

SEQUENCE LISTING

<110> XL-protein GmbH

<120> Nucleic acids encoding repetitive amino acid sequences rich in proline and alanine residues that have low repetitive nucleotide sequences

<130> Y1730 PCT S3

<150> EP15 20 2093.9

<151> 2015-12-22

<160> 197

<170> BiSSAP 1.3

<210> 1

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Amino acid repeat sequence of PAS#1

<400> 1

Ala	Ser	Pro	Ala	Ala	Pro	Ala	Pro	Ala	Ser	Pro	Ala	Ala	Pro	Ala	Pro
1				5					10					15	
Ser	Ala	Pro	Ala												
				20											

<210> 2

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Amino acid repeat sequence of PA#1

<400> 2

Ala	Ala	Pro	Ala	Ala	Pro	Ala	Pro	Ala	Ala	Pro	Ala	Ala	Pro	Ala	Pro
1				5					10					15	
Ala	Ala	Pro	Ala												
				20											

<210> 3

<211> 18

<212> DNA

<213> Artificial Sequence

eolf-seql

<220>

<223> Sequencing primer XLP-1

<400> 3

ccgccggggc actaggag

18

<210> 4

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer NdeI-MP-SapI-HindIIIfw

<400> 4

tatgccagcc tgaagagccg gctcttcggc cta

33

<210> 5

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Primer NdeI-MP-SapI-HindIIIr

<400> 5

agcttaggcc gaagagccgg ctcttcaggc tggca

35

<210> 6

<211> 200

<212> PRT

<213> Artificial Sequence

<220>

<223> Amino acid sequence of the proline/alanine-rich sequence
PAS#1(200)

<400> 6

Ala	Ser	Pro	Ala	Ala	Pro	Ala	Pro	Ala	Ser	Pro	Ala	Ala	Pro	Ala	Pro
1				5					10					15	
Ser	Ala	Pro	Ala	Ala	Ser	Pro	Ala	Ala	Pro	Ala	Pro	Ala	Ser	Pro	Ala
			20					25					30		
Ala	Pro	Ala	Pro	Ser	Ala	Pro	Ala	Ala	Ser	Pro	Ala	Ala	Pro	Ala	Pro
			35					40					45		

eolf-seql

```

Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala
 50          55          60
Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala
65          70          75          80
Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro
      85          90          95
Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala
    100        105        110
Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro
    115        120        125
Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala
    130        135        140
Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala
145          150          155          160
Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro
      165          170          175
Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala
    180        185          190
Ala Pro Ala Pro Ser Ala Pro Ala
    195        200

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<210> 7

<211> 200

<212> PRT

<213> Artificial Sequence

<220>

<223> Amino acid sequence of proline/alanine-rich sequence PA#1(200)

<400> 7

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Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala Ala Pro Ala Pro
1          5          10          15
Ala Ala Pro Ala Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala
    20          25          30
Ala Pro Ala Pro Ala Ala Pro Ala Ala Pro Ala Ala Pro Ala Pro
    35          40          45
Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala Ala Pro Ala
    50          55          60
Ala Pro Ala Pro Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala
65          70          75          80
Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala Ala Pro Ala Pro
      85          90          95
Ala Ala Pro Ala Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala
    100        105        110
Ala Pro Ala Pro Ala Ala Pro Ala Ala Ala Pro Ala Ala Pro Ala Pro
    115        120        125
Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala Ala Pro Ala
    130        135        140

```

eolf-seql

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Ala Pro Ala Pro Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala
145          150          155          160
Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala Ala Pro Ala Pro
          165          170          175
Ala Ala Pro Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala
          180          185          190
Ala Pro Ala Pro Ala Ala Pro Ala
          195          200

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<210> 8

<211> 200

<212> PRT

<213> Artificial Sequence

<220>

<223> Amino acid sequence of proline/alanine-rich sequence PA#3(200)

<400> 8

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Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro
1          5          10          15
Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Pro Ala Ala Pro
          20          25          30
Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro
          35          40          45
Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro
          50          55          60
Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro
65          70          75          80
Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro
          85          90          95
Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro
          100          105          110
Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro
          115          120          125
Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro
          130          135          140
Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro
145          150          155          160
Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro
          165          170          175
Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro
          180          185          190
Ala Ala Ala Pro Ala Ala Ala Pro
          195          200

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<210> 9

<211> 198

<212> PRT

eolf-seql

<213> Artificial Sequence

<220>

<223> Amino acid sequence of the proline/alanine-rich sequence
PA#5(198)

<400> 9

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Ala Ala Ala Ala Pro Ala Ala Ala Ala Pro Ala Ala Ala Ala
1      5      10     15
Ala Pro Ala Ala Ala Ala Pro Ala Ala Ala Ala Pro Ala Ala
20     25     30
Ala Ala Ala Pro Ala Ala Ala Ala Pro Ala Ala Ala Ala Pro
35     40     45
Ala Ala Ala Ala Ala Pro Ala Ala Ala Ala Pro Ala Ala Ala
50     55     60
Ala Pro Ala Ala Ala Ala Pro Ala Ala Ala Ala Pro Ala Ala
65     70     75     80
Ala Ala Ala Pro Ala Ala Ala Ala Pro Ala Ala Ala Ala Pro
85     90     95
Ala Ala Ala Ala Ala Pro Ala Ala Ala Ala Pro Ala Ala Ala
100    105    110
Ala Pro Ala Ala Ala Ala Pro Ala Ala Ala Ala Pro Ala Ala
115    120    125
Ala Ala Ala Pro Ala Ala Ala Ala Pro Ala Ala Ala Ala Pro
130    135    140
Ala Ala Ala Ala Ala Pro Ala Ala Ala Ala Pro Ala Ala Ala
145    150    155    160
Ala Pro Ala Ala Ala Ala Pro Ala Ala Ala Ala Pro Ala Ala
165    170    175
Ala Ala Ala Pro Ala Ala Ala Ala Pro Ala Ala Ala Ala Pro
180    185    190
Ala Ala Ala Ala Ala Pro
195

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<210> 10

<211> 353

<212> PRT

<213> Artificial Sequence

<220>

<223> Amino acid sequence of the proline/alanine-rich sequence PA#1
after seamless fusion with IL1Ra

<400> 10

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Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala Ala Pro Ala Pro
1      5      10     15
Ala Ala Pro Ala Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala
20     25     30

```

eolf-seql

Ala Pro Ala Pro Ala Ala Pro Ala Ala Ala Pro Ala Ala Pro Ala Pro
35 40 45
Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala Ala Ala Pro Ala
50 55 60
Ala Pro Ala Pro Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala
65 70 75 80
Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala Ala Pro Ala Pro
85 90 95
Ala Ala Pro Ala Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala
100 105 110
Ala Pro Ala Pro Ala Ala Pro Ala Ala Ala Pro Ala Ala Pro Ala Pro
115 120 125
Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala Ala Ala Pro Ala
130 135 140
Ala Pro Ala Pro Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala
145 150 155 160
Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala Ala Pro Ala Pro
165 170 175
Ala Ala Pro Ala Ala Ala Pro Ala Ala Pro Ala Pro Ala Ala Pro Ala
180 185 190
Ala Pro Ala Pro Ala Ala Pro Ala Ala Arg Pro Ser Gly Arg Lys Ser
195 200 205
Ser Lys Met Gln Ala Phe Arg Ile Trp Asp Val Asn Gln Lys Thr Phe
210 215 220
Tyr Leu Arg Asn Asn Gln Leu Val Ala Gly Tyr Leu Gln Gly Pro Asn
225 230 235 240
Val Asn Leu Glu Glu Lys Ile Asp Val Val Pro Ile Glu Pro His Ala
245 250 255
Leu Phe Leu Gly Ile His Gly Gly Lys Met Cys Leu Ser Cys Val Lys
260 265 270
Ser Gly Asp Glu Thr Arg Leu Gln Leu Glu Ala Val Asn Ile Thr Asp
275 280 285
Leu Ser Glu Asn Arg Lys Gln Asp Lys Arg Phe Ala Phe Ile Arg Ser
290 295 300
Asp Ser Gly Pro Thr Thr Ser Phe Glu Ser Ala Ala Cys Pro Gly Trp
305 310 315 320
Phe Leu Cys Thr Ala Met Glu Ala Asp Gln Pro Val Ser Leu Thr Asn
325 330 335
Met Pro Asp Glu Gly Val Met Val Thr Lys Phe Tyr Phe Gln Glu Asp
340 345 350
Glu

<210> 11

<211> 600

<212> DNA

<213> Artificial Sequence

eolf-seql

<220>

<223> Nucleotide sequence of PAS#1a(200)

<400> 11

gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	60
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	120
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	180
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	240
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	300
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	360
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	420
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	480
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	540
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	600

<210> 12

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1a(600)

<400> 12

gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	60
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	120
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	180
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	240
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	300
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	360
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	420

eolf-seql

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gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	540
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	600
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gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	960
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gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	1740
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eolf-seql

<211> 2400

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1a(800)

<400> 13

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gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	120
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	180
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	240
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	300
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	360
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gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	720
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gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	1080
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	1140
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	1200

eolf-seql

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gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	1320
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gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	1800
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	1860
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	1920
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gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	2160
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gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	2280
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	2340
gcctctccag ctgcacctgc tccagcaagc cctgctgcac cagctccgtc tgctcctgct	2400

<210> 14

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1a(200)

eolf-seql

<400> 14

gccgctccag ctgcacctgc tccagcagca cctgctgcac cagctccggc tgctcctgct	60
gccgctccag ctgcacctgc tccagcagca cctgctgcac cagctccggc tgctcctgct	120
gccgctccag ctgcacctgc tccagcagca cctgctgcac cagctccggc tgctcctgct	180
gccgctccag ctgcacctgc tccagcagca cctgctgcac cagctccggc tgctcctgct	240
gccgctccag ctgcacctgc tccagcagca cctgctgcac cagctccggc tgctcctgct	300
gccgctccag ctgcacctgc tccagcagca cctgctgcac cagctccggc tgctcctgct	360
gccgctccag ctgcacctgc tccagcagca cctgctgcac cagctccggc tgctcctgct	420
gccgctccag ctgcacctgc tccagcagca cctgctgcac cagctccggc tgctcctgct	480
gccgctccag ctgcacctgc tccagcagca cctgctgcac cagctccggc tgctcctgct	540
gccgctccag ctgcacctgc tccagcagca cctgctgcac cagctccggc tgctcctgct	600

<210> 15

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#3a(200)

<400> 15

gccgctgcac ctgctgcagc acctgctgca gctccagcag ctgctcctgc agcagctcca	60
gccgctgcac ctgctgcagc acctgctgca gctccagcag ctgctcctgc agcagctcca	120
gccgctgcac ctgctgcagc acctgctgca gctccagcag ctgctcctgc agcagctcca	180
gccgctgcac ctgctgcagc acctgctgca gctccagcag ctgctcctgc agcagctcca	240
gccgctgcac ctgctgcagc acctgctgca gctccagcag ctgctcctgc agcagctcca	300
gccgctgcac ctgctgcagc acctgctgca gctccagcag ctgctcctgc agcagctcca	360
gccgctgcac ctgctgcagc acctgctgca gctccagcag ctgctcctgc agcagctcca	420
gccgctgcac ctgctgcagc acctgctgca gctccagcag ctgctcctgc agcagctcca	480

eolf-seql

gccgctgcac ctgctgcagc acctgctgca gctccagcag ctgctcctgc agcagctcca	540
gccgctgcac ctgctgcagc acctgctgca gctccagcag ctgctcctgc agcagctcca	600

<210> 16
 <211> 609
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Nucleotide sequence of a [(AP)5]n multimer

<400> 16	
gctccagcac ctgccccagc ccctgcacca gctccagcac ctgccccagc ccctgcacca	60
gctccagcac ctgccccagc ccctgcacca gctccagcac ctgccccagc ccctgcacca	120
gctccagcac ctgccccagc ccctgcacca gctccagcac ctgccccagc ccctgcacca	180
gctccagcac ctgccccagc ccctgcacca gctccagcac ctgccccagc ccctgcacca	240
gctccagcac ctgccccagc ccctgcacca gctccagcac ctgccccagc ccctgcacca	300
gctccagcac ctgccccagc ccctgcacca gctccagcac ctgccccagc ccctgcacca	360
gctccagcac ctgccccagc ccctgcacca gctccagcac ctgccccagc ccctgcacca	420
gctccagcac ctgccccagc ccctgcacca gctccagcac ctgccccagc ccctgcacca	480
gctccagcac ctgccccagc ccctgcacca gctccagcac ctgccccagc ccctgcacca	540
gctccagcac ctgccccagc ccctgcacca gctccagcac ctgccccagc ccctgcacca	600
gctccagca	609

<210> 17
 <211> 276
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Synthetic gene construct encoding the glycomodule [AAPAPAPAP]10AS

<400> 17	
gccgctccag cacctgcccc agcccctgca gctccagcac ctgccccagc ccctgcagct	60

eolf-seq1

ccagcacctg cccagcccc tgcagctcca gcacctgccc cagccccctgc agctccagca	120
cctgccccag cccctgcagc tccagcacct gccccagccc ctgcagctcc agcacctgcc	180
ccagccccctg cagctccagc acctgccccca gcccctgcag ctccagcacc tgccccagcc	240
cctgcagctc cagcacctgc cccagccccct gcatcc	276

<210> 18
 <211> 225
 <212> DNA
 <213> Macacine herpesvirus 1

<220>
 <223> Nucleotide sequence of a fragment of the very large tegument protein of Macacine herpesvirus [GeneBank: AAP41454.1, 8844 - 8808]

<400> 18	
gcgccacccg cccctgctgc ccctgctgcc cctgctgccc ctgctgcccc tgctgcccct	60
gctgcccctg ctgcccctgc tgcccctgct gcccctgctg cccctgctgc ccctgctgcc	120
cctgctgccc ctgctgcccc tgctgcccct gctgcccctg ctgcccctgc tgcccctgct	180
gcccctgctg cccctgctgc ccctgctgcc cctgcgcccc cagca	225

<210> 19
 <211> 600
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Nucleotide sequence of PAS#1b(200), codon-optimized for E. coli

<400> 19	
gccagccctg ccgcacctgc gcccgcattca cctgcggcac ctgcaccttc cgccccggct	60
gcatctcctg ccgcacccgc gcctgccagc ccagctgcac ctgccccaaag tgcgccagca	120
gcatcccctg ccgcgcctgc ccccgctagt ccagcggccc cagctccatc tgcaccagct	180
gctagcccctg ctgcaccagc tcctgcttct cccgcagccc cagcgccttc tgctcccgca	240
gcctcacctg cggccccggc accagcatct ccagcggcac cagcaccttc ggccccctgct	300

eolf-seq1

gctagcccag cagcacctgc gccagcctca ccagctgctc ccgctcctag tgccccggcg	360
gcctcgcctg ctgctcctgc accagcttcg ccagcggcac cggctccttc ggcgccggct	420
gcttcaccag cagcacctgc tccagcgtcc ccagcggccc ctgctccaag tgctccggct	480
gcatcgcctg ccgctcctgc tcctgcatcc ccagctgctc cagcaccaag cgcacctgcc	540
gcctcaccag cggcgccagc acccgccagc ccagcagcgc ctgctccatc cgcaccggcg	600

<210> 20

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1c(200), codon-optimized for E. coli

<400> 20

gccagtcctg ctgcaccggc accggcatca ccggctgcac cagcacctag tgcaccggca	60
gcttctccgg ctgcccctgc gcctgcatca ccagctgcgc ctgcaccgtc tgcccctgca	120
gctagtccag cagctccagc tccggcttct cctgcggctc ctgcaccaag tgcgcctgca	180
gcaagtccgg ctgcgcctgc cccagctagt cctgctgctc cggcaccgtc agctccggca	240
gcatctcctg cagcaccagc ccctgcaagt ccagcagcgc cagcccatc agcaccagca	300
gcttcaccag ccgcaccagc gccagcaagc cctgctgccc cagctcctag cgcaccggca	360
gccagtcctg cagctcctgc gcctgctagt ccggcagccc cagctccaag tgcccctgcc	420
gcttcgcctg cagccccagc accagcttct ccagccgcac cggcaccttc tgccccagct	480
gcatctccgg cagctccggc accagcaagc ccggcagcac cggcaccatc tgcgcctgcc	540
gcatctccgg ctgcgccagc tccagcctct cctgcagcgc cagcaccgag cgcaccagca	600

<210> 21

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1d(200), codon-optimized for E. coli

eolf-seql

<400> 21

```
gccagccccg cgcctccagc accggcgctct cccgccgcac cagcccccttc agcgccctgca      60
gcatcaccgg cggccccgcg acccgcatct ccagccgccc ctgctccttc cgccccagcc      120
gcatcgccag ccgctccagc accggcatcc cccgcggctc ccgctcccag cgcacctgcg      180
gcttcaccgg cagcaccagc gcccgcaagt ccagccgcgc cggctccttc tgcgcctgcg      240
gcctcgccgg cagctccagc ccctgcttcc ccagctgccc cggcccccttc agccccagcg      300
gcgtctccag cagcaccagc tcccgcttct cgggcagcgc cagcgccctc ggcccccgcc      360
gcgtccccctg ccgccccggc acccgcatcg cccgctgccc cagccccatc cgccccagct      420
gcaagccccg ctgctccagc tcccgccagt ccagcagcac ccgcccccttc tgcgccagcc      480
gcgtcaccgg ccgccccagc accggcgagc cccgctgcac ccgccccctag cgctccggcc      540
gcatctcctg cggcgccccg acctgccagt ccagctgctc ctgctccgtc cgccccctgcc      600
```

<210> 22

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1e(200), codon-optimized for
Cricetulus griseus

<400> 22

```
gcctctcctg ctgccccctgc cccagcttct ccagctgctc ctgcaccttc tgctccagcc      60
gctagtcctg cagctccagc tcctgcttct cctgccgcac cagcacctag tgccccctgct      120
gcatcaccag cagctcccg ccccgctagc ccagctgcac cagctccaag tgctccagca      180
gcttcaccgg cagcaccgcg tccagcaagt ccagcagccc cagcccccttc agcaccagct      240
gcatctcccg cagccccctgc tcctgccagc cctgccgctc ctgctccaag cgctcctgct      300
gctagtcctg ccgccccctgc accagcaagt cctgctgctc ccgcacctag tgaccagca      360
gcaagccctg cagctcctgc accagcatct ccagcagcac cagcaccatc agccccctgcc      420
gcttctcccg cagctccagc cccagcctcc cctgctgctc cagccccctc tgctcctgca      480
```

eolf-seq1

gcatctcctg ccgctcccg cccctgcaagt cccgccgctc cagcaccatc cgctccagct 540
gcttccccag ccgctccagc tccagctagc cccgcagccc ccgcaccatc tgccccagca 600

<210> 23

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1f(200), codon-optimized for E. coli

<400> 23

gcctcccctg ccgctccagc ccccgccctg ccggccgctc ccgctccgtc tgcacctgct 60
gcctcaccag cagccccggc cccagcatcc ccggccgcac cagctccgtc agcacctgcc 120
gcatcgctg ctgcccctgc cccagccagt ccagcggctc cagccccgag tgctccggcc 180
gcttcccccg cagcaccggc tcctgcctcc cctgcagccc ctgctccatc tgcccctgcg 240
gcatcccctg cggcgccagc tcctgcctct ccagctgcac cggctccctc agtcccgt 300
gcctccccag ccgcgcccgc tcctgcaagc ccagcagctc cggctccatc cgccccgcc 360
gccagccccg cagccccggc gcctgcctct cctgctgcac ctgcaccgtc agcccctgca 420
gcatctcccg cagctcctgc accggcatct ccagcagccc ccgccccgtc agtcccga 480
gccagcccgg ccgcacccgc ccccgctca ccagctgcac cagcgccatc cgctcctgct 540
gcgtctcccg ctgcgcccgc cctgcctca cctgcagcac ctgcacctag cgccccggct 600

<210> 24

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1g(200), codon-optimized for Pichia
Pastoris

<400> 24

gcctctcctg ctgcacctgc accagcttct cccgctgctc ctgctccttc agctcctgct 60

eolf-seq1

gcatcacctg ctgcacctgc tcctgcttct ccagctgcac cagctccatc tgcaccagct	120
gcttcacctg cagcacctgc acctgcttca ccagcagcac cagctccttc cgctccagcc	180
gcttcaccag ccgctccagc accagcttca ccagcagctc ctgctccatc tgctcctgct	240
gcttccccctg ctgctccagc tcctgcatca ccagctgcac ctgcaccttc tgctccagct	300
gcatctccag cagctccagc tcccgccttca cctgctgctc cagcaccatc cgctcctgca	360
gcttctccag ctgctcctgc tccagcttct cctgcagcac ctgctccatc cgctccagca	420
gcttctccag ccgctcctgc tcctgcctcc cctgctgcac cagctccttc agctccagct	480
gcttccccag ctgctccagc tccagcttct ccagcagctc ctgcaccatc tgctccagct	540
gcttctcctg ctgcaccagc cccagcatcc ccagctgctc ctgcaccttc cgctcctgct	600

<210> 25

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1h(200), codon-optimized for
Cricetulus griseus

<400> 25

gcctcaccag ccgccccagc ccccgcttcc ccagccgccc ctgctccttc cgccccgcc	60
gcttctccag ccgctcctgc cccgccttct cccgctgccc ccgccccatc agccccgcc	120
gcctctccag cagctccagc tcccgcctct cctgccgccc cagctccaag cgccccgcc	180
gcatctcctg ccgcacctgc ccctgcctct cctgccgctc cagccccatc tgccccgcc	240
gcctctccag ccgccccgc ccctgcttct ccggctgccc ccgcaccttc agcaccgcc	300
gcttcaccag ctgcaccagc ccctgcctct cccgccgccc ccgcaccctc cgcaccgct	360
gcttcacctg ccgcccctgc acctgcctcc cctgccgcac ctgcacctag cgccccgcc	420
gcctcacctg ccgccccagc cccagcttct cccgccgcac ccgccccctc tgccccgca	480
gcctcccccg ctgccccagc tccagcctcc cctgccgccc ccgctccatc cgccccgcc	540
gcttcccccg cagcccctgc ccctgcatcc cctgccgctc cagctccctc agtccccgcc	600

eolf-seq1

<210> 26
<211> 600
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide sequence of PAS#1i(200), codon-optimized for
Cricetulus griseus

<400> 26
gccagccccg ccgctcccgcc acctgccagc ccagccgctc ccgctccctc cgcccccgcc 60
gccagccccg ccgcccctgc tcccgccagc cctgcagctc cagcacctag cgccccagca 120
gcatccccag ctgcacccgc acccgctcc ccagcagcac ctgcaccatc tgctccagca 180
gcaagtccgg ctgctcctgc tcctgcatca cctgctgcac cagccccctc agctcctgca 240
gcaagcccag ctgcacctgc accagctagt ccagccgctc cagcaccttc cgctccagca 300
gcatctcctg ctgcaccagc accagcatct cctgcagctc ccgccccaaag tgccccagca 360
gcatcacctg ccgcaccagc tcctgcaagc ccagcagctc cagcaccaag cgctcctgca 420
gcctccccag ctgctcctgc cccagcttcc cccgcagctc ccgcaccttc tgccccagca 480
gcaagccccg cggcaccagc accagcttca cccgccgctc ctgcaccaag cgccccgct 540
gcaagccctg cagcaccgc accagcctca ccagccgcac cagcacctc cgccccagca 600

<210> 27
<211> 600
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide sequence of PAS#1j(200), codon-optimized for
Cricetulus griseus

<400> 27
gcctcaccgc ccgcaccagc cccagcatca cccgccgctc cggctccaag tgccccagcc 60
gcttctccag ctgcccctgc tccagcatca cctgctgctc ctgccccctc cgctcccgca 120
gcatctccag ctgcacctgc cccagcaagt ccagccgcac ctgctcctag tgctcctgct 180

eolf-seql

gctagccctg ctgccccagc acctgcatca cccgcagctc ccgctccttc agctccagca	240
gcttccccctg ccgctcccg c accagcatca cccgcagccc cagctcctag cgccccctgcc	300
gccagtccccg ctgctcctgc tcccgcgaagt cctgccgcac ccgcacccag tgcacctgct	360
gcatccccag ctgctccagc cccagctagt ccagcagccc ctgctccctc tgctcctgcc	420
gcttccccag cagcaccagc tcccgctagt cctgccgctc ctgccccaaag tgcacccgct	480
gccagccccg cagcaccagc tccagcctca cccgctgctc ctgcacccag cgcaccagca	540
gctagcccag cagctcctgc tccagccagc ccagccgcac ctgccccatc tgcacccgct	600

<210> 28

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1b(200), codon-optimized for E. coli

<400> 28

gccgctcctg ctgccccctgc tcccgctgcc cccgccgccc ccgccccagc tgcccccgct	60
gccgcacctg ctgccccagc tcccgctgcc ccagccgcgc cggcccccg c agctccagcc	120
gcggcaccag ctgccccagc tccagcggcg cctgctgccc cggcccccg gcacccggct	180
gccgcgccccg cagctccagc gcctgctgca ccggctgctc cggcaccgc cgcgccagca	240
gctgccccctg cggcaccagc tcctgctgcc cccgcggcac ctgcacccgc tgccccggcg	300
gcagctccccg ccgcgccagc ccctgcagct cctgctgcac ctgctcctgc cgccccctgct	360
gctgccccctg ctgctccagc ccctgcagca ccggccgctc cagctcctgc cgctcctgcc	420
gctgcgccccg ctgctccagc cccagctgcg ccagcagctc ctgcacctgc tgccccctgcc	480
gccgccccctg cggctccagc acctgctgca ccggccgccc cggcgccgc tgcccccgca	540
gcagccccag ccgcacccgc tccagcagct cccgcagccc cagcaccgc agcaccagcc	600

<210> 29

<211> 600

eolf-seq1

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1c(200), codon-optimized for E. coli

<400> 29

