Arg Gly Phe Leu Ile Leu Gly Lys Glu Asp Arg Arg Tyr  
690 695 700

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Gly Pro Ala Leu Ser Ile Asn Glu Leu Ser Asn Leu Ala Lys Gly Glu  
705 710 715 720

Lys Ala Asn Val Leu Ile Gly Gln Gly Asp Val Val Leu Val Met Lys  
725 730 735

Arg Lys Arg Asp Ser Ser Ile Leu Thr Asp Ser Gln Thr Ala Thr Lys  
740 745 750

Arg Ile Arg Met Ala Ile Asn  
755

<210> 2  
<211> 770  
<212> PRT  
<213> Influenza B virus

<220>  
<221> PB2  
<222> (1)..(770)

<400> 2

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

Glu Ala Lys Thr Val Leu Lys Gln Thr Thr Val Asp Gln Tyr Asn Ile  
20 25 30

Ile Arg Lys Phe Asn Thr Ser Arg Ile Glu Lys Asn Pro Ser Leu Arg  
35 40 45

Met Lys Trp Ala Met Cys Ser Asn Phe Pro Leu Ala Leu Thr Lys Gly  
50 55 60

Asp Met Ala Asn Arg Ile Pro Leu Glu Tyr Lys Gly Ile Gln Leu Lys  
65 70 75 80

Thr Asn Ala Glu Asp Ile Gly Thr Lys Gly Gln Met Cys Ser Ile Ala  
85 90 95

Ala Val Thr Trp Trp Asn Thr Tyr Gly Pro Ile Gly Asp Thr Glu Gly  
100 105 110

Phe Glu Lys Val Tyr Glu Ser Phe Phe Leu Arg Lys Met Arg Leu Asp  
115 120 125

Asn Ala Thr Trp Gly Arg Ile Thr Phe Gly Pro Val Glu Arg Val Arg  
130 135 140

Lys Arg Val Leu Leu Asn Pro Leu Thr Lys Glu Met Pro Pro Asp Glu  
145 150 155 160

492-11 PCT Sequence listing.txt

Ala Ser Asn Val Ile Met Glu Ile Leu Phe Pro Lys Glu Ala Gly Ile  
165 170 175

Pro Arg Glu Ser Thr Trp Ile His Arg Glu Leu Ile Lys Glu Lys Arg  
180 185 190

Glu Lys Leu Lys Gly Thr Met Ile Thr Pro Ile Val Leu Ala Tyr Met  
195 200 205

Leu Glu Arg Glu Leu Val Ala Arg Arg Arg Phe Leu Pro Val Ala Gly  
210 215 220

Ala Thr Ser Ala Glu Phe Ile Glu Met Leu His Cys Leu Gln Gly Glu  
225 230 235 240

Asn Trp Arg Gln Ile Tyr His Pro Gly Gly Asn Lys Leu Thr Glu Ser  
245 250 255

Arg Ser Gln Ser Met Ile Val Ala Cys Arg Lys Ile Ile Arg Arg Ser  
260 265 270

Ile Val Ala Ser Asn Pro Leu Glu Leu Ala Val Glu Ile Ala Asn Lys  
275 280 285

Thr Val Ile Asp Thr Glu Pro Leu Lys Ser Cys Leu Thr Ala Ile Asp  
290 295 300

Gly Gly Asp Val Ala Cys Asp Ile Ile Arg Ala Ala Leu Gly Leu Lys  
305 310 315 320

Ile Arg Gln Arg Gln Arg Phe Gly Arg Leu Glu Leu Lys Arg Ile Ser  
325 330 335

Gly Arg Gly Phe Lys Asn Asp Glu Glu Ile Leu Ile Gly Asn Gly Thr  
340 345 350

Ile Gln Lys Ile Gly Ile Trp Asp Gly Glu Glu Glu Phe His Val Arg  
355 360 365

Cys Gly Glu Cys Arg Gly Ile Leu Lys Lys Ser Lys Met Arg Met Glu  
370 375 380

Lys Leu Leu Ile Asn Ser Ala Lys Lys Glu Asp Met Lys Asp Leu Ile  
385 390 395 400

Ile Leu Cys Met Val Phe Ser Gln Asp Thr Arg Met Phe Gln Gly Val  
405 410 415

Arg Gly Glu Ile Asn Phe Leu Asn Arg Ala Gly Gln Leu Leu Ser Pro  
420 425 430

492-11 PCT Sequence listing.txt

Met Tyr Gln Leu Gln Arg Tyr Phe Leu Asn Arg Ser Asn Asp Leu Phe  
435 440 445

Asp Gln Trp Gly Tyr Glu Glu Ser Pro Lys Ala Ser Glu Leu His Gly  
450 455 460

Ile Asn Glu Leu Met Asn Ala Ser Asp Tyr Thr Leu Lys Gly Val Val  
465 470 475 480

