

SEQUENCE LISTING

<110> ILLUMINA, INC.
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BOUTELL, JONATHAN

<120> RECOMBINASE MUTANTS

<130> IP-1264-PRV

<160> 35

<170> PatentIn version 3.5

<210> 1

<211> 356

<212> PRT

<213> Enterobacteria phage RB49

<400> 1

Met	Ser	Val	Leu	Glu	Lys	Leu	Lys	Lys	Asn	Ser	Thr	Leu	Lys	Thr	Thr
1				5					10					15	

Ala	Val	Leu	Ser	Lys	Ser	Ser	Phe	Phe	Asn	Glu	Lys	Thr	Asn	Thr	Arg
			20					25					30		

Thr	Lys	Ile	Pro	Met	Leu	Asn	Ile	Ala	Phe	Ser	Gly	Asp	Leu	Lys	Lys
		35					40					45			

Gly	Phe	Gln	Ser	Gly	Leu	Ile	Phe	Phe	Ala	Gly	Pro	Ser	Lys	His	Phe
	50					55					60				

Lys	Ser	Asn	Met	Gly	Leu	Thr	Cys	Val	Ser	Ala	Tyr	Met	Lys	Gln	Asn
65					70					75					80

Pro	Asp	Ala	Ala	Cys	Leu	Phe	Phe	Asp	Ser	Glu	Phe	Gly	Ile	Thr	Ser
				85					90					95	

Ala	Tyr	Leu	Glu	Ser	Met	Gly	Val	Asp	Pro	Asp	Arg	Val	Val	His	Val
			100					105					110		

Pro	Ile	Lys	Asn	Ile	Glu	Glu	Leu	Lys	Phe	Glu	Ile	Met	Asn	Gln	Leu
		115					120					125			

Glu	Gln	Ile	Thr	Arg	Glu	Asp	Lys	Val	Ile	Ile	Phe	Ile	Asp	Ser	Ile
	130					135						140			

Gly Asn Leu Ala Ser Lys Lys Glu Val Glu Asp Ala Ile Asn Glu Lys
145 150 155 160

Ser Ala Gln Asp Met Thr Arg Ala Lys Ala Leu Lys Gly Leu Phe Arg
165 170 175

Met Val Thr Pro Tyr Leu Thr Met Asn Asp Ile Pro Cys Ile Ala Ile
180 185 190

Asn His Thr Tyr Glu Thr Gln Glu Met Phe Ser Lys Thr Val Met Ser
195 200 205

Gly Gly Thr Gly Ala Met Tyr Ser Ala Asn Glu Val Phe Ile Ile Gly
210 215 220

Arg Arg Gln Gln Lys Glu Gly Thr Glu Ile Thr Gly Tyr Asp Phe Ile
225 230 235 240

Leu Asn Ala Glu Lys Ser Arg Thr Val Lys Glu Lys Ser Lys Phe Pro
245 250 255

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

Glu Leu Ala Val Glu Leu Gly Trp Val Val Lys Pro Ser Asn Gly Trp
275 280 285

Tyr Ser Arg Ser Ile Leu Asn Thr Glu Thr Gly Glu Met Glu Thr Glu
290 295 300

Glu Arg Lys Phe Arg Ala Lys Glu Thr Asn Ser Ile Glu Phe Trp Lys
305 310 315 320

Pro Leu Leu Thr Asn Asp Lys Phe Asn Glu Ala Ile Asn Asp His Tyr
325 330 335

Lys Leu Gly Gln Val Ile Ser Asp Glu Ala Val Asp Lys Glu Ile Glu
340 345 350

Asp Met Leu Ala

355

<210> 2
<211> 356
<212> PRT
<213> Enterobacteria phage RB49

<400> 2

Met Ser Val Leu Glu Lys Leu Lys Lys Asn Ser Thr Leu Lys Thr Thr
1 5 10 15

Ala Val Leu Ser Lys Ser Ser Phe Phe Asn Glu Lys Thr Asn Thr Arg
20 25 30

Thr Lys Ile Pro Met Leu Asn Ile Ala Phe Ser Gly Asp Leu Lys Lys
35 40 45

Gly Phe Gln Ser Gly Leu Ile Phe Phe Ala Gly Pro Ser Lys Ser Phe
50 55 60

Lys Ser Asn Met Gly Leu Thr Cys Val Ser Ala Tyr Met Lys Gln Asn
65 70 75 80

Pro Asp Ala Ala Cys Leu Phe Phe Asp Ser Glu Phe Gly Ile Thr Ser
85 90 95

Ala Tyr Leu Glu Ser Met Gly Val Asp Pro Asp Arg Val Val His Val
100 105 110

Pro Ile Lys Asn Ile Glu Glu Leu Lys Phe Glu Ile Met Asn Gln Leu
115 120 125

Glu Gln Ile Thr Arg Glu Asp Lys Val Ile Ile Phe Ile Asp Ser Ile
130 135 140

Gly Asn Leu Ala Ser Lys Lys Glu Val Glu Asp Ala Ile Asn Glu Lys
145 150 155 160

Ser Ala Gln Asp Met Thr Arg Ala Lys Ala Leu Lys Gly Leu Phe Arg
165 170 175

Met Val Thr Pro Tyr Leu Thr Met Asn Asp Ile Pro Cys Ile Ala Ile

				180					185					190			
Asn	His	Thr	Tyr	Glu	Thr	Gln	Glu	Met	Phe	Ser	Lys	Thr	Val	Met	Ser		
	195						200					205					
Gly	Gly	Thr	Gly	Ala	Met	Tyr	Ser	Ala	Asn	Glu	Val	Phe	Ile	Ile	Gly		
	210					215					220						
Arg	Arg	Gln	Gln	Lys	Glu	Gly	Thr	Glu	Ile	Thr	Gly	Tyr	Asp	Phe	Ile		
225					230					235					240		
Leu	Asn	Ala	Glu	Lys	Ser	Arg	Thr	Val	Lys	Glu	Lys	Ser	Lys	Phe	Lys		
				245					250					255			
Ile	Ser	Val	Thr	Phe	Ser	Gly	Gly	Ile	Asp	Pro	Tyr	Ser	Gly	Leu	Leu		
			260					265					270				
Glu	Leu	Ala	Val	Glu	Leu	Gly	Trp	Val	Val	Lys	Pro	Ser	Asn	Gly	Trp		
		275					280					285					
Tyr	Ser	Arg	Ser	Ile	Leu	Asn	Thr	Glu	Thr	Gly	Glu	Met	Glu	Thr	Glu		
	290					295					300						
Glu	Arg	Lys	Phe	Arg	Ala	Lys	Glu	Thr	Asn	Ser	Ile	Glu	Phe	Trp	Lys		
305					310					315					320		
Pro	Leu	Leu	Thr	Asn	Asp	Lys	Phe	Asn	Glu	Ala	Ile	Asn	Asp	His	Tyr		
				325					330					335			
Lys	Leu	Gly	Gln	Val	Ile	Ser	Asp	Glu	Ala	Val	Asp	Lys	Glu	Ile	Glu		
			340					345					350				
Asp	Met	Leu	Ala														
		355															

<210> 3
 <211> 8
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Semi Conserved Domain

<400> 3

Lys Glu Lys Ser Lys Phe Phe Ile
1 5

<210> 4

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Semi Conserved Domain

<400> 4

Lys Glu Lys Ser Lys Phe Pro Ile
1 5

<210> 5

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Semi Conserved Domain

<220>

<221> VARIANT

<222> (5)..(5)

<223> X = any AA

<220>

<221> VARIANT

<222> (7)..(7)

<223> X = any AA

<400> 5

Lys Glu Lys Ser Xaa Phe Xaa Ile
1 5

<210> 6

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Semi Conserved Domain

<220>

<221> VARIANT
<222> (4)..(4)
<223> X = any AA

<220>
<221> VARIANT
<222> (5)..(5)
<223> X = any AA

<220>
<221> VARIANT
<222> (8)..(8)
<223> X = any AA

<220>
<221> VARIANT
<222> (9)..(9)
<223> X = any AA

<220>
<221> VARIANT
<222> (10)..(10)
<223> X = any AA

<220>
<221> VARIANT
<222> (11)..(11)
<223> X = any AA

<220>
<221> VARIANT
<222> (12)..(12)
<223> X = any AA

<220>
<221> VARIANT
<222> (13)..(13)
<223> X = any AA

<400> 6

Lys Ser Arg Xaa Xaa Lys Glu Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10

<210> 7
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Semi Conserved Domain