```

gccgcgccag cggccccggc ccctgccgcg ccgctgctc ccgcccctgc tgccccagcc      60
gccgctcctg cggcacctgc gcccgcgcg ccggcagcgc cggcaccggc agctccggcg      120
gccgcgcctg cagctcctgc accggcggct ccagcagccc cggcgccggc cgcacctgcg      180
gcggcgcccc cggcgctgc acccgcagcg cctgcggcac cggccccagc agcccctgcc      240
gccgcaccgg ctgcgcctgc ccagcggcc ccgctgccc cggccccggc ggctccagcc      300
gcagcgcttg ccgccccagc gcccgcagca ccggcggcac cagctccggc ggcgccggcg      360
gcggctccgg cagctccggc ccctgctgcg ccggctgcgc cggctccggc ggcccctgcg      420
gcggctccgg ccgcacctgc acctgccgcg ccggctgctc cggccccggc tgccccagca      480
gcggcaccag cagcgctgc tcctgcggcg cctgcagctc cggcgccggc agccccggcc      540
gccgcacccg cggctccagc ccccgccgct ccagcagccc ccgcgccagc tgcacctgct      600

```

<210> 30

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1d(200), codon-optimized for E. coli

<400> 30

```

gccgcaccgg ctgccccagc ccctgccgca ccagcagctc ccgcccctgc agcccccgcc      60
gccgctccgg ccgcaccagc cccggctgcc cctgctgccc ccgccccggc agcaccgct      120
gcagcaccag ccgcgcctgc accggcagct cctgcagccc cggcaccggc agcacctgcc      180
gcagcaccgg cagccccagc ccagcagcg cctgccgctc cagcaccagc ggacccggcc      240
gccgcaccag ccgccccagc accggcagcc cccgcagcgc cggcaccagc cgctccagcc      300
gccgccccag cagccccggc tccggccgct cccgcggctc cagcaccagc agctccagcg      360

```

eolf-seql

```
gccgctccgg cagcgccggc cccagcagca cctgcagccc ctgcaccagc agcgccagcc 420
gcggcgcccc cagctcccg c acctgcggct cccgcagccc ctgcacccgc ggcgccagca 480
gccgcccctg cagcgccagc tcctgcagca cctgcagctc cagccccggc cgccccagct 540
gcagctcctg cggccccagc acctgccgcc cctgccgcac cggctccagc cgccccagcc 600
```

<210> 31

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1e(200), codon-optimized for E. coli

<400> 31

```
gccgcaccgg ctgcaccagc tccggcagct ccagcagcac cggcaccagc agctccggct 60
gcagcgccag cagcaccagc gcctgctgct ccagctgctc ctgctcctgc tgcaccagca 120
gcagctccag ccgcaccagc accggcagcg cctgcagccc ctgctccggc agctcctgcc 180
gcagcaccgg cagcaccagc tccagcggca cccgctgccc ctgctcctgc agcaccggca 240
gcggcaccgg ctgctcctgc gccagctgct ccggcagccc cagcccctgc agccccagca 300
gcagcgccctg cggctccagc gccagccgca ccagcggctc cggcaccggc agcccctgcg 360
gcagctcctg ctgcgcctgc tccagcagct ccagctgccc cagcgccggc agctccggct 420
gccgcaccag ctgcgcctgc ccctgctgcg ccagccgcac cggctccggc agcaccagca 480
gctgccccag cagctcctgc cccagctgcg cctgctgcgc cagcaccagc agccccagct 540
gcagcaccag ctgcaccggc accagctgct ccagcagcac cagccccagc cgctccggca 600
```

<210> 32

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1f(200), codon-optimized for Cricetulus griseus

eolf-seql

<400> 32

```

gccgctcctg ctgctccagc tcctgctgcc ccagcagccc ctgccccagc tgctcctgca      60
gcagctcccc cagccccagc acccgccgca ccagcagctc cagccccctgc agcaccagct      120
gctgccccctg ccgccccctgc tccagccgca cccgctgcac ccgcaccagc tgccccagcc      180
gccgcacccg cagctccagc tcccgtgtgt cctgctgcac cagccccctgc cgctccagca      240
gccgcaccag cagcaccagc cccagctgtgt cccgctgtct cagcaccgca agcccccgca      300
gcagcaccag ccgctcctgc tcctgccgcc ccagcagctc ctgctccagc agccccctgt      360
gctgctccag cagcaccagc accagctgtgt ccagctgccc cagctcctgc agcaccgccc      420
gctgctcccc cagctcctgc ccctgctgca cccgcagcac ccgctccagc agcacctgca      480
gctgcaccag ctgctccgca acctgccgct cccgcagctc ccgctcctgc agctccagcc      540
gcagctcctg ctgctcctgc accagcagct cccgccgcac cagctccagc tgccccctgt      600

```

<210> 33

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1g(200), codon-optimized for *Cricetulus griseus*

<400> 33

```

gccgcaccgg ctgctcctgc tcctgccgct cctgccgcac ccgctcccgc tgccccctgcc      60
gccgccccctg cagctcctgc ccccgccgca cctgcagctc cagcacctgc agcaccagct      120
gcagcacctg ctgcaccagc tcccgccgct ccagcagctc ctgccccagc tgcaccagcc      180
gctgcacccg ccgctcccgc tcctgcagcc cccgctgcac cggccccctgc cgctcctgca      240
gctgcgccag cagccccctgc tccagctgca cctgccgcac ccgccccagc tgcccccgcc      300
gctgctccag ccgctcctgc acctgctgca cctgctgtct cagcacctgc ggctcctgct      360
gccgctccag ctgccccgc tccagcgggt cctgccgccc ctgctcccgc cgctcctgca      420
gcagccccctg ctgctccagc cccagccgct ccggcagctc ccgctccagc agcccccgcc      480

```

eolf-seq1

gctgcccctg ctgcaccagc ccccgctgcc ccagctgccc ctgctcctgc tgccccgcc 540
gcagcccccg ccgcacccgc accagcagca cccgcagctc cagcaccagc tgcaccagca 600

<210> 34
<211> 600
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide sequence of PA#1h(200), codon-optimized for *Cricetulus griseus*

<400> 34
gccgcccctg ctgccccagc cccagccgcc cccgccgctc ccgccccagc tgccccagcc 60
gctgcacctg cagccccagc acctgctgcc ccagccgctc cagcaccagc tgcccctgca 120
gccgctcccg ccgccccagc ccccgctgcc cccgcagctc cagctcctgc cgctccagcc 180
gccgcccccg cagctcctgc ccccgctgcc cctgcagccc ctgctcctgc tgcacctgcc 240
gcagcccctg ctgccccagc tccagcagca cctgctgccc ccgctcccg cgcacccgca 300
gcagcacctg ccgctccagc tccagccgcc cccgctgccc ctgctccagc cgctccagct 360
gctgctcccg cagcccctgc cccagccgct cccgcagcac ccgctcctgc cgccccagcc 420
gcagctccag ccgctcctgc ccctgccgca ccagctgctc ccgctcccg tgctcccgcc 480
gccgctcccg ccgcacctgc tcctgccgca cccgccgctc cagcaccagc agctccagct 540
gccgctccag ccgctcccg acccgctgct cctgccgccc ctgcccccg agcccctgct 600

<210> 35
<211> 600
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide sequence of PA#1i(200), codon-optimized for *Cricetulus griseus*

<400> 35
gccgctccag ccgccccagc ccctgccgcc cccgccgcac ctgcccccg cgccccagct 60

eolf-seql

```

gccgccccag ccgcccctgc tcccgtgct cctgccgcac ctgcacccgc tgcccctgct      120
gctgcccccg ctgctcctgc tcccgtgct cccgtgccc cggccccgc tgctcccgcc      180
gctgctcccg ccgcacctgc ccagccgca ccagctgcac ctgctccagc cgctcccgct      240
gccgtccag ccgccccgc acccgccgca cctgccgccc ctgcccctgc agccccgcc      300
gccgtcccg cagccccgc tcccgtgcc ccagccgccc ctgccccgc ggctcccgcc      360
gctgctcctg ccgctccgc cccgcccgc cctgccgccc cggcccctgc tgccccgct      420
gccgcacctg ctgctccgc ccagccgct ccagctgccc ctgccccagc tgccccgct      480
gctgcccctg ccgctcctgc ccctgtgct cctgccgccc ccgccccgc cgctcctgcc      540
gctgcccccg ctgcacccgc tcccgccgcc cccgtgccc ccgcccctgc tgctcctgct      600

```

<210> 36

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#3b(200), codon-optimized for E. coli

<400> 36

```

gccgcagcac cggcagcagc ccctgcagca gctccagctg ccgcaccagc agctgcacca      60
gctgcagcgc ctgtgctgc tcctgcagct gcgccagcag ctgctccggc agcggcaccg      120
gctgcagcac cagccgcagc ccagcagcc gctcctgctg cagctcctgc ggctgcacca      180
gcgggtgccc ctgcggcagc accagcagca gcgccagcgg ctgcaccagc tgccgcaccg      240
gcagcagctc cggcagcagc accagcagcg gcaccggcag ctgcgcctgc cgctgcgcct      300
gcggcagccc ctgccgcagc tccagcagca gcaccggcag ctgctccagc ggagctcct      360
gcagcagccc cagccgctgc gcctgccgca gcgccagcag ctgcgcctgc agcggctcca      420
gccgcagcac cagcggcagc tccagctgca gcccctgctg cagcgccagc agcagcacct      480
gcgggtgccc ctgcagcggc tccggctgca gcgcctgcgg cagcacctgc agcggcacca      540
gcagcagccc ctgcggcagc gcctgctgca gcccagctg cagccccagc agcggcacca      600

```

eolf-seq1

<210> 37
 <211> 594
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Nucleotide sequence of PA#5b(198), codon-optimized for E. coli

<400> 37
 gccgcagcag cagcaccggc agctgcagca gctccagcgg cagcagctgc ccctgcagcc 60
 gcagctgcac cagcagcagc cgcagcgcct gcagcagctg ccgctccggc agcagcagcc 120
 gcaccagctg ccgcagcagc tcctgccgca gccgcagccc cagccgcagc agcgggtcca 180
 gcagcagctg cagcaccagc cgctgcagcc gcaccggcag ctgcggcagc accagcagcg 240
 gcagcagccc cagcagctgc agcagcgcct gcagccgcag cagcgccagc tgcagcagcg 300
 gcaccggcag cggcagcggc tccggcagca gctgcagccc ctgccgcagc agctgcacct 360
 gcagcagccg cagcaccggc tgccgcagcg gcaccagccg cagcagctgc cccagcggca 420
 gcagcagcac cagcagctgc tgcagcacca gctgcagccg cagcaccagc ggctgccgca 480
 gcgccagcag cggcagcggc accagcggca gcggcagcac cggcagcagc ggagccccct 540
 gcagccgctg cagctcctgc agcagcggca gcgccagccg cagccgcagc tcct 594

<210> 38
 <211> 1800
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Nucleotide sequence of PAS#1f/1c/1b(600), codon-optimized for E. coli

<400> 38
 gcctccccctg ccgtccagc cccgcctcg ccggccgctc ccgtccgtc tgcacctgct 60
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 gcatcgcctg ctgccccctgc cccagccagt ccagcggctc cagccccgag tgctccggcc 180

eolf-seq1

gcttcccccg cagcaccggc tcctgcctcc cctgcagccc ctgctccatc tgccccctgcg	240
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gcctccccag ccgcgcccgc tcctgcaagc ccagcagctc cggctccatc cgcccccgcc	360
gccagccccg cagccccggc gcctgcctct cctgctgcac ctgcaccgtc agccccctgca	420
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gccagccccg ccgcacccgc ccccgctca ccagctgcac cagcgccatc cgctcctgct	540
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gccagtccctg ctgcaccggc accggcatca ccggctgcac cagcacctag tgcaccggca	660
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gcttcgcctg cagccccagc accagcttct ccagccgcac cggcaccttc tgccccagct	1080
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eolf-seq1

gcttcaccag cagcacctgc tccagcgtcc ccagcggccc ctgctccaag tgctccggct	1680
gcatcgcctg ccgctcctgc tcctgcatcc ccagctgctc cagcaccaag cgcacctgcc	1740
gcctcaccag cggcgccagc acccgccagc ccagcagcgc ctgctccatc cgcaccggcg	1800

<210> 39

<211> 2400

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1d/1f/1c/1b(800), codon-optimized for
E. coli

<400> 39

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gcatcgccag ccgctccagc accggcatcc cccgcggctc ccgctcccag cgcacctgcg	180
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gcgtctccag cagcaccagc tccgcctct cccgcagcgc cagcgccctc ggccccgcc	360
gcgtcccctg ccgccccggc acccgcatcg cccgctgccc cagccccatc cgccccagct	420
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gcttcccccg cagcaccggc tcctgcctcc cctgcagccc ctgctccatc tgcccctgcg	840
gcatcccctg cggcgccagc tcctgcctct ccagctgcac cggctccctc agtcccgt	900
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eolf-seql

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gcctcgcctg ctgctcctgc accagcttcg ccagcggcac cggctccttc ggcgccggct	2220
gcttcaccag cagcacctgc tccagcgtcc ccagcggccc ctgctccaag tgctccggct	2280
gcatcgcctg ccgctcctgc tcctgcatcc ccagctgctc cagcaccaag cgcacctgcc	2340
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eolf-seql

<210> 40

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1h/1e/1i(600), codon-optimized for
Cricetulus griseus

<400> 40

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gcctctccag cagctccagc tcccgcttct cctgccgccc cagctccaag cgcccccgcc	180
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gcttcaccag ctgcaccagc ccctgcctct cccgccgccc ccgcaccctc cgcacccgct	360
gcttcacctg ccgccccctgc acctgcctcc cctgccgcac ctgcacctag cgcccccgcc	420
gcctcacctg ccgccccagc cccagcttct cccgccgcac ccgccccctc tgccccctgca	480
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gctagtccag ccgccccctgc accagcaagt cctgctgctc ccgcacctag tgcaccagca	960
gcaagccctg cagctcctgc accagcatct ccagcagcac cagcaccatc agccccctgcc	1020
gcttctcccg cagctccagc cccagcctcc cctgctgctc cagccccctc tgctcctgca	1080

eolf-seq1

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gccagccccg ccgctcccgc acctgccagc ccagccgctc ccgctccctc cgcccccgcc	1260
gccagccccg ccgcccctgc tcccgccagc cctgcagctc cagcacctag cgccccagca	1320
gcatccccag ctgcacccgc acccgcttcc ccagcagcac ctgcaccatc tgctccagca	1380
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gcctccccag ctgctcctgc cccagcttcc cccgcagctc ccgcaccttc tgccccagca	1680
gcaagccccg cggcaccagc accagcttca cccgccgctc ctgcaccaag cgccccgct	1740
gcaagccctg cagcacccgc accagcctca ccagccgcac cagcacctc cgccccagca	1800

<210> 41

<211> 2400

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1j/1h/1e/1i(800), codon-optimized for
Cricetulus griseus

<400> 41

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gcttctccag ctgcccctgc tccagcatca cctgctgctc ctgccccttc cgctcccgca	120
gcatctccag ctgcacctgc cccagcaagt ccagccgcac ctgctcctag tgctcctgct	180
gctagccctg ctgccccagc acctgcatca cccgcagctc ccgctccttc agctccagca	240
gcttcccctg ccgctcccgc accagcatca cccgcagccc cagctcctag cgcccctgcc	300
gccagtcccc ctgctcctgc tcccgcaagt cctgccgcac ccgcacccag tgcacctgct	360
gcatccccag ctgctccagc cccagctagt ccagcagccc ctgctccctc tgctcctgcc	420

eolf-seq1

gcttccccag cagcaccagc tcccgctagt cctgccgctc ctgccccaaag tgcacccgct	480
gccagccccg cagcaccagc tccagcctca cccgctgctc ctgcacccag cgcaccagca	540
gctagcccag cagctcctgc tccagccagc ccagccgcac ctgccccatc tgcacccgct	600
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gcttccccag ccgctccagc tccagctagc cccgcagccc ccgcaccatc tgccccagca	1800
gccagccccg ccgctcccgc acctgccagc ccagccgctc ccgctccctc cgccccgcc	1860

eolf-seq1

gccagccccg ccgcccctgc tcccgccagc cctgcagctc cagcacctag cgccccagca	1920
gcatccccag ctgcaccgc acccgctcc ccagcagcac ctgcaccatc tgctccagca	1980
gcaagtccgg ctgctcctgc tcctgcatca cctgctgcac cagccccctc agctcctgca	2040
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gcaagccccg cggcaccagc accagcttca ccgcccgtc ctgcaccaag cgccccgct	2340
gcaagccctg cagcaccgc accagcctca ccagccgcac cagcacctc cgccccagca	2400

<210> 42

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1d/1c/1b(600), codon-optimized for E. coli

<400> 42

gccgcaccgg ctgccccagc ccctgccgca ccagcagctc ccgcccctgc agcccccgcc	60
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gcagcaccag ccgcgcctgc accggcagct cctgcagccc cggcaccggc agcacctgcc	180
gcagcaccgg cagccccagc ccagcagcg cctgccgctc cagcaccagc ggcaccggcc	240
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gccgctccgg cagcgccggc ccagcagca cctgcagccc ctgcaccagc agcgccagcc	420
gcggcgcccc cagctcccg acctgcggct cccgcagccc ctgcaccgc ggcgccagca	480
gccgcccctg cagcgccagc tcctgcagca cctgcagctc cagccccggc cgccccagct	540

eolf-seql

gcagctcctg cggccccagc acctgccgcc cctgccgcac cggctccagc cgccccagcc	600
gccgcgccag cggccccggc ccctgccgcg cccgctgctc ccgcccctgc tgccccagcc	660
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gcagccccag ccgcacccgc tccagcagct cccgcagccc cagcaccgc agcaccagcc	1800

<210> 43

<211> 2400

<212> DNA

<213> Artificial Sequence

eolf-seql

<220>

<223> Nucleotide sequence of PA#1i/1h/1g/1f(800), codon-optimized for
Cricetulus griseus

<400> 43

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eolf-seq1

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<210> 44

<211> 2400

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1e/1d/1c/1b(800), codon-optimized for
E. coli

<400> 44

eolf-seql

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gcagctccag ccgcaccagc accggcagcg cctgcagccc ctgctccggc agctcctgcc	180
gcagcaccgg cagcaccagc tccagcggca cccgctgccc ctgctcctgc agcaccggca	240
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gcagcgccctg cggctccagc gccagccgca ccagcggctc cggcaccggc agcccctgcg	360
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eolf-seql

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gccgccccctg cggctccagc acctgctgca ccggccgccc cggcgccgc tgcccccgca	2340
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<210> 45

<211> 4800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1i/1h/1g/1f/1e/1d/1c/1b(1600)

<400> 45

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gccgcacctg ctgccccagc tcccgtgcc ccagccgcgc cggccccgc agctccagcc	120
gcggcaccag ctgccccagc tccagcggcg cctgctgccc cggccccgc ggacccggct	180

eolf-seq1

gccgcgccccg cagctccagc gcctgctgca ccggctgctc cggcaccgc cgcgccagca	240
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gccgccccag cagccccggc tccggccgct ccgcggctc cagcaccagc agctccagcg	1560
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eolf-seql

gcggcgccccg cagctccccgc acctgcggct cccgcagccc ctgcacccgc ggcgccagca	1680
gccgcccctg cagcgccagc tcctgcagca cctgcagctc cagccccggc cgccccagct	1740
gcagctcctg cggccccagc acctgccgcc cctgccgcac cggctccagc cgccccagcc	1800
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eolf-seql

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gcagcacctg ctgcaccagc tcccgccgct ccagcagctc ctgccccagc tgcaccagcc	3180
gctgcacccg ccgctcccgc tcctgcagcc cccgctgcac cggccccctgc cgctcctgca	3240
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eolf-seql

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gccgcacctg ctgtccccgc cccagccgct ccagctgcc ctgccccagc tgccccgct	4680
gctgccccctg ccgctcctgc ccctgtgtg cctgccgcc ccgccccgc cgctcctgcc	4740
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<210> 46

<211> 571

<212> DNA

<213> Artificial Sequence

<220>

<223> Synthetic gene construct for seamless fusion of a
proline/alanine-rich sequence with IL1Ra

<400> 46

tctagataac gagggcaaaa aatgaaaaag acagctatcg cgattgcagt ggcaactggct	60
ggtttcgcta ccgtagcgca ggccgccaga agagcgcgct cttctgccccg accctctggg	120
agaaaatcca gcaagatgca agccttcaga atctgggatg ttaaccagaa gaccttctat	180
ctgaggaaca accaactagt tgccggatac ttgcaaggac caaatgtcaa tttagaagaa	240
aagatagatg tggtagccat tgagcctcat gctctgttct tgggaatcca tggagggaag	300
atgtgcctgt cctgtgtcaa gtctgggtgat gagaccagac tccagctgga ggcagttaac	360
atcactgacc tgagcgagaa cagaaagcag gacaagcgct tcgccttcat ccgctcagac	420
agtggcccca ccaccagttt tgagtctgcc gcctgccccg gttggttcct ctgcacagcg	480
atggaagctg accagcccgt cagcctcacc aatatgcctg acgaaggcgt catggtcacc	540
aaattctact tccaggagga cgagtaagct t	571

<210> 47

<211> 1150

<212> DNA

<213> Artificial Sequence

<220>

eolf-seq1

<223> Expression cassette encoding the PA#1b(200) sequence seamless fused to IL1Ra

<400> 47

tctagataac gagggcaaaa aatgaaaaag acagctatcg cgattgcagt ggcaactggct	60
ggtttcgcta ccgtagcgca ggccgccgct cctgctgccc ctgctcccgcc tgccccgcc	120
gccccgccc cagctgcccc cgctgccgca cctgctgccc cagctcccgcc tgccccagcc	180
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gagtctgccg cctgccccgg ttggttcctc tgcacagcga tggaagctga ccagcccgtc	1080
agcctcacca atatgcctga cgaaggcgtc atggtcacca aattctactt ccaggaggac	1140
gagtaagctt	1150

<210> 48

<211> 2662

<212> DNA

eolf-seql

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of pXL2

<400> 48

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cactcattag gcaccccagg ctttacactt tatgcttccg gctcgtatgt tgtgtggaat	180
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accctggcgt tacccaactt aatcgccctg cagcacatcc ccctttcgcc agctggcgta	360
atagcgagga ggcccgacc gatcgccctt cccaacagtt gcgcagcctg aatggcgaat	420
ggcgccctgat gcggtatttt ctctttacgc atctgtgcgg tattttcacac cgcatatggt	480
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gacgaaaggg cctcgtgata cgcctatttt tatagggtta tgatcatgata ataatggttt	720
cttagacgtc aggtggcact tttcggggaa atgtgcgcgg aacccttatt tgtttatttt	780
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tatgtggcgc ggtattatcc cgtattgacg ccgggcaaga gcaactcggc cgccgcatac	1140
actatttctca gaatgacttg gttgagtact caccagtcac agaaaagcat cttacggatg	1200
gcatgacagt aagagaatta tgcagtgctg ccataacat gagtgataac actgcggcca	1260

eolf-seq1

acttacttct gacaacgatc ggaggaccga aggagctaac cgcttttttg cacaacatgg	1320
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acgagcgtga caccacgatg cctgtagcaa tggcaacaac gttgcgcaaa ctattaactg	1440
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ttgcaggacc acttctgcgc tcggcccttc cggctggctg gtttattgct gataaatctg	1560
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cagaccccgt agaaaagatc aaaggatctt cttgagatcc tttttttctg cgcgtaatct	1920
gctgcttgca aacaaaaaaaa ccaccgctac cagcggtggt ttgtttgccg gatcaagagc	1980
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ggttggactc aagacgatag ttaccggata aggcgcagcg gtcgggctga acgggggggtt	2220
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gctggccttt tgctcacatg ttctttcctg cgttatcccc tgattctgtg gataaccgta	2580
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cagtgaagcga ggaagcggag aa	2662

eolf-seql

<210> 49

<211> 3670

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of pASK75-IL1Ra:

<400> 49

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aaaaatctag ataacgaggg caaaaaatga aaaagacagc tatcgcgatt gcagtggcac	180
tggctggttt cgctaccgta gcgcaggccg ctagccatca ccatcaccac catagctctt	240
ctgcccgacc ctctgggaga aaatccagca agatgcaagc cttcagaatc tgggatgtta	300
accagaagac cttctatctg aggaacaacc aactagttgc cggatacttg caaggaccaa	360
atgtcaattt agaagaaaag atagatgtgg taccattga gcctcatgct ctgttcttgg	420
gaatccatgg agggaagatg tgcctgtcct gtgtcaagtc tggatgatgag accagactcc	480
agctggaggc agttaacatc actgacctga gcgagaacag aaagcaggac aagcgcttcg	540
ccttcatccg ctgagacagt ggccccacca ccagttttga gtctgccgcc tgccccggtt	600
ggttcctctg cacagcgatg gaagctgacc agcccgtcag cctcaccaat atgcctgacg	660
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gaaaaatggc gcacattgtg cgacatTTTT tttgtctgcc gtttaccgct actgcgtcac	780
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tagtgggcca tcgccctgat agacggTTTT tcgccctttg acgttggagt ccacgttctt	1080
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eolf-seq1

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eolf-seq1

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eolf-seq1

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eolf-seq1

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<210> 52

<211> 3862

<212> DNA

<213> Artificial Sequence

eolf-seq1

<220>

<223> Nucleotide sequence of pXL2-PAS#1c/1b(400):

<400> 52

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eolf-seq1

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eolf-seql

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<211> 5520

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of pASK37-MP-PA#1d/1c/1b(600)

<400> 53

eolf-seql

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eolf-seq1

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eolf-seq1

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eolf-seq1

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<211> 3262

<212> DNA

<213> Artificial Sequence

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eolf-seql

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eolf-seq1

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eolf-seql

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gcagggtcgg aacaggagag cgcacgaggg agcttccagg gggaaacgcc tggatatctt	3000
atagtcctgt cgggtttcgc cacctctgac ttgagcgtcg atttttgtga tgctcgtcag	3060
gggggcggag cctatggaaa aacgccagca acgcggcctt tttacggttc ctggcctttt	3120
gctggccttt tgctcacatg ttctttcctg cgttatcccc tgattctgtg gataaccgta	3180
ttaccgcctt tgagtgaagt gataccgctc gccgcagccg aacgaccgag cgcagcgagt	3240
cagtgaagcga ggaagcggag aa	3262

<210> 55

<211> 2662

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of plasmid pXL1

<400> 55

gcgccaata cgaaaccgc ctctccccgc gcgttggccg attcattaat gcagctggca	60
cgacaggttt cccgactgga aagcgggcag tgagcgcaac gcaattaatg tgagttagct	120
cactcattag gcaccccagg ctttacactt tatgcttccg gctcgtatgt tgtgtggaat	180
tgtgagcgga taacaatttc acacaggaaa cagctatgac catgattacg ccaagcttgg	240
ctcttcaggc agaagagcag aattcactgg ccgtcgtttt acaacgtcgt gactgggaaa	300
accctggcgt tacccaactt aatcgcttg cagcacatcc ccctttcgcc agctggcgta	360
atagcgaaga ggcccgacc gatcgccctt cccaacagtt gcgcagcctg aatggcgaat	420
ggcgctgat gcggtatttt ctctttacgc atctgtgcgg tattttcacac cgcatatggt	480
gcactctcag tacaatctgc tctgatgccg catagttaag ccagccccga caccgcca	540
caccgctga cgcgccctga cgggcttggt tgctccggc atccgcttac agacaagctg	600
tgaccgtctc cgggagctgc atgtgtcaga ggttttcacc gtcacaccg aaacgcgcga	660

eolf-seq1

gacgaaaggg cctcgtgata cgcctatfff tataggftaa tgtcatgata ataatggfff	720
cttagacgtc aggtggcact ttfcggggaa atgtgcgcgg aaccctatt tgfffatfff	780
tctaaataca ttcaaatatg tatccgtca tgagacaata accctgataa atgcttcaat	840
aatattgaaa aaggaagagt atgagtattc aacattfccg tgfcgcccft attccctfff	900
ttgcggcatt ttgccttcct gttfffgtc acccagaaac gctggtgaaa gtaaaagatg	960
ctgaagatca gttgggtgca cgagtgggtt acatcgaact ggatctcaac agcggtaaga	1020
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tatgtggcgc ggtattatcc cgtattgacg ccgggcaaga gcaactcggf cgccgcatac	1140
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gcatgacagt aagagaatta tgcagtgtg ccataaccat gagtgataac actgcggcca	1260
acttacttct gacaacgatc ggaggaccga aggagctaac cgctftftftg cacaacatgg	1320
gggatcatgt aactcgcctt gatcgttggg aaccggagct gaatgaagcc ataccaaacg	1380
acgagcgtga caccacgatg cctgtagcaa tggcaacaac gttgcgcaaa ctattaactg	1440
gcgaactact tactctagct tcccggaac aattaataga ctggatggag gcggataaag	1500
ttgcaggacc acttctgcgc tcggcccttc cggctggctg gtttattgt gataaatctg	1560
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cccgtatcgt agttatctac acgacgggga gtcaggcaac tatggatgaa cgaaatagac	1680
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tcctftftga taatctcatg accaaaatcc cttaacgtga gtttfcgttc cactgagcgt	1860
cagaccccgf agaaaagatc aaaggatctt cttgagatcc tftftftctg cgcgtaatct	1920
gctgcttgca aacaaaaaaa ccaccgtac cagcggtggt ttgtttgccg gatcaagagc	1980
taccaactct ttttccgaag gtaactggct tcagcagagc gcagatacca aatactgttc	2040
ttctagtgtg gccgtagtta ggccaccact tcaagaactc tgtagcaccg cctacatacc	2100

eolf-seq1

tcgctctgct aatcctgtta ccagtggctg ctgccagtgg cgataagtcg tgtcttaccg	2160
ggttggactc aagacgatag ttaccggata aggcgcagcg gtcgggctga acgggggggtt	2220
cgtgcacaca gcccagcttg gagcgaacga cctacaccga actgagatac ctacagcgtg	2280
agctatgaga aagcgccacg cttcccgaag ggagaaaggc ggacaggat cccgtaagcg	2340
gcagggtcgg aacaggagag cgcacgaggg agcttccagg gggaaacgcc tggatatctt	2400
atagtcctgt cgggtttcgc cacctctgac ttgagcgtcg atttttgtga tgctcgtcag	2460
gggggcggag cctatggaaa aacgccagca acgcggcctt tttacggttc ctggcctttt	2520
gctggccttt tgctcacatg ttctttcctg cgttatcccc tgattctgtg gataaccgta	2580
ttaccgcctt tgagtgagct gataccgctc gccgcagccg aacgaccgag cgcagcgagt	2640
cagtgagcga ggaagcggag aa	2662

<210> 56

<211> 4240

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of pASK75-PA#1b(200)-IL1RA encoding the proline/alanine-rich sequence PA#1 seamless fused with IL1Ra

<400> 56

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gatagagtta ttttaccact ccctatcagt gatagagaaa agtgaaatga atagttcgac	120
aaaaatctag ataacgaggg caaaaaatga aaaagacagc tatcgcgatt gcagtggcac	180
tggctggttt cgctaccgta gcgcaggccg ccgccgctcc tgctgcccct gctcccgtg	240
ccccgcccgc ccccgcccca gctgcccccg ctgccgcacc tgctgccccca gctcccgtg	300
ccccagccgc gccggcccc gcagctccag ccgcggcacc agctgccccca gctccagcgg	360
cgctgtgtgc cccggcccc gcggcaccgg ctgccgcgcc cgagctcca gcgcctgtg	420
caccggctgc tccggcacc gccgcgccag cagctgcccc tgccggacca gctcctgtg	480
ccccgcggc acctgcacc gctgccccgg cggcagctcc cgccgcgcca gcccctgcag	540

eolf-seq1

ctcctgctgc acctgctcct gccgcccctg ctgctgcccc tgctgctcca gcccctgcag	600
caccggccgc tccagctcct gccgctcctg ccgctgcgcc cgctgctcca gccccagctg	660
cgccagcagc tcctgcacct gctgcccctg ccgccgcccc tgcggctcca gcacctgctg	720
caccggccgc cccggcgccc gctgcccccg cagcagcccc agccgcaccc gctccagcag	780
ctcccgcagc cccagcaccc gcagcaccag ccgcccgacc ctctgggaga aaatccagca	840
agatgcaagc cttcagaatc tgggatgtta accagaagac cttctatctg aggaacaacc	900
aactagttgc cggatacttg caaggaccaa atgtcaattht agaagaaaag atagatgtgg	960
tacccattga gcctcatgct ctgttcttgg gaatccatgg agggaagatg tgcctgtcct	1020
gtgtcaagtc tggatgatgag accagactcc agctggaggc agttaacatc actgacctga	1080
gcgagaacag aaagcaggac aagcgcttcg ccttcatccg ctcagacagt ggccccacca	1140
ccagttttga gtctgccgcc tgccccggtt ggttcctctg cacagcgatg gaagctgacc	1200
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gcccgtcctt ttcgctttct tcccttcctt tctcgccacg ttcgccggct ttccccgtca	1500
agctctaaat cgggggctcc ctttaggggt ccgatttagt gctttacggc acctcgaccc	1560
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tcgccctttg acgttggagt ccacgttctt taatagtgga ctcttggtcc aaactggaac	1680
aacactcaac cctatctcgg tctattcttt tgatttataa gggattttgc cgatttcggc	1740
ctattgggta aaaaatgagc tgatttaaca aaaatttaac gcgaatttta acaaaatatt	1800
aacgtttaca atttcagggt gcacttttcg gggaaatgtg cgcggaaccc ctatttggtt	1860
atttttctaa atacattcaa atatgtatcc gctcatgaga caataaccct gataaatgct	1920
tcaataatat tgaaaaagga agagtatgag tattcaacat ttccgtgtcg cccttattcc	1980

eolf-seql

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agatgctgaa gatcagttgg gtgcacgagt gggttacatc gaactggatc tcaacagcgg	2100
taagatcctt gagagttttc gccccgaaga acgtttttcca atgatgagca cttttaaagt	2160
tctgctatgt ggcgcggtat tatcccgtat tgacgccggg caagagcaac tcggtcgccg	2220
catacactat tctcagaatg acttggttga gtactcacca gtcacagaaa agcatcttac	2280
ggatggcatg acagtaagag aattatgcag tgctgccata accatgagtg ataactgc	2340
ggccaactta cttctgacaa cgatcggagg accgaaggag ctaaccgctt ttttgacaa	2400
catgggggat catgtaactc gccttgatcg ttgggaaccg gagctgaatg aagccatacc	2460
aaacgacgag cgtgacacca cgatgcctgt agcaatggca acaacgttgc gcaaactatt	2520
aactggcgaa ctacttactc tagcttcccg gcaacaattg atagactgga tggaggcgga	2580
taaagttgca ggaccacttc tgcgctcggc ctttccggct ggctggttta ttgctgataa	2640
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gcaccatact cacttttgcc ctttagaagg ggaaagctgg caagattttt tacgtaataa	3060
cgctaaaagt tttagatgtg ctttactaag tcatcgcgat ggagcaaaaag tacatttagg	3120
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acaaggtttt tcactagaga atgcattata tgcactcagc gcagtggggc attttacttt	3240
aggttgcgta ttggaagatc aagagcatca agtcgctaaa gaagaaaggg aaacacctac	3300
tactgatagt atgccgcat tattacgaca agctatcgaa ttatttgatc accaagggtgc	3360
agagccagcc ttcttattcg gccttgaatt gatcatatgc ggattagaaa aacaacttaa	3420

eolf-seql