Val Thr Lys Asn Val Ile Asp Asp Phe Ser Ser Thr Glu Thr Glu Lys  
485 490 495

Val Ser Ile Thr Lys Asn Leu Ser Leu Ile Lys Arg Thr Gly Glu Val  
500 505 510

Ile Met Gly Ala Asn Asp Val Ser Glu Leu Glu Ser Gln Ala Gln Leu  
515 520 525

Met Ile Thr Tyr Asp Thr Pro Lys Met Trp Glu Met Gly Thr Thr Lys  
530 535 540

Glu Leu Val Gln Asn Thr Tyr Gln Trp Val Leu Lys Asn Leu Val Thr  
545 550 555 560

Leu Lys Ala Gln Phe Leu Leu Gly Lys Glu Asp Met Phe Gln Trp Asp  
565 570 575

Ala Phe Glu Ala Phe Glu Ser Ile Ile Pro Gln Lys Met Ala Gly Gln  
580 585 590

Tyr Ser Gly Phe Ala Arg Ala Val Leu Lys Gln Met Arg Asp Gln Glu  
595 600 605

Val Met Lys Thr Asp Gln Phe Ile Lys Leu Leu Pro Phe Cys Phe Ser  
610 615 620

Pro Pro Lys Leu Arg Ser Asn Gly Glu Pro Tyr Gln Phe Leu Arg Leu  
625 630 635 640

Val Leu Lys Gly Gly Gly Glu Asn Phe Ile Glu Val Arg Lys Gly Ser  
645 650 655

Pro Leu Phe Ser Tyr Asn Pro Gln Thr Glu Val Leu Thr Ile Cys Gly  
660 665 670

Arg Met Met Ser Leu Lys Gly Lys Ile Glu Asp Glu Glu Arg Asn Arg  
675 680 685

Ser Met Gly Asn Ala Val Leu Ala Gly Phe Leu Val Ser Gly Lys Tyr  
690 695 700

492-11 PCT Sequence listing.txt

Asp Pro Asp Leu Gly Asp Phe Lys Thr Ile Glu Glu Leu Glu Lys Leu  
705 710 715 720

Lys Pro Gly Glu Lys Ala Asn Ile Leu Leu Tyr Gln Gly Lys Pro Val  
725 730 735

Lys Val Val Lys Arg Lys Arg Tyr Ser Ala Leu Ser Asn Asp Ile Ser  
740 745 750

Gln Gly Ile Lys Arg Gln Arg Met Thr Val Glu Ser Met Gly Trp Ala  
755 760 765

Leu Ser  
770

<210> 3  
<211> 774  
<212> PRT  
<213> Influenza C virus

<220>  
<221> PB2  
<222> (1)..(774)

<400> 3

Met Ser Phe Leu Leu Thr Ile Ala Lys Glu Tyr Lys Arg Leu Cys Gln  
1 5 10 15

Asp Ala Lys Ala Ala Gln Met Met Thr Val Gly Thr Val Ser Asn Tyr  
20 25 30

Thr Thr Phe Lys Lys Trp Thr Thr Ser Arg Lys Glu Lys Asn Pro Ser  
35 40 45

Leu Arg Met Arg Trp Ala Met Ser Ser Lys Phe Pro Ile Ile Ala Asn  
50 55 60

Lys Arg Met Leu Glu Glu Ala Gln Ile Pro Lys Glu His Asn Asn Val  
65 70 75 80

Ala Leu Trp Glu Asp Thr Glu Asp Val Ser Lys Arg Asp His Val Leu  
85 90 95

Ala Ser Ala Ser Cys Ile Asn Tyr Trp Asn Phe Cys Gly Pro Cys Val  
100 105 110

Asn Asn Ser Glu Val Ile Lys Glu Val Tyr Lys Ser Arg Phe Gly Arg  
115 120 125

Leu Glu Arg Arg Lys Glu Ile Met Trp Lys Glu Leu Arg Phe Thr Leu  
130 135 140

492-11 PCT Sequence listing.txt

Val Asp Arg Gln Arg Arg Arg Val Asp Thr Gln Pro Val Glu Gln Arg  
145 150 155 160