<400> 7

Lys Ser Arg Thr Val Lys Glu Lys Ser Lys Phe Phe Ile
1 5 10

<210> 8

<211> 391

<212> PRT

<213> Enterobacteria phage T4

<400> 8

Met Ser Asp Leu Lys Ser Arg Leu Ile Lys Ala Ser Thr Ser Lys Leu
1 5 10 15

Thr Ala Glu Leu Thr Ala Ser Lys Phe Phe Asn Glu Lys Asp Val Val
20 25 30

Arg Thr Lys Ile Pro Met Met Asn Ile Ala Leu Ser Gly Glu Ile Thr
35 40 45

Gly Gly Met Gln Ser Gly Leu Leu Ile Leu Ala Gly Pro Ser Lys Ser
50 55 60

Phe Lys Ser Asn Phe Gly Leu Thr Met Val Ser Ser Tyr Met Arg Gln
65 70 75 80

Tyr Pro Asp Ala Val Cys Leu Phe Tyr Asp Ser Glu Phe Gly Ile Thr
85 90 95

Pro Ala Tyr Leu Arg Ser Met Gly Val Asp Pro Glu Arg Val Ile His
100 105 110

Thr Pro Val Gln Ser Leu Glu Gln Leu Arg Ile Asp Met Val Asn Gln
115 120 125

Leu Asp Ala Ile Glu Arg Gly Glu Lys Val Val Val Phe Ile Asp Ser
130 135 140

Leu Gly Asn Leu Ala Ser Lys Lys Glu Thr Glu Asp Ala Leu Asn Glu
145 150 155 160

Lys Val Val Ser Asp Met Thr Arg Ala Lys Thr Met Lys Ser Leu Phe
165 170 175

Arg Ile Val Thr Pro Tyr Phe Ser Thr Lys Asn Ile Pro Cys Ile Ala
180 185 190

Ile Asn His Thr Tyr Glu Thr Gln Glu Met Phe Ser Lys Thr Val Met
195 200 205

Gly Gly Gly Thr Gly Pro Met Tyr Ser Ala Asp Thr Val Phe Ile Ile
210 215 220

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

Val Leu Asn Val Glu Lys Ser Arg Thr Val Lys Glu Lys Ser Lys Phe
245 250 255

Phe Ile Asp Val Lys Phe Asp Gly Gly Ile Asp Pro Tyr Ser Gly Leu
260 265 270

Leu Asp Met Ala Leu Glu Leu Gly Phe Val Val Lys Pro Lys Asn Gly
275 280 285

Trp Tyr Ala Arg Glu Phe Leu Asp Glu Glu Thr Gly Glu Met Ile Arg
290 295 300

Glu Glu Lys Ser Trp Arg Ala Lys Asp Thr Asn Cys Thr Thr Phe Trp
305 310 315 320

Gly Pro Leu Phe Lys His Gln Pro Phe Arg Asp Ala Ile Lys Arg Ala
325 330 335

Tyr Gln Leu Gly Ala Ile Asp Ser Asn Glu Ile Val Glu Ala Glu Val
340 345 350

Asp Glu Leu Ile Asn Ser Lys Val Glu Lys Phe Lys Ser Pro Glu Ser
355 360 365

Lys Ser Lys Ser Ala Ala Asp Leu Glu Thr Asp Leu Glu Gln Leu Ser
370 375 380

Asp Met Glu Glu Phe Asn Glu
385 390

<210> 9
<211> 393
<212> PRT
<213> Enterobacteria phage T6

<400> 9

Met Ser Ile Ala Asp Leu Lys Ser Arg Leu Ile Lys Ala Ser Thr Ser
1 5 10 15

Lys Met Thr Ala Glu Leu Thr Thr Ser Lys Phe Phe Asn Glu Lys Asp
20 25 30

Val Ile Arg Thr Lys Ile Pro Met Leu Asn Ile Ala Ile Ser Gly Ala
35 40 45

Ile Asp Gly Gly Met Gln Ser Gly Leu Thr Ile Phe Ala Gly Pro Ser
50 55 60

Lys His Phe Lys Ser Asn Met Ser Leu Thr Met Val Ala Ala Tyr Leu
65 70 75 80

Asn Lys Tyr Pro Asp Ala Val Cys Leu Phe Tyr Asp Ser Glu Phe Gly
85 90 95

Ile Thr Pro Ala Tyr Leu Arg Ser Met Gly Val Asp Pro Glu Arg Val
100 105 110

Ile His Thr Pro Ile Gln Ser Val Glu Gln Leu Lys Ile Asp Met Val
115 120 125

Asn Gln Leu Glu Ala Ile Glu Arg Gly Glu Lys Val Ile Val Phe Ile
130 135 140

Asp Ser Ile Gly Asn Met Ala Ser Lys Lys Glu Thr Glu Asp Ala Leu
145 150 155 160

Asn Glu Lys Ser Val Ala Asp Met Thr Arg Ala Lys Ser Leu Lys Ser
165 170 175

Leu Phe Arg Ile Val Thr Pro Tyr Phe Ser Ile Lys Asn Ile Pro Cys
180 185 190

Val Ala Val Asn His Thr Ile Glu Thr Ile Glu Met Phe Ser Lys Thr
195 200 205

Val Met Thr Gly Gly Thr Gly Val Met Tyr Ser Ala Asp Thr Val Phe
210 215 220

Ile Ile Gly Lys Arg Gln Ile Lys Asp Gly Ser Asp Leu Gln Gly Tyr
225 230 235 240

Gln Phe Val Leu Asn Val Glu Lys Ser Arg Thr Val Lys Glu Lys Ser
245 250 255

Lys Phe Phe Ile Asp Val Lys Phe Asp Gly Gly Ile Asp Pro Tyr Ser
260 265 270

Gly Leu Leu Asp Met Ala Leu Glu Leu Gly Phe Val Val Lys Pro Lys
275 280 285

Asn Gly Trp Tyr Ala Arg Glu Phe Leu Asp Glu Glu Thr Gly Glu Met
290 295 300

Ile Arg Glu Glu Lys Ser Trp Arg Ala Lys Asp Thr Asn Cys Thr Thr
305 310 315 320

Phe Trp Gly Pro Leu Phe Lys His Gln Pro Phe Arg Asp Ala Ile Lys
325 330 335

Arg Ala Tyr Gln Leu Gly Ala Ile Asp Ser Asn Glu Ile Val Glu Ala
340 345 350

Glu Val Asp Glu Leu Ile Asn Ser Lys Val Glu Lys Phe Lys Ser Pro
355 360 365

Glu Ser Lys Ser Lys Ser Ala Ala Asp Leu Glu Thr Asp Leu Glu Gln
370 375 380

Leu Ser Asp Met Glu Glu Phe Asn Glu
385 390

<210> 10
<211> 387

<212> PRT

<213> Acinetobacter phage 133

<400> 10

Met	Ser	Ser	Leu	Lys	Glu	Arg	Leu	Ile	Lys	Ala	Ser	Thr	Ser	Lys	Met
1				5					10					15	

Thr	Ala	Glu	Leu	Thr	Lys	Ser	Lys	Phe	Phe	Asn	Asp	Lys	Thr	Val	Val
			20					25					30		

Arg	Thr	Arg	Ile	Pro	Met	Leu	Asn	Ile	Ala	Ile	Ser	Gly	Ala	Leu	Asn
		35					40					45			

Gly	Gly	Met	Gln	Ser	Gly	Leu	Thr	Ile	Phe	Ala	Gly	Pro	Ser	Lys	His
	50					55					60				

Phe	Lys	Ser	Asn	Met	Gly	Leu	Thr	Met	Val	Ala	Ala	Tyr	Met	Lys	Ala
65					70					75					80

Phe	Pro	Asp	Ala	Val	Cys	Met	Phe	Tyr	Asp	Ser	Glu	Phe	Gly	Ile	Thr
				85					90					95	

Pro	Ala	Tyr	Leu	Lys	Ala	Met	Gly	Val	Asp	Pro	Asp	Arg	Val	Ile	His
			100					105					110		

Thr	Pro	Val	Gln	Ser	Val	Glu	Gln	Leu	Lys	Ile	Asp	Met	Thr	Asn	Gln
		115					120					125			

Leu	Glu	Glu	Val	Lys	Arg	Gly	Glu	Lys	Val	Ile	Val	Phe	Ile	Asp	Ser
	130					135					140				

Ile	Gly	Asn	Leu	Ala	Ser	Lys	Lys	Glu	Thr	Glu	Asp	Ala	Leu	Asn	Glu
145					150					155					160

Lys	Thr	Thr	Ala	Asp	Met	Thr	Arg	Ala	Lys	Ala	Leu	Lys	Ser	Leu	Phe
				165					170					175	

Arg	Ile	Val	Thr	Pro	Tyr	Phe	Ser	Ile	Lys	Asp	Ile	Pro	Cys	Val	Ala
			180					185					190		

Val	Asn	His	Thr	Leu	Gln	Thr	Leu	Glu	Met	Phe	Ser	Lys	Glu	Val	Met
		195					200					205			