```

atgtgaaagt gggcttataa agcagcataa cctttttccg tgatggtaac ttcactagtt      3480
taaaaggatc taggtgaaga tcctttttga taatctcatg accaaaaatcc cttaacgtga      3540
gttttcgttc cactgagcgt cagaccccgt agaaaagatc aaaggatctt cttgagatcc      3600
tttttttctg cgcgtaatct gctgcttgca aacaaaaaaaa ccaccgctac cagcggtggt      3660
ttgtttgccg gatcaagagc taccaactct ttttccgaag gtaactggct tcagcagagc      3720
gcagatacca aatactgtcc ttctagtgtg gccgtagtta ggccaccact tcaagaactc      3780
ttagcaccg cctacatacc tcgctctgct aatcctgtta ccagtggctg ctgccagtgg      3840
cgataagtcg tgtcttaccg ggttggactc aagacgatag ttaccggata aggcgcagcg      3900
gtcgggctga acgggggggtt cgtgcacaca gcccagcttg gagcgaacga cctacaccga      3960
actgagatac ctacagcgtg agctatgaga aagcgccacg cttcccgaag ggagaaaggc      4020
ggacaggtat ccggtaaagc gcagggtcgg aacaggagag cgcacgaggg agcttcagg      4080
gggaaacgcc tggtatcttt atagtcctgt cgggtttcgc cacctctgac ttgagcgtcg      4140
atttttgtga tgctcgtcag gggggcggag cctatggaaa aacgccagca acgcggcctt      4200
tttacggttc ctggcctttt gctggccttt tgctcacatg      4240

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<210> 57

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Amino acid sequence of a PA#3

<400> 57

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Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro Ala Ala Ala Pro
1           5           10          15
Ala Ala Ala Pro
                20

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<210> 58

<211> 18

<212> PRT

<213> Artificial Sequence

eolf-seq1

<220>

<223> Amino acid sequence of a PA#5

<400> 58

Ala Ala Ala Ala Pro Ala Ala Ala Ala Pro Ala Ala Ala Ala
1 5 10 15
Ala Pro

<210> 59

<211> 46

<212> DNA

<213> Artificial Sequence

<220>

<223> Upper nucleotide strand depicted in Figure 1C

<400> 59

tacgccaagc ttggctcttc tgccagaaga gtagaattca ctggcc 46

<210> 60

<211> 46

<212> DNA

<213> Artificial Sequence

<220>

<223> Lower nucleotide strand depicted in Figure 1C

<400> 60

ggccagtga ttctactctt ctggcagaag agccaagctt ggcgta 46

<210> 61

<211> 646

<212> DNA

<213> Artificial Sequence

<220>

<223> Upper nucleotide strand depicted in Figure 1D

<400> 61

tacgccaagc ttggctcttc tgccagccct gccgcacctg cgcccgcatac acctgcggca 60

cctgcacctt ccgccccggc tgcattctct gccgcacccg cgcctgccag cccagctgca 120

cctgccccaa gtgcgccagc agcatcccct gccgcgcctg cccccgctag tccagcggcc 180

eolf-seq1

ccagctccat ctgcaccagc tgctagccct gctgcaccag ctcttgcttc tcccgcagcc	240
ccagcgcctt ctgctcccg c agcctcacct gcggccccgg caccagcatc tccagcggca	300
ccagcacctt cggccccctgc tgctagccca gcagcacctg cgccagcctc accagctgct	360
cccgctccta gtgccccggc ggccctgcct gctgctcctg caccagcttc gccagcggca	420
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ccagcaccaa gcgcacctgc cgcctacca gcggcgccag caccgcccag cccagcagcg	600
cctgctccat ccgcaccggc ggccagaaga gtagaattca ctggcc	646

<210> 62

<211> 646

<212> DNA

<213> Artificial Sequence

<220>

<223> Lower nucleotide strand depicted in Figure 1D

<400> 62

ggccagtga ttctactctt ctggccgccg gtgcggatgg agcaggcgct gctgggctgg	60
cgggtgctgg cgccgtggt gaggcggcag gtgcgcttgg tgctggagca gctggggatg	120
caggagcagg agcggcaggc gatgcagccg gagcacttgg agcaggggcc gctggggacg	180
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ctggtgcagg agcagcaggc gaggccgccg gggcactagg agcgggagca gctggtgagg	300
ctggcgcagg tgctgctggg ctagcagcag gggccgaagg tgctggtgcc gctggagatg	360
ctggtgccgg ggccgcagggt gaggctgcgg gagcagaagg cgctggggct gcgggagaag	420
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cgggggcagg cgccgcaggg gatgctgctg gcgcacttgg ggcaggtgca gctgggctgg	540
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eolf-seql

<210> 63
 <211> 201
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Amino acid sequence depicted in Figure 1D

<400> 63
 Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro
 1 5 10 15
 Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala
 20 25 30
 Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro
 35 40 45
 Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala
 50 55 60
 Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala
 65 70 75 80
 Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro
 85 90 95
 Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala
 100 105 110
 Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro
 115 120 125
 Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala
 130 135 140
 Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala
 145 150 155 160
 Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro
 165 170 175
 Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala
 180 185 190
 Ala Pro Ala Pro Ser Ala Pro Ala Ala
 195 200

<210> 64
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Nucleic acid section depicted in Figure 6A

<400> 64
 gccgccagaa gagcgcgctc ttctgcccga

eolf-seq1

<210> 65
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleic acid section depicted in Figure 6A

<400> 65
tcgggcagaa gagcgcgctc ttctggcggc 30

<210> 66
<211> 10
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleic acid section depicted in Figure 6

<400> 66
gagtaagctt 10

<210> 67
<211> 10
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleic acid section depicted in Figure 6

<400> 67
aagcttactc 10

<210> 68
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleic acid section of the PA#1b(200) cassette depicted in Figure 6C

<400> 68

gccgctcctg ct

12

<210> 69

<211> 12

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleic acid section of the PA#1b(200) cassette depicted in
Figure 6C

<400> 69

ggcggctggt gc

12

<210> 70

<211> 12

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleic acid section depicted in Figure 6C

<400> 70

gccgctcctg ct

12

<210> 71

<211> 12

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleic acid section depicted in Figure 6C

<400> 71

agcaggagcg gc

12

<210> 72

<211> 14

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleic acid section depicted in Figure 6C

<400> 72
gcaccaccgc ccga 14

<210> 73
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleic acid section depicted in Figure 6C

<400> 73
tcgggcggct ggtcg 15

<210> 74
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Amino acid stretch depicted in Figure 6C

<400> 74
Ala Pro Ala Ala
1

<210> 75
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Amino acid stretch depicted in Figure 6C

<400> 75
Ala Ala Pro Ala
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<210> 76
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Amino acid stretch depicted in Figure 6C

eolf-seql

<400> 76

Ala Pro Ala Ala Arg

1 5

<210> 77

<211> 5470

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of pASK75-PA#1d/1c/1b(600)-IL1Ra

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aaaaatctag ataacgaggg caaaaaatga aaaagacagc tatcgcgatt gcagtggcac	180
tggctggttt cgctaccgta gcgcaggccg ctagccatca ccatcaccac catagctctt	240
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cggccgcgcc tgcagctcct gcaccggcgg ctccagcagc cccggcgccg gccgcacctg	1020
cggcgggcgcc cgcggcgccct gacccgcag cgcctgcggc accggcccca gcagcccctg	1080

eolf-seql

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ccgcagcgcc tgccgcccc a gccccgcag caccggcggc accagctccg gcggcgccgg	1200
cggcggctcc ggcagctccg gccccctgctg cgccggctgc gccggctccg gcggccccctg	1260
cggcggctcc ggccgcacct gcacctgccg cgccggctgc tccggccccg gctgccccag	1320
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eolf-seql

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<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1a(600)

<400> 80

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eolf-seql

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<210> 81

<211> 4179

eolf-seql

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of pASK37-MP-huLeptin

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eolf-seq1

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eolf-seql

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eolf-seql

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<210> 82

<211> 5958

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of pASK37-MP-huLeptin-PA#1d/1c/1b(600)

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eolf-seql

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eolf-seq1

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eolf-seq1

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eolf-seql

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<211> 5958

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of pASK37-MP-huLeptin-PAS#1f/1c/1b(600)

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eolf-seql

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eolf-seql

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eolf-seq1

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eolf-seq1

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<211> 4454

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<213> Artificial Sequence

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<223> Nucleotide sequence of pXL1-PAS#1f/1c/1b(600)

eolf-seql

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eolf-seql

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eolf-seql

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eolf-seql

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eolf-seql

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Val	Gln	Asp	Asp	Thr	Lys	Thr	Leu	Ile	Lys	Thr	Ile	Val	Thr	Arg	Ile				
				610					615					620					
Asn	Asp	Ile	Ser	His	Thr	Gln	Ser	Val	Ser	Ser	Lys	Gln	Lys	Val	Thr				

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eolf-seq1

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eolf-seql

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eolf-seq1

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eolf-seql

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<210> 87

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1j(200), codon-optimized for P.
pastoris

<400> 87

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eolf-seql

gctgccccag ccgccccagc tcctgctgcc ccagccgcac ctgcaccagc cgctccagct	180
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<210> 88

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1k(200), codon-optimized for P.
pastoris

<400> 88

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eolf-seql

<210> 89

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#11(200), codon-optimized for P.
pastoris

<400> 89

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<210> 90

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1m(200), codon-optimized for P.
pastoris

<400> 90

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gcagcccccg ctgccccctgc acccgagca ccagctgcac ctgctcctgc cgctcccgct	120
gctgcacctg ctgccccagc ccctgctgca ccagcagctc cagctcccgcc tgccccctgct	180
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eolf-seql

gctgctcctg ctgccccgc tccagcagcc cctgcagcac ctgctcctgc agccccgca	300
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gccgcacccg ccgcacctgc tccagctgct cccgcagccc ctgcacctgc cgctcctgcc	540
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<210> 91

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1n(200), codon-optimized for *S. cerevisiae*

<400> 91

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<210> 92

<211> 600

<212> DNA

eolf-seql

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#o(200), codon-optimized for *S. cerevisiae*

<400> 92

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<210> 93

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1p(200), codon-optimized for *S. cerevisiae*

<400> 93

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eolf-seq1

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<210> 94

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1q(200), codon-optimized for K. lactis

<400> 94

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<210> 95

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1r(200), codon-optimized for K. lactis

eolf-seql

<400> 95

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<210> 96

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1s(200), codon-optimized for K. lactis

<400> 96

```

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eolf-seql

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<210> 97
<211> 600
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide sequence of PA#1t(200), codon-optimized for H. sapiens
(HEK cells)

<400> 97
gccgctcctg ctgctccagc tccagctgca ccagccgctc cggcaccagc agcaccgct 60
gctgcccctg cagctcctgc tccggcagct cccgcagctc ctgcaccagc tgctccagct 120
gccgctccag ccgctcctgc tcctgccgct cctgcagcac ccgctccggc cgcaccagct 180
gctgctcccg ctgcaccgc tccagcagct ccggctgcac cagcaccggc tgctccagca 240
gcagcccctg cagcaccagc tccagctgct cccgcagctc cagctcctgc tgctccggcc 300
gctgctcctg ccgcaccagc accagccgct ccagctgcac ccgcaccagc tgcaccgccc 360
gctgctccag ctgctcctgc accggcagca ccagctgctc ccgctccggc tgctcccgt 420
gctgcaccgg ccgctccagc tccagcagct cctgccgctc ccgcaccagc agtcccgca 480
gcagcaccgg ccgcaccggc tccggcagca ccagccgcac cagctcccgc tgcaccggct 540
gccgcaccgg ctgcaccggc accagcagct ccagccgctc cggctcctgc agctccagca 600

<210> 98
<211> 600
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide sequence of PA#1u(200), codon-optimized for H. sapiens
(HEK cells)

<400> 98
gccgccccgg ctgctccgc tcctgcagca ccggcagctc ccgctccagc cgcaccagca 60

eolf-seql

gcagcaccgc cagctccagc accggctgca cccgctgcac ctgctccagc cgctccagca	120
gctgccccag ccgcaccagc accggcagct ccggctgctc ctgctccagc agcaccggcc	180
gcagctccgg ccgctccagc tcctgctgca cccgcagctc ccgcaccggc agctccagcc	240
gctgcaccag cagctccggc tccagctgct ccagcagcac cagctccagc cgcaccgct	300
gcagccccag ctgcaccagc accagccgca cctgcagctc cagcaccagc tgctccggca	360
gctgcaccgc ctgctccgc accagctgca ccagcagcac ccgcaccagc cgctccggcc	420
gcagctcctg cagctccgc ccctgcagct cctgccgctc ctgctccgc tgctcctgcc	480
gcagctccgc ctgctccgc tcctgccgca ccagctgcac ccgctccggc agcaccagca	540
gccgcaccgc cagcaccagc tccagcagct ccagctgctc ctgctcctgc tgcaccagct	600

<210> 99

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1v(200), codon-optimized for H. sapiens
(HEK cells)

<400> 99

gccgccccgg cagcaccgc accggctgca ccagccgctc cagcaccggc cgcaccagcc	60
gcagctccag cagcaccggc accggcagct cccgcagcac cagctccggc agctccagcc	120
gccgctccgg ctgcaccagc tccagcagca ccagctgctc cagctccagc agcaccgca	180
gctgctccag cagctccgc tccggccgct cctgctgcac cggctccagc tgctccggcc	240
gcagcaccag cagctccagc cccagccgct ccagcagctc ctgctccgc agcaccggca	300
gccgcaccag ctgctccggc tccggcagct cctgctgcac cagctccgc cgctccagct	360
gcagctccag ctgctccgc accggctgca ccggccgctc cggctccgc cgcaccagct	420
gcagcccctg ccgctcctgc accagctgca cccgctgctc cagctccggc tgctcctgca	480
gccgctcctg cagctccggc accagctgca cctgcagctc ccgctccagc tgctcctgca	540
gcagctccgc ctgcaccagc accagcagct cccgccgcac cggctccagc tgcaccagca	600

eolf-seq1

<210> 100
<211> 600
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide sequence of PA#1w(200), codon-optimized for B.
subtilis

<400> 100
gccgcaccgg ctgcaccggc accagctgcg cctgctgcac cagcaccggc agcaccagca 60
gccgcacccg ctgctcccg ctcctgctgcg ccagctgcac cagctccggc agcgccctgcg 120
gctgctccag cggctccggc tctgctgcg cctgccgctc cagctccagc agcaccagct 180
gcggctccgg ctgcaccggc tccagccgca ccagcagcac cggcaccggc agcgccagct 240
gcagcccctg ctgctccggc gcctgctgca ccggcagctc cggcaccagc ggccaccggc 300
gcagctccgg cagctccggc tctgctgct ccggcagcgc cagcgccagc agctcctgca 360
gctgctcctg ctgcacctgc accggctgct ccagcagcgc cggcaccggc tgcgcccggct 420
gcagctccag ctgctccagc gccagctgct ccggcagcac cggctccggc tgcgcccagc 480
gccgctcctg cagcgccctg accagccgct ccggcggctc ctgcaccagc cgcaccggct 540
gctgcacctg ctgcgcccgc gcctgctgct cctgctgcgc ctgctccggc agctcctgca 600

<210> 101
<211> 600
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide sequence of PA#1x(200), codon-optimized for B.
subtilis

<400> 101
gccgcacctg cagcaccagc tccggcagca ccggcagctc cagcgccctg ggctccggct 60
gctgctcctg cagctcctgc gccagctgcg ccagcagctc cagctccagc cgctcctgct 120
gcagcccctg cggcaccggc tccggcagct ccagcggcac cagcaccggc agctccggct 180

eolf-seq1

gcagcgccag cagctccggc accagcagct ccagcagcgc cagctcctgc ggcaccagcc	240
gcagcaccag ccgctccggc tccagctgcg cctgccgcac cggctccagc ggcaccggct	300
gcggcaccag cagcaccagc gcctgcagca ccagcagcgc cagcacctgc tgctccggca	360
gctgcaccgg ctgctccggc tccagcagct ccggctgcac cagcgctgc tgcgctgca	420
gcagcacctg cggctccggc accggctgca ccggcggcac cggctccagc tgctccagca	480
gcggctcctg cagctccggc tcctgccgca ccggctgctc cagctccggc tgcgccagcg	540
gcagcaccgg ctgcaccagc accagcggcg ccagccgcac cagcacctgc tgcgcctgct	600

<210> 102

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1y(200), codon-optimized for B. subtilis

<400> 102

gccgcaccgg ctgcgccagc acctgcagcg cctgccgctc ctgctccggc tgctccggct	60
gctgcaccag cggcaccagc accagcagcg cctgcggcac cggcaccagc cgcaccagct	120
gccgctccag ccgctccggc accggctgct ccggcagcac cagcaccagc tgcaccagcg	180
gcagcgcttg cagcgccagc tccggcagcg ccagcagcac cagctccagc tgcaccggct	240
gctgcccctg ctgcaccagc tccagccgct ccggctgcgc ctgctcctgc agcgccagct	300
gccgctcctg cagcaccagc gccagcggca ccggcagcgc ctgctccggc tgcaccagct	360
gccgcaccgg cagcacctgc accagcagct ccagctgctc cggctccagc ggctcctgca	420
gctgcgcctg cggctcctgc accagcggct ccagctgctc ctgcgcctgc cgctccagca	480
gcagctccag ctgcgcctgc gccagcagca ccggctgcgc ctgcaccagc ggctccggca	540
gcagcaccag ctgcgccagc gcctgcagct ccggctgctc cggcaccagc tgcgccagct	600

<210> 103

eolf-seql

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1z(200), codon-optimized for E. coli

<400> 103