Leu Arg Thr Gly Glu Ile Lys Asp Leu Gln Met Trp Thr Leu Phe Glu  
165 170 175

Asp Glu Ala Pro Leu Ala Ser Lys Phe Ile Leu Asp Asn Tyr Gly Leu  
180 185 190

Val Lys Glu Met Arg Ser Lys Phe Ala Asn Lys Pro Leu Asn Lys Glu  
195 200 205

Val Val Ala His Met Leu Glu Lys Gln Phe Asn Pro Glu Ser Arg Phe  
210 215 220

Leu Pro Val Phe Gly Ala Ile Arg Pro Glu Arg Met Glu Leu Ile His  
225 230 235 240

Ala Leu Gly Gly Glu Thr Trp Ile Gln Glu Ala Asn Thr Ala Gly Ile  
245 250 255

Ser Asn Val Asp Gln Arg Lys Asn Asp Met Arg Ala Val Cys Arg Lys  
260 265 270

Val Cys Leu Ala Ala Asn Ala Ser Ile Met Asn Ala Lys Ser Lys Leu  
275 280 285

Val Glu Tyr Ile Lys Ser Thr Ser Met Arg Ile Gly Glu Thr Glu Arg  
290 295 300

Lys Leu Glu Glu Leu Ile Leu Glu Thr Asp Asp Val Ser Pro Glu Val  
305 310 315 320

Thr Leu Cys Lys Ser Ala Leu Gly Gly Pro Leu Gly Lys Thr Leu Ser  
325 330 335

Phe Gly Pro Met Leu Leu Lys Lys Ile Ser Gly Ser Gly Val Lys Val  
340 345 350

Lys Asp Thr Val Tyr Ile Gln Gly Val Arg Ala Val Gln Phe Glu Tyr  
355 360 365

Trp Ser Glu Gln Glu Glu Phe Tyr Gly Glu Tyr Lys Ser Ala Thr Ala  
370 375 380

Leu Phe Ser Arg Lys Glu Arg Ser Leu Glu Trp Ile Thr Ile Gly Gly  
385 390 395 400

Gly Ile Asn Glu Asp Arg Lys Arg Leu Leu Ala Met Cys Met Ile Phe  
405 410 415



492-11 PCT Sequence listing.txt

Cys Arg Asp Gly Asp Tyr Phe Lys Asp Ala Pro Ala Thr Ile Thr Met  
420 425 430

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

Met Met Asn Trp Ile Gln Lys Ser Glu Asp Asn Leu Glu Ala Leu Leu  
450 455 460

Tyr Ser Arg Gly Ile Val Glu Thr Asn Pro Gly Lys Met Gly Ser Ser  
465 470 475 480

Met Gly Ile Asp Gly Ser Lys Arg Ala Ile Lys Ser Leu Arg Ala Val  
485 490 495

Thr Ile Gln Ser Gly Lys Ile Asp Met Pro Glu Ser Lys Glu Lys Ile  
500 505 510

His Leu Glu Leu Ser Asp Asn Leu Glu Ala Phe Asp Ser Ser Gly Arg  
515 520 525

Ile Val Ala Thr Ile Leu Asp Leu Pro Ser Asp Lys Lys Val Thr Phe  
530 535 540

Gln Asp Val Ser Phe Gln His Pro Asp Leu Ala Val Leu Arg Asp Glu  
545 550 555 560

Lys Thr Ala Ile Thr Lys Gly Tyr Glu Ala Leu Ile Lys Arg Leu Gly  
565 570 575

Thr Gly Asp Asn Asp Ile Pro Ser Leu Ile Ala Lys Lys Asp Tyr Leu  
580 585 590

Ser Leu Tyr Asn Leu Pro Glu Val Lys Leu Met Ala Pro Leu Ile Arg  
595 600 605

Pro Asn Arg Lys Gly Val Tyr Ser Arg Val Ala Arg Lys Leu Val Ser  
610 615 620

Thr Gln Val Thr Thr Gly His Tyr Ser Leu His Glu Leu Ile Lys Val  
625 630 635 640

Leu Pro Phe Thr Tyr Phe Ala Pro Lys Gln Gly Met Phe Glu Gly Arg  
645 650 655

Leu Phe Phe Ser Asn Asp Ser Phe Val Glu Pro Gly Val Asn Asn Asn  
660 665 670

Val Phe Ser Trp Ser Lys Ala Asp Ser Ser Lys Ile Tyr Cys His Gly  
675 680 685

492-11 PCT Sequence listing.txt

Ile Ala Ile Arg Val Pro Leu Val Val Gly Asp Glu His Met Asp Thr  
690 695 700

Ser Leu Ala Leu Leu Glu Gly Phe Ser Val Cys Glu Asn Asp Pro Arg  
705 710 715 720