Thr Gly Gly Thr Gly Val Met Tyr Ser Ala Asp Thr Val Phe Phe Ile
210 215 220

Gly Lys Arg Gln Val Lys Asp Gly Thr Glu Leu Ala Gly Tyr Glu Phe
225 230 235 240

Ile Leu Lys Ala Glu Lys Ser Arg Met Val Lys Glu Lys Ser Val Phe
245 250 255

Pro Ile Thr Val Lys Phe Asp Gly Gly Ile Asp Pro Tyr Ser Gly Leu
260 265 270

Leu Glu Met Ala Thr Asp Leu Gly Phe Val Val Lys Pro Lys Val Gly
275 280 285

Trp Tyr Lys Arg Ala Met Met Val Asp Gly Val Met Gln His Glu Glu
290 295 300

Lys Ser Trp Arg Ala Lys Asp Thr Asp Ser Ile Asp Phe Trp Gly Pro
305 310 315 320

Leu Phe Lys His Asp Glu Phe Arg Lys Ala Ile Glu Thr Arg Tyr Gln
325 330 335

Leu Gly Ser Ile Glu Ser Asp Ala Glu Val Asp Ala Glu Val Asp Ala
340 345 350

Leu Ile Gly Ser Lys Thr Thr Ala Lys Ile Ser Gly Val Asn Phe Gly
355 360 365

Pro Ala Glu Ser Ala Ala Asp Lys Glu Gln Gln Leu Glu Asp Phe Val
370 375 380

Asp Glu Asp
385

<210> 11

<211> 390

<212> PRT

<213> Enterobacteria phage RB69

<400> 11

Met Ser Asp Leu Lys Ser Arg Leu Ile Lys Ala Ser Thr Ser Lys Met
1 5 10 15

Thr Ala Asp Leu Thr Lys Ser Lys Leu Phe Asn Asn Arg Asp Glu Val
20 25 30

Pro Thr Arg Ile Pro Met Leu Asn Ile Ala Leu Gly Gly Ala Leu Asn
35 40 45

Ala Gly Leu Gln Ser Gly Leu Thr Ile Phe Ala Ala Pro Ser Lys His
50 55 60

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

Tyr Lys Asp Ala Ile Cys Leu Phe Tyr Asp Ser Glu Phe Gly Ala Ser
85 90 95

Glu Ser Tyr Phe Arg Ser Met Gly Val Asp Leu Asp Arg Val Val His
100 105 110

Thr Pro Ile Gln Ser Val Glu Gln Leu Lys Val Asp Met Thr Asn Gln
115 120 125

Leu Asp Ala Ile Glu Arg Gly Asp Lys Val Ile Ile Phe Ile Asp Ser
130 135 140

Ile Gly Asn Thr Ala Ser Lys Lys Glu Thr Glu Asp Ala Leu Asn Glu
145 150 155 160

Lys Val Val Gly Asp Met Ser Arg Ala Lys Ala Leu Lys Ser Leu Phe
165 170 175

Arg Ile Val Thr Pro Tyr Leu Thr Ile Lys Asp Ile Pro Cys Val Ala
180 185 190

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

Met Gly Gly Gly Thr Gly Ile Leu Tyr Ser Ala Asn Thr Val Phe Phe

210

215

220

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

Phe Thr Leu Lys Ala Glu Lys Ser Arg Thr Val Lys Glu Lys Ser Thr
 245 250 255

Phe Pro Ile Thr Val Asn Phe Asp Gly Gly Ile Asp Pro Phe Ser Gly
 260 265 270

Leu Leu Glu Met Ala Thr Glu Ile Gly Phe Val Val Lys Pro Lys Ala
 275 280 285

Gly Trp Tyr Ala Arg Glu Phe Leu Asp Glu Glu Thr Gly Glu Met Ile
 290 295 300

Arg Glu Glu Lys Ser Trp Arg Ala Lys Ala Thr Asp Cys Val Glu Phe
 305 310 315 320

Trp Gly Pro Leu Phe Lys His Lys Pro Phe Arg Asp Ala Ile Glu Thr
 325 330 335

Lys Tyr Lys Leu Gly Ala Ile Ser Ser Ile Lys Glu Val Asp Asp Ala
 340 345 350

Val Asn Asp Leu Ile Asn Cys Lys Ala Thr Thr Lys Val Pro Val Lys
 355 360 365

Thr Ser Asp Ala Pro Ser Ala Ala Asp Ile Glu Asn Asp Leu Asp Glu
 370 375 380

Met Glu Asp Phe Asp Glu
 385 390

<210> 12

<211> 411

<212> PRT

<213> Aeromonas phage Aeh1

<400> 12

Met Ala Lys Gly Ile Lys Thr Ala Lys Thr Gly Asn Leu Gly Ser Leu

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

Gly Ile Thr Tyr Ser Ser Asp Thr Val Ile Ile Ile Gly Arg Gln Gln
225 230 235 240

Glu Lys Asp Gly Lys Glu Leu Leu Gly Tyr Asn Phe Val Leu Asn Met
245 250 255

Glu Lys Ser Arg Phe Val Lys Glu Gln Ser Lys Leu Pro Leu Glu Val
260 265 270

Thr Phe Gln Gly Gly Ile Asn Thr Tyr Ser Gly Met Leu Asp Ile Ala
275 280 285

Leu Glu Val Gly Phe Val Val Lys Pro Ser Asn Gly Trp Phe Ser Arg
290 295 300

Ala Phe Leu Asp Glu Glu Thr Gly Glu Leu Val Glu Glu Asp Arg Lys
305 310 315 320

Trp Arg Arg Ala Asp Thr Asn Cys Leu Glu Phe Trp Lys Pro Met Phe
325 330 335

Ala His Gln Pro Phe Lys Thr Ala Cys Ser Asp Met Phe Lys Leu Lys
340 345 350

Ser Val Ala Val Lys Asp Glu Val Phe Asp Glu Val Asp Glu Leu Phe
355 360 365

Ser Gly Glu Ala Glu Met Pro Val Asn Met Gly Arg Lys Leu Asp Thr
370 375 380

Ala Asp Gln Glu Glu Ile Asp Gln Leu Glu Glu Val Asp Val Glu Gly
385 390 395 400

Ser Asp Ser Asp Glu Leu Phe Ala Asn Leu Asp
405 410

<210> 13
<211> 368
<212> PRT
<213> Aeromonas phage 65

<400> 13

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

Leu Asn Gly Thr Ser Ser Asn Lys Met Ser Ala Met Leu Ala Glu Ser
20 25 30

Ile Phe Phe Asn Glu Lys Asp Thr Ile Arg Thr Arg Val Pro Ile Ile
35 40 45

Asn Leu Met Met Ser Gly Arg Leu Asp Gly Gly Ile Thr Pro Gly Leu
50 55 60

Thr Cys Ile Ala Gly Pro Ser Lys His Phe Lys Ser Asn Leu Ser Leu
65 70 75 80

Val Met Val Ser Ala Tyr Leu Arg Lys Tyr Pro Lys Ala Val Cys Leu
85 90 95

Phe Phe Asp Asn Glu Phe Gly Ser Thr Pro Asp Tyr Phe Thr Ser Gln
100 105 110

Gly Val Asp Ile Ser Arg Val Val His Cys Pro Phe Ile Asp Val Glu
115 120 125

Glu Leu Lys Phe Asp Ile Val Lys Lys Leu Glu Ser Ile Thr Arg Gly
130 135 140

Asp Lys Val Ile Ile Tyr Ile Asp Ser Ile Gly Asn Val Ala Ser Lys
145 150 155 160

Lys Glu Leu Gln Asp Ala Lys Asp Glu Lys Ser Ala Gln Asp Met Thr
165 170 175

Arg Ala Lys Gln Ile Lys Ser Leu Phe Arg Met Val Thr Pro Tyr Leu
180 185 190

Thr Val Leu Asp Ile Pro Cys Ile Ala Val Asn His Thr Tyr Glu Thr
195 200 205

Gln Glu Met Phe Ser Lys Thr Val Met Ser Gly Gly Thr Gly Pro Met
210 215 220

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

Gly Lys Glu Leu Leu Gly Tyr Asn Phe Val Met Asn Ala Glu Lys Ser
245 250 255

Arg Ala Ile Lys Glu Lys Ser Lys Leu Asp Leu Met Val Ser Phe Glu
260 265 270

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

Gly Phe Val Thr Lys Pro Gln Asn Ala Arg Tyr Gln Arg Asn Phe Leu
290 295 300

Asp Leu Glu Pro Gly Glu Met Val Ile Pro Glu Asp Glu Lys Lys Trp
305 310 315 320

Thr Glu Glu Glu Ser Asp Ser Leu Glu Phe Trp Lys Pro Met Phe Ser
325 330 335

His Lys Pro Phe Met Asp Ala Val Ser Asn Ala Tyr Lys Leu Lys Ala
340 345 350

Val Glu Val Ser Gln Glu Val Phe Asp Glu Val Asp Gln Leu Phe Gly
355 360 365

<210> 14