```

gccgcacctg ccgcacctgc ccctgctgcc ccagctgccc ctgctcctgc cgcccctgcc      60
gccgctcctg ccgctcctgc tccagccgct ccagctgctc cagctcctgc tgctccagct      120
gctgccccag ccgccccagc tcctgctgcc ccagccgcac ctgcaccagc cgctccagct      180
gctgccccctg ccgcacctgc accagctgct ccagccgcac ctgcacctgc tgccccagct      240
gccgccccctg ccgcaccagc tcctgcagcc cctgccgctc cagccccagc agctccagct      300
gccgctcctg cagccccctgc ccctgccgca ccagctgccc ctgccccagc cgctcctgct      360
gccgccccctg ccgctccagc accagcagct ccagccgcac ctgctccagc tgctccagct      420
gccgcacctg ccgctccagc ccctgcagcc cctgcagccc cagccccagc cgctccagcc      480
gccgccccctg cagccccagc accagctgcc cctgcagccc cagctcctgc tgctcctgct      540
gcagcaccag ccgcaccagc accagcagca ccagccgccc ctgcaccagc cgcaccagca      600

```

<210> 104

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1aa(200), codon-optimized for E. coli

<400> 104

```

gccgccccag cagcaccggc tccagctgcc ccagccgcac cagcaccagc cgctccagcg      60
gccgcgcttg ccgctccgcg acccgcggtt ccggccgccc ctgcgcccggc ggcaccggcg      120
gcggcaccgg cggcacctgc acctgccgcc ccgcgggtc ctgctccgcg ggcgccagca      180
gcagcgccag cggcgcttg tcctgccgca ccagcagcac cagcaccgcg cgcgccagca      240
gcggccccctg cagctccgcg cccggcagcg cccgctgcgc cagcaccgcg tgctcccgcg      300

```

eolf-seq1

```
gcagcccccg cagctccggc ccctgcggct ccagctgcac cagcaccggc agcgccggcg      360
gcggcaccag ccgcacccgc accggctgcg cccgccgcgc cagcgccagc cgctccagct      420
gccgcgccgg cagccccggc ccccgctgcc cctgctgcac ccgcgcctgc agcaccggcg      480
gcagcccctg cggcacctgc acccgcggtt cccgctgccc ctgcacccgc agcgcccgcc      540
gccgcaccgg ccgctccggc acctgcagcg ccggctgcac cagcgccggc agctccagcg      600
```

<210> 105

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1ab(200), codon-optimized for E. coli

<400> 105

```
gccgcgcccg ctgcacccgc accagctgca ccagccgcac cggcaccggc ggccccagct      60
gcagcaccgg cagccccgc gccggccgc ccagccgcgc cggcaccggc tgctccggct      120
gcagcaccgg cagcgctgc gccagctgct cccgcagctc ctgctccggc ggcgctgca      180
gctgcaccgg cagctcctgc cccagcagcc ccggcggcgc cagcgccgc cgccccagct      240
gcagcccctg cagcgccggc acccgccgcc cccgcagcac ctgcgcccgc cgccccagct      300
gcggcaccgg ccgcacccgc cccggcggct ccagcagcac ctgctccagc agcaccagct      360
gcagcccctg cggcaccagc acccgcagcg ccagcggcac cagctccggc cgctcccgcc      420
gctgcaccag cctcaccggc gccggccgca ccagctgctc ccgccccagc cgctcccgcg      480
gcggcaccag cggcgccagc gcccgcagct ccggcagcac cggcgccggc tgctcctgcc      540
gccgcacctg ctgccccggc gcccgcgcc cccgccgctc ccgcgcccgc tgcacctgcg      600
```

<210> 106

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1ac(200), codon-optimized for E. coli

eolf-seql

<400> 106

```

gccgcgccag cggcgccagc tcctgccgcg cccgcagccc cagcgcccgc cgctccggcc      60
gccgcgcccc cggctcccg ccccgctgcg cccgccgctc cagcacctgc cgccccagcg      120
gcggcaccag ccgcgccagc acccgctgcg cctgcagcac ccgctccggc ggccccggcg      180
gctgctccag ccgcccctgc acccgctgct ccagctgcgc ccgccccagc cgccccggcc      240
gccgctccgg ctgcaccggc accggcagca ccggctgcgc cagccccggc tgccccggca      300
gctgctccgg cggcacctgc ccccgccgcg ccagctgccc ccgcaccggc agctccagcg      360
gcagccccgg cggcaccagc tccagcagcg ccagctgcgc ctgccccagc agcgccagcc      420
gctgctccag cagctcctgc ccctgctgcg cctgcggctc cggcgccagc tgctcctgct      480
gcagctccgg ccgccccagc accggcagcg ccagcagcac cggcgccagc tgcccctgcc      540
gccgcaccag cagcacctgc gccggcggct cccgcagcac ctgctccggc tgcccctgcc      600

```

<210> 107

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1ad(200), codon-optimized for E. coli

<400> 107

```

gccgcgcccc ctgcaccggc acctgctgcg ccggcggcgc ctgcacctgc agcaccagca      60
gcggccccgg cggctcccg ccccgccgccc ccggcagctc ccgcaccggc ggcgccctgcc      120
gcagctcccc ccgcaccagc gccagccgca ccagccgctc cggcccccg cggctccggca      180
gcagcccccg ccgctccagc gcctgctgca cctgccgcgc ctgcgcctgc cgcacctgcc      240
gctgctcccc ctgccccagc tccagccgct ccggcggcgc ccgcacctgc tgcccctgcg      300
gccgctcccc ctgcgcccgc gcctgctgct cctgcagcac cagctcccg cgtccggcc      360
gcagcccccg ctgccccggc gcctgcagct ccagcggcgc cggctcccg tcgcccggcc      420
gcagcccccg cagccccagc acctgctgct cccgctgcgc cggccccggc tgctccagct      480

```

eolf-seql

gcagctccag cggccccctgc ccctgctgct cccgccgcgc cagctcctgc cgctccagct 540
gcagctcctg ctgctcccgc gccggcagct ccggctgcac cggctccagc agctcctgcg 600

<210> 108

<211> 300

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1ae(100), codon-optimized for E. coli

<400> 108

gccgctcctg ctgccccctgc tcccgtgcc cccgccgcc ccgccccagc tgcccccgct 60
gccgcacctg ctgccccagc tcccgtgcc ccagccgcgc cggccccgc agctccagcc 120
gcggcaccag ctgccccagc tccagcggcg cctgctgccc cggccccgc ggcaccggct 180
gccgcgcccg cagctccagc gcctgctgca ccggctgctc cggcaccgc cgcgccagca 240
gctgcccctg cggcaccagc tcctgctgcc cccgcggcac ctgcaccgc tgccccggcg 300

<210> 109

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1af(200), codon-optimized for C.
glutamicum

<400> 109

gccgcgcccg cggctcctgc ccagcagcg cccgcggcac cagcaccggc ggccccggcc 60
gccgcccctg ctgcgcccgc gcctgcagct cccgccgcc cagccccgc tgcaccagca 120
gccgctccag ccgcaccggc gcccgtgca cctgccgctc cggcgccggc cgctccagcc 180
gctgcaccag ccgcgccagc accagctgca cctgcggccc ctgcgccagc tgcgccagca 240
gcggcaccag cagctccagc tccagctgcg cctgcggcac ctgccccggc tgccccggcg 300
gctgcgcctg cggccccctgc accagccgcc ccagctgcac ccgcccctgc ggcgccctgcc 360
gccgcacccg ccgcgcctgc ccagccgct ccggcggcac ctgccccagc tgctcctgca 420

eolf-seql

gcagccccctg ccgccccggc gccagccgca cccgccgcac cagcacctgc agcgccagct	480
gccgcgccag ctgcgctgc cccgcagcc cccgccgctc ctgctccagc cgcacccgca	540
gccgctccgg ctgctccagc cccagcagct ccagcggcac ccgccccctgc tgcaccggct	600

<210> 110

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1ag(200), codon-optimized for C. glutamicum

<400> 110

gccgctccgg ccgccccgc acccgctgct cccgcagcgc cggcgctgc ggcacccgca	60
gccgccccctg cagccccagc tccgcagcc cccgctgctc ctgctccagc tgcacccgcg	120
gctgcacccg ctgcaccggc cccggcggct cctgccgccc cagcgccggc ggctcccgt	180
gctgcacccg cggccccctgc gccggcagcc ccagcggcac cagcgctgc cgcaccggca	240
gccgccccag ccgccccagc gccagctgcg ccagcggctc cggccccagc tgcgccggca	300
gcggcacctg cagctccagc tcctgctgct cccgcggcgc ccgccccgc agcacctgct	360
gccgccccag ctgccccagc tccggccgcc cctgcggctc ctgctcctgc agcgctgct	420
gcggctcccg cggcgccagc gccggcggcc ccagcagctc cagctcctgc agcaccggca	480
gcggcccccg cggctccagc tcctgcagct ccggctgccc cagcccctgc cgcaccggct	540
gcagcgcccc cggctccgc tcctgcagca cctgcagcac cagcccctgc tgcaccggcg	600

<210> 111

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1ah(200), codon-optimized for C. glutamicum

eolf-seql

<400> 111

```

gccgctcctg cagcaccagc gccagcggct cccgccgcac cggcaccagc tgctcccgct    60
gcagcgccgg cggcaccgcg tccggctgcg ccggccgcgc ctgccccggc ggcgccctgca    120
gcagcgccctg ccgcacctgc tccagccgct ccagcggcgc ccgccccgcg ggccccagca    180
gcgggtccgg cggccccagc gcccgcagcc ccagccgcgc ccgcacctgc tgcgccggcc    240
gccgcacccg cggcaccggc gcccgcggcc cccgctgccc ctgcacccgc tgcccccgca    300
gccgctccag cagcaccagc accagcggct ccggcggcgc cggctcccgc tgcccccgca    360
gcagcgcccc cgcgccccgc gcctgccgca ccagcggcac cggcaccagc agcgcccgcg    420
gccgcgccag ctgcgcccgc cccagcggct cctgccgccc ccgcgccggc cgctcctgca    480
gctgcccctg ccgctccggc gccagccgct cccgccgccc ccgctcctgc ggctccggcc    540
gctgcgccgg ctgcccctgc accagcggct ccggccgctc cggccccgcg cgctccagct    600

```

<210> 112

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1ai(200), codon-optimized for C.
glutamicum

<400> 112

```

gccgctccag ctgcacccgc tcctgccgca ccggcggctc cagcaccgcg ggcacctgcc    60
gccgcacctg ctgcacctgc accggccgct cccgccgccc cggccccggc ggctccagcc    120
gctgcgcccc cagctcctgc cccgcagcc ccggcagcgc ccgcaccggc agccccctgcg    180
gcggcgcccc cagcaccagc tccggccgct cccgctgccc cggcaccggc tgccccagcc    240
gccgcacctg cggcgccggc gccggccgca ccggctgcgc ccgcgccggc agcccccgct    300
gcagcacctg ccgccccagc cccagccgct ccagccgctc ccgcaccggc tgcgcctgct    360
gcagccccag ccgcgccggc tccggcggcc ccggcggccc cggctccggc agccccagcc    420
gcagcccccg cagcgccagc gccagccgct ccggcagcac ctgcacctgc ggcgcccgcg    480

```

eolf-seql

gcggcacctg cagcgcctgc gcccgtgcc cccgcggccc ccgctcctgc cgcgccggcg 540
gcggcaccag ccgcccctgc cccagctgca ccggcagcgc ctgccccgc tgcgccagcc 600

<210> 113
<211> 600
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide sequence of PA#1aj(200), codon-optimized for P. patens

<400> 113
gccgctcccc ctgcccctgc tcctgctgcg cccgctgcac ctgcccctgc tgctcccgca 60
gctgctccag ccgccccgc tcccgctgca ccagctgctc ccgctcctgc cgctcccgct 120
gccgcacccg ctgcacctgc gcctgcggct cccgccgctc ccgccccgc tgcgcccgca 180
gccgcccccg cagccccgc accagcagcc ccagccgcac cagctccagc agccccagct 240
gccgcacctg ctgcacccgc tcctgctgct cccgcagcac cagcccctgc agtcccgct 300
gccgcgcctg ccgcccctgc cccgcagca ccagcagctc ccgccccagc tgcacctgca 360
gccgctccag cagccccagc ccctgccgct ccagctgctc ctgctccagc cgcaccagca 420
gccgcacccg ctgcaccagc acctgcagcg cccgctgcac cagcgccgc tgccccagct 480
gccgctcccc ccgcaccagc tcctgctgca cccgctgctc cagcaccgc cgctcccgcc 540
gctgctcctg ccgctcctgc tcccgagct cccgctgcgc ctgctccagc tgcaccagcc 600

<210> 114
<211> 600
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide sequence of PA#1ak(200), codon-optimized for P. patens

<400> 114
gccgcacctg ccgcaccagc cccgcagca cccgcagcgc cagctccagc agtccagcc 60
gccgcacctg ccgctccgc gccgctgct cctgccgcc ctgcccctgc tgcacccgct 120

eolf-seql

gcagctcctg ccgctcctgc acctgccgct cctgcagccc ctgctcctgc tgccccctgct	180
gccgctccag ctgccccctgc tcctgccgcg cctgctgccc cagcaccggc cgccccagca	240
gctgctcctg ctgcccccgcc accagcagct ccagccgcgc ctgcgcctgc tgcccccgct	300
gccgctcctg ccgctcctgc ccctgctgct cctgctgcac ccgctcccgc tgctcctgct	360
gctgcacccg ccgccccctgc tcctgcagct ccagccgctc ccgctccagc tgcaccagcc	420
gccgccccag ccgcgccagc gccagctgcc cctgctgcac ctgctcccgc cgctcccgt	480
gccgcccccg ctgcacccgc accagctgca cccgctgctc ccgccccctgc tgctcccgt	540
gcagctccgg ccgctcccgc acctgctgct cccgctgccc ctgcgcctgc cgctcccga	600

<210> 115

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1a1(200), codon-optimized for P. patens

<400> 115

gccgcaccag ctgctcccgc acctgcagca ccagccgctc ccgccccctgc cgctccagcc	60
gccgcaccag ccgccccagc ccctgcagca cccgcagcac ctgctcccgc agctccagcc	120
gcagccccag ccgctcctgc accagccgcc cctgctgcac cggctccagc cgcgcccgt	180
gctgcgcccg ccgctcccgc cccagccgcc ccagctgccc ccgctccagc tgctcccga	240
gctgcacccg ccgcacctgc acctgctgcc cccgctgcac ctgcacctgc cgccccctgca	300
gctgccccag ccgccccggc acccgctgcc cccgccgctc ctgctcctgc tgcaccagct	360
gccgccccctg ccgcccccgcc accagcggcc ccagcagccc ccgccccagc cgctccagct	420
gctgctcccg ccgcacctgc cccagccgca cctgccgccc cagctcccgc cgctcccgcc	480
gccgctcctg ctgcacccgc ccctgctgct cctgccgctc ccgctcccgc tgctcccgt	540
gccgctcccg ccgcccccgcc tcctgccgcc cccgccgcac cagcacctgc agctcctgcc	600

<210> 116

eolf-seql

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1am(200), codon-optimized for P. fluorescens

<400> 116

```

gccgcgccag cggcgccggc cccagccgcg ccggcagcgc cagcgcccgc cgcgccagca      60
gccgcgcctg cggcgccctg gcctgcggcc ccagcggcgc cggcgccagc ggcaccggca      120
gccgcgcccc cagcgccggc ccctgccgcg ccggcagccc ccgcgcctgc ggccccagca      180
gccgccccgg cggctcccgc gccggccgcc cctgcggcac cggcgccctg ggccccggcg      240
gccgcgccag ccgcgcctgc cccggccgcg ccggccgcgc cggcgcccgc cgcacctgcc      300
gccgccccgg ccgcgcgggc tccggccgcg ccagcggccc ctgcgcctgc agccccagcc      360
gcggccccgg cggcgcccgc accagccgcg cctgccgcgc ccgcgccggc cgcaccggca      420
gccgcgccgg ccgcgcctgc ccctgccgcc cccgccgcgc ctgccccagc agccccggca      480
gccgccccgg cagcgccctg gccagccgca ccggccgcgc cggcgccagc cgcaccagcc      540
gccgcaccgg ccgcccctgc gccagcggcg cccgcagcgc cggcgccctg cgcaccgcgc      600

```

<210> 117

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1an(200), codon-optimized for P. fluorescens

<400> 117

```

gccgcgcccc cagccccagc cccggccgcg cccgccgcac ccgcgcccgc cgcccctgct      60
gccgcgcccc ccgccccggc cccggccgct cccgccgcgc cggccccggc cgccccggcc      120
gccgcgcctg ctgcccctgc ccctgccgcg ccggccgcgc ccgccccagc ggcccctgcc      180
gccgctcccc ccgcacctgc acccgccgcc ccagctgcgc ccgcacccgc ggcgcccgcc      240

```

eolf-seql

```

gccgccccgg cagcgccccg gcctgccgcg ccggccgccc ctgcccctgc tgcgcccgcc      300
gcggccccgg ccgcacccgc gcccgcggcg cccgccgctc cagccccggc cgccccggca      360
gccgcgccag ccgctccccg cccagccgcc ccggctgcgc ccgcccctgc cgccccggcc      420
gcggctcccc ccgcgccccg gcccgccgcg cctgccgccc cagcgccccg cgcgcccgcc      480
gcagcgcccc ccgcgccagc ccccgccgcc ccagcagcgc ccgccccagc agccccggcc      540
gccgcgcccc ccgcgccccg accagccgca cccgccgccc cagcccctgc agcgccctgcc      600

```

<210> 118

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1ao(200), codon-optimized for P.
fluorescens

<400> 118

```

gccgccccag ccgcccctgc ccctgccgcc ccagccgcac ccgccccggc agccccagcc      60
gccgccgccc ccgcacccgc cccagcagca cccgctgcgc ccgctcctgc cgcgcccgcg      120
gccgcgcccc ccgcccctgc cccggctgcg cccgccgccc cagcgccagc tgcgcccgcc      180
gccgcccctg ccgccccagc cccggccgca cccgccgccc cggcccctgc cgcgcccgct      240
gccgcacccg ccgcacccgc cccggccgcc cctgccgccc ctgcacccgc cgcgccctgcc      300
gctgccccag ccgcaccagc cccagccgcg ccagccgcac ccgcccctgc agcccctgcc      360
gccgcgccag ccgcgccccg cccggccgcc ccagccgccc ccgctcccgc cgccccagcc      420
gccgcgcccgg cagccccagc cccagccgcc cctgcagcac ccgcacccgc cgcgcccgcc      480
gccgccccag ccgcgccccg acccgccgcc cctgccgctc ctgccccagc cgccccagcc      540
gccgcaccag ccgcccctgc cccggccgcg cccgctgcgc ccgccccggc cgcacccgcg      600

```

<210> 119

<211> 600

<212> DNA

<213> Artificial Sequence

eolf-seq1

<220>

<223> Nucleotide sequence of PA#1ap(200), codon-optimized for T. thermophila

<400> 119

```

gccgctccag ctgctccggc tcccgtgct cctgcagctc ccgctccagc tgctcctgca    60
gcagctcctg cagccccgc tccagctgca ccggctgcac cagctcctgc tgctcctgct    120
gctgcccctg ctgctccgc ccctgctgct cctgcagctc cggcacctgc tgctcctgct    180
gccgcacctg cagctccagc cccagctgct cctgctgcac ctgctcctgc agcaccagct    240
gctgcacctg ctgcaccgc tccagctgct ccagctgctc ctgcccctgc agctccagct    300
gccgcacctg ccgctccagc tcctgcagct cccgccgcac ctgctccagc agtcccgcga    360
gctgcacctg ctgctcctgc cccagcagct cctgcagctc cagctccagc agtcctgcc    420
gctgcacctg ctgctccagc accagctgca ccagcagctc ctgctcctgc agtcctgcc    480
gcagctcctg ctgctccgc accagctgca cctgccgctc ccgctccagc agcaccagct    540
gccgctccag ctgctccgc cccagctgct ccagcagctc cagcaccagc agctccagct    600

```

<210> 120

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1aq(200), codon-optimized for T. thermophila

<400> 120

```

gccgctcctg ctgcaccagc acctgctgct cctgcagcac ccgctcctgc tgcccctgct    60
gcagctcctg cagctcctgc tcctgctgct ccggcagctc ctgctccgc tgcccctgct    120
gccgctcctg cagctccgc acctgctgct ccagctgccc cagcacctgc tgcccagct    180
gcagctcctg cggcccctgc tcctgcagct ccggctgctc ctgctcctgc cgcaccagct    240
gctgctcctg cagccccagc tcctgctgcc ccagccgctc cagctccagc tgcaccagct    300
gcagcacctg ctgctccggc tccagctgct cccgcagcac ctgctcctgc tgcaccggca    360

```

eolf-seq1

gctgctcctg cagctcctgc accagctgct cctgccgccc ctgcacctgc tgcacctgct	420
gctgcacctg cagctcctgc tccggctgca cctgctgccc ctgcaccagc tgcacctgct	480
gcagcacctg ccgctcctgc cccagctgcc cctgctgctc ctgctccagc tgcacccgct	540
gctgcacctg ctgcgccagc tcctgctgca cctgcagccc ctgctcctgc tgcacctgct	600

<210> 121

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1ar(200), codon-optimized for T. thermophila

<400> 121

gccgctcctg cagctccagc acctgctgca ccagctgccc ctgccccagc tgctcccgct	60
gctgctccag ctgcacctgc acccgctgca ccggctgctc cggctcctgc tgctcctgcc	120
gctgctcctg ctgccccgc tcctgctgca cctgccgcac ctgctcctgc ggctccagcc	180
gctgctccag cagctcctgc tccagccgca ccagcagcac cagctcctgc agcacctgca	240
gctgctcctg cggcacctgc tccagctgct ccagcggctc ctgcacctgc tgctcccgca	300
gctgctccag ccgcccctgc tcctgctgca cctgctgctc cagcccctgc agctcctgcc	360
gccgctcctg cagcccctgc tccagcagcc cctgccgctc ctgctcctgc agcgcctgca	420
gctgcaccag ccgctcctgc ccctgctgct ccagcagcac ctgctcccgc cgctccagct	480
gccgctccag cagctccagc tcctgctgct ccagcggcac cagctccagc tgctcctgct	540
gctgctcctg ctgcacccgc acctgcagca ccagcagctc ccgctcctgc tgctcccgct	600

<210> 122

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1as(200), codon-optimized for T.

eolf-seql

thermophila

<400> 122

```

gccgcacctg cagctccagc acctgccgct cccgccgcac ctgctcctgc cgctcctgct    60
gccgctccag cagcacctgc tcctgcagct ccagcagctc ctgccccctgc tgctcctgcc    120
gcagctcctg ccgcacccgc tcccgctgct ccagctgctc ctgctccggc tgctccagct    180
gctgctcctg ctgccccctgc tcctgctgct cctgaggctc cagcacccgc agtccccgcc    240
gccgctcctg ctgctccgc acccgctgct cctgccgctc cagcacctgc tgctcctgct    300
gcagctcccg cagctcctgc gcctgctgct cctgctgcgc ctgctccgc tgctccagca    360
gcagctcctg ctgctccagc ccctgctgct cccgctgctc ctgcacctgc agctcctgca    420
gctgccccctg cagctccagc accagctgct cctgccgctc ccgctcctgc agctcctgcc    480
gctgcaccag ctgcacctgc accagctgcc cctgctgcac ctgcacctgc cgctcctgca    540
gcagctcctg ctgcacccgc ccctgctgct ccagctgcac ccgctcctgc tgctcctgca    600

```

<210> 123

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1k(200), codon-optimized for E. coli

<400> 123