Ala Pro Met Val Thr Arg Gln Asp Leu Ile Asp Val Gly Phe Gly Gln  
725 730 735

Lys Val Arg Leu Phe Val Gly Gln Gly Ser Val Arg Thr Phe Lys Arg  
740 745 750

Thr Ala Ser Gln Arg Ala Ala Ser Ser Asp Val Asn Lys Asn Val Lys  
755 760 765

Lys Ile Lys Met Ser Asn  
770

<210> 4  
<211> 262  
<212> PRT  
<213> Influenza A virus

<220>  
<221> PB2 235 to 496  
<222> (1)..(262)

<400> 4

Thr Gln Gly Thr Cys Trp Glu Gln Met Tyr Thr Pro Gly Gly Glu Val  
1 5 10 15

Arg Asn Asp Asp Ile Asp Gln Ser Leu Ile Ile Ala Ala Arg Asn Ile  
20 25 30

Val Arg Arg Ala Ser Val Ser Ala Asp Pro Leu Ala Ser Leu Leu Glu  
35 40 45

Met Cys His Ser Thr Gln Ile Gly Gly Thr Arg Met Val Asp Ile Leu  
50 55 60

Arg Gln Asn Pro Thr Glu Glu Gln Ala Val Asp Ile Cys Lys Ala Ala  
65 70 75 80

Met Gly Leu Arg Ile Ser Ser Ser Phe Ser Phe Gly Gly Phe Thr Phe  
85 90 95

Lys Arg Thr Ser Gly Ser Ser Ile Lys Arg Glu Glu Glu Val Leu Thr  
100 105 110

Gly Asn Leu Gln Thr Leu Lys Ile Arg Val His Glu Gly Tyr Glu Glu  
115 120 125

492-11 PCT Sequence listing.txt

Phe Thr Met Val Gly Lys Arg Ala Thr Ala Ile Leu Arg Lys Ala Thr  
130 135 140

Arg Arg Leu Val Gln Leu Ile Val Ser Gly Arg Asp Glu Gln Ser Ile  
145 150 155 160

Ala Glu Ala Ile Ile Val Ala Met Val Phe Ser Gln Glu Asp Cys Met  
165 170 175

Ile Lys Ala Val Arg Gly Asp Leu Asn Phe Val Asn Arg Ala Asn Gln  
180 185 190

Arg Leu Asn Pro Met His Gln Leu Leu Arg His Phe Gln Lys Asp Ala  
195 200 205

Lys Val Leu Phe Gln Asn Trp Gly Ile Glu His Ile Asp Asn Val Met  
210 215 220

Gly Met Val Gly Val Leu Pro Asp Met Thr Pro Ser Thr Glu Met Ser  
225 230 235 240

Met Arg Gly Ile Arg Val Ser Lys Met Gly Val Asp Glu Tyr Ser Ser  
245 250 255

Thr Glu Arg Val Val Val  
260

<210> 5  
<211> 243  
<212> PRT  
<213> Influenza A virus

<220>  
<221> PB2 241 to 483  
<222> (1)..(243)

<400> 5

Glu Gln Met Tyr Thr Pro Gly Gly Glu Val Arg Asn Asp Asp Ile Asp  
1 5 10 15

Gln Ser Leu Ile Ile Ala Ala Arg Asn Ile Val Arg Arg Ala Ser Val  
20 25 30

Ser Ala Asp Pro Leu Ala Ser Leu Leu Glu Met Cys His Ser Thr Gln  
35 40 45

Ile Gly Gly Thr Arg Met Val Asp Ile Leu Arg Gln Asn Pro Thr Glu  
50 55 60

Glu Gln Ala Val Asp Ile Cys Lys Ala Ala Met Gly Leu Arg Ile Ser  
65 70 75 80

492-11 PCT Sequence listing.txt

Ser Ser Phe Ser Phe Gly Gly Phe Thr Phe Lys Arg Thr Ser Gly Ser  
85 90 95

Ser Ile Lys Arg Glu Glu Glu Val Leu Thr Gly Asn Leu Gln Thr Leu  
100 105 110

Lys Ile Arg Val His Glu Gly Tyr Glu Glu Phe Thr Met Val Gly Lys  
115 120 125

Arg Ala Thr Ala Ile Leu Arg Lys Ala Thr Arg Arg Leu Val Gln Leu  
130 135 140

Ile Val Ser Gly Arg Asp Glu Gln Ser Ile Ala Glu Ala Ile Ile Val  
145 150 155 160