<211> 366
<212> PRT
<213> Vibrio phage KVP40

<400> 14

Met Ser Asp Leu Met Lys Ser Leu Lys Lys Ser Ser Thr Ser Gly Tyr
1 5 10 15

Ala Gln Val Leu Ser Glu Ser Gln Phe Met Phe Asp Lys Asp His Thr
20 25 30

Arg Thr Tyr Val Pro Ala Ile Asn Ile Ala Phe Ser Gly Glu Val Asp
35 40 45

Gly Gly Leu Thr Ser Gly Leu Thr Val Leu Ala Gly Pro Ser Lys His
50 55 60

Phe Lys Ser Asn Leu Gly Leu Val Gly Val Ala Ala Tyr Leu Lys Lys
65 70 75 80

Tyr Pro Asp Ala Val Cys Val Phe Ile Asp Thr Glu Phe Gly Ile Thr
85 90 95

Pro Ser Tyr Leu Arg Ser Gln Gly Val Asp Pro Asp Arg Val Leu His
100 105 110

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

Leu Lys Asp Leu Ala Glu Arg Lys Arg Ala Lys Lys Ala Gly Glu Glu
130 135 140

Pro Asp Arg Val Ile Phe Phe Ile Asp Ser Val Gly Asn Val Ala Ser
145 150 155 160

Ala Lys Glu Ile Asp Asp Ala Gln Asn Glu Lys Ser Val Ala Asp Met
165 170 175

Ser Arg Ala Lys Gln Leu Lys Ser Leu Phe Arg Ile Ile Thr Pro Tyr
180 185 190

Phe Thr Met Leu Asp Ile Pro Cys Ile Ala Ile Asn His Thr Tyr Gln
195 200 205

Thr Gln Glu Ile Tyr Ser Lys Thr Val Met Ser Gly Gly Thr Gly Ile
210 215 220

Met Tyr Ser Ala Asp Thr Val Ile Ile Leu Gly Lys Gln Gln Glu Lys
225 230 235 240

Asp Gly Lys Asp Ile Ile Gly Tyr His Phe Ile Met Asn Ile Glu Lys
245 250 255

Ser Arg Phe Val Lys Glu Lys Met Lys Val Pro Leu Thr Val Thr Tyr
260 265 270

Glu Asn Gly Ile Asp Pro Phe Ser Gly Leu Leu Asp Ile Ala Leu Gln
275 280 285

Thr Gly His Val Val Lys Pro Ser Asn Gly Trp Tyr Gln Arg Ala Thr
290 295 300

Val Asp Glu Glu Thr Gly Glu Met Ile Val Glu Glu Lys Lys Tyr Arg
305 310 315 320

Ala Lys Glu Thr Gln Thr Ile Ser Phe Trp Lys Asp Ile Ile Asn Ser
325 330 335

Pro Thr Phe Lys Glu Gly Val Lys Arg Ile Tyr Cys Leu Gly Gln Leu
340 345 350

Asp Glu Ser Glu Leu Phe Gly Glu Val Asp Ser Leu Phe Asp
355 360 365

<210> 15
<211> 386
<212> PRT
<213> Enterobacteria phage RB43

<400> 15

Met Ser Asn Lys Ala Leu Leu Lys Lys Leu Ile Lys Asn Ser Asn Ser
1 5 10 15

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

Lys Thr Arg Thr Arg Val Pro Ile Leu Asn Leu Ala Leu Ser Gly Ala
35 40 45

Phe Asp Gly Gly Leu Thr Ser Gly Leu Thr Leu Phe Ala Gly Pro Ser
50 55 60

Lys His Phe Lys Ser Asn Leu Gly Leu Val Thr Val Ser Ala Tyr Leu
65 70 75 80

Lys Ala Asn Glu Asp Ala Val Cys Leu Phe Tyr Asp Ser Glu Lys Gly
85 90 95

Val Thr Lys Ser Tyr Leu Lys Ser Met Gly Val Asp Pro Asp Arg Val
100 105 110

Val Tyr Thr Arg Ile Thr Thr Val Glu Gln Leu Arg Asn Asp Val Val
115 120 125

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

Asp Ser Val Gly Asn Thr Ala Ser Lys Lys Glu Leu Ala Asp Ala Leu
145 150 155 160

Ser Asp Asn Asp Lys Gln Asp Met Thr Arg Ala Lys Ala Leu Lys Gly
165 170 175

Met Phe Arg Met Val Thr Pro Tyr Leu Ala Asp Leu Asp Ile Pro Met
180 185 190

Val Cys Ile Cys His Thr Tyr Asp Thr Gln Glu Met Tyr Ser Lys Lys
195 200 205

Val Ile Ser Gly Gly Thr Gly Leu Met Tyr Ser Ala Asp Thr Ala Ile
210 215 220

Ile Leu Gly Lys Gln Gln Val Lys Glu Gly Thr Glu Val Val Gly Tyr
225 230 235 240

Asp Phe Ile Met Asn Ile Glu Lys Ser Arg Phe Val Lys Glu Lys Ser
245 250 255

Lys Phe Pro Leu His Val Thr Tyr Glu Gly Gly Ile Ser Met Tyr Ser
260 265 270

Gly Leu Leu Asp Leu Ala Met Glu Met Asn Phe Val Gln Thr Pro Thr
275 280 285

Lys Gly Trp Arg Gly Arg Ala Phe Leu Asn Thr Glu Thr Gly Glu Leu
290 295 300

Glu Leu Glu Glu Lys Lys Trp Arg Glu Ser Glu Thr Asn Ser Ile Glu

305		310		315		320
Phe Trp Arg Pro Leu Phe Thr His Gln Pro Phe Leu Asp Ala Ile Gln						
		325		330		335
Asp Lys Tyr Arg Ile Pro Asp Lys Glu Ile Thr Asp Gly Ala Ala Leu						
		340		345		350
Glu Asp Leu Tyr Ser Thr Asp Glu Pro Glu Ser Asn Lys Ile Asp Leu						
		355		360		365
Asp Asp Asp Ile Pro Asp Asp Ile Gly Ile Asp Gln Asp Glu Glu Pro						
		370		375		380
Ile Met						
385						
<210> 16						
<211> 335						
<212> PRT						
<213> Prochlorococcus phage P-SSM2						
<400> 16						
Met Asp Phe Leu Lys Glu Ile Val Lys Glu Ile Gly Asp Glu Tyr Thr						
1		5		10		15
Gln Val Ala Ala Asp Ile Gln Glu Asn Glu Arg Phe Ile Asp Thr Gly						
		20		25		30
Ser Tyr Ile Phe Asn Gly Leu Val Ser Gly Ser Ile Phe Gly Gly Val						
		35		40		45
Ser Ser Ser Arg Ile Thr Ala Ile Ala Gly Glu Ser Ser Thr Gly Lys						
		50		55		60
Thr Tyr Phe Ser Leu Ala Val Val Lys Asn Phe Leu Asp Asn Asn Pro						
65		70		75		80
Asp Gly Tyr Cys Leu Tyr Phe Asp Thr Glu Ala Ala Val Asn Lys Gly						
		85		90		95
Leu Leu Glu Ser Arg Gly Ile Asp Met Asn Arg Leu Val Val Val Asn						

				100					105					110			
Val	Val	Thr	Ile	Glu	Glu	Phe	Arg	Ser	Lys	Ala	Leu	Arg	Ala	Val	Asp		
		115					120					125					
Ile	Tyr	Leu	Lys	Thr	Ser	Glu	Glu	Glu	Arg	Lys	Pro	Cys	Met	Phe	Val		
	130					135					140						
Leu	Asp	Ser	Leu	Gly	Met	Leu	Ser	Thr	Glu	Lys	Glu	Ile	Arg	Asp	Ala		
145					150					155					160		
Leu	Asp	Asp	Lys	Gln	Val	Arg	Asp	Met	Thr	Lys	Ser	Gln	Leu	Val	Lys		
				165					170					175			
Gly	Ala	Phe	Arg	Met	Leu	Thr	Leu	Lys	Leu	Gly	Gln	Ala	Asn	Ile	Pro		
			180					185					190				
Leu	Ile	Val	Thr	Asn	His	Thr	Tyr	Asp	Val	Ile	Gly	Ser	Tyr	Val	Pro		
		195					200					205					
Thr	Lys	Glu	Met	Gly	Gly	Gly	Ser	Gly	Leu	Lys	Tyr	Ala	Ala	Ser	Thr		
	210					215					220						
Ile	Ile	Tyr	Leu	Ser	Lys	Lys	Lys	Glu	Lys	Asp	Gln	Lys	Glu	Val	Ile		
225					230					235					240		
Gly	Asn	Leu	Ile	Lys	Ala	Lys	Thr	His	Lys	Ser	Arg	Leu	Ser	Lys	Glu		
				245					250					255			
Asn	Lys	Glu	Val	Gln	Ile	Arg	Leu	Tyr	Tyr	Asp	Glu	Arg	Gly	Leu	Asp		
			260					265					270				
Arg	Tyr	Tyr	Gly	Leu	Leu	Glu	Leu	Gly	Glu	Ile	Gly	Gly	Met	Trp	Lys		
		275					280					285					
Asn	Val	Ala	Gly	Arg	Tyr	Glu	Met	Asn	Gly	Lys	Lys	Ile	Tyr	Ala	Lys		
	290					295					300						
Glu	Ile	Leu	Lys	Asn	Pro	Thr	Glu	Tyr	Phe	Thr	Asp	Asp	Ile	Met	Glu		
305					310					315					320		