```

gcctctcctg cagctccggc cccagcttca ccagccgctc cagccccatc tgcgccggcc    60
gcctcacctg cagcaccagc ccctgcgtcg cccgccgcgc ctgcgccctc agccccagca    120
gctagccctg ccgcacccgc cccagcaagt cctgctgctc ctgccccctc tgccccggca    180
gcttcaccgg cagccccctgc accagcttcc cccgcagccc ctgccccagc tgcacctgca    240
gctagtctg cggccccagc accagcgtct ccagctgcgc ccgcgccttc agcaccagca    300
gcttctccgg ccgctccgc tcccgctagc cctgcagctc cagctccctc agcgcccgca    360
gcaagccctg ccgcaccggc ccctgcctct cctgctgctc ccgccccgtc cgcacccgca    420
gcctcaccag ccgctcctgc tcccgcttcg ccagccgctc ccgccccctc cgcgcctgca    480

```

eolf-seql

gcttctcccg ccgctcctgc tccggcctct cccgcggcgc ctgctccttc tgccccggcc 540
gcgtccccctg ccgcacctgc ccctgcgagc cctgcagccc cagccccgag cgctcctgcc 600

<210> 124

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1l(200), codon-optimized for E. coli

<400> 124

gccagcccag cagctcccg cccggcatca cccgctgctc cggccccgag tgctccagct 60
gcttctcctg ccgcacccgc ccctgcaagc ccggcagccc ccgcaccctc cgcgccggcc 120
gcgtcaccag ccgctcctgc acccgcgta ccagcggcac cggcaccctc tgcgcccgcc 180
gcatcaccag cagcaccggc gcctgcatcc ccagcagcac ctgcaccaag cgccccgcc 240
gcctccccgg ccgcccctgc accggcaagt cctgcagcac ccgcgccttc agctccggcc 300
gcctccccag cagctcccg accagccagc ccagccgcac cagcgccgta tgcaccagcc 360
gcgagcccag ccgcgcctgc accggccagc cctgccgccc cagccccctc tgcgcccga 420
gcctcccctg cagctcctgc cccggccagt ccagccgccc ccgcgcccag tgcacctgca 480
gcatcaccag cggctcctgc acctgcatct cccgcagcac ccgctccgta agcccctgca 540
gccagccctg ccgcgccagc acctgcgtca ccagccgccc cggccccgag tgcacctgca 600

<210> 125

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1m(200), codon-optimized for E. coli

<400> 125

gcctcgcccg ccgctccagc accggcaagt ccagctgctc ctgccccag cgcacctgcc 60
gcatcgccag ctgctccgc cccggcctct ccagctgccc ccgccccgta cgccccgcc 120

eolf-seql

```

gcaagtccag cagccccagc cccagcctca ccggccgccc cagcaccagc tgcgcctgcc      180
gcttcaccag cggcgccagc accagcgtca ccagcggccc cagcgccatc tgcacctgcc      240
gcaagcccag ccgcaccagc tccagcatct ccagccgcac ccgccccgag cgctccagca      300
gcttcaccag ccgcaccggc cccggcatca ccagcagcac ccgcaccctc tgcaccagct      360
gcttctccgg ccgcccctgc tccggcttcc ccagctgccc cggccccgtc cgcccctgca      420
gcaagcccag cagctcccg cccagcgtct cctgcagcac ctgctcccag cgcacctgct      480
gcgagtccag ccgccccagc accagcttca ccagctgccc ccgcaccaag cgccccagca      540
gctagtccag cagccccgc tcccgcgtct ccggctgcac cggccccctc tgctccggct      600

```

<210> 126

<211> 300

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1n(100), codon-optimized for E. coli

<400> 126

```

gccagtccgg cagcgccgc tccagcaagt cccgctgcac ccgcacctag cgccccggca      60
gcttccccgg ctgcgcctgc gccagcctct ccggctgccc cagcgccgtc cgcaccgcg      120
gcgtcaccag cagcccctgc gcctgcttcc ccagcagccc ctgcaccgtc agcgccagca      180
gcatcacctg ctgccccgc acccgcaagt cctgccgcac cggccccctc agcccctgct      240
gcctctccag ccgcgccagc acccgcgctc cccgctgcgc ctgccccag cgcacctgca      300

```

<210> 127

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1o(200), codon-optimized for P.
pastoris

<400> 127

eolf-seq1

gcctcaccag ccgcacccgc cccagctagt cccgcagccc ccgctccctc tgctccagca	60
gccagtccag ccgcaccagc acctgcaagt ccagctgcac ccgcaccttc tgcacctgcc	120
gcctctcccg ctgctccagc cccagcctca cctgctgccc ctgctccatc cgcacctgcc	180
gcatctcctg ccgccccgc acctgcttcc cccgctgcac ccgcccctag tgctcctgca	240
gcatcaccgg ctgccccagc ccctgcatcc ccagctgctc cagcccctag tgccccgct	300
gctagtcccg ctgcaccagc ccccgcaagt ccagctgccc ccgccccatc tgctcccgcc	360
gcctcccccg cagctcctgc tcccgcttct cctgccgccc cagcccctag tgcacctgct	420
gcctcacctg cagctccagc acctgcctct ccagcagccc cagcaccag tgctccgct	480
gctagtcctg cagctccgc accagcttca cctgccgcac ccgcaccag tgctcctgct	540
gcatcaccag ctgctccgc accagcctcc ccagcagcac cagctcccag tgcacctgct	600

<210> 128

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1p(200), codon-optimized for P.
pastoris

<400> 128

gcctctcctg ctgcacccgc tcccgcatca cctgcagcac ctgctcccag tgctccagca	60
gcctcacctg ccgctccagc ccctgccagt cctgccgctc cagctcccag tgctcctgct	120
gcttctccag ccgctccagc tccagcttcc cctgcagctc ccgctccctc agctcctgca	180
gcatctccag ccgcaccagc ccctgcttct cccgcagcac ccgcaccttc cgcaccagcc	240
gcctcccccg ctgcacccgc acctgcttcc ccagcagcac ctgcacccag tgctcccgca	300
gcatcaccag cagccccagc tcctgcttca cccgccgcac cagccccctc cgctcctgct	360
gcttctcctg cagctccgc tccagcttca cccgctgcac ctgccccctc cgcacccgca	420
gcctcaccag ctgcaccagc acccgcttct cctgcagcac ccgccccctc tgctcccgct	480
gcttctccag ccgcaccagc tcctgcatca cctgcagctc ctgccccag tgctcccgca	540

eolf-seql

gcttctcctg cagctcctgc tccagctagt cccgctgcac ctgcccccttc cgcacctgca 600

<210> 129

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1q(200), codon-optimized for P. fluorescens

<400> 129

gcctcgccccg cagccccagc gcccgcctcc cctgccgccc ctgcccccaag cgccccggca 60

gccagccccgg ccgcaccggc cccagcaagc ccagccgcac cagcccccttc cgccccggcc 120

gcctcccctg cagcgcccg cccggcctcg cccgccgccc cggcgccgag cgcgcccgcc 180

gcctcccctg ccgctcccg ccccgcgagc cctgcagccc cggccccgtc cgccccagcc 240

gcctcccctg ccgcgcccgc cccagctagc cccgcggccc cggcccccaag cgctcctgcc 300

gctagccctg ccgccccggc gcccgccagc cctgccgctc ccgcccccaag tgctcccgcc 360

gcgtccccgg ccgccccggc cccggcctca cccgcagctc cggcccccttc cgcgcccgcc 420

gcgagccccg cagccccggc tcctgccagc cccgccgccc ctgcaccgtc ggcgcccgcc 480

gcctccccag ccgcccctgc cccggccagc cccgccgccc cggcaccgag cgcgccagcc 540

gcttcgccccg ccgcgccagc gcctgcctcg cccgccgcgc ccgcccccttc cgcccctgcc 600

<210> 130

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1r(200), codon-optimized for P. fluorescens

<400> 130

gcctccccag ccgcgcccgc gcccgctagc cccgcagcgc ccgccccgtc ggcccctgcc 60

gcgtctcctg ccgcgccagc cccggccagt ccagccgcgc ccgccccgtc cgcgccggca 120

eolf-seql

gcctcgccag ccgcccctgc acccgcaagc ccggccgcac ccgccccgag cgcaccggca	180
gcctcaccag ctgccccagc cccggcatcc gccgccgctc cagccccatc cgctcccgcc	240
gccagtccgg ccgccccggc tcctgcatcg cccgcagccc ctgccccgag tgcgccagca	300
gcgagccccg ccgcccctgc gcccgccagc ccagctgccc ccgcgccgag tgcgccgca	360
gcgtccccgg cagccccggc gcccgcctca cccgccgccc cagccccaaag cgcaccgct	420
gcgtcgcccc ccgcacctgc tcccgctcc cccgcagctc ccgccccaaag tgcccctgct	480
gcgagtccgg ctgcaccggc cccagcgagc ccggcggccc cggccccgag cggcccctgcc	540
gcaagcccag ccgccccgc tcccgcatcc ccagccgcgc cggccccgtc cgctccggcc	600

<210> 131

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1s(200), codon-optimized for P.
fluorescens

<400> 131

gcctcaccag cagctccgc gcccgcctcg cccgccgccc cggcccctag cggcccggcg	60
gccagccccg ccgcgcctgc cccggcctcg cccgcagccc cagcgccaag tgcgccgcc	120
gccagccccg ccgccccagc gcccgcctcg cccgccgccc cggccccaaag tgctcccgcc	180
gcctccccgg ccgcccctgc gccagccagc cccgcagccc cggccccgtc ggcaccagcc	240
gcctctccag ccgcgcccgc cccggctagc cccgcagccc cagccccgtc cgcccctgcc	300
gcgtcccctg cagccccagc ccctgcgagc cctgccgcac ccgccccgtc cgcgccgcc	360
gcttcgccgg cagccccggc cccggcgctc cccgccgccc cagccccgag tgccccggcc	420
gcgagccccg ccgccccgc cccagcctcg cccgcggccc ctgcaccatc cgcaccggcc	480
gccagcccag cggcgcccgc accggcctcc cccgcagccc ctgcgcccag tgccccggca	540
gctagcccag ccgcgcccgc cccagcgctc cccgccgcgc ctgccccaaag tgccccgcc	600

eolf-seq1

<210> 132

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1t(200), codon-optimized for C.
glutamicum

<400> 132

gcctccccgg cggcaccagc accagcgagc ccagcagcac cagcgccgtc tgcacctgca	60
gcgtctcctg ccgctccagc tccggcaagc ccggccgcac ctgctccatc tgctcccgcg	120
gcatccccag ctgcgccagc cccagcttct cccgctgcac cggctccctc cgcaccagcc	180
gcttccccag cagctccagc tccagcatct cccgctgcac ctgcaccgtc agcacccggt	240
gctagccccg cggcgccagc tcctgcgtcc ccggcagctc cagcgccatc cgctcctgcg	300
gcatcccctg cagctccagc acctgcttca cctgctgcac cagccccaag tgctccggct	360
gcatcaccag cagctcctgc accagcgtct cctgcggccc cagcaccatc cgcgcccgca	420
gcttccccag ctgcgcctgc accagcctcc cccgctgcgc cagcgccatc agcacctgcc	480
gcttctccgg ctgctccagc gcctgcctcc ccagctgcac ccgctccatc ggctccggct	540
gcttcacctg ccgcaccagc cccagcgtca cctgcagctc ctgccccatc tgccccagct	600

<210> 133

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1u(200), codon-optimized for C.
glutamicum

<400> 133

gcctccccag cagcgccgc tccggcatct ccagccgctc cggcccctag cgctccagct	60
gcatctcctg ctgcgcctgc ccctgctagc cctgctgctc ccgcaccttc ggctccggca	120
gcttcgccag ccgctccagc tcccgcctcc ccggccgctc cagcaccctc tgctccagct	180

eolf-seq1

gcctctccag cagcaccggc accagcttcc cccgcagccc cggctccaag cgctcctgct	240
gcaagtcctg ccgcacctgc gcctgcgtct ccagctgcac cagctcccag cgccccagcc	300
gcttcccctg ctgcacctgc gccggctagt cccgctgcac ccgctccctc cgccccctgca	360
gcatcgccag ccgccccctgc acccgcatct ccggcagcgc ctgctccatc ggctcctgcc	420
gcctccccgg cagctcctgc tccgcctcc cccgcggcac ctgctccgag tgccccagct	480
gccagcccag ctgctccagc tcctgcctcg cctgctgctc cagccccatc cgcaccagct	540
gccagtccag cggcccccgcc accagcaagc cctgccgcgc cggcaccagc tgctccagcg	600

<210> 134

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1v(200), codon-optimized for C.
glutamicum

<400> 134

gcctccccag ctgctccagc accagcctct cctgcagcac cagcgccatc cgctccggcc	60
gcctcccctg cagcacctgc tcctgccagt cctgctgcac cggccccgag cgcacccgca	120
gctagcccag cagcacctgc acctgcctca cctgcggcgc ctgctccctc cgccccagct	180
gcatctccag ccgcgcccgc tccagcttca ccagctgcac cagcaccgtc tgctccggca	240
gccagccctg ctgctcctgc gccagcatct cccgctgctc cggcgccatc tgcacccgcc	300
gctagtccag ccgcaccagc gcctgcaagc cccgcagcac ccgctccttc cgcacctgcg	360
gctagcccag cagctcctgc tccagcgtcc ccagccgccc ctgcaccaag tgctcctgct	420
gccagcccag ctgccccagc acctgcgagt ccagcagccc ctgcaccgag tgcaccagct	480
gcttcccctg ccgctcccgcc accggcttcc ccggcagcac cagctccatc agcgctgca	540
gcaagtccag cagctccggc cccagctagt cctgcagctc ccgccccgtc agcaccagca	600

<210> 135

<211> 600

eolf-seq1

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1w(200), codon-optimized for *P. patens*

<400> 135

```
gcctctcccg cagccccagc gcccgcattct cctgccgctc ctgctccttc cgctcccgca      60
gctagtccag ccgccccagc tcccgctagt cctgccgccc cagctccgag tgcccccgcc      120
gcttctcccg cagcaccgac cccagcgtca cctgccgctc cagccccctc agctcctgcc      180
gcaagccctg ctgctcctgc tcccgcttct cctgccgcac ccgcaccttc tgcccctgct      240
gcatcaccgg ctgctcctgc acccgctgtt ccagcagcgc cggcacctag cgctccagcc      300
gcatcgcccg ccgctcctgc acctgctagc ccggctgccc ctgccccctc agtcccgct      360
gcaagtccag ctgcaccagc ccccgctgtt cctgcagctc ctgccccctc tgctccagcc      420
gcctctccag ctgccccgac accagcattt ccagctgcgc cggccccctc tgctcctgca      480
gcatcaccag cagctcctgc tcccgctatt ccggctgccc ctgctcccag cgcacctgca      540
gcatcgccag ccgccccagc ccccgcgagc cccgccgctc ccgctccctc tgctccagct      600
```

<210> 136

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1x(200), codon-optimized for *P. patens*

<400> 136

```
gccagccccg ctgctccgac tccagcttca cctgcagctc cagctcccag tgcccccgcc      60
gcctccccctg ccgctccagc gcccgcgtcc cccgcagctc cagcaccaag cgcacctgct      120
gccagtccag cagcaccgac tccggcgagc ccagctgcac ccgctccatc cgcacctgct      180
gcaagtccag ccgcacctgc gcctgctagc cctgctgcac ccgccccgct tgccaccagca      240
gcgagccccg cagcaccgac cccggcttcc cccgcagcac cagctccatc ggctcctgca      300
gcttccccgg cagccccgac gccagcatca cccgcagccc ccgctccctc cgccccagcc      360
```

eolf-seq1

gcgagtcctg cagcgcccgcc gccagcttct ccagccgccc ctgctccatc agcccccgct	420
gcctcgccag ctgcaccagc accagcatca ccggccgcac cagccccgtc tgcccccgca	480
gcatcaccag cagcacctgc tccagcatcc ccagccgctc cagcaccttc ggccccagca	540
gctagcccgg cagctcccgcc cccagccagc cctgctgctc ctgcccctag cgccccctgct	600

<210> 137

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1y(200), codon-optimized for *P. patens*

<400> 137

gccagtcctg ctgcacctgc ccctgcgtct ccagctgctc ccgctccgag tgctcctgca	60
gcgtctcctg ccgcaccagc cccagcgctc cctgccgcac ccgcgccttc tgctccagct	120
gcttcaccag ctgctcctgc gcccgcata cccgcagcgc cagccccatc cgcacccgca	180
gcttccccgg ccgctccagc accagcatct cccgcagcgc ccgctccgtc ggctcctgct	240
gcctctcctg cagcgccggc tccagcatca cctgctgctc cggctccgtc ggccccggct	300
gcttcgcccc ccgctccagc ccctgctagc ccagccgcac ctgccccgag cgcacctgca	360
gcaagcccgg ccgcacccgc ccctgcttct ccggccgccc ccgcaccgtc cgctcctgct	420
gctagtcagg ctgctccggc ccctgcatcc cctgccgcgc ccgctccttc ggacccggcc	480
gcgtcaccgg ctgcaccagc ccccgcttcc ccggcagctc ccgcgccttc agcgccagcc	540
gctagccccg ccgcacccgc tccagcttct cccgctgctc ctgctccgtc cgcacctgct	600

<210> 138

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1z(200), codon-optimized for *K. lactis*

eolf-seql

<400> 138

```
gcctctccgg ctgcacccgc cccggctagt ccagccgccc cggctccttc agcaccagca      60
gcttcaccag cagcaccggc tcccgctctg ccagccgccc ctgctccttc cgccccggct      120
gcaagtccag ccgcccctgc acccgccagt cccgcagctc cagctccatc agcaccagcc      180
gcatcgccgg ctgcaccagc ccctgcatcg ccggcagccc cagccccgtc agctccggct      240
gccagtcctg cagctccggc ccccgcttca cccgccgccc ccgcaccttc cgccccagcc      300
gcaagtcctg ccgccccagc accagctagt ccggctgctc ccgccccatc cgctccagcc      360
gcttcgccag ctgccccgc ccccgcaagt cccgcagccc ccgcaccttc tgcacccgcc      420
gcttcgccgg ccgcaccggc acccgcttca cccgcagcac ctgcaccgag tgctcccgcc      480
gcatccccctg cagcaccagc acctgcaagt ccagctgcac ctgccccctc agcaccggct      540
gcatctcccc ctgcaccggc tccggcatcg cccgccgcac ccgcacctag tgctccagct      600
```

<210> 139

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1aa(200), codon-optimized for K. lactis

<400> 139

```
gcctctccgg ctgcaccagc tcccgcatct ccagcagctc ccgccccgtc ggacaccggca      60
gcctctccgg ccgcacctgc cccagcctcc cctgcagcac cagctcccag tgctccggct      120
gcatcacctg ctgcaccagc acctgcatca cctgccgccc cggcaccgtc agccccggct      180
gcatctcccc ccgccccagc cccagcctcg ccagcagccc ctgctcccag tgcacctgct      240
gcctcacctg cagctcctgc acccgcaagt ccggcagcac ctgccccctc tgccccctgca      300
gctagtccgg ccgctcccg cccagccagt cccgccgcac ctgcaccaag tgctcctgct      360
gcttctcctg ctgcacctgc tccggcctca cccgccgctc cggctccatc ggccccctgca      420
gcatcaccag ctgcacccgc tcccgcttcc ccggccgcac cagcaccatc tgctcctgca      480
```

eolf-seq1

gcatcaccgg ccgcacctgc accagcaagt ccagccgcac ccgccccatc tgcaccggca 540

gcatcaccgg ctgcccctgc tccagcttcg ccagcagcac ccgccccatc ggctcctgct 600

<210> 140

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1ab(200), codon-optimized for K. lactis

<400> 140

gcctccccgg cagctccagc ccctgcctca ccagctgccc cggccccatc ggcccccgca 60

gcctctcccg ccgctccgc ccctgctagt cctgcagctc ctgctccatc cgcacctgca 120

gcttcaccag ccgcaccagc tccggcctcg ccagccgcac cagcaccgtc cgccccctgct 180

gcttcaccag cagccccctgc cccggcttcc cctgcagcac ctgctccttc ggctccagct 240

gcctctccgg cagctccggc tcctgcctcc cctgccgctc cagctccgtc agcaccgct 300

gcaagtcctg ccgcacccgc tcccgctctt ccggcagccc cagctccatc cgcaccagca 360

gctagtccgg cagcaccggc tccagctagt ccagctgcac cagccccctc cgccccagca 420

gcttcaccgg ccgccccggc cccagcctct ccagcagcac ctgccccatc ggccccggcc 480

gcatctcccg ctgccccggc tcccgcatcg cctgccgcac cggctccctc ggccaccggcc 540

gcctctcctg ctgcacctgc acccgcttcc cctgccgctc ctgcccctag tgcaccagca 600

<210> 141

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1ac(200), codon-optimized for S. cerevisiae

<400> 141

gccagtcctg ccgctccagc acctgccagt ccagcagctc cagccccctc tgccccagca 60

eolf-seq1

gcctcaccag ccgcacctgc tccagcaagc ccggcagctc ccgccccgag tgctccagca	120
gcatcaccag ctgctcccgc gccggctagc cctgcggctc ccgcaccgag tgccccagca	180
gcatcacctg ccgccccctgc gcccgcaagc cccgcggccc ctgctccttc cgcgcctgct	240
gcctcaccag cagcaccagc cccggcaagt ccagcggcgc cggcaccag cgcaccgcg	300
gcctctcctg cagctcctgc acctgcatct cccgcggctc ccgcaccctc agtccccgcg	360
gccagccctg ctgcaccagc acctgcaagc cctgcggctc cggcgccttc tgccccctgct	420
gcctctccgg ctgccccctgc acctgcgtcc ccggctgctc ccgctcctag tgccccggca	480
gcaagcccag ccgcaccggc cccagccagc cccgccgctc ccgctccctc cgctcccgct	540
gcgtccccag ccgctcccgc tcctgcgtca cctgcagcgc ccgcgccctc tgcaccgcc	600

<210> 142

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1ad(200), codon-optimized for *S. cerevisiae*

<400> 142

gcctctccag cagcgccggc accagcaagc cctgcggcac ctgctccatc tgctccggcg	60
gccagtcccc ctgcacctgc tccggcttct cctgcagcac cagcaccatc tgccccctgca	120
gctagcccgg cagcgcccgc tcccgcgagt ccagcagcgc ctgccccctc agcgccggcc	180
gcgtcacctg ccgcaccggc acccgctagc ccagcggcac cggctccgtc tgcaccagcc	240
gcttccccag cagcaccagc gccagctagc ccggctgccc cagctccctc cgctcctgct	300
gcatcccctg ctgcaccgc tcccgctagt cctgctgcgc ctgcaccctc agctccagca	360
gcgtctcccc cagcgccagc acctgcgagt ccagcggcac cagcaccctc tgctccagcc	420
gcttccccgg cagccccggc ccctgcctcc ccagctgcgc cagctccttc cgctcccgct	480
gcctcccctg ccgcacctgc cccggcgagc cctgctgctc ctgcaccctc tgctcccgcg	540
gcctctcccc ctgcaccagc gcccgctct cccgctgctc cggcacctag tgcaccagct	600

eolf-seq1

<210> 143
<211> 600
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide sequence of PAS#1ae(200), codon-optimized for *S. cerevisiae*

<400> 143
gcctctcccg cagcaccgc acccgcgta cctgcggcac cggctccctc tgcaccggca 60
gcctctccag ctgcaccagc ccctgcgtcc ccagcagcgc ccgcgcccag cgctccagcg 120
gcaagcccag ctgccccagc tcctgcaagc ccggctgccc cggctcctag cgccccagct 180
gcttcacccg ctgctcccg cactgcctct ccggcggccc cagcgcccag cgctcctgca 240
gcgtcaccag cggccccagc gccagcctca cccgctgctc cggccccatc tgcgccggca 300
gcgagtccag ccgctccagc gcctgcgtct cctgcggcac cagcaccttc agctccggca 360
gcatctccgg cggctcccg ccttgcttcc cccgctgcac cagcacctag cgcacccgcc 420
gcttcacctg ctgcgcccgc tcctgccagc ccggcagcac ccgcgccatc cgcacccgcc 480
gctagcccag cagcacctgc ccctgcatct ccggcagctc ccgcgccatc agccccgcg 540
gcatctccgg ctgctcctgc cccagcatca cccgccgcgc cagccccgtc cgcaccagca 600

<210> 144
<211> 600
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide sequence of PAS#1af(200), codon-optimized for *T. thermophila*

<400> 144
gcctctccag ccgcaccagc ccctgcttca cccgctgccc ctgctcctag tgcacctgct 60
gcaagccccg ctgcccctgc acctgcttct cctgccgctc cagccccctt tgcacctgcc 120
gcttctccag cagccccctgc acccgcttca cctgctgctc cagccccatc agctcccgct 180

eolf-seq1

gctagtcccg ccgctcctgc acctgcttct cccgctgcac ctgccccatc agcaccagcc	240
gcctcaccag ccgctcccg cccagcctca cccgccgccc ctgcaccatc tgcacctgca	300
gcctcaccg ccgcacctgc acccgcatca cccgctgcac ctgctccatc agctcctgct	360
gcttctccag ccgcacctgc tccagcatca cctgccgctc ccgccccaaag tgctccagcc	420
gcatctcctg ctgcaccgc acctgcaagc cctgctgcac ctgcaccttc agcccctgca	480
gccagccctg ctgcacctgc cccagctagt cccgctgcac ccgcccctag tgctcctgcc	540
gcaagccctg cagctcctgc ccctgcttca cctgctgccc ctgctccaag cgctcctgca	600

<210> 145

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1ag(200), codon-optimized for T. thermophila

<400> 145

gccagtcctg ctgctcccg tccagcaagt cctgctgctc cagcccctag tgctccagct	60
gcttcaccg ccgctcccg acccgcatca cctgctgcac ctgctccaag cgcacctgct	120
gctagcccag ctgcccctgc accagcttct cccgccgcac cagcacctag cgcaccagct	180
gcctctccg ctgcaccagc acccgcttca cccgcagccc cagcccctag cgcacctgcc	240
gcctcaccag ctgcacctgc tccagcaagt cctgccgccc ccgctcctag cgcaccagca	300
gcctcaccag ccgcaccagc tcccgcaagt cctgcagctc cagccccaaag tgcaccgca	360
gctagccctg cagctcccg tcccgcaagt ccagctgccc cagcaccatc tgcaccgct	420
gcttcaccg ccgcaccgc accagctagc ccagcagctc ctgctccttc agctcccgcc	480
gcttcaccag ctgctcccg accagcctca ccagctgcac ccgctcccag cgctcctgct	540
gcttcacctg ctgctcctgc accagctagt cctgctgctc cagctccatc agccccagca	600

<210> 146

eolf-seql

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1ah(200), codon-optimized for T. thermophila

<400> 146