Ala Met Val Phe Ser Gln Glu Asp Cys Met Ile Lys Ala Val Arg Gly  
165 170 175

Asp Leu Asn Phe Val Asn Arg Ala Asn Gln Arg Leu Asn Pro Met His  
180 185 190

Gln Leu Leu Arg His Phe Gln Lys Asp Ala Lys Val Leu Phe Gln Asn  
195 200 205

Trp Gly Ile Glu His Ile Asp Asn Val Met Gly Met Val Gly Val Leu  
210 215 220

Pro Asp Met Thr Pro Ser Thr Glu Met Ser Met Arg Gly Ile Arg Val  
225 230 235 240

Ser Lys Met

<210> 6  
<211> 216  
<212> PRT  
<213> Influenza A virus

<220>  
<221> PB2 268 to 483  
<222> (1)..(216)

<400> 6

Arg Arg Ala Ser Val Ser Ala Asp Pro Leu Ala Ser Leu Leu Glu Met  
1 5 10 15

Cys His Ser Thr Gln Ile Gly Gly Thr Arg Met Val Asp Ile Leu Arg  
20 25 30

Gln Asn Pro Thr Glu Glu Gln Ala Val Asp Ile Cys Lys Ala Ala Met  
35 40 45

492-11 PCT Sequence listing.txt

Gly Leu Arg Ile Ser Ser Ser Phe Ser Phe Gly Gly Phe Thr Phe Lys  
50 55 60

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

Asn Leu Gln Thr Leu Lys Ile Arg Val His Glu Gly Tyr Glu Glu Phe  
85 90 95

Thr Met Val Gly Lys Arg Ala Thr Ala Ile Leu Arg Lys Ala Thr Arg  
100 105 110

Arg Leu Val Gln Leu Ile Val Ser Gly Arg Asp Glu Gln Ser Ile Ala  
115 120 125

Glu Ala Ile Ile Val Ala Met Val Phe Ser Gln Glu Asp Cys Met Ile  
130 135 140

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

Leu Asn Pro Met His Gln Leu Leu Arg His Phe Gln Lys Asp Ala Lys  
165 170 175

Val Leu Phe Gln Asn Trp Gly Ile Glu His Ile Asp Asn Val Met Gly  
180 185 190

Met Val Gly Val Leu Pro Asp Met Thr Pro Ser Thr Glu Met Ser Met  
195 200 205

Arg Gly Ile Arg Val Ser Lys Met  
210 215

<210> 7  
<211> 204  
<212> PRT  
<213> Influenza A virus

<220>  
<221> PB2 277 to 480  
<222> (1)..(204)

<400> 7

Leu Ala Ser Leu Leu Glu Met Cys His Ser Thr Gln Ile Gly Gly Thr  
1 5 10 15

Arg Met Val Asp Ile Leu Arg Gln Asn Pro Thr Glu Glu Gln Ala Val  
20 25 30

Asp Ile Cys Lys Ala Ala Met Gly Leu Arg Ile Ser Ser Ser Phe Ser  
35 40 45

492-11 PCT Sequence listing.txt

Phe Gly Gly Phe Thr Phe Lys Arg Thr Ser Gly Ser Ser Ile Lys Arg  
50 55 60

Glu Glu Glu Val Leu Thr Gly Asn Leu Gln Thr Leu Lys Ile Arg Val  
65 70 75 80

His Glu Gly Tyr Glu Glu Phe Thr Met Val Gly Lys Arg Ala Thr Ala  
85 90 95

Ile Leu Arg Lys Ala Thr Arg Arg Leu Val Gln Leu Ile Val Ser Gly  
100 105 110

Arg Asp Glu Gln Ser Ile Ala Glu Ala Ile Ile Val Ala Met Val Phe  
115 120 125

Ser Gln Glu Asp Cys Met Ile Lys Ala Val Arg Gly Asp Leu Asn Phe  
130 135 140

Val Asn Arg Ala Asn Gln Arg Leu Asn Pro Met His Gln Leu Leu Arg  
145 150 155 160

His Phe Gln Lys Asp Ala Lys Val Leu Phe Gln Asn Trp Gly Ile Glu  
165 170 175

His Ile Asp Asn Val Met Gly Met Val Gly Val Leu Pro Asp Met Thr  
180 185 190

Pro Ser Thr Glu Met Ser Met Arg Gly Ile Arg Val  
195 200

<210> 8  
<211> 202  
<212> PRT  
<213> Influenza A virus

<220>  
<221> PB2 281 to 482  
<222> (1)..(202)