Gln Leu Asp Asn Ile Ala Lys Glu His Phe Ser Tyr Gly Thr Asn
325 330 335

<210> 17
<211> 336
<212> PRT
<213> Prochlorococcus phage P-SSM4

<400> 17

Met Asn Phe Leu Lys Asp Ile Ala Lys Glu Ile Gly Asn Asp Tyr Ala
1 5 10 15

Ser Leu Val Ser Glu Gly Val Ser Ala Gly Asp Thr Ala Gly Phe Ile
20 25 30

Asp Thr Gly Ser Tyr Ile Phe Asn Ala Leu Leu Ser Gly Ser Ile Tyr
35 40 45

Gly Gly Ile Pro Asn Asn Lys Ile Thr Ala Ile Ala Gly Glu Thr Ser
50 55 60

Thr Gly Lys Thr Phe Phe Cys Leu Gly Met Val Gln His Phe Leu Glu
65 70 75 80

Ser Asn Pro Asp Ala Gly Val Ile Tyr Phe Glu Ser Glu Ser Ala Ile
85 90 95

Ser Lys Gln Met Ile Glu Asp Arg Gly Ile Asp Ser Asn Arg Met Leu
100 105 110

Leu Val Pro Val Thr Thr Val Gln Glu Phe Arg Leu Gln Ala Ile Lys
115 120 125

Ile Leu Asp Lys Tyr Asn Glu Gln Thr Ala Glu Glu Arg Lys Pro Leu
130 135 140

Met Phe Val Leu Asp Ser Leu Gly Met Leu Ser Thr Ser Lys Glu Val
145 150 155 160

Glu Asp Ser Glu Ala Gly Lys Glu Thr Arg Asp Met Thr Arg Ala Gln
165 170 175

Val Val Lys Ser Ile Phe Arg Val Leu Thr Leu Lys Leu Gly Lys Ala
180 185 190

Asn Val Pro Leu Ile Val Thr Asn His Thr Tyr Asp Val Val Gly Ala
195 200 205

Tyr Ile Pro Thr Lys Glu Met Gly Gly Gly Ser Gly Leu Lys Tyr Ala
210 215 220

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

Glu Val Val Gly Asn Ile Ile Lys Cys Lys Thr Ala Lys Ser Arg Leu
245 250 255

Thr Lys Glu Asn Ser Asp Val Glu Thr Arg Leu Tyr Tyr Asp Arg Gly
260 265 270

Leu Asp Arg Tyr Tyr Gly Leu Leu Glu Leu Gly Glu Lys His Gly Val
275 280 285

Phe Ser Arg Lys Gly Asn Arg Val Val Val Gly Asp Ser Ser Val Tyr
290 295 300

Pro Ser Ala Ile Leu Ala Asp Pro Asp Lys Tyr Phe Thr Glu Glu Leu
305 310 315 320

Met Glu Lys Leu Asp Glu Ala Ala Ala Lys Glu Phe Arg Tyr Gly Asn
325 330 335

<210> 18

<211> 343

<212> PRT

<213> Synechococcus phage S-PM2

<400> 18

Met Ser Phe Leu Asp Ser Val Ile Lys Asp Ser Lys Asn Glu Tyr Ala
1 5 10 15

Ala Phe Ala Ser Glu Gly Val Ala Ala Gly Asp Val Glu Ser Phe Val
20 25 30

Asp Thr Gly Ser Tyr Ile Phe Asn Ala Leu Val Ser Gly Ser Ile Phe
35 40 45

Gly Gly Ile Pro Ser Asn Lys Ile Thr Ala Leu Ala Gly Glu Ser Gly
50 55 60

Thr Gly Lys Thr Phe Phe Cys Leu Ser Val Val Arg Asn Phe Leu Asn
65 70 75 80

Thr Asp Pro Asp Ala Gly Val Ile Tyr Phe Glu Thr Glu Ser Ala Ile
85 90 95

Ser Lys Gln Met Ile Glu Ser Arg Gly Ile Asp Ser Thr Arg Met Ile
100 105 110

Ile Phe Pro Val Asp Thr Ile Glu Asp Phe Arg Thr Gln Ala Val Arg
115 120 125

Ile Ile Asp Lys Tyr Met Glu Gln Asn Lys Ser Glu Arg Lys Pro Leu
130 135 140

Met Phe Val Leu Asp Ser Leu Gly Met Leu Ala Thr Lys Lys Glu Val
145 150 155 160

Glu Asp Ala Ser Asn Asp Lys Gln Val Arg Asp Met Thr Lys Ala Gln
165 170 175

Ile Val Lys Ser Ala Phe Arg Ile Leu Thr Leu Lys Met Gly Lys Ala
180 185 190

Asn Ile Pro Met Leu Val Thr Asn His Thr Tyr Asp Val Val Gly Ser
195 200 205

Tyr Val Pro Thr Lys Glu Met Gly Gly Gly Ser Gly Leu Lys Tyr Ser
210 215 220

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

Asp Leu Val Gly Asn Ile Ile Lys Cys Glu Ala Lys Lys Ser Arg Leu
245 250 255

Thr Arg Glu Gly Ser Lys Val Glu Thr Arg Leu Phe Phe Asp Gln Arg
260 265 270

Gly Leu Glu Arg Tyr Tyr Gly Met Leu Glu Leu Gly Glu Arg Ala Gly
275 280 285

Leu Trp Lys Asn Thr Ala Gly Arg Tyr Glu Ile Asn Gly Lys Lys Val
290 295 300

Tyr Gly Lys Gln Ile Leu Ala Asn Pro Asp Glu Phe Phe Thr Glu Glu
305 310 315 320

Ile Leu Gln Glu Leu Asp Lys Gln Ala Gln Arg Glu Phe Leu Tyr Gly
325 330 335

Ala Ser Asp Asp Gly Glu Asp
340

<210> 19
<211> 393
<212> PRT
<213> Enterobacteria phage RB32

<400> 19

Met Ser Ile Ala Asp Leu Lys Ser Arg Leu Ile Lys Ala Ser Thr Ser
1 5 10 15

Lys Met Thr Ala Glu Leu Thr Thr Ser Lys Phe Phe Asn Glu Lys Asp
20 25 30

Val Ile Arg Thr Lys Ile Pro Met Leu Asn Ile Ala Ile Ser Gly Ala
35 40 45

Ile Asp Gly Gly Met Gln Ser Gly Leu Thr Ile Phe Ala Gly Pro Ser
50 55 60

Lys His Phe Lys Ser Asn Met Ser Leu Thr Met Val Ala Ala Tyr Leu
65 70 75 80

Asn Lys Tyr Pro Asp Ala Val Cys Leu Phe Tyr Asp Ser Glu Phe Gly
85 90 95

Ile Thr Pro Ala Tyr Leu Arg Ser Met Gly Val Asp Pro Glu Arg Val
100 105 110

Ile His Thr Pro Ile Gln Ser Val Glu Gln Leu Lys Ile Asp Met Val
115 120 125

Asn Gln Leu Glu Ala Ile Glu Arg Gly Glu Lys Val Ile Val Phe Ile
130 135 140

Asp Ser Ile Gly Asn Met Ala Ser Lys Lys Glu Thr Glu Asp Ala Leu
145 150 155 160

Asn Glu Lys Ser Val Ala Asp Met Thr Arg Ala Lys Ser Leu Lys Ser
165 170 175

Leu Phe Arg Ile Val Thr Pro Tyr Phe Ser Ile Lys Asn Ile Pro Cys
180 185 190

Val Ala Val Asn His Thr Ile Glu Thr Ile Glu Met Phe Ser Lys Thr
195 200 205

Val Met Thr Gly Gly Thr Gly Val Met Tyr Ser Ala Asp Thr Val Phe
210 215 220

Ile Ile Gly Lys Arg Gln Ile Lys Asp Gly Ser Asp Leu Gln Gly Tyr
225 230 235 240

Gln Phe Val Leu Asn Val Glu Lys Ser Arg Thr Val Lys Glu Lys Ser
245 250 255

Lys Phe Phe Ile Asp Val Lys Phe Asp Gly Gly Ile Asp Pro Tyr Ser
260 265 270

Gly Leu Leu Asp Met Ala Leu Glu Leu Gly Phe Val Val Lys Pro Lys
275 280 285

Asn Gly Trp Tyr Ala Arg Glu Phe Leu Asp Glu Glu Thr Gly Glu Met
290 295 300

Ile Arg Glu Glu Lys Ser Trp Arg Ala Lys Asp Thr Asn Cys Thr Thr
305 310 315 320

Phe Trp Gly Pro Leu Phe Lys His Gln Pro Phe Arg Asp Ala Ile Lys
325 330 335

Arg Ala Tyr Gln Leu Gly Ala Ile Asp Ser Asn Glu Ile Val Glu Ala
340 345 350

Glu Val Asp Glu Leu Ile Asn Ser Lys Val Glu Lys Phe Lys Ser Pro
355 360 365

Glu Ser Lys Ser Lys Ser Ala Ala Asp Leu Glu Thr Asp Leu Glu Gln
370 375 380

Leu Ser Asp Met Glu Glu Phe Asn Glu
385 390

<210> 20
<211> 366
<212> PRT
<213> Vibrio phage nt-1

<400> 20

Met Ser Asp Leu Leu Lys Ser Leu Lys Lys Ser Ser Thr Ser Gly Tyr
1 5 10 15

Ala His Val Leu Ser Glu Ser Gln Phe Met Phe Glu Lys Asp His Thr
20 25 30

Arg Thr Tyr Val Pro Ala Ile Asn Ile Ala Phe Ser Gly Glu Val Asp
35 40 45

Gly Gly Leu Thr Ser Gly Leu Thr Val Leu Ala Gly Pro Ser Lys His
50 55 60

Phe Lys Ser Asn Leu Gly Leu Val Gly Val Ala Ala Tyr Leu Lys Lys
65 70 75 80

Tyr Pro Glu Ala Ile Cys Val Phe Ile Asp Thr Glu Phe Gly Ile Thr
85 90 95

Pro Ser Tyr Leu Lys Ser Gln Gly Val Asp Pro Glu Arg Val Leu His
100 105 110

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

Leu Lys Asp Leu Ala Glu Arg Lys Arg Ala Lys Lys Ala Gly Glu Glu
130 135 140

Pro Asp Arg Val Val Phe Phe Ile Asp Ser Val Gly Asn Val Ala Ser
145 150 155 160

Ala Lys Glu Ile Asp Asp Ala Gln Asn Glu Lys Ser Val Ala Asp Met
165 170 175

Ser Arg Ala Lys Gln Leu Lys Ser Leu Phe Arg Ile Ile Thr Pro Tyr
180 185 190

Phe Thr Met Leu Asp Ile Pro Cys Ile Ala Ile Asn His Thr Tyr Gln
195 200 205

Thr Gln Glu Met Tyr Ser Lys Thr Val Met Ser Gly Gly Thr Gly Ile
210 215 220

Met Tyr Ser Ala Asp Thr Val Ile Ile Leu Gly Lys Gln Gln Glu Lys
225 230 235 240

Asp Gly Lys Glu Ile Ile Gly Tyr His Phe Ile Met Asn Ile Glu Lys
245 250 255