```
gccagtcctg ccgctcccg cccagctagt cctgccgcac ccgccccttc tgcaccagcc      60
gcatctccag cagcacctgc tccagcctct ccagccgctc ccgctcccag cgccccagcc      120
gcaagccctg ccgctcccg cccagctagc cccgccgctc ccgcacctag tgctcctgct      180
gcaagccctg ctgctcctgc acctgctagc cctgctgcac cagctccaag cgccccagcc      240
gctagtccag ctgctcccg tcctgcaagc cctgcagcac ctgctccaag tgctcccgcc      300
gcttctcccg ctgcccccg acctgccagt cctgctgcac ctgctccctc agctcccgct      360
gcttcaccag ctgcacccgc accagcttca cctgccgcac cagctcctag cgctccagct      420
gcatctcctg cagctcccg tcctgcatca ccagcagctc ctgcacccag tgcaccagcc      480
gctagccctg cagcaccagc accagcctct cctgccgcac cagcccctag cgcaccagcc      540
gcatcacctg ccgctccagc tcctgccagc cctgctgccc cagctccatc tgctccagct      600
```

<210> 147

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1ai(200), codon-optimized for H. sapiens (HEK cells)

<400> 147

```
gccagtcctg ctgcgccggc accagcctcc cctgctgccc cagcccctag cgcacccgct      60
gcttcccctg ccgctccagc gcctgcctct cctgcggccc ctgctcctag tgcaccagcc      120
gcttccccag cagcacctgc tcctgcaagt ccagctgctc ctgcaccctc tgctcccgcg      180
gcctctccag ctgcacccgc tcctgcttca cctgccgctc cagctccatc cgcaccagct      240
```

eolf-seql

gccagtcctg ctgcgctgc acccgctca cctgctgctc ccgcaccttc agcacctgca	300
gcctctccgg cagcccctgc acccgctcc ccggctgccc ccgcgcccag tgctccggcc	360
gcgtctcccc ctgctcctgc tcccgcttca cccgccgctc ctgcccccttc tgccccctgcc	420
gccagccccg ctgctccccg ccctgcctcc cctgcagctc ccgccccatc tgcgcctgct	480
gcttcaccgg ctgcgccagc accagctagc cccgcagcgc cagccccatc agcaccagcc	540
gcctctcctg ctgcacccgc ccctgcgagc cctgcggctc ccgcaccctc tgccccagca	600

<210> 148

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1aj(200), codon-optimized for H. sapiens (HEK cells)

<400> 148

gccagtcccc cagcaccagc acccgctcc ccagctgcgc ctgcccctag tgctccagct	60
gcctctcccc ccgcacccgc acctgcaagt cctgcagctc cggcaccgag cgcccccgcc	120
gccagtccag ccgcacccgc gcctgcaagc ccagccgcgc ccgcccccttc cgccccggcc	180
gcttctccag ccgcaccagc gcccgcatcc ccagcggctc cagctccgtc tgctcctgcc	240
gcaagccctg ctgcgcccgc ccctgcatcc cctgctgcac ctgctccgag tgctcccgcc	300
gcctccccag ccgcaccggc ccctgctagt cccgccgcgc cggccccaaag tgccccagct	360
gcttctcctg ctgctccagc accggcatct cccgcggccc ctgcaccaag tgcgccagcc	420
gctagtccgg cagctcctgc tccagccagt cccgcggctc ctgctccaag cgccccagct	480
gcatcaccag cagctccagc tcctgccagc cctgcagcgc ccgcgccatc agcccctgct	540
gctagcccag cagccccgc cccagcgagt ccagcggcac ctgctccatc tgctccagct	600

<210> 149

<211> 600

<212> DNA

<213> Artificial Sequence

eolf-seql

<220>

<223> Nucleotide sequence of PAS#1ak(200), codon-optimized for H. sapiens (HEK cells)

<400> 149

```
gccagtcctg ctgccccctgc acctgcgtct ccagctgctc ccgctccttc tgctccggct      60
gcatctcctg ccgcccccagc ccctgcaagt ccagcagcgc ctgctccatc agctcctgca      120
gcttcaccag cggcccccagc acccgccagt cctgcagctc ctgcgccctc agccccagcc      180
gcgagccctg ccgcgcttgc tcccgcttct cccgcagccc ctgccccatc cgctccggcc      240
gcatcacctg ctgctcctgc tcctgcctca cccgctgctc cagcgccatc tgcacccgct      300
gccagccccg ctgccccggc tcctgcatcc cctgcggcac cagctccaag cgctcctgca      360
gcaagccccg ccgctccagc tcccgcgagt cctgccgctc ctgcaccatc tgccccagca      420
gctagtcccc ctgcaccggc tcccgcatct ccagcagctc cggcaccttc ggccccagca      480
gccagtcctg cagcccccagc acctgccagt cctgcggctc cggcgccatc agcacctgca      540
gcgtcacctg ccgcacctgc tcccgcaagt cctgccgcgc cagctcctag cgcaccagcc      600
```

<210> 150

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1al(200), codon-optimized for B. subtilis

<400> 150

```
gcctcaccgg ctgcacctgc tccagcttcc ccagcagcac cagccccctc cgcacctgcc      60
gctagccccg ctgctcctgc cccagcctca cctgcggctc cagctccttc cgcaccggca      120
gcgtcgcttg cagcaccggc gcctgctagc cctgctgctc ccgccccctc ggcaacctgca      180
gcgtctccgg cggctcctgc tcctgcgtct ccagcagctc ctgcaccgtc cgctcctgcc      240
gcaagccccg cagcacctgc acctgcttca ccagcggctc ctgccccgag tgcaccggca      300
gcctcccctg cagctcctgc tccggcaagc ccagctgcac cggccccaaag cgcaccagct      360
```

eolf-seq1

gcaagccctg cagccccagc accggcctca ccggcagcac ctgcgccgtc agcacctgca	420
gccagcccag cggccccctgc acctgcatca cctgcggcgc ctgctccttc tgccccctgcg	480
gcatcccctg ctgctcctgc acccgcaagt ccggctgcac cggctccaag tgcaccagca	540
gcatcacctg ccgcaccggc acctgcgagt cctgcggcac ctgcccctag tgctccggcg	600

<210> 151

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1am(200), codon-optimized for B. subtilis

<400> 151

gcctcaccgg ctgccccagc acctgcttct ccggcagctc cggcccccttc agcacctgca	60
gcttctccgg cagcgcccg ccccgcttct cctgcagctc cggcaccgtc agcgccagcg	120
gccagcccag cagctccggc tccagcttcg cctgccgctc cagcaccgtc ggctccggca	180
gcatctccgg ctgctcctgc tccagcgta ccagccgcac ctgcaccgag tgctcctgca	240
gcctctccag ctgccccctgc ccctgcttcg ccagcagcac ctgcgccttc ggccccggca	300
gcaagcccag ccgctcctgc accagcaagt cctgccgccc cagcccccttc tgctcctgct	360
gcttccccgg cggcaccggc acccgcgta ccggcagcac ccgcaccgtc tgcaccagct	420
gcgagcccgg ctgcaccagc gcctgcttca cctgccgcgc ccgctccttc agctccagct	480
gcttctcccg ccgcacctgc tccggctagc ccagcagcgc cggcaccttc agcacctgct	540
gcgagtccag cagctccagc gccggcaagc cctgccgctc cagcgccgtc agccccctgca	600

<210> 152

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1an(200), codon-optimized for B.

eolf-seql

subtilis

<400> 152

gcctcacctg cagcaccggc accagcttca cccgcagccc ctgctccaag cgcaccggcg	60
gcatcccctg cagcgccagc gccggcctca ccagcagctc cagccccgag cgctcctgcg	120
gcatcaccgg cagcgcccgc tccagcatct cctgccgcac cggccccgag cgctccagct	180
gcgtccccgg cagcaccagc gccagcgagt ccggcggccc ccgcaccgtc tgctccagca	240
gcgagtcctg ccgccccggc gcccgcttct ccggcagcac ccgccccgtc agcaccagcg	300
gcatcaccgg cagctcctgc ccctgcaagt ccagctgctc ctgccccctc agctccagcc	360
gccagccctg ctgcaccagc tccggcatca cctgcagcgc cagccccctt agcgcccgcc	420
gcgagccctg ctgcaccgc tcctgcttcc cctgccgcac cagcaccctc tgcgccagcc	480
gcgtcgctg ccgctccgc tcccgcata ccagcggctc ccgctccatc tgcaccagca	540
gccagtcctg cagcaccagc accagctagt ccggcagccc ccgcacctag tgcacctgct	600

<210> 153

<211> 900

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1ae/1c(300), codon-optimized for E. coli

<400> 153

gccgtcctg ctgcccctgc tcccgtgcc cccgccgccc ccgccccagc tgcccccgct	60
gccgcacctg ctgccccagc tcccgtgcc ccagccgcgc cggcccccg c agctccagcc	120
gcggcaccag ctgccccagc tccagcggcg cctgctgccc cggcccccg c ggcaccggct	180
gccgcgccc cagctccagc gcctgctgca ccggctgctc cggcaccgc cgcgccagca	240
gctgcccctg cggcaccagc tcctgctgcc cccgcggcac ctgcaccgc tgccccggcg	300
gccgcgccc cggccccggc ccctgccgcg cccgctgctc ccgcccctgc tgccccagcc	360
gccgtcctg cggcacctgc gcccgccgc cggcagcgc cggcaccggc agctccggcg	420

eolf-seq1

gccgcgcttg cagctcctgc accggcggct ccagcagccc cggcgccggc cgcacctgcg	480
gcggcgcccc cggcgctgc acccgagcgc cctgcggcac cggccccagc agccccctgcc	540
gccgcaccgg ctgcgctgc cccagcggcc cccgctgccc cggccccggc ggctccagcc	600
gcagcgcttg ccgccccagc gcccgcagca ccggcggcac cagctccggc ggcgccggcg	660
gcggctccgg cagctccggc ccctgctgcg ccggctgcgc cggctccggc ggccccctgcg	720
gcggctccgg ccgcacctgc acctgccgcg ccggctgctc cggccccggc tgccccagca	780
gcggcaccag cagcgctgc tcctgcggcg cctgcagctc cggcgccggc agccccggcc	840
gccgcacccg cggctccagc ccccgccgct ccagcagccc ccgcccagc tgcacctgct	900

<210> 154

<211> 900

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1ae/1d(300), codon-optimized for E. coli

<400> 154

gccgtcctg ctgccccctgc tcccgctgcc cccgccgccc ccgccccagc tgccccctgct	60
gccgcacctg ctgccccagc tcccgctgcc ccagccgcgc cggccccgc agctccagcc	120
gcggcaccag ctgccccagc tccagcggcg cctgctgccc cggccccgc ggacccggct	180
gccgcgcccc cagctccagc gcctgctgca ccggctgctc cggcaccgc cgcgccagca	240
gctgccccctg cggcaccagc tcctgctgcc cccgcggcac ctgcaccgc tgccccggcg	300
gccgcaccgg ctgccccagc ccctgccgca ccagcagctc ccgccccctgc agcccccgcc	360
gccgctccgg ccgcaccagc cccggctgcc cctgctgccc ccgccccggc agcaccgct	420
gcagcaccag ccgcgctgc accggcagct cctgcagccc cggcaccggc agcacctgcc	480
gcagcaccgc cagccccagc cccagcagcg cctgccgctc cagcaccagc ggacccggcc	540
gccgcaccag ccgccccagc accggcagcc cccgcagcgc cggcaccagc cgctccagcc	600
gccgccccag cagccccggc tccggccgct cccgcggctc cagcaccagc agctccagcg	660

eolf-seq1

gccgctccgg cagcgccggc cccagcagca cctgcagccc ctgcaccagc agcgccagcc	720
gcggcgcccc cagctcccg acctgcggct cccgcagccc ctgcaccgc ggcgccagca	780
gccgcccctg cagcgccagc tcctgcagca cctgcagctc cagccccggc cgccccagct	840
gcagctcctg cggccccagc acctgccgcc cctgccgcac cggctccagc cgccccagcc	900

<210> 155

<211> 1200

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1d/1c(400), codon-optimized for E. coli

<400> 155

gccgcaccgg ctgccccagc ccctgccgca ccagcagctc ccgcccctgc agccccgcc	60
gccgctccgg ccgcaccagc cccggctgcc cctgctgccc ccgccccggc agcaccgct	120
gcagcaccag ccgcgcctgc accggcagct cctgcagccc cggcaccggc agcacctgcc	180
gcagcaccgg cagccccagc cccagcagcg cctgccgctc cagcaccagc ggccaccggcc	240
gccgcaccag ccgccccagc accggcagcc cccgcagcgc cggcaccagc cgctccagcc	300
gccgccccag cagccccggc tccggccgct cccgcggctc cagcaccagc agctccagcg	360
gccgctccgg cagcgccggc cccagcagca cctgcagccc ctgcaccagc agcgccagcc	420
gcggcgcccc cagctcccg acctgcggct cccgcagccc ctgcaccgc ggcgccagca	480
gccgcccctg cagcgccagc tcctgcagca cctgcagctc cagccccggc cgccccagct	540
gcagctcctg cggccccagc acctgccgcc cctgccgcac cggctccagc cgccccagcc	600
gccgcgccag cggccccggc ccctgccgcg cccgctgctc ccgcccctgc tgccccagcc	660
gccgctcctg cggcacctgc gcccgcgcg ccggcagcgc cggcaccggc agctccggcg	720
gccgcgcctg cagctcctgc accggcggct ccagcagccc cggcgccggc cgcacctgcg	780
gcggcgcccc cggcgccctgc accgcagcg cctgcggcac cggccccagc agcccctgcc	840
gccgcaccgg ctgcgcctgc cccagcggcc cccgctgccc cggccccggc ggctccagcc	900

eolf-seql

gcagcgcctg ccgccccagc gcccgcagca ccggcggcac cagctccggc ggcgccggcg	960
gcggctccgg cagctccggc ccctgctgcg ccggctgcgc cggctccggc ggccccctgcg	1020
gcggctccgg ccgcacctgc acctgccgcg ccggctgctc cggccccggc tgccccagca	1080
gcggcaccag cagcgcctgc tcctgcggcg cctgcagctc cggcgccggc agccccggcc	1140
gccgcacccg cggctccagc ccccgccgct ccagcagccc ccgcgccagc tgcacctgct	1200

<210> 156

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1b/1c/1d(600), codon-optimized for E. coli

<400> 156

gccgctcctg ctgccccctg tcccgtgcc cccgccgccc ccgccccagc tgcccccgct	60
gccgcacctg ctgccccagc tcccgtgcc ccagccgcgc cggcccccg c agctccagcc	120
gcggcaccag ctgccccagc tccagcggcg cctgctgccc cggcccccg c ggcaccggct	180
gccgcgccc cagctccagc gcctgctgca ccggctgctc cggcaccgc cgcgccagca	240
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gcagctcccc cgcgccagc ccctgcagct cctgctgcac ctgctcctgc cccccctgct	360
gctgccccctg ctgctccagc ccctgcagca ccggccgctc cagctcctgc cgtcctgcc	420
gctgcgccc cgtctccagc cccagctgcg ccagcagctc ctgcacctgc tgccccctgcc	480
gccgccccctg cggctccagc acctgctgca ccggccgccc cggcgccgc tgcccccgca	540
gcagccccag ccgcaccgc tccagcagct cccgcagccc cagcaccgc agcaccagcc	600
gccgcgccag cggccccggc ccctgccg cccgctgctc ccgccccctgc tgccccagcc	660
gccgctcctg cggcacctgc gcccgccg cccgcagcgc cggcaccggc agctccggcg	720
gccgcgcctg cagctcctgc accggcggct ccagcagccc cggcgccggc cgcacctgcg	780

eolf-seq1

gcggcgccccg cggcgccctgc acccgagcgc cctgcggcac cggccccagc agccccctgcc	840
gccgcaccgg ctgcgcctgc cccagcggcc cccgctgccc cggccccggc ggctccagcc	900
gcagcgccctg ccgccccagc gcccgcagca ccggcggcac cagctccggc ggcgccggcg	960
gcggctccgg cagctccggc ccctgctgcg ccggctgcgc cggctccggc ggccccctgcg	1020
gcggctccgg ccgcacctgc acctgccgcg ccggctgctc cggccccggc tgccccagca	1080
gcggcaccag cagcgccctgc tcctgcggcg cctgcagctc cggcgccggc agccccggcc	1140
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gccgctccgg ccgcaccagc cccggctgcc cctgctgccc ccgccccggc agcaccgct	1320
gcagcaccag ccgcgcctgc accggcagct cctgcagccc cggcaccggc agcacctgcc	1380
gcagcacccg cagccccagc cccagcagcg cctgccgctc cagcaccagc ggacccggcc	1440
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gccgccccag cagccccggc tccggccgct cccgcggctc cagcaccagc agctccagcg	1560
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gcggcgccccg cagctccgc acctgcggct cccgcagccc ctgcacccgc ggcgccagca	1680
gccgccccctg cagcgccagc tcctgcagca cctgcagctc cagccccggc cgccccagct	1740
gcagctcctg cggccccagc acctgccgcc cctgccgcac cggctccagc cgccccagcc	1800

<210> 157

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1d/1b/1c(600), codon-optimized for E. coli

<400> 157

gccgcaccgg ctgccccagc ccctgccgca ccagcagctc ccgccccctgc agccccgcc	60
gccgctccgg ccgcaccagc cccggctgcc cctgctgccc ccgccccggc agcaccgct	120

eolf-seql

gcagcaccag ccgcgcctgc accggcagct cctgcagccc cggcaccggc agcacctgcc	180
gcagcaccgc cagccccagc cccagcagcg cctgccgctc cagcaccagc ggccaccggcc	240
gccgcaccag ccgccccagc accggcagcc cccgcagcgc cggcaccagc cgctccagcc	300
gccgccccag cagccccggc tccggccgct cccgcggctc cagcaccagc agctccagcg	360
gccgctccgg cagcgccggc cccagcagca cctgcagccc ctgcaccagc agcgccagcc	420
gcggcgcccc cagctcccg cccagcagca cctgcagccc ctgcacccgc ggcgccagca	480
gccgccccctg cagcgccagc tcctgcagca cctgcagctc cagccccggc cgccccagct	540
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gccgcacctg ctgccccagc tcccgctgcc ccagccgcgc cggcccccg c agctccagcc	720
gcggcaccag ctgccccagc tccagcggcg cctgctgccc cggcccccg gcacccggct	780
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gccgcaccgg ctgcgcctgc cccagcggcc cccgctgccc cggccccggc ggctccagcc	1500
gcagcgccctg ccgccccagc gcccgcagca ccggcggcac cagctccggc ggcgccggcg	1560

eolf-seql

gcggctccgg cagctccggc ccctgctgcg ccggctgcgc cggctccggc ggccccctgcg	1620
gcggctccgg ccgcacctgc acctgccgcg ccggctgctc cggccccggc tgccccagca	1680
gcggcaccag cagcgctgc tcctgcggcg cctgcagctc cggcgccggc agccccggcc	1740
gccgcacccg cggctccagc ccccgccgct ccagcagccc ccgcgccagc tgcacctgct	1800

<210> 158

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1c/1b/1d(600), codon-optimized for E. coli

<400> 158

gccgcgccag cggccccggc ccctgccgcg cccgctgctc ccgccccctgc tgccccagcc	60
gccgctcctg cggcacctgc gcccgcgcg ccggcagcgc cggcaccggc agctccggcg	120
gccgcgcctg cagctcctgc accggcggct ccagcagccc cggcgccggc cgcacctgcg	180
gcggcgcccc cggcgctgc acccgcagcg cctgcggcac cggccccagc agccccctgcc	240
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gcggcaccag cagcgctgc tcctgcggcg cctgcagctc cggcgccggc agccccggcc	540
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gccgcacctg ctgccccagc tcccgtgcc ccagccgcgc cggccccgc agctccagcc	720
gcggcaccag ctgccccagc tccagcggcg cctgctgccc cggccccgc ggacccggct	780
gccgcgcccc cagctccagc gcctgctgca ccggctgctc cggcaccgc cgcgccagca	840

eolf-seq1

gctgcccctg cggcaccagc tcctgctgcc cccgcggcac ctgcacccgc tgccccggcg	900
gcagctcccg ccgcgccagc ccctgcagct cctgctgcac ctgctcctgc cgcccctgct	960
gctgcccctg ctgctccagc ccctgcagca ccggccgctc cagctcctgc cgctcctgcc	1020
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gccgcccctg cagcgccagc tcctgcagca cctgcagctc cagccccggc cgccccagct	1740
gcagctcctg cggccccagc acctgccgcc cctgccgcac cggctccagc cgccccagcc	1800

<210> 159

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1c/1d/1b(600), codon-optimized for E. coli

<400> 159

gccgcgccag cggccccggc ccctgccgcg cccgctgctc ccgcccctgc tgccccagcc	60
gccgctcctg cggcacctgc gccgcgcgc ccggcagcgc cggcaccggc agctccggcg	120
gccgcgcctg cagctcctgc accggcggct ccagcagccc cggcgccggc cgcacctgcg	180

eolf-seq1

gcggcgccccg cggcgccctgc acccgagcgc cctgcggcac cggccccagc agccccctgcc	240
gccgcaccgg ctgcgcctgc cccagcggcc cccgctgccc cggccccggc ggctccagcc	300
gcagcgcttg ccgccccagc gcccgcagca ccggcggcac cagctccggc ggcgccggcg	360
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eolf-seq1

gctgcgccccg ctgctccagc cccagctgcg ccagcagctc ctgcacctgc tgccccctgcc	1680
gccgccccctg cggctccagc acctgctgca ccggccgccc cggcgccccgc tgcccccgca	1740
gcagccccag ccgcacccgc tccagcagct cccgcagccc cagcaccgc agcaccagcc	1800

<210> 160

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1b/1d/1c(600), codon-optimized for E. coli

<400> 160

gccgctcctg ctgccccctgc tcccgtgcc cccgccgccc ccgccccagc tgcccccgct	60
gccgcacctg ctgccccagc tcccgtgcc ccagccgcgc cggccccgc agctccagcc	120
gcggcaccag ctgccccagc tccagcggcg cctgctgccc cggccccgc ggcaccggct	180
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gcagcaccgg cagccccagc cccagcagcg cctgccgctc cagcaccagc ggcaccggcc	840
gccgcaccag ccgccccagc accggcagcc cccgcagcgc cggcaccagc cgctccagcc	900

eolf-seql

```

gccgccccag cagccccggc tccggccgct cccgcggctc cagcaccagc agctccagcg      960
gccgctccgg cagcgccggc cccagcagca cctgcagccc ctgcaccagc agcgccagcc      1020
gcggcgcccc cagctcccgc acctgcggct cccgcagccc ctgcacccgc ggcgccagca      1080
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gcggcaccag cagcgcctgc tcctgcggcg cctgcagctc cggcgccggc agccccggcc      1740
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<210> 161

<211> 3000

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1aa/1e/1d/1c/1b(1000), codon-optimized
for E. coli

<400> 161

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gccgccccag cagcaccggc tccagctgcc ccagccgcac cagcaccagc cgctccagcg      60
gccgcgcctg ccgctcccgc acccgcggct ccggccgccc ctgcgccggc ggccaccggcg      120
gcggcacccc cggcacctgc acctgccgcc cccgcggctc ctgctcccgc ggcgccagca      180
gcagcgccag cggcgccctg tcctgccgca ccagcagcac cagcaccgc cgcgccagca      240

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eolf-seql

gcggccccctg cagctccccgc cccggcagcg cccgctgcgc cagcaccgc tgctcccgcg	300
gcagcccccg cagctccggc ccctgcggct ccagctgcac cagcaccggc agcgccggcg	360
gcggcaccag ccgcaccgc accggctgcg cccgccgcgc cagcgccagc cgctccagct	420
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eolf-seql

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<210> 162

<211> 3600

eolf-seq1

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1ab/1aa/1e/1d/1c/1b(1200),
codon-optimized for E. coli

<400> 162

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eolf-seql

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eolf-seq1

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<210> 163

<211> 4200

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1ac/1ab/1aa/1e/1d/1c/1b(1400),
codon-optimized for E. coli

<400> 163

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eolf-seql

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eolf-seql

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eolf-seq1

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<211> 4800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1ad/1ac/1ab/1aa/1e/1d/1c/1b(1600),
codon-optimized for E. coli

eolf-seql

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eolf-seql

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gccgcaccag ccgccccagc accggcagcc cccgcagcgc cggcaccagc cgctccagcc	3300
gccgccccag cagccccggc tccggccgct cccgcggctc cagcaccagc agctccagcg	3360
gccgctccgg cagcgccggc cccagcagca cctgcagccc ctgcaccagc agcgccagcc	3420
gcggcgcccc cagctccgc acctgcggct cccgcagccc ctgcaccgc ggcgccagca	3480
gccgccccctg cagcgccagc tcctgcagca cctgcagctc cagccccggc cgccccagct	3540
gcagctcctg cggccccagc acctgccgcc cctgccgcac cggctccagc cgccccagcc	3600
gccgcgccag cggccccggc ccctgccgcg cccgctgctc ccgccccctgc tgccccagcc	3660
gccgctcctg cggcacctgc gcccgcgcg ccggcagcgc cggcaccggc agctccggcg	3720
gccgcgcctg cagctcctgc accggcggct ccagcagccc cggcgccggc cgcacctgcg	3780
gcggcgcccc cggcgccctgc acccgcagcg cctgcggcac cggccccagc agccccctgcc	3840
gccgcaccgg ctgcgcctgc cccagcggcc cccgctgccc cggccccggc ggctccagcc	3900
gcagcgccctg ccgccccagc gcccgcagca ccggcggcac cagctccggc ggcgccggcg	3960
gcggctccgg cagctccggc ccctgctgcg ccggctgcg cggctccggc ggccccctgcg	4020
gcggctccgg ccgcacctgc acctgccgcg ccggctgctc cggccccggc tgccccagca	4080
gcggcaccag cagcgccctgc tcctgcggcg cctgcagctc cggcgccggc agccccggcc	4140
gccgcacccg cggctccagc ccccgccgct ccagcagccc ccgcgccagc tgcacctgct	4200
gccgctcctg ctgccccctgc tcccgctgcc cccgccgccc ccgccccagc tgcccccgct	4260

eolf-seql

gccgcacctg ctgccccagc tcccgtgcc ccagccgcgc cggccccgc agctccagcc	4320
gcggcaccag ctgccccagc tccagcggcg cctgctgccc cggccccgc ggcaccggct	4380
gccgcgccccg cagctccagc gcctgctgca ccggctgctc cggcaccgc cgcgccagca	4440
gctgccccctg cggcaccagc tcctgctgcc ccgcggcac ctgcaccgc tgccccggcg	4500
gcagctccccg ccgcgccagc ccctgcagct cctgctgcac ctgctcctgc cgccccctgct	4560
gctgccccctg ctgctccagc ccctgcagca ccggccgctc cagctcctgc cgctcctgcc	4620
gctgcgccccg ctgctccagc cccagctgcg ccagcagctc ctgcacctgc tgccccctgcc	4680
gccgccccctg cggctccagc acctgctgca ccggccgccc cggcgccccgc tgcccccgca	4740
gcagccccag ccgcaccgc tccagcagct cccgcagccc cagcaccgc agcaccagcc	4800