<400> 8

Leu Glu Met Cys His Ser Thr Gln Ile Gly Gly Thr Arg Met Val Asp  
1 5 10 15

Ile Leu Arg Gln Asn Pro Thr Glu Glu Gln Ala Val Asp Ile Cys Lys  
20 25 30

Ala Ala Met Gly Leu Arg Ile Ser Ser Ser Phe Ser Phe Gly Gly Phe  
35 40 45

Thr Phe Lys Arg Thr Ser Gly Ser Ser Ile Lys Arg Glu Glu Glu Val  
50 55 60

492-11 PCT Sequence listing.txt

Leu Thr Gly Asn Leu Gln Thr Leu Lys Ile Arg Val His Glu Gly Tyr  
65 70 75 80

Glu Glu Phe Thr Met Val Gly Lys Arg Ala Thr Ala Ile Leu Arg Lys  
85 90 95

Ala Thr Arg Arg Leu Val Gln Leu Ile Val Ser Gly Arg Asp Glu Gln  
100 105 110

Ser Ile Ala Glu Ala Ile Ile Val Ala Met Val Phe Ser Gln Glu Asp  
115 120 125

Cys Met Ile Lys Ala Val Arg Gly Asp Leu Asn Phe Val Asn Arg Ala  
130 135 140

Asn Gln Arg Leu Asn Pro Met His Gln Leu Leu Arg His Phe Gln Lys  
145 150 155 160

Asp Ala Lys Val Leu Phe Gln Asn Trp Gly Ile Glu His Ile Asp Asn  
165 170 175

Val Met Gly Met Val Gly Val Leu Pro Asp Met Thr Pro Ser Thr Glu  
180 185 190

Met Ser Met Arg Gly Ile Arg Val Ser Lys  
195 200

<210> 9  
<211> 194  
<212> PRT  
<213> Influenza A virus

<220>  
<221> PB2 290 to 483  
<222> (1)..(194)

<400> 9

Gly Gly Thr Arg Met Val Asp Ile Leu Arg Gln Asn Pro Thr Glu Glu  
1 5 10 15

Gln Ala Val Asp Ile Cys Lys Ala Ala Met Gly Leu Arg Ile Ser Ser  
20 25 30

Ser Phe Ser Phe Gly Gly Phe Thr Phe Lys Arg Thr Ser Gly Ser Ser  
35 40 45

Ile Lys Arg Glu Glu Glu Val Leu Thr Gly Asn Leu Gln Thr Leu Lys  
50 55 60

Ile Arg Val His Glu Gly Tyr Glu Glu Phe Thr Met Val Gly Lys Arg  
65 70 75 80

492-11 PCT Sequence listing.txt

Ala Thr Ala Ile Leu Arg Lys Ala Thr Arg Arg Leu Val Gln Leu Ile  
85 90 95

Val Ser Gly Arg Asp Glu Gln Ser Ile Ala Glu Ala Ile Ile Val Ala  
100 105 110

Met Val Phe Ser Gln Glu Asp Cys Met Ile Lys Ala Val Arg Gly Asp  
115 120 125

Leu Asn Phe Val Asn Arg Ala Asn Gln Arg Leu Asn Pro Met His Gln  
130 135 140

Leu Leu Arg His Phe Gln Lys Asp Ala Lys Val Leu Phe Gln Asn Trp  
145 150 155 160

Gly Ile Glu His Ile Asp Asn Val Met Gly Met Val Gly Val Leu Pro  
165 170 175

Asp Met Thr Pro Ser Thr Glu Met Ser Met Arg Gly Ile Arg Val Ser  
180 185 190

Lys Met

<210> 10  
<211> 188  
<212> PRT  
<213> Influenza A virus

<220>  
<221> PB2 295 to 482  
<222> (1)..(188)