Ser Arg Phe Val Lys Glu Lys Met Lys Val Pro Leu Thr Val Thr Tyr
260 265 270

Glu His Gly Ile Asp Gln Phe Ser Gly Leu Leu Asp Ile Ala Leu Gln
275 280 285

Thr Gly His Val Val Lys Pro Ser Asn Gly Trp Tyr Gln Arg Ala Phe
290 295 300

Ile Asp Glu Glu Thr Gly Glu Ile Glu Ile Glu Glu Lys Lys Tyr Arg
305 310 315 320

Ala Lys Glu Thr Gln Thr Leu Ser Phe Trp Lys Glu Ile Ile Asn Ser

325

330

335

Pro Thr Phe Lys Thr Gly Val Lys Arg Leu Tyr Cys Leu Gly Gln Leu
 340 345 350

Asp Glu Ser Glu Leu Leu Asp Glu Val Asp Ser Leu Phe Asp
 355 360 365

<210> 21

<211> 381

<212> PRT

<213> Enterobacteria phage RB16

<400> 21

Met Ser Asn Lys Ala Leu Leu Lys Lys Leu Ile Lys Asn Ser Asn Ser
 1 5 10 15

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

Lys Thr Arg Thr Arg Val Pro Ile Leu Asn Leu Val Leu Ser Gly Ala
 35 40 45

Phe Asp Gly Gly Leu Thr Ser Gly Leu Thr Leu Ile Ala Gly Pro Ser
 50 55 60

Lys His Phe Lys Ser Asn Leu Gly Leu Val Ala Val Ala Ala Tyr Leu
 65 70 75 80

Lys Ala Asn Glu Asp Ala Val Cys Leu Phe Tyr Asp Ser Glu Lys Gly
 85 90 95

Val Thr Lys Ser Tyr Leu Lys Ser Met Gly Val Asp Pro Asp Arg Val
 100 105 110

Val Tyr Thr Arg Ile Thr Thr Val Glu Gln Leu Arg Asn Asp Val Val
 115 120 125

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

Asp Ser Val Gly Asn Thr Ala Ser Lys Lys Glu Leu Lys Asp Ala Leu

145					150					155				160		
Glu	Asp	Asn	Asp	Lys	Gln	Asp	Met	Thr	Arg	Ala	Lys	Ala	Leu	Lys	Gly	
				165					170					175		
Met	Phe	Arg	Met	Val	Thr	Pro	Tyr	Leu	Ala	Asp	Ile	Asp	Ile	Pro	Met	
			180					185					190			
Val	Cys	Ile	Cys	His	Thr	Tyr	Asp	Thr	Gln	Glu	Met	Tyr	Ser	Lys	Lys	
		195					200					205				
Val	Ile	Ser	Gly	Gly	Thr	Gly	Leu	Met	Tyr	Ser	Ala	Asp	Thr	Ala	Ile	
	210					215					220					
Ile	Leu	Gly	Lys	Gln	Gln	Val	Lys	Glu	Gly	Thr	Glu	Val	Val	Gly	Tyr	
225					230					235					240	
Asp	Phe	Ile	Met	Asn	Val	Glu	Lys	Ser	Arg	Phe	Val	Lys	Glu	Lys	Ser	
				245					250					255		
Lys	Phe	Pro	Leu	His	Val	Thr	Tyr	Glu	Gly	Gly	Ile	Ser	Met	Phe	Ser	
			260					265					270			
Gly	Leu	Leu	Asp	Leu	Ala	Met	Glu	Met	Asn	Phe	Val	Gln	Thr	Pro	Thr	
		275					280					285				
Lys	Gly	Trp	Arg	Gly	Arg	Ala	Phe	Leu	Asn	Thr	Glu	Thr	Gly	Glu	Leu	
	290					295					300					
Glu	Leu	Glu	Glu	Lys	Lys	Trp	Arg	Glu	Ala	Glu	Thr	Asn	Cys	Ile	Glu	
305					310					315					320	
Phe	Trp	Lys	Pro	Leu	Phe	Lys	His	Gln	Pro	Phe	Ile	Asp	Ala	Ile	Gln	
				325					330					335		
Asp	Lys	Tyr	Arg	Ile	Pro	Asp	Lys	Glu	Ile	Thr	Asp	Gly	Ala	Ala	Leu	
			340					345					350			
Glu	Asp	Leu	Tyr	Ser	Asp	Asp	Val	Val	Glu	Ser	Asn	Lys	Val	Asp	Phe	
		355					360					365				

Asp Asp Asp Ile Pro Asp Asp Val Asp Leu Met Glu Glu
370 375 380

<210> 22
<211> 391
<212> PRT
<213> Enterobacteria phage T4

<400> 22

Met Ser Asp Leu Lys Ser Arg Leu Ile Lys Ala Ser Thr Ser Lys Leu
1 5 10 15

Thr Ala Glu Leu Thr Ala Ser Lys Phe Phe Asn Glu Lys Asp Val Val
20 25 30

Arg Thr Lys Ile Pro Met Met Asn Ile Ala Leu Ser Gly Glu Ile Thr
35 40 45

Gly Gly Met Gln Ser Gly Leu Leu Ile Leu Ala Gly Pro Ser Lys Ser
50 55 60

Phe Lys Ser Asn Phe Gly Leu Thr Met Val Ser Ser Tyr Met Arg Gln
65 70 75 80

Tyr Pro Asp Ala Val Cys Leu Phe Tyr Asp Ser Glu Phe Gly Ile Thr
85 90 95

Pro Ala Tyr Leu Arg Ser Met Gly Val Asp Pro Glu Arg Val Ile His
100 105 110

Thr Pro Val Gln Ser Leu Glu Gln Leu Arg Ile Asp Met Val Asn Gln
115 120 125

Leu Asp Ala Ile Glu Arg Gly Glu Lys Val Val Val Phe Ile Asp Ser
130 135 140

Leu Gly Asn Leu Ala Ser Lys Lys Glu Thr Glu Asp Ala Leu Asn Glu
145 150 155 160

Lys Val Val Ser Asp Met Thr Arg Ala Lys Thr Met Lys Ser Leu Phe
165 170 175

Arg Ile Val Thr Pro Tyr Phe Ser Thr Lys Asn Ile Pro Cys Ile Ala
180 185 190

Ile Asn His Thr Tyr Glu Thr Gln Glu Met Phe Ser Lys Thr Val Met
195 200 205

Gly Gly Gly Thr Gly Pro Met Tyr Ser Ala Asp Thr Val Phe Ile Ile
210 215 220

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

Val Leu Asn Val Glu Lys Ser Arg Thr Val Lys Glu Lys Ser Lys Phe
245 250 255

Lys Ile Asp Val Lys Phe Asp Gly Gly Ile Asp Pro Tyr Ser Gly Leu
260 265 270

Leu Asp Met Ala Leu Glu Leu Gly Phe Val Val Lys Pro Lys Asn Gly
275 280 285

Trp Tyr Ala Arg Glu Phe Leu Asp Glu Glu Thr Gly Glu Met Ile Arg
290 295 300

Glu Glu Lys Ser Trp Arg Ala Lys Asp Thr Asn Cys Thr Thr Phe Trp
305 310 315 320

Gly Pro Leu Phe Lys His Gln Pro Phe Arg Asp Ala Ile Lys Arg Ala
325 330 335

Tyr Gln Leu Gly Ala Ile Asp Ser Asn Glu Ile Val Glu Ala Glu Val
340 345 350

Asp Glu Leu Ile Asn Ser Lys Val Glu Lys Phe Lys Ser Pro Glu Ser
355 360 365

Lys Ser Lys Ser Ala Ala Asp Leu Glu Thr Asp Leu Glu Gln Leu Ser
370 375 380

Asp Met Glu Glu Phe Asn Glu
385 390

<210> 23
<211> 393
<212> PRT
<213> Enterobacteria phage T6

<400> 23

Met Ser Ile Ala Asp Leu Lys Ser Arg Leu Ile Lys Ala Ser Thr Ser
1 5 10 15

Lys Met Thr Ala Glu Leu Thr Thr Ser Lys Phe Phe Asn Glu Lys Asp
20 25 30

Val Ile Arg Thr Lys Ile Pro Met Leu Asn Ile Ala Ile Ser Gly Ala
35 40 45

Ile Asp Gly Gly Met Gln Ser Gly Leu Thr Ile Phe Ala Gly Pro Ser
50 55 60

Lys His Phe Lys Ser Asn Met Ser Leu Thr Met Val Ala Ala Tyr Leu
65 70 75 80

Asn Lys Tyr Pro Asp Ala Val Cys Leu Phe Tyr Asp Ser Glu Phe Gly
85 90 95

Ile Thr Pro Ala Tyr Leu Arg Ser Met Gly Val Asp Pro Glu Arg Val
100 105 110

Ile His Thr Pro Ile Gln Ser Val Glu Gln Leu Lys Ile Asp Met Val
115 120 125

Asn Gln Leu Glu Ala Ile Glu Arg Gly Glu Lys Val Ile Val Phe Ile
130 135 140

Asp Ser Ile Gly Asn Met Ala Ser Lys Lys Glu Thr Glu Asp Ala Leu
145 150 155 160

Asn Glu Lys Ser Val Ala Asp Met Thr Arg Ala Lys Ser Leu Lys Ser
165 170 175

Leu Phe Arg Ile Val Thr Pro Tyr Phe Ser Ile Lys Asn Ile Pro Cys
180 185 190

Val Ala Val Asn His Thr Ile Glu Thr Ile Glu Met Phe Ser Lys Thr
195 200 205

Val Met Thr Gly Gly Thr Gly Val Met Tyr Ser Ala Asp Thr Val Phe
210 215 220

Ile Ile Gly Lys Arg Gln Ile Lys Asp Gly Ser Asp Leu Gln Gly Tyr
225 230 235 240

Gln Phe Val Leu Asn Val Glu Lys Ser Arg Thr Val Lys Glu Lys Ser
245 250 255

Lys Phe Lys Ile Asp Val Lys Phe Asp Gly Gly Ile Asp Pro Tyr Ser
260 265 270

Gly Leu Leu Asp Met Ala Leu Glu Leu Gly Phe Val Val Lys Pro Lys
275 280 285

Asn Gly Trp Tyr Ala Arg Glu Phe Leu Asp Glu Glu Thr Gly Glu Met
290 295 300

Ile Arg Glu Glu Lys Ser Trp Arg Ala Lys Asp Thr Asn Cys Thr Thr
305 310 315 320

Phe Trp Gly Pro Leu Phe Lys His Gln Pro Phe Arg Asp Ala Ile Lys
325 330 335

Arg Ala Tyr Gln Leu Gly Ala Ile Asp Ser Asn Glu Ile Val Glu Ala
340 345 350

Glu Val Asp Glu Leu Ile Asn Ser Lys Val Glu Lys Phe Lys Ser Pro
355 360 365

Glu Ser Lys Ser Lys Ser Ala Ala Asp Leu Glu Thr Asp Leu Glu Gln
370 375 380

Leu Ser Asp Met Glu Glu Phe Asn Glu
385 390

<210> 24
<211> 387

<212> PRT

<213> Acinetobacter phage 133

<400> 24

Met	Ser	Ser	Leu	Lys	Glu	Arg	Leu	Ile	Lys	Ala	Ser	Thr	Ser	Lys	Met
1				5					10					15	