<210> 165

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1ao/1an/1am(600), codon-optimized for
P. fluorescens

<400> 165

gccgccccag ccgccccctgc ccctgccgcc ccagccgcac ccgccccggc agccccagcc	60
gccgcgccccg ccgcaccgc cccagcagca cccgctgcgc ccgctcctgc cgcgccccgcg	120
gccgcgccccg ccgccccctgc cccggctgcg cccgccgccc cagcgccagc tgcgccccgcc	180
gccgccccctg ccgccccagc cccggccgca cccgccgccc cggccccctgc cgcgccccgct	240
gccgcacccg ccgcaccgc cccggccgcc cctgccgccc ctgcaccgc cgcgcctgcc	300
gctgccccag ccgcaccagc cccagccgcg ccagccgcac ccgccccctgc agccccctgcc	360
gccgcgcccag ccgcgccccgc cccggccgcc ccagccgccc ccgctccgc cgccccagcc	420
gccgcgcccgg cagccccagc cccagccgcc cctgcagcac ccgcaccgc cgcgccccgcc	480
gccgccccag ccgcgccccgc acccgccgcc cctgccgctc ctgccccagc cgccccagcc	540
gccgcaccag ccgccccctgc cccggccgcg cccgctgcgc ccgccccggc cgcaccgcg	600

eolf-seql

gccgcgccccg cagccccagc cccggccgcg cccgccgcac ccgcgccccgc cgccccctgct	660
gccgcgccccg ccgccccggc cccggccgct cccgccgcgc cggccccggc cgccccggcc	720
gccgcgcctg ctgccccctgc ccctgccgcg ccggccgcgc ccgccccagc ggccccctgcc	780
gccgctccccg ccgcacctgc acccgccgcc ccagctgcgc ccgcacccgc ggcgcccgcc	840
gccgccccgg cagcgccgc gcctgccgcg ccggccgccc ctgccccctgc tgcgcccgcc	900
gcggccccgg ccgcacccgc gcccgcggcg cccgccgctc cagccccggc cgccccggca	960
gccgcgccag ccgctccccgc cccagccgcc ccggctgcgc ccgccccctgc cgccccggcc	1020
gcggctccccg ccgcgccccgc gcccgccgcg cctgccgccc cagcgccccgc cgcgcccgcc	1080
gcagcgccccg ccgcgccagc ccccgccgcc ccagcagcgc ccgccccagc agccccggcc	1140
gccgcgccccg ccgcgccccgc accagccgca cccgccgccc cagccccctgc agcgccctgcc	1200
gccgcgccag cggcgccggc cccagccgcg ccggcagcgc cagcgccccgc cgcgccagca	1260
gccgcgcctg cggcgccctgc gcctgcggcc ccagcggcgc cggcgccagc ggcacccggca	1320
gccgcgccccg cagcgccggc ccctgccgcg ccggcagccc ccgcgcctgc ggccccagca	1380
gccgccccgg cggctccccgc gccggccgcc cctgcggcac cggcgccctgc ggccccggcg	1440
gccgcgccag ccgcgcctgc cccggccgcg ccggccgcgc cggcgccccgc cgcacctgcc	1500
gccgccccgg ccgcgccggc tccggccgcg ccagcggccc ctgcgcctgc agccccagcc	1560
gcggccccgg cggcgccccgc accagccgcg cctgccgcgc ccgcgccggc cgcaccggca	1620
gccgcgccgg ccgcgcctgc ccctgccgcc cccgccgcgc ctgccccagc agccccggca	1680
gccgccccgg cagcgccctgc gccagccgca ccggccgcgc cggcgccagc cgcaccagcc	1740
gccgcaccgg ccgccccctgc gccagcggcg cccgcagcgc cggcgccctgc cgcacccgcg	1800

<210> 166

<211> 2400

<212> DNA

<213> Artificial Sequence

<220>

eolf-seq1

<223> Nucleotide sequence of PA#1ai/1ah/1ag/1af(800), codon-optimized
for *C. glutamicum*

<400> 166

gccgctccag ctgcacccgc tcctgccgca ccggcggctc cagcaccgc ggcacctgcc	60
gccgcacctg ctgcacctgc accggccgct ccgcccggc cggccccggc ggctccagcc	120
gctgcgcccg cagctcctgc cccgcagcc ccggcagcgc ccgcaccggc agccccctgcg	180
gcggcgcccg cagcaccagc tccggccgct ccgctgccc cggcaccggc tgccccagcc	240
gccgcacctg cggcgccggc gccggccgca ccggctgcgc ccgcgcccggc agcccccgct	300
gcagcacctg ccgccccagc cccagccgct ccagccgctc ccgcaccggc tgcgcctgct	360
gcagccccag ccgcgcccggc tccggcggcc ccggcggccc cggctccggc agccccagcc	420
gcagcccccg cagcgccagc gccagccgct ccggcagcac ctgcacctgc ggcgcccgcg	480
gcggcacctg cagcgctgc gccgctgcc ccgcccggc ccgctcctgc cgcgcccggcg	540
gcggcaccag ccgccccctgc cccagctgca ccggcagcgc ctgccccgc tgcgccagcc	600
gccgctcctg cagcaccagc gccagcggct ccgcccgcac cggcaccagc tgctcccgt	660
gcagcgccgg cggcaccgc tccggctgcg ccggccgcgc ctgccccggc ggcgctgca	720
gcagcgctg ccgcacctgc tccagccgct ccagcggcgc ccgccccgc ggccccagca	780
gcggctccgg cggccccagc gcccgagcc ccagccgcgc ccgcacctgc tgcgccggcc	840
gccgcacccg cggcaccggc gcccgccggcc ccgctgccc ctgcacccgc tgccccgca	900
gccgctccag cagcaccagc accagcggct ccggcggcgc cggctcccgc tgccccgca	960
gcagcgcccg ccgccccgc gcctgccgca ccagcggcac cggcaccagc agcgcccgcg	1020
gccgcgccag ctgcgcccgc cccagcggct cctgccgccc ccgcgcccggc cgctcctgca	1080
gctgcccctg ccgctccggc gccagccgct ccgcccggc ccgctcctgc ggctccggcc	1140
gctgcgcccg ctgccccctgc accagcggct ccggccgctc cggccccgc cgctccagct	1200
gccgctccgg ccgccccgc acccgctgct cccgcagcgc cggcgctgc ggcacccgca	1260
gccgcccctg cagccccagc tcccgcagcc cccgctgctc ctgctccagc tgcacccgcg	1320

eolf-seq1

gctgcacccg ctgcaccggc cccggcggct cctgccgccc cagcgccggc ggctcccgct	1380
gctgcacccg cggcccctgc gccggcagcc ccagcggcac cagcgccctgc cgcaccggca	1440
gccgccccag ccgccccagc gccagctgcg ccagcggctc cggccccagc tgcgccggca	1500
gcggcacctg cagctccagc tcctgctgct cccgcggcgc ccgccccgc agcacctgct	1560
gccgccccag ctgccccagc tccggccgcc cctgcggctc ctgctcctgc agcgccctgct	1620
gcggctcccg cggcgccagc gccggcggcc ccagcagctc cagctcctgc agcaccggca	1680
gcggcccccg cggctccagc tcctgcagct ccggctgccc cagcccctgc cgcaccggct	1740
gcagcgcccg cggctccgc tcctgcagca cctgcagcac cagcccctgc tgcaccggcg	1800
gccgcgcccc cggctcctgc cccagcagcg cccgcggcac cagcaccggc ggccccggcc	1860
gccgcccctg ctgcgcccgc gcctgcagct cccgccgccc cagccccgc tgcaccagca	1920
gccgctccag ccgcaccggc gccgctgca cctgccgctc cggcgccggc cgctccagcc	1980
gctgcaccag ccgcgccagc accagctgca cctgcggccc ctgcgccagc tgcgccagca	2040
gcggcaccag cagctccagc tccagctgcg cctgcggcac ctgccccggc tgccccggcg	2100
gctgcgcctg cggcccctgc accagccgcc ccagctgcac ccgcccctgc ggcgccctgcc	2160
gccgcacccg ccgcgcctgc cccagccgct ccggcggcac ctgccccagc tgctcctgca	2220
gcagcccctg ccgccccggc gccagccgca cccgccgcac cagcacctgc agcgccagct	2280
gccgcgccag ctgcgcctgc cccgcagcc cccgccgctc ctgctccagc cgcaccgca	2340
gccgctccgg ctgctccagc cccagcagct ccagcggcac ccgcccctgc tgcaccggct	2400

<210> 167

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1y/1x/1w(600), codon-optimized for B. subtilis

<400> 167

gccgcaccgg ctgcaccggc accagctgcg cctgctgcac cagcaccggc agcaccagca	60
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eolf-seq1

gccgcacccg ctgctcccg	tcctgctgcg ccagctgcac	cagctccggc agcgcctgcg	120
gctgctccag cggctccggc	tcctgcagct cctgccgctc	cagctccagc agcaccagct	180
gcggctccgg ctgcaccggc	tccagccgca ccagcagcac	cggcaccggc agcgccagct	240
gcagcccctg ctgctccggc	gcctgctgca ccggcagctc	cggcaccagc ggcaccggca	300
gcagctccgg cagctccggc	tcctgctgct ccggcagcgc	cagcgccagc agctcctgca	360
gctgctcctg ctgcacctgc	accggctgct ccagcagcgc	cggcaccggc tgcgccggct	420
gcagctccag ctgctccagc	gccagctgct ccggcagcac	cggctccggc tgcgcctgca	480
gccgctcctg cagcgctgc	accagccgct ccggcggctc	ctgcaccagc cgcaccggct	540
gctgcacctg ctgcgcctgc	gcctgctgct cctgctgcgc	ctgctccggc agctcctgca	600
gccgcacctg cagcaccagc	tccggcagca ccggcagctc	cagcgctgc ggctccggct	660
gctgctcctg cagctcctgc	gccagctgcg ccagcagctc	cagctccagc cgctcctgct	720
gcagcccctg cggcaccggc	tccggcagct ccagcggcac	cagcaccggc agctccggct	780
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gcagcaccag ccgctccggc	tccagctgcg cctgccgcac	cggctccagc ggcaccggct	900
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gctgcaccgg ctgctccggc	tccagcagct ccggctgcac	cagcgctgc tgcgcctgca	1020
gcagcacctg cggctccggc	accggctgca ccggcggcac	cggctccagc tgctccagca	1080
gcggctcctg cagctccggc	tcctgccgca ccggctgctc	cagctccggc tgcgccagcg	1140
gcagcaccgg ctgcaccagc	accagcggcg ccagccgcac	cagcacctgc tgcgcctgct	1200
gccgcaccgg ctgcgccagc	acctgcagcg cctgccgctc	ctgctccggc tgctccggct	1260
gctgcaccag cggcaccagc	accagcagcg cctgcggcac	cggcaccagc cgcaccagct	1320
gccgctccag ccgctccggc	accggctgct ccggcagcac	cagcaccagc tgcaccagcg	1380
gcagcgctg cagcgccagc	tccggcagcg ccagcagcac	cagctccagc tgcaccggct	1440
gctgcccctg ctgcaccagc	tccagccgct ccggctgcgc	ctgctcctgc agcgccagct	1500

eolf-seql

gccgctcctg cagcaccagc gccagcggca ccggcagcgc ctgctccggc tgcaccagct	1560
gccgcaccgg cagcacctgc accagcagct ccagctgctc cggctccagc ggctcctgca	1620
gctgcgcctg cggctcctgc accagcggct ccagctgctc ctgcgcctgc cgctccagca	1680
gcagctccag ctgcgcctgc gccagcagca ccggctgcgc ctgcaccagc ggctccggca	1740
gcagcaccag ctgcgccagc gcctgcagct ccggctgctc cggcaccagc tgcgccagct	1800

<210> 168

<211> 2400

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1j/1k/1l/1m(800), codon-optimized for
P. pastoris

<400> 168

gccgcacctg ccgcacctgc ccctgctgcc ccagctgccc ctgctcctgc cgcccctgcc	60
gccgctcctg ccgctcctgc tcctgccgct ccagctgctc cagctcctgc tgctccagca	120
gctgccccag ccgccccagc tcctgctgcc ccagccgcac ctgcaccagc cgctccagct	180
gctgccccctg ccgcacctgc accagctgct ccagccgcac ctgcacctgc cgccccagct	240
gccgccccctg ccgcaccagc tcctgcagcc cctgccgctc cagccccagc agctccagct	300
gccgccccctg cagccccctgc cccagccgca ccagctgccc ctgccccagc agctcctgct	360
gccgccccctg ctgctccagc accagcagct ccagccgcac ctgctccagc cgctccagct	420
gccgcacctg ccgctccagc ccctgcagcc cctgcagccc cagctccagc cgccccagcc	480
gccgcacctg cagccccagc accagctgcc cctgcagcac cagctcctgc tgctcctgct	540
gcagcaccag ccgcaccagc accagcagca ccagccgccc cagccccagc cgcaccagca	600
gccgccccctg ccgccccgc tcctgctgca cctgctgctc ccgcacccgc cgcccctgcc	660
gctgccccctg ctgcaccagc ccctgctgct ccagccgcac cagctccagc agctcctgcc	720
gctgccccag ctgccccagc tcccgccgcc cccgccgctc ctgcacccgc tgcaccagcc	780

eolf-seql

gccgccccag ccgctccagc cccagccgct cctgcagctc ctgctcctgc tgccccctgca	840
gccgccccgg cagctccagc tcccgcagct cctgctgcac cagctcccgc tgctcctgca	900
gccgcacctg ctgccccctgc tcctgctgct ccagctgcac ccgctcctgc cgcaccagcc	960
gctgccccctg ccgctccagc acccgccgca ccagccgctc ctgccccctgc agctccagcc	1020
gccgccccctg ccgcgccctgc tccagccgct cctgcagcac ctgcacctgc agcacctgct	1080
gcagcaccag cagctcctgc tcccgcagca ccagcagccc cagcaccagc cgctccagca	1140
gccgctccag ctgcacctgc ccctgcagca cctgcagctc ctgctccagc ggctccagct	1200
gccgcccccg ccgctccagc acctgccgca cctgcagctc cagccccctgc tgctcctgct	1260
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gccgctcccg ctgccccctgc accagctgct cctgctgctc ctgccccctgc tgcacctgca	1380
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gccgcaccag ctgctccagc tccggcagca cctgcagccc ccgctccagc cgccccctgcc	1500
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gccgctcccg ctgctccagc tccggctgca cctgctgcac ctgctcctgc tgctcccgct	1620
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gcagctcctg cagcaccggc tccagcagct cctgctgcac ctgccccctgc cgctcccgct	1740
gcagctcccg ccgctcccgc ccctgctgca cccgctgccc cagcacctgc agcacctgca	1800
gccgcacccg ctgcacctgc cccgcagcc ccagccgccc ctgcccccgc tgcacctgca	1860
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gctgcacctg ctgccccagc ccctgctgca ccagcagctc cagctcccgc tgccccctgct	1980
gcagcacccg ctgctcctgc tcctgcagct ccagctgcac cagccccagc agcacctgcc	2040
gctgctcctg ctgcccccg cccagcagcc cctgcagcac ctgctcctgc agccccgca	2100
gcagctccag ctgccccctgc cccgcccgt ccagctgctc ctgctcccgc cgcacctgcc	2160
gcagctcctg cagctcctgc acctgctgct ccagccgctc ccgcaccagc agcacctgct	2220

eolf-seq1

gccgctcctg cagccccagc acccgctgcc cccgcagcac ctgcacccgc cgccccctgct 2280
 gccgcacccg ccgcacctgc tccagctgct cccgcagccc ctgcacctgc cgctcctgcc 2340
 gccgctccag ccgctccagc cccgcagct cctgccgctc cagcacctgc agctccagca 2400

<210> 169

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1p/1o/1n(600), codon-optimized for *S. cerevisiae*

<400> 169

gccgctccag cagcaccagc tcctgcagct ccagctgcac ctgctccagc cgctcccgt 60
 gcagctccgg ccgctccgc cccagccgca cccgcagccc cagctccgc tgctccagct 120
 gcagctccag cagcacctgc gcccgcggca ccagccgctc ctgcaccggc tgcaccgct 180
 gcggcgccgg cagcaccgc tccgcagcc cccgcagcgc ccgccccagc ggccccagcc 240
 gcggcgccag cagctccagc tccagcggca cccgcggcac cagctccgc agcgccggcg 300
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 gcagcgccgg cggctccggc gccggcagcg ccagcggccc ctgctccgc cgcgccggca 420
 gcagcccccg ccgctccagc ccctgcggct ccggcggcgc ccgccccgc agcacctgcg 480
 gctgcgccag ccgcacctgc cccggctgca cctgctgcac ccgcgccggc tgcaccgcg 540
 gctgccccgg ctgctccggc gccagcggca cctgctgcac cagcacctgc cgcgccagcg 600
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 gctgcaccag ccgctccgc accagctgct cctgctgctc cagcgccctgc agctcctgct 720
 gccgctccag ctgccccagc tccagcggct ccggcagcgc cagccccagc agcaccgcc 780
 gctgcacctg ccgcaccagc tcctgccgca cctgctgctc ccgcaccagc agcaccggca 840
 gctgctccag ccgcaccagc gcctgccgca cccgctgccc cagcacctgc ggcgccagca 900
 gcagctcctg cggcaccggc accagctgcc cctgcagctc cggctccagc tgcgcctgcc 960

eolf-seq1

gctgcaccag ctgcgcctgc gccagccgct cctgctgcgc ctgcaccagc ggaccaccagca	1020
gctgcacccg ctgcaccagc gccagcagct ccggcagctc cagcgcccg gcgcctgct	1080
gctgcccctg ccgctccagc tccagctgct cctgcagcac cagcccctgc agccccggcg	1140
gccgcaccag cagcgctgc acctgcggct ccagcagccc cagccccagc ggccccctgcc	1200
gccgctccag ctgcaccagc tccagcagct ccagccgctc ctgctcctgc tgctcccgca	1260
gcagcccctg cagcaccgc tccagcagca cccgctgctc cagctccagc tgcacccgca	1320
gctgctccag cagcacctgc accagccgca ccagcagctc ccgctccagc agctcctgca	1380
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gcagctccg cagcaccagc tccagctgct cccgctgcac ccgctccagc cgaccagcc	1560
gctgcaccag ctgcacccgc tccagctgca cccgccgctc cagctcctgc agcaccagct	1620
gctgccccag ccgctccagc accagctgct cccgccgctc ctgcaccagc agctccagct	1680
gccgctcctg cagcaccgc accagctgca ccagcagcac cagcaccagc agcaccagct	1740
gctgctccg ctgctcctgc tcctgccgct cctgcagctc cagctcctgc cgctccagct	1800

<210> 170

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1s/1r/1q(600), codon-optimized for K. lactis

<400> 170

gccgccccg ctgctcctgc cccagctgcc cccgccgcgc cagcccctgc tgctcctgct	60
gccgcgcctg cagctccagc cccagccgca ccagcagccc cagccccagc agtccccgcc	120
gcagctccag cagccccgc cccagctgca ccagccgcac cagcacctgc tgctcccgcc	180
gctgccccag ccgctcctgc tccagccgcc cctgccgctc ccgccccagc agccccagca	240

eolf-seq1

gcagcgccag cagccccagc acccgctgct ccagccgccc cagctccggc cgcaccagct	300
gccgccccag ccgctcctgc accagctgcc cctgccgccc cagctcccgc cgccccagca	360
gcagctccag ccgcaccagc cccagccgcg ccagctgctc ctgcacctgc tgcacctgca	420
gcagctcccc ctgctccagc acctgctgca cctgctgctc cagccccagc agcgcccgca	480
gccgctccag cagctccagc acctgcagct ccagccgctc cagccccagc cgcgccctgcc	540
gccgctccag ctgcccctgc cccagcagca cccgccgctc cagccccagc agctccagcc	600
gccgccccag cagctcctgc tccagctgct cccgctgctc cagcccctgc agctcccgcc	660
gcagcaccag ccgccccagc tcctgccgct cccgccgctc cagcacctgc cgcccctgct	720
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gcagctccag cagctcccgc tcctgctgcc cctgccgctc ctgcccctgc tgaccagcc	1620
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eolf-seq1

gccgctcctg ctgccccgc acccgctgca cccgcgggcc cggccccggc agctccagca 1740
gcagctcctg ccgctccggc ccctgcagca ccagccgctc ccgcaccggc cgcacccgcc 1800

<210> 171

<211> 2400

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1as/1ar/1aq/1ap(800), codon-optimized
for T. thermophila

<400> 171

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gcagctcctg ccgcacccgc tcccgtgct ccagctgctc ctgctccggc tgctccagct 180
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eolf-seql

gctgcaccag ccgctcctgc ccctgctgct ccagcagcac ctgctcccgc cgctccagct	1080
gccgctccag cagctccagc tcctgctgct ccagcggcac cagctccagc tgctcctgct	1140
gctgctcctg ctgcacccgc acctgcagca ccagcagctc ccgctcctgc tgctcccgc	1200
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gcagcacctg ctgctccggc tccagctgct cccgcagcac ctgctcctgc tgcaccggca	1560
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gctgcacctg ctgctccagc accagctgca ccagcagctc ctgctcctgc agctcctgcc	2280
gcagctcctg ctgctcccgc accagctgca cctgccgctc ccgctccagc agcaccagct	2340
gccgctccag ctgctcccgc cccagctgct ccagcagctc cagcaccagc agctccagct	2400

eolf-seql

<210> 172

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1v/1u/1t(600), codon-optimized for H. sapiens (HEK cells)