<400> 10

Val Asp Ile Leu Arg Gln Asn Pro Thr Glu Glu Gln Ala Val Asp Ile  
1 5 10 15

Cys Lys Ala Ala Met Gly Leu Arg Ile Ser Ser Ser Phe Ser Phe Gly  
20 25 30

Gly Phe Thr Phe Lys Arg Thr Ser Gly Ser Ser Ile Lys Arg Glu Glu  
35 40 45

Glu Val Leu Thr Gly Asn Leu Gln Thr Leu Lys Ile Arg Val His Glu  
50 55 60

Gly Tyr Glu Glu Phe Thr Met Val Gly Lys Arg Ala Thr Ala Ile Leu  
65 70 75 80

Arg Lys Ala Thr Arg Arg Leu Val Gln Leu Ile Val Ser Gly Arg Asp  
85 90 95



492-11 PCT Sequence listing.txt

Glu Gln Ser Ile Ala Glu Ala Ile Ile Val Ala Met Val Phe Ser Gln  
100 105 110

Glu Asp Cys Met Ile Lys Ala Val Arg Gly Asp Leu Asn Phe Val Asn  
115 120 125

Arg Ala Asn Gln Arg Leu Asn Pro Met His Gln Leu Leu Arg His Phe  
130 135 140

Gln Lys Asp Ala Lys Val Leu Phe Gln Asn Trp Gly Ile Glu His Ile  
145 150 155 160

Asp Asn Val Met Gly Met Val Gly Val Leu Pro Asp Met Thr Pro Ser  
165 170 175

Thr Glu Met Ser Met Arg Gly Ile Arg Val Ser Lys  
180 185

<210> 11  
<211> 166  
<212> PRT  
<213> Influenza A virus

<220>  
<221> PB2 318 to 483 R389K  
<222> (1)..(166)

<400> 11

Arg Ile Ser Ser Ser Phe Ser Phe Gly Gly Phe Thr Phe Lys Arg Thr  
1 5 10 15

Ser Gly Ser Ser Ile Lys Arg Glu Glu Glu Val Leu Thr Gly Asn Leu  
20 25 30

Gln Thr Leu Lys Ile Arg Val His Glu Gly Tyr Glu Glu Phe Thr Met  
35 40 45

Val Gly Lys Arg Ala Thr Ala Ile Leu Arg Lys Ala Thr Arg Arg Leu  
50 55 60

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

Ile Ile Val Ala Met Val Phe Ser Gln Glu Asp Cys Met Ile Lys Ala  
85 90 95

Val Arg Gly Asp Leu Asn Phe Val Asn Arg Ala Asn Gln Arg Leu Asn  
100 105 110

Pro Met His Gln Leu Leu Arg His Phe Gln Lys Asp Ala Lys Val Leu  
115 120 125

492-11 PCT Sequence listing.txt

Phe Gln Asn Trp Gly Ile Glu His Ile Asp Asn Val Met Gly Met Val  
130 135 140

Gly Val Leu Pro Asp Met Thr Pro Ser Thr Glu Met Ser Met Arg Gly  
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Ile Arg Val Ser Lys Met  
165

<210> 12  
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<212> PRT  
<213> Influenza A virus

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<221> PB2 320 to 483  
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<400> 12

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Leu Lys Ile Arg Val His Glu Gly Tyr Glu Glu Phe Thr Met Val Gly  
35 40 45

Lys Arg Ala Thr Ala Ile Leu Arg Lys Ala Thr Arg Arg Leu Val Gln  
50 55 60

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

Val Ala Met Val Phe Ser Gln Glu Asp Cys Met Ile Lys Ala Val Arg  
85 90 95

Gly Asp Leu Asn Phe Val Asn Arg Ala Asn Gln Arg Leu Asn Pro Met  
100 105 110

His Gln Leu Leu Arg His Phe Gln Lys Asp Ala Lys Val Leu Phe Gln  
115 120 125

Asn Trp Gly Ile Glu His Ile Asp Asn Val Met Gly Met Val Gly Val  
130 135 140

Leu Pro Asp Met Thr Pro Ser Thr Glu Met Ser Met Arg Gly Ile Arg  
145 150 155 160

Val Ser Lys Met

492-11 PCT Sequence listing.txt

<210> 13  
 <211> 82  
 <212> PRT  
 <213> Influenza A virus

<220>  
 <221> PB2 323 to 404  
 <222> (1)..(82)

<400> 13

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Arg Val His Glu Gly Tyr Glu Glu Phe Thr Met Val Gly Lys Arg Ala  
 35 40 45

Thr Ala Ile Leu Arg Lys Ala Thr Arg Arg Leu Val Gln Leu Ile Val  
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Ser Gly Arg Asp Glu Gln Ser Ile Ala Glu Ala Ile Ile Val Ala Met  
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Val Phe

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<400> 14

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 1 5 10

<210> 15  
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 <212> PRT  
 <213> Influenza A virus

<220>  
 <221> PB2 330 to 340  
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<400> 15

Phe Lys Arg Thr Ser Gly Ser Ser Ile Lys Arg  
 1 5 10

492-11 PCT Sequence listing.txt

<210> 16  
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 <212> PRT  
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<220>  
 <221> PB2 340 to 350  
 <222> (1)..(11)