Thr	Ala	Glu	Leu	Thr	Lys	Ser	Lys	Phe	Phe	Asn	Asp	Lys	Thr	Val	Val
			20					25					30		

Arg	Thr	Arg	Ile	Pro	Met	Leu	Asn	Ile	Ala	Ile	Ser	Gly	Ala	Leu	Asn
		35					40					45			

Gly	Gly	Met	Gln	Ser	Gly	Leu	Thr	Ile	Phe	Ala	Gly	Pro	Ser	Lys	His
	50					55					60				

Phe	Lys	Ser	Asn	Met	Gly	Leu	Thr	Met	Val	Ala	Ala	Tyr	Met	Lys	Ala
65					70					75					80

Phe	Pro	Asp	Ala	Val	Cys	Met	Phe	Tyr	Asp	Ser	Glu	Phe	Gly	Ile	Thr
				85					90					95	

Pro	Ala	Tyr	Leu	Lys	Ala	Met	Gly	Val	Asp	Pro	Asp	Arg	Val	Ile	His
			100					105					110		

Thr	Pro	Val	Gln	Ser	Val	Glu	Gln	Leu	Lys	Ile	Asp	Met	Thr	Asn	Gln
		115					120					125			

Leu	Glu	Glu	Val	Lys	Arg	Gly	Glu	Lys	Val	Ile	Val	Phe	Ile	Asp	Ser
	130					135					140				

Ile	Gly	Asn	Leu	Ala	Ser	Lys	Lys	Glu	Thr	Glu	Asp	Ala	Leu	Asn	Glu
145					150					155					160

Lys	Thr	Thr	Ala	Asp	Met	Thr	Arg	Ala	Lys	Ala	Leu	Lys	Ser	Leu	Phe
				165					170					175	

Arg	Ile	Val	Thr	Pro	Tyr	Phe	Ser	Ile	Lys	Asp	Ile	Pro	Cys	Val	Ala
			180					185					190		

Val	Asn	His	Thr	Leu	Gln	Thr	Leu	Glu	Met	Phe	Ser	Lys	Glu	Val	Met
		195					200					205			

Thr Gly Gly Thr Gly Val Met Tyr Ser Ala Asp Thr Val Phe Phe Ile
210 215 220

Gly Lys Arg Gln Val Lys Asp Gly Thr Glu Leu Ala Gly Tyr Glu Phe
225 230 235 240

Ile Leu Lys Ala Glu Lys Ser Arg Met Val Lys Glu Lys Ser Val Phe
245 250 255

Lys Ile Thr Val Lys Phe Asp Gly Gly Ile Asp Pro Tyr Ser Gly Leu
260 265 270

Leu Glu Met Ala Thr Asp Leu Gly Phe Val Val Lys Pro Lys Val Gly
275 280 285

Trp Tyr Lys Arg Ala Met Met Val Asp Gly Val Met Gln His Glu Glu
290 295 300

Lys Ser Trp Arg Ala Lys Asp Thr Asp Ser Ile Asp Phe Trp Gly Pro
305 310 315 320

Leu Phe Lys His Asp Glu Phe Arg Lys Ala Ile Glu Thr Arg Tyr Gln
325 330 335

Leu Gly Ser Ile Glu Ser Asp Ala Glu Val Asp Ala Glu Val Asp Ala
340 345 350

Leu Ile Gly Ser Lys Thr Thr Ala Lys Ile Ser Gly Val Asn Phe Gly
355 360 365

Pro Ala Glu Ser Ala Ala Asp Lys Glu Gln Gln Leu Glu Asp Phe Val
370 375 380

Asp Glu Asp
385

<210> 25

<211> 390

<212> PRT

<213> Enterobacteria phage RB69

<400> 25

Met Ser Asp Leu Lys Ser Arg Leu Ile Lys Ala Ser Thr Ser Lys Met
1 5 10 15

Thr Ala Asp Leu Thr Lys Ser Lys Leu Phe Asn Asn Arg Asp Glu Val
20 25 30

Pro Thr Arg Ile Pro Met Leu Asn Ile Ala Leu Gly Gly Ala Leu Asn
35 40 45

Ala Gly Leu Gln Ser Gly Leu Thr Ile Phe Ala Ala Pro Ser Lys His
50 55 60

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

Tyr Lys Asp Ala Ile Cys Leu Phe Tyr Asp Ser Glu Phe Gly Ala Ser
85 90 95

Glu Ser Tyr Phe Arg Ser Met Gly Val Asp Leu Asp Arg Val Val His
100 105 110

Thr Pro Ile Gln Ser Val Glu Gln Leu Lys Val Asp Met Thr Asn Gln
115 120 125

Leu Asp Ala Ile Glu Arg Gly Asp Lys Val Ile Ile Phe Ile Asp Ser
130 135 140

Ile Gly Asn Thr Ala Ser Lys Lys Glu Thr Glu Asp Ala Leu Asn Glu
145 150 155 160

Lys Val Val Gly Asp Met Ser Arg Ala Lys Ala Leu Lys Ser Leu Phe
165 170 175

Arg Ile Val Thr Pro Tyr Leu Thr Ile Lys Asp Ile Pro Cys Val Ala
180 185 190

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

Met Gly Gly Gly Thr Gly Ile Leu Tyr Ser Ala Asn Thr Val Phe Phe

210

215

220

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

Phe Thr Leu Lys Ala Glu Lys Ser Arg Thr Val Lys Glu Lys Ser Thr
 245 250 255

Phe Lys Ile Thr Val Asn Phe Asp Gly Gly Ile Asp Pro Phe Ser Gly
 260 265 270

Leu Leu Glu Met Ala Thr Glu Ile Gly Phe Val Val Lys Pro Lys Ala
 275 280 285

Gly Trp Tyr Ala Arg Glu Phe Leu Asp Glu Glu Thr Gly Glu Met Ile
 290 295 300

Arg Glu Glu Lys Ser Trp Arg Ala Lys Ala Thr Asp Cys Val Glu Phe
 305 310 315 320

Trp Gly Pro Leu Phe Lys His Lys Pro Phe Arg Asp Ala Ile Glu Thr
 325 330 335

Lys Tyr Lys Leu Gly Ala Ile Ser Ser Ile Lys Glu Val Asp Asp Ala
 340 345 350

Val Asn Asp Leu Ile Asn Cys Lys Ala Thr Thr Lys Val Pro Val Lys
 355 360 365

Thr Ser Asp Ala Pro Ser Ala Ala Asp Ile Glu Asn Asp Leu Asp Glu
 370 375 380

Met Glu Asp Phe Asp Glu
 385 390

<210> 26

<211> 411

<212> PRT

<213> Aeromonas phage Aeh1

<400> 26

Met Ala Lys Gly Ile Lys Thr Ala Lys Thr Gly Asn Leu Gly Ser Leu

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

Gly Ile Thr Tyr Ser Ser Asp Thr Val Ile Ile Ile Gly Arg Gln Gln
225 230 235 240

Glu Lys Asp Gly Lys Glu Leu Leu Gly Tyr Asn Phe Val Leu Asn Met
245 250 255

Glu Lys Ser Arg Phe Val Lys Glu Gln Ser Lys Leu Lys Leu Glu Val
260 265 270

Thr Phe Gln Gly Gly Ile Asn Thr Tyr Ser Gly Met Leu Asp Ile Ala
275 280 285

Leu Glu Val Gly Phe Val Val Lys Pro Ser Asn Gly Trp Phe Ser Arg
290 295 300

Ala Phe Leu Asp Glu Glu Thr Gly Glu Leu Val Glu Glu Asp Arg Lys
305 310 315 320

Trp Arg Arg Ala Asp Thr Asn Cys Leu Glu Phe Trp Lys Pro Met Phe
325 330 335

Ala His Gln Pro Phe Lys Thr Ala Cys Ser Asp Met Phe Lys Leu Lys
340 345 350

Ser Val Ala Val Lys Asp Glu Val Phe Asp Glu Val Asp Glu Leu Phe
355 360 365

Ser Gly Glu Ala Glu Met Pro Val Asn Met Gly Arg Lys Leu Asp Thr
370 375 380

Ala Asp Gln Glu Glu Ile Asp Gln Leu Glu Glu Val Asp Val Glu Gly
385 390 395 400

Ser Asp Ser Asp Glu Leu Phe Ala Asn Leu Asp
405 410

<210> 27

<211> 368

<212> PRT

<213> Aeromonas phage 65

<400> 27

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

Leu Asn Gly Thr Ser Ser Asn Lys Met Ser Ala Met Leu Ala Glu Ser
20 25 30

Ile Phe Phe Asn Glu Lys Asp Thr Ile Arg Thr Arg Val Pro Ile Ile
35 40 45

Asn Leu Met Met Ser Gly Arg Leu Asp Gly Gly Ile Thr Pro Gly Leu
50 55 60

Thr Cys Ile Ala Gly Pro Ser Lys His Phe Lys Ser Asn Leu Ser Leu
65 70 75 80

Val Met Val Ser Ala Tyr Leu Arg Lys Tyr Pro Lys Ala Val Cys Leu
85 90 95

Phe Phe Asp Asn Glu Phe Gly Ser Thr Pro Asp Tyr Phe Thr Ser Gln
100 105 110

Gly Val Asp Ile Ser Arg Val Val His Cys Pro Phe Ile Asp Val Glu
115 120 125

Glu Leu Lys Phe Asp Ile Val Lys Lys Leu Glu Ser Ile Thr Arg Gly
130 135 140

Asp Lys Val Ile Ile Tyr Ile Asp Ser Ile Gly Asn Val Ala Ser Lys
145 150 155 160

Lys Glu Leu Gln Asp Ala Lys Asp Glu Lys Ser Ala Gln Asp Met Thr
165 170 175

Arg Ala Lys Gln Ile Lys Ser Leu Phe Arg Met Val Thr Pro Tyr Leu
180 185 190

Thr Val Leu Asp Ile Pro Cys Ile Ala Val Asn His Thr Tyr Glu Thr
195 200 205

Gln Glu Met Phe Ser Lys Thr Val Met Ser Gly Gly Thr Gly Pro Met
210 215 220

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

Gly Lys Glu Leu Leu Gly Tyr Asn Phe Val Met Asn Ala Glu Lys Ser
245 250 255

Arg Ala Ile Lys Glu Lys Ser Lys Leu Lys Leu Met Val Ser Phe Glu
260 265 270

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

Gly Phe Val Thr Lys Pro Gln Asn Ala Arg Tyr Gln Arg Asn Phe Leu
290 295 300

Asp Leu Glu Pro Gly Glu Met Val Ile Pro Glu Asp Glu Lys Lys Trp
305 310 315 320

Thr Glu Glu Glu Ser Asp Ser Leu Glu Phe Trp Lys Pro Met Phe Ser
325 330 335

His Lys Pro Phe Met Asp Ala Val Ser Asn Ala Tyr Lys Leu Lys Ala
340 345 350

Val Glu Val Ser Gln Glu Val Phe Asp Glu Val Asp Gln Leu Phe Gly
355 360 365

<210> 28
<211> 366
<212> PRT
<213> Vibrio phage KVP40

<400> 28

Met Ser Asp Leu Met Lys Ser Leu Lys Lys Ser Ser Thr Ser Gly Tyr
1 5 10 15

Ala Gln Val Leu Ser Glu Ser Gln Phe Met Phe Asp Lys Asp His Thr
20 25 30

Arg Thr Tyr Val Pro Ala Ile Asn Ile Ala Phe Ser Gly Glu Val Asp
35 40 45

Gly Gly Leu Thr Ser Gly Leu Thr Val Leu Ala Gly Pro Ser Lys His
50 55 60

Phe Lys Ser Asn Leu Gly Leu Val Gly Val Ala Ala Tyr Leu Lys Lys
65 70 75 80

Tyr Pro Asp Ala Val Cys Val Phe Ile Asp Thr Glu Phe Gly Ile Thr
85 90 95

Pro Ser Tyr Leu Arg Ser Gln Gly Val Asp Pro Asp Arg Val Leu His
100 105 110

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

Leu Lys Asp Leu Ala Glu Arg Lys Arg Ala Lys Lys Ala Gly Glu Glu
130 135 140

Pro Asp Arg Val Ile Phe Phe Ile Asp Ser Val Gly Asn Val Ala Ser
145 150 155 160

Ala Lys Glu Ile Asp Asp Ala Gln Asn Glu Lys Ser Val Ala Asp Met
165 170 175

Ser Arg Ala Lys Gln Leu Lys Ser Leu Phe Arg Ile Ile Thr Pro Tyr
180 185 190

Phe Thr Met Leu Asp Ile Pro Cys Ile Ala Ile Asn His Thr Tyr Gln
195 200 205

Thr Gln Glu Ile Tyr Ser Lys Thr Val Met Ser Gly Gly Thr Gly Ile
210 215 220

Met Tyr Ser Ala Asp Thr Val Ile Ile Leu Gly Lys Gln Gln Glu Lys
225 230 235 240

Asp Gly Lys Asp Ile Ile Gly Tyr His Phe Ile Met Asn Ile Glu Lys
245 250 255

Ser Arg Phe Val Lys Glu Lys Met Lys Val Lys Leu Thr Val Thr Tyr
260 265 270

Glu Asn Gly Ile Asp Pro Phe Ser Gly Leu Leu Asp Ile Ala Leu Gln
275 280 285

Thr Gly His Val Val Lys Pro Ser Asn Gly Trp Tyr Gln Arg Ala Thr
290 295 300

Val Asp Glu Glu Thr Gly Glu Met Ile Val Glu Glu Lys Lys Tyr Arg
305 310 315 320

Ala Lys Glu Thr Gln Thr Ile Ser Phe Trp Lys Asp Ile Ile Asn Ser
325 330 335

Pro Thr Phe Lys Glu Gly Val Lys Arg Ile Tyr Cys Leu Gly Gln Leu
340 345 350

Asp Glu Ser Glu Leu Phe Gly Glu Val Asp Ser Leu Phe Asp
355 360 365

<210> 29
<211> 386
<212> PRT
<213> Enterobacteria phage RB43

<400> 29

Met Ser Asn Lys Ala Leu Leu Lys Lys Leu Ile Lys Asn Ser Asn Ser
1 5 10 15

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

Lys Thr Arg Thr Arg Val Pro Ile Leu Asn Leu Ala Leu Ser Gly Ala
35 40 45

Phe Asp Gly Gly Leu Thr Ser Gly Leu Thr Leu Phe Ala Gly Pro Ser
50 55 60

Lys His Phe Lys Ser Asn Leu Gly Leu Val Thr Val Ser Ala Tyr Leu
65 70 75 80

Lys Ala Asn Glu Asp Ala Val Cys Leu Phe Tyr Asp Ser Glu Lys Gly
85 90 95

Val Thr Lys Ser Tyr Leu Lys Ser Met Gly Val Asp Pro Asp Arg Val
100 105 110

Val Tyr Thr Arg Ile Thr Thr Val Glu Gln Leu Arg Asn Asp Val Val
115 120 125

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

Asp Ser Val Gly Asn Thr Ala Ser Lys Lys Glu Leu Ala Asp Ala Leu
145 150 155 160

Ser Asp Asn Asp Lys Gln Asp Met Thr Arg Ala Lys Ala Leu Lys Gly
165 170 175

Met Phe Arg Met Val Thr Pro Tyr Leu Ala Asp Leu Asp Ile Pro Met
180 185 190

Val Cys Ile Cys His Thr Tyr Asp Thr Gln Glu Met Tyr Ser Lys Lys
195 200 205

Val Ile Ser Gly Gly Thr Gly Leu Met Tyr Ser Ala Asp Thr Ala Ile
210 215 220

Ile Leu Gly Lys Gln Gln Val Lys Glu Gly Thr Glu Val Val Gly Tyr
225 230 235 240

Asp Phe Ile Met Asn Ile Glu Lys Ser Arg Phe Val Lys Glu Lys Ser
245 250 255

Lys Phe Lys Leu His Val Thr Tyr Glu Gly Gly Ile Ser Met Tyr Ser
260 265 270

Gly Leu Leu Asp Leu Ala Met Glu Met Asn Phe Val Gln Thr Pro Thr
275 280 285

Lys Gly Trp Arg Gly Arg Ala Phe Leu Asn Thr Glu Thr Gly Glu Leu
290 295 300

Glu Leu Glu Glu Lys Lys Trp Arg Glu Ser Glu Thr Asn Ser Ile Glu

305		310		315		320
Phe Trp Arg Pro Leu	Phe Thr His Gln	Pro Phe Leu Asp	Ala Ile Gln			
	325	330	335			
Asp Lys Tyr Arg Ile	Pro Asp Lys Glu	Ile Thr Asp Gly	Ala Ala Leu			
	340	345	350			
Glu Asp Leu Tyr Ser	Thr Asp Glu Pro	Glu Ser Asn Lys	Ile Asp Leu			
	355	360	365			
Asp Asp Asp Ile Pro	Asp Asp Ile Gly	Ile Asp Gln Asp	Glu Glu Pro			
	370	375	380			
Ile Met						
385						
<210>	30					
<211>	335					
<212>	PRT					
<213>	Prochlorococcus phage P-SSM2					
<400>	30					
Met Asp Phe Leu Lys	Glu Ile Val Lys	Glu Ile Gly Asp	Glu Tyr Thr			
1	5	10	15			
Gln Val Ala Ala Asp	Ile Gln Glu Asn	Glu Arg Phe Ile	Asp Thr Gly			
	20	25	30			
Ser Tyr Ile Phe Asn	