<400> 172

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gccgctccgg ctgcaccagc tccagcagca ccagctgctc cagctccagc agcaccgca      180
gctgctccag cagctccgc tccggccgct cctgctgcac cggctccagc tgctccggcc      240
gcagcaccag cagctccagc cccagccgct ccagcagctc ctgctccgc agcaccggca      300
gccgcaccag ctgctccggc tccggcagct cctgctgcac cagctccgc cgctccagct      360
gcagctccag ctgctccggc accggctgca ccggccgctc cggctccgc cgcaccagct      420
gcagcccctg ccgctcctgc accagctgca cccgctgctc cagctccggc tgctcctgca      480
gccgctcctg cagctccggc accagctgca cctgcagctc ccgctccagc tgctcctgca      540
gcagctcccg ctgcaccagc accagcagct cccgccgac cggctccagc tgcaccagca      600
gccgccccgg ctgctccgc tcctgcagca ccggcagctc ccgctccagc cgcaccagca      660
gcagcacccg cagctccagc accggctgca cccgctgcac ctgctccagc cgctccagca      720
gctgccccag ccgcaccagc accggcagct ccggctgctc ctgctccagc agcaccgcc      780
gcagctccgg ccgctccagc tcctgctgca cccgcagctc ccgcaccggc agctccagcc      840
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gctgcacccg ctgctccgc accagctgca ccagcagcac ccgcaccagc cgctccggcc     1020
gcagctcctg cagctccgc ccctgcagct cctgccgctc ctgctccgc tgctcctgcc     1080
gcagctcccg ctgctccggc tcctgccgca ccagctgcac ccgctccggc agcaccagca     1140

```

eolf-seql

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gctgcccctg cagctcctgc tccggcagct cccgcagctc ctgcaccagc tgctccagct	1320
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gctgctcctg ccgcaccagc accagccgct ccagctgcac ccgcaccagc tgcacccgcc	1560
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gctgcaccgg ccgctccagc tccagcagct cctgccgctc ccgcaccagc agtcccgcga	1680
gcagcaccgg ccgcaccggc tccggcagca ccagccgcac cagctcccgc tgcaccggct	1740
gccgcaccgg ctgcaccggc accagcagct ccagccgctc cggctcctgc agtccagca	1800

<210> 173

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1al/1ak/1j(600), codon-optimized for *P. patens*

<400> 173

gccgcaccag ctgctcccgc acctgcagca ccagccgctc ccgcccctgc cgctccagcc	60
gccgcaccag ccgccccagc ccctgcagca cccgcagcac ctgctcccgc agtccagcc	120
gcagccccag ccgctcctgc accagccgcc cctgctgcac cggctccagc cgcgcccgt	180
gctgcgcccg ccgctcccgc cccagccgcc ccagctgccc ccgctccagc tgctcccgcga	240
gctgcacccg ccgcacctgc acctgctgcc cccgctgcac ctgcacctgc cgcccctgca	300
gctgccccag ccgccccggc acccgctgcc cccgccgctc ctgctcctgc tgcaccagct	360
gccgcccctg ccgccccgc accagcggcc ccagcagccc ccgccccagc cgctccagct	420
gctgctcccg ccgcacctgc cccagccgca cctgccgccc cagctcccgc cgctcccgcc	480

eolf-seql

gccgctcctg ctgcacccgc ccctgctgct cctgccgctc ccgctcccgc tgctcccgct	540
gccgctccccg ccgccccgc tcctgccgcc cccgccgcac cagcacctgc agctcctgcc	600
gccgcacctg ccgcaccagc ccccgagca cccgcagcgc cagctccagc agctccagcc	660
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gccgctccccg ccgcaccagc tcctgctgca cccgctgctc cagcaccgc cgctcccgcc	1740
gctgctcctg ccgctcctgc tcccgcagct cccgctgcgc ctgctccagc tgcaccagcc	1800

<210> 174

<211> 900

eolf-seq1

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1n/1b(300), codon-optimized for E. coli

<400> 174

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gccagtccgg cagcgcccgc tccagcaagt cccgctgcac ccgcacctag cgccccggca      60
gcttccccgg ctgcgcctgc gccagcctct cgggctgccc cagcgccgtc cgcacccgcg      120
gcgtcaccag cagcccctgc gcctgcttcc ccagcagccc ctgcaccgtc agcgccagca      180
gcatcacctg ctgccccgcg acccgcaagt cctgccgcac cggccccctt agccccctgct      240
gcctctccag ccgcgccagc acccgcgctc cccgctgcgc ctgccccag cgcacctgca      300
gccagccctg ccgcacctgc gcccgcatca cctgcggcac ctgcaccttc cgccccggct      360
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gcatcccctg ccgcgcctgc ccccgctagt ccagcggccc cagctccatc tgcaccagct      480
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gcttcaccag cagcacctgc tccagcgtcc ccagcggccc ctgctccaag tgctccggct      780
gcatcgcctg ccgctcctgc tcctgcatcc ccagctgctc cagcaccaag cgcacctgcc      840
gcctcaccag cggcgccagc acccgccagc ccagcagcgc ctgctccatc cgcaccggcg      900

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<210> 175

<211> 900

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1n/1c(300), codon-optimized for E. coli

eolf-seql

<400> 175

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gcttccccgg ctgcgcctgc gccagcctct cgggctgccc cagcgccgtc cgcacccgcg      120
gcgtcaccag cagccccctgc gcctgcttcc ccagcagccc ctgcaccgtc agcgccagca      180
gcatcacctg ctgcccccg c acccgcaagt cctgccgcac cggccccctt agccccctgct      240
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gccagtcctg ctgcaccggc accggcatca cgggctgcac cagcacctag tgcaccggca      360
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gctagtccag cagctccagc tccggcttct cctgcggctc ctgcaccaag tgcgcctgca      480
gcaagtccgg ctgcgcctgc cccagctagt cctgctgctc cggcaccgtc agctccggca      540
gcatctcctg cagcaccagc ccctgcaagt ccagcagcgc cagccccatc agcaccagca      600
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gcatctccgg ctgcgccagc tccagcctct cctgcagcgc cagcaccgag cgcaccagca      900
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<210> 176

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1b/1f/1c(600), codon-optimized for E. coli

<400> 176

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gcatctcctg ccgcacccgc gcctgccagc ccagctgcac ctgccccaaag tgcgccagca      120
gcatccccctg ccgcgcctgc ccccgctagt ccagcggccc cagctccatc tgcaccagct      180
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eolf-seq1

gctagccctg ctgcaccagc tcctgcttct cccgcagccc cagcgcttc tgctcccgca	240
gcctcacctg cggccccggc accagcatct ccagcggcac cagcaccttc ggccccctgct	300
gctagcccag cagcacctgc gccagcctca ccagctgctc ccgctcctag tgccccggcg	360
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gcatctcctg cagcaccagc ccctgcaagt ccagcagcgc cagccccatc agcaccagca	1500
gcttcaccag ccgcaccagc gccagcaagc cctgctgccc cagctcctag cgcaccggca	1560
gccagtccctg cagctcctgc gcctgctagt ccggcagccc cagctccaag tgccccctgcc	1620

eolf-seq1

gcttcgcctg cagccccagc accagcttct ccagccgcac cggcaccttc tgccccagct	1680
gcatctccgg cagctccggc accagcaagc ccggcagcac cggcaccatc tgcgcctgcc	1740
gcatctccgg ctgcgccagc tccagcctct cctgcagcgc cagcaccgag cgcaccagca	1800

<210> 177

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1b/1c/1f(600), codon-optimized for E. coli

<400> 177

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gcatctcctg ccgcacccgc gcctgccagc ccagctgcac ctgccccaaag tgcgccagca	120
gcatccccctg ccgcgcctgc ccccgctagt ccagcggccc cagctccatc tgcaccagct	180
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gcatctcctg cagcaccagc ccctgcaagt ccagcagcgc cagccccatc agcaccagca	900
gcttcaccag ccgcaccagc gccagcaagc cctgctgccc cagctcctag cgcaccggca	960

eolf-seq1

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gcatcgcctg ctgccccctgc cccagccagt ccagcggctc cagccccgag tgctccggcc 1380
gcttcccccg cagcaccggc tcctgcctcc cctgcagccc ctgctccatc tgccccctgcg 1440
gcatccccctg cggcgccagc tcctgcctct ccagctgcac cggctccctc agctcccgt 1500
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gccagccccg cagccccggc gcctgcctct cctgctgcac ctgcaccgtc agccccctgca 1620
gcatctcccc cagctcctgc accggcatct ccagcagccc ccgccccgtc agctcccgca 1680
gccagccccg ccgcacccgc cccgcgtca ccagctgcac cagcgccatc cgctcctgct 1740
gcgtctcccc ctgcgcccgc ccctgcctca cctgcagcac ctgcacctag cgccccggct 1800

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<210> 178

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1c/1b/1f(600), codon-optimized for E. coli

<400> 178

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gccagtcctg ctgcaccggc accggcatca ccggctgcac cagcacctag tgcaccggca 60
gcttctccgg ctgccccctgc gcctgcatca ccagctgcgc ctgcaccgtc tgccccctgca 120
gctagtccag cagctccagc tccggcttct cctgcggctc ctgcaccaag tgcgcctgca 180
gcaagtccgg ctgcgcctgc cccagctagt cctgctgctc cggcaccgtc agctccggca 240

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eolf-seq1

gcatctcctg cagcaccagc ccctgcaagt ccagcagcgc cagccccatc agcaccagca	300
gcttcaccag ccgcaccagc gccagcaagc cctgctgccc cagctcctag cgcaccggca	360
gccagtccctg cagctcctgc gcctgctagt ccggcagccc cagctccaag tgccccctgcc	420
gcttcgcctg cagccccagc accagcttct ccagccgcac cggcaccttc tgccccagct	480
gcatctccgg cagctccggc accagcaagc ccggcagcac cggcaccatc tgcgcctgcc	540
gcatctccgg ctgcgccagc tccagcctct cctgcagcgc cagcaccgag cgcaccagca	600
gccagccctg ccgcacctgc gcccgcatca cctgcggcac ctgcaccttc cgtccccggct	660
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gcatccccctg ccgcgcctgc ccccgctagt ccagcggccc cagctccatc tgcaccagct	780
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gcctccccag ccgcgcccgc tcctgcaagc ccagcagctc cggctccatc cgtccccgcc	1560
gccagccccg cagccccggc gcctgcctct cctgctgcac ctgcaccgtc agccccctgca	1620
gcatctcccc cagctcctgc accggcatct ccagcagccc ccgccccgtc agctcccgca	1680

eolf-seql

gccagccccg cgcacccgc ccccgctca ccagctgcac cagcgccatc cgctcctgct 1740
gcgtctcccc ctgcgcccgc ccctgcctca cctgcagcac ctgcacctag cgccccggct 1800

<210> 179

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1f/1b/1c(600), codon-optimized for E. coli

<400> 179

gcctccccctg ccgctccagc ccccgctcg ccggccgctc ccgctccgtc tgcacctgct 60
gcctcaccag cagccccggc cccagcatcc ccggccgcac cagctccgtc agcacctgcc 120
gcatcgcttg ctgcccctgc cccagccagt ccagcggctc cagccccgag tgctccggcc 180
gcttcccccg cagcaccggc tcctgcctcc cctgcagccc ctgctccatc tgcccctgcg 240
gcatccccctg cggcgccagc tcctgcctct ccagctgcac cggctccctc agtcccgt 300
gcctccccag ccgcgcccgc tcctgcaagc ccagcagctc cggctccatc cgccccgcc 360
gccagccccg cagccccggc gcctgcctct cctgctgcac ctgcaccgtc agcccctgca 420
gcatctcccc cagctcctgc accggcatct ccagcagccc ccgccccgtc agtcccga 480
gccagccccg cgcacccgc ccccgctca ccagctgcac cagcgccatc cgctcctgct 540
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gccagccctg ccgcacctgc gcccgcata cctgcggcac ctgcaccttc cgccccggct 660
gcatctcctg ccgcacccgc gcctgccagc ccagctgcac ctgccccaaag tgcgccagca 720
gcatccccctg ccgcgcctgc ccccgctagt ccagcggccc cagctccatc tgcaccagct 780
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gcctcacctg cggccccggc accagcatct ccagcggcac cagcaccttc ggcccctgct 900
gctagcccag cagcacctgc gccagcctca ccagctgctc ccgctcctag tgccccggcg 960
gcctcgcttg ctgctcctgc accagcttcg ccagcggcac cggctccttc ggcgccggct 1020

eolf-seq1

```

gcttcaccag cagcacctgc tccagcgtcc ccagcggccc ctgctccaag tgctccggct 1080
gcatcgcttg ccgctcctgc tcctgcatcc ccagctgctc cagcaccaag cgcacctgcc 1140
gcctcaccag cggcgccagc acccgccagc ccagcagcgc ctgctccatc cgcaccggcg 1200
gccagtcctg ctgcaccggc accggcatca ccggctgcac cagcacctag tgcaccggca 1260
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gcttcaccag ccgcaccagc gccagcaagc cctgctgccc cagctcctag cgcaccggca 1560
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gcttcgcctg cagccccagc accagcttct ccagccgcac cggcaccttc tgccccagct 1680
gcatctccgg cagctccggc accagcaagc ccggcagcac cggcaccatc tgcgcctgcc 1740
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<210> 180

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1c/1f/1b(600), codon-optimized for E. coli

<400> 180

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gccagtcctg ctgcaccggc accggcatca ccggctgcac cagcacctag tgcaccggca 60
gcttctccgg ctgcccctgc gcctgcatca ccagctgcgc ctgcaccgtc tgcccctgca 120
gctagtccag cagctccagc tccggcttct cctgcggctc ctgcaccaag tgcgcctgca 180
gcaagtccgg ctgcgcctgc cccagctagt cctgctgctc cggcaccgtc agctccggca 240
gcatctcctg cagcaccagc ccctgcaagt ccagcagcgc cagccccatc agcaccagca 300

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eolf-seql

gcttcaccag ccgcaccagc gccagcaagc cctgctgccc cagctcctag cgcaccggca	360
gccagtcctg cagctcctgc gcctgctagt ccggcagccc cagctccaag tgccccctgcc	420
gcttcgcctg cagccccagc accagcttct ccagccgcac cggcaccttc tgccccagct	480
gcatctccgg cagctccggc accagcaagc ccggcagcac cggcaccttc tgcgcctgcc	540
gcatctccgg ctgcgccagc tccagcctct cctgcagcgc cagcaccgag cgcaccagca	600
gcctccccctg ccgctccagc ccccgctctg ccggccgctc ccgctccgtc tgcacctgct	660
gcctcaccag cagccccggc cccagcatcc ccggccgcac cagctccgtc agcacctgcc	720
gcatcgcctg ctgccccctg cccagccagt ccagcggctc cagccccgag tgctccggcc	780
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gcatccccctg cggcgccagc tcctgcctct ccagctgcac cggctccctc agctcccgct	900
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gccagccccg ccgcacccgc ccccgctca ccagctgcac cagcgccatc cgctcctgct	1140
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gcctcgcctg ctgctcctgc accagcttcg ccagcggcac cggctccttc ggcgccggct	1620
gcttcaccag cagcacctgc tccagcgtcc ccagcggccc ctgctccaag tgctccggct	1680
gcatcgcctg ccgctcctgc tcctgcatcc ccagctgctc cagcaccaag cgcacctgcc	1740

eolf-seql

gcctcaccag cggcgccagc acccgccagc ccagcagcgc ctgctccatc cgcaccggcg 1800

<210> 181

<211> 3000

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1k/1d/1f/1c/1b(1000), codon-optimized
for E. coli

<400> 181

gcctctcctg cagctccggc cccagcttca ccagccgctc cagccccatc tgcgccggcc 60

gcctcacctg cagcaccagc ccctgcgtcg cccgccgcgc ctgcgccctc agccccagca 120

gctagccctg ccgcacccgc cccagcaagt cctgctgctc ctgccccctc tgccccggca 180

gcttcaccgg cagccccctg accagcttcc cccgcagccc ctgccccagc tgcacctgca 240

gctagtcctg cggccccagc accagcgtct ccagctgcgc ccgcgccttc agcaccagca 300

gcttctccgg ccgctccgc tcccgttagc cctgcagctc cagctccctc agcgcccgca 360

gcaagccctg ccgcaccggc ccctgcctct cctgctgctc ccgccccgtc cgcacccgca 420

gcctcaccag ccgctcctgc tcccgttctg ccagccgctc ccgccccctc cgcgcctgca 480

gcttctcccg ccgctcctgc tccggcctct cccgcggcgc ctgctccttc tgccccggcc 540

gcgtcccctg ccgcacctgc ccctgcgagc cctgcagccc cagccccgag cgctcctgcc 600

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eolf-seql

gcgtcaccgg ccgccccagc accggcgagc cccgctgcac ccgcccctag cgctccggcc	1140
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gcctccccctg ccgctccagc ccccgccctg cggcgccgctc ccgctccgctc tgcacctgct	1260
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gccagtcctg ctgcaccggc accggcatca ccggctgcac cagcacctag tgcaccggca	1860
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gccagccctg ccgcacctgc gcccgcatca cctgcggcac ctgcaccttc cgccccggct	2460
gcatctcctg ccgcacccgc gcctgccagc ccagctgcac ctgccccaaag tgcgccagca	2520

eolf-seql

gcatccccctg ccgcgccctgc ccccgctagt ccagcggccc cagctccatc tgcaccagct	2580
gctagccctg ctgcaccagc tcctgcttct cccgcagccc cagcgccctc tgctcccgca	2640
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gcctcgcctg ctgctcctgc accagcttcg ccagcggcac cggctccttc ggcgccggct	2820
gcttcaccag cagcacctgc tccagcgtcc ccagcggccc ctgctccaag tgctccggct	2880
gcatcgcctg ccgctcctgc tcctgcatcc ccagctgctc cagcaccaag cgcacctgcc	2940
gcctcaccag cggcgccagc acccgccagc ccagcagcgc ctgctccatc cgcaccggcg	3000

<210> 182

<211> 3600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence PAS#1l/1k/1d/1f/1c/1b(1200), codon-optimized
for E. coli

<400> 182

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gcgtcaccag ccgctcctgc acccgcgta ccagcggcac cggcacccctc tgcgcccgcc	180
gcatcaccag cagcacccgc gcctgcatcc ccagcagcac ctgcaccaag cgcccccgcc	240
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gcctccccag cagctcccg c accagccagc ccagccgcac cagcgccgctc tgcaccagcc	360
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gcctccccctg cagctcctgc cccggccagt ccagccgccc ccgcgccgag tgcacctgca	480
gcatcaccag cggctcctgc acctgcatct cccgcagcac ccgctccgctc agccccctgca	540
gccagccctg ccgcgccagc acctgcgtca ccagccgccc cggccccgag tgcacctgca	600

eolf-seql

gcctctcctg cagctccggc cccagcttca ccagccgctc cagccccatc tgcgccggcc	660
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gctagccctg ccgcacccgc cccagcaagt cctgctgctc ctgccccctc tgccccggca	780
gcttcaccgg cagccccctg accagcttcc cccgcagccc ctgccccag tgcacctgca	840
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gcttctccgg ccgctcccg c tcccgctagc cctgcagctc cagctccctc agcgcccgca	960
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gcatcgccctg ctgccccctg cccagccagt ccagcggctc cagccccgag tgctccggcc	1980
gcttcccccg cagcaccggc tcctgcctcc cctgcagccc ctgctccatc tgccccctgcg	2040

eolf-seq1

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gcctccccag ccgcgcccgc tcctgcaagc ccagcagctc cggctccatc cgcccccgcc	2160
gccagccccg cagccccggc gcctgcctct cctgctgcac ctgcaccgtc agccccctgca	2220
gcatctccccg cagctcctgc accggcatct ccagcagccc ccgccccgtc agtccccgca	2280
gccagccccg ccgcacccgc ccccgctca ccagctgcac cagcgccatc cgctcctgct	2340
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gccagtccctg ctgcaccggc accggcatca ccggctgcac cagcacctag tgcaccggca	2460
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gcttcaccag cagcacctgc tccagcgtcc ccagcggccc ctgctccaag tgctccggct	3480

eolf-seq1

gcatcgctg ccgctcctgc tcctgcatcc ccagctgctc cagcaccaag cgcacctgcc 3540
gcctcaccag cggcgccagc acccgccagc ccagcagcgc ctgctccatc cgcaccggcg 3600

<210> 183

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence PAS#1s/1q/1r(600), codon-optimized for P. fluorescens

<400> 183

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gcgagccccg ccgccccctgc gcccgccagc ccagctgccc ccgcgccgag tgcgcccgca 960
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eolf-seql

gcgtcgcccg ccgcacctgc tcccgctcc ccggcagctc ccgccccaaag tgccccctgct 1080
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 gcctccccag ccgccccctgc cccggccagc cccgccgccc cggcaccgag cgcgccagcc 1740
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<210> 184

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence PAS#1v/1t/1u(600), codon-optimized for C. glutamicum

<400> 184

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 gctagcccag cagcacctgc acctgcctca cctgcggcgc ctgctccctc cgccccagct 180
 gcatctccag ccgcgcccgc tccagcttca ccagctgcac cagcaccgtc tgctccggca 240
 gccagccctg ctgctcctgc gccagcatct cccgctgctc cggcgccatc tgcacccgcc 300

eolf-seq1

gctagtccag ccgcaccagc gcctgcaagc cccgcagcac ccgctccttc cgcacctgcg	360
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gcttctccgg ctgctccagc gcctgcctcc ccagctgcac ccgctccatc ggctccggct	1740

eolf-seq1

gcttcacctg ccgcaccagc cccagcgtca cctgcagctc ctgccccatc tgccccagct 1800

<210> 185

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence PAS#1an/am/1l(600), codon-optimized for B. subtilis

<400> 185

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eolf-seq1

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gcatccccctg ctgctcctgc acccgcaagt ccggctgcac cggctccaag tgcaccagca	1740
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<210> 186

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence PAS#1p/1o/1g(600), codon-optimized for P. pastoris

<400> 186

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gcctcccccg ctgcaccgc acctgcttcc ccagcagcac ctgcaccag tgctcccgca	300
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eolf-seql

gcttctcctg cagctcccg c tccagcttca cccgctgcac ctgccccctc cgcacccgca	420
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eolf-seq1

<210> 187

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence PAS#1ae/1ad/1ac(600), codon-optimized for *S. cerevisiae*

<400> 187

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gcctcccctg ccgcacctgc cccggcgagc cctgctgctc ctgcaccctc tgctcccgcg     1140
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eolf-seql

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<210> 188

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence PAS#1ab/1aa/1z(600), codon-optimized for K. lactis

<400> 188

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gcttcaccag ccgcaccagc tccggcctcg ccagccgcac cagcaccgtc cgcccctgct 180
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gcaagtcctg ccgcaccgc tcccgcctct ccggcagccc cagctccatc cgaccagca 360
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eolf-seq1

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<210> 189

eolf-seq1

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence PAS#1ah/1ag/1af(600), codon-optimized for T. thermophila

<400> 189

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gcttcaccag ctgctcccg c accagcctca ccagctgcac ccgctcccag cgctcctgct     1140
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eolf-seql

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<210> 190

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence PAS#1ak/aj/ah(600), codon-optimized for HEK cells

<400> 190

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gcgagccctg ccgcgcctgc tcccgcttct cccgcagccc ctgccccatc cgctccggcc 240
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gccagccccg ctgccccggc tcctgcatcc cctgcggcac cagctccaag cgctcctgca 360
gcaagccccg ccgctccagc tcccgcgagt cctgccgctc ctgcaccatc tgccccagca 420
gctagtccccg ctgcaccggc tcccgcatct ccagcagctc cggcaccttc ggccccagca 480
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eolf-seql

gccagtcctg cagccccagc acctgccagt cctgcggctc cggcgccatc agcacctgca	540
gcgtcacctg ccgcacctgc tcccgcgaagt cctgccgcgc cagctcctag cgcaccagcc	600
gccagtcccg cagcaccagc acccgcgctc ccagctgcgc ctgcccctag tgctccagct	660
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gccagccccg ctgctccgc ccctgcctcc cctgcagctc ccgccccatc tgcgctgct	1680
gcttcaccgg ctgcgccagc accagctagc cccgcagcgc cagccccatc agcaccagcc	1740
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<210> 191

<211> 1800

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence PAS#1y/1x/1w(600), codon-optimized for *P. patens*

<400> 191

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gcttcaccag ctgctcctgc gcccgcata cccgcagcgc cagccccatc cgcacccgca      180
gcttccccgg ccgctccagc accagcatct cccgcagcgc ccgctccgtc ggctcctgct      240
gcctctcctg cagcgccggc tccagcatca cctgctgctc cggctccgtc ggccccggct      300
gcttcgcccc ccgctccagc ccctgctagc ccagccgcac ctgccccgag cgcacctgca      360
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gcctcccctg ccgctccagc gcccgcgtcc cccgcagctc cagcaccaag cgcacctgct      720
gccagtccag cagcacccgc tccggcgagc ccagctgcac ccgctccatc cgcacctgct      780
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gcatcaccag cagcacctgc tccagcatcc ccagccgctc cagcaccttc ggccccagca      1140
gctagcccgg cagctccgc cccagccagc cctgctgctc ctgcccctag cgccccgct      1200
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eolf-seql

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gcatcaccag cagctcctgc tcccgcattt ccggctgccc ctgctcccag cgcacctgca 1740
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<210> 192

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PA#1at(200), codon-optimized for E. coli

<400> 192

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gcagcaccgg cagcgccggc accggcagca ccggcagcac cggcaccggc ggcaccggca 180
gcagcaccgg cagcaccggc accggctgca ccggcagcac cggcaccggc agcgccggcg 240
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gcagcaccgg cagcaccggc accggcagca ccagcagcac cggcaccggc agcaccggca 480
gcagcaccgg cggcaccggc accggcggca ccggcagcgc cggcaccggc agcgccggca 540
gcagcgccgg cagcaccggc accggcagca ccggcagcgc cggcaccggc ggcaccggca 600

```

eolf-seq1

<210> 193
<211> 600
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide sequence of PA#1au(200), codon-optimized for E. coli

<400> 193
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gcatctccgg cagcgccggc accggcaagt ccggcagcac cggcgccgtc tgcaccggca 120
gcaagtccgg cagcgccggc gccggcatct ccggcagcac cggctccgag tgcaccggca 180
gcgagtccgg cagcaccggc accggcgtct ccggcagcac cggcaccgtc tgcaccggca 240
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gcatctccgg cagcaccggc accagcatct ccggcagcac cggcgccatc tgcaccggca 480
gcatctccgg cagcaccggc cccggcatct ccggcagcac cggcaccgag tgcaccggcg 540
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<210> 194
<211> 600
<212> DNA
<213> Artificial Sequence

<220>
<223> Nucleotide sequence of PAS#1ao(200), codon-optimized for E. coli

<400> 194
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gcatctccgg cagcaccggc tccggcatct ccggcagcac cggcaccgtc tgcaccggca 120
gcaagtccgg cagcaccggc accggcgagt ccggcagcac cggcaccgag tgcaccggca 180
gcaagtccgg cggcaccggc accggcaagt ccggcagcac cggcaccgtc tgcgcccggca 240

eolf-seql

```

gcatctccgg cagcaccggc accggcgtct ccggcagcac cggcaccgag cgcaccggca    300
gcatctccgg cagcaccggc gccggcatct ccggcagcac cggcaccgag tgcgccggca    360
gcatctccgg cagcaccggc gccggcgagt ccggcagcac cggcaccgtc tgcaccggcg    420
gcatctccgg cagcaccggc accggcaagc ccggcagcac cggcaccgag tgcaccggcg    480
gcatctccgg cagcaccggc gccggcaagt ccggcagcac cggcaccgag tgcaccggct    540
gcatctccgg cagcaccggc accggcaagt ccggcagcac cggcgccgtc tgcaccggca    600

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<210> 195

<211> 600

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence of PAS#1ap(200), codon-optimized for E. coli

<400> 195

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gcaagtccgg cagcgccggc gccggcatct ccggcagcac cggctccgag tgcaccggca    180
gcgagtccgg cagcaccggc accggcgtct ccggcagcac cggcaccgtc tgcaccggca    240
gcgtctccgg cagcaccggc gccggcaagt ccggcagcac cggcaccgag cgcaccggca    300
gcatctccgg cggcaccggc gccggcatct ccggcggcgc cggcaccgag tgcaccggcg    360
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gcatctccgg cagcaccggc cccggcatct ccggcagcac cggcaccgag tgcaccggcg    540
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<210> 196

<211> 4641

<212> DNA

<213> Artificial Sequence

eolf-seql

<220>

<223> Nucleotide sequence

<400> 196

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tctccagcag cccctgcacc ggcaagccct gcagctccag caccgtcagc accagcagca	180
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eolf-seq1

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eolf-seq1

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eolf-seql

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cgcacgctcg gctgtagctg ggagttcatc ccggtggacg atggctgggg cgagcgcccg	4560
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<210> 197

<211> 4341

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence

<400> 197

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eolf-seq1

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eolf-seq1

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eolf-seq1

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