<400> 16

Arg Glu Glu Glu Val Leu Thr Gly Asn Leu Gln  
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<210> 17  
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<220>  
 <221> PB2 350 to 360  
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<400> 17

Gln Thr Leu Lys Ile Arg Val His Glu Gly Tyr  
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<210> 18  
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<220>  
 <221> PB2 360 to 370  
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<400> 18

Tyr Glu Glu Phe Thr Met Val Gly Lys Arg Ala  
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<210> 19  
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<220>  
 <221> PB2 370 to 380  
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Ala Thr Ala Ile Leu Arg Lys Ala Thr Arg Arg  
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 <213> Influenza A virus

492-11 PCT Sequence listing.txt

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<210> 21  
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<220>  
 <221> PB2 390 to 400  
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<400> 21

Asp Glu Gln Ser Ile Ala Glu Ala Ile Ile Val  
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<210> 22  
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 <213> Influenza A virus

<220>  
 <221> PB2 400 to 410  
 <222> (1)..(11)

<400> 22

Val Ala Met Val Phe Ser Gln Glu Asp Cys Met  
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<210> 23  
 <211> 2277  
 <212> DNA  
 <213> Influenza A virus

<220>  
 <221> PB2 WT  
 <222> (1)..(2277)

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 aagaaccctg cacttaggat gaaatggatg atggcaatga aatatccaat tacagctgac 180  
 aagaggataa cagaaatggt tcctgagaga aatgagcaag gacaaaccct atggagtaaa 240  
 atgagtgatg ccgggtcaga tcgagtgatg gtatcacctt tggcagtgac atggtggaat 300  
 agaaatggac cagtgacaag tacggttcat tatccaaaag tctacaagac ttattttgat 360  
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## 492-11 PCT Sequence listing.txt

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<210> 24  
 <211> 2277  
 <212> DNA  
 <213> Influenza A virus

## 492-11 PCT Sequence listing.txt

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&lt;221&gt; PB2 Arg389Lys

&lt;222&gt; (1)..(2277)

&lt;400&gt; 24

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aagaggataa cagaaatggt tcctgagaga aatgagcaag gacaaaccct atggagtaaa      240
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492-11 PCT Sequence listing.txt

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aaggctaattg	tgctaattgg	gcaaggagac	gtggtgttgg	taatgaaacg	aaaacgggac	2220
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<210> 25  
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 <212> DNA  
 <213> Influenza A virus

<220>  
 <221> PB2 synthetic gene, optimized for E.coli codon usage  
 <222> (1)..(2274)

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aaagtggaa	gcctgaaaca	420
attcgtcgtc	gcgtggatat	480
gacgttatca	tggaagtgtg	540
agccagctga	ccatcaccaa	600
ctgatgggtg	cgtatatgct	660
gcgggtggca	ccagcagcgt	720
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# 492-11 PCT Sequence listing.txt

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 <221> PB2  
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<210> 27  
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 <212> DNA  
 <213> Influenza C virus

<220>  
 <221> PB2  
 <222> (1)..(2325)

## 492-11 PCT Sequence listing.txt

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aaggtaacat ttcaggatgt aagctttcaa catcctgata tggcagtatt gagagatgag     1680
aaaacggcca taacaaaagg gtatgaagcg ctaatcaaaa ggctaggaac aggggacaat     1740
gatattcctt ccttaattgc aaagaaggat tatttgtctc ttataattt accagaagta     1800
aaattaatgg ctcccttaat cagacccaat agaaaaggag ttatttccag agttgctaga     1860
aaattagtgt ctacacaagt tactactgga cattattcat tacatgaatt gataaaggct     1920
ttacccttta cttatttcgc cccaaaacag ggaatgtttg aaggaaggct tttcttttagc     1980
aacgatagct ttgttgagcc tggagtaaata aacaatgtat tttcttggag taaggctgac     2040

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agttctaaaa	tatattgtca	tggaatagcg	ataagggtag	ctttagttgt	tgagatgaa	2100
cacatggaca	cttcgttagc	actattagaa	gggttttagt	tttgtgaaaa	cgaccccaga	2160
gcaccaatgg	taacaagaca	agatttaatt	gatgtgggat	ttgggcaaaa	agttagactc	2220
ttcgtaggcc	aagggagcgt	tagaaccttc	aagcgaactg	cctcaciaag	ggctgcatca	2280
agcgatgtaa	ataagaatgt	gaaaaagata	aagatgtcta	actaa		2325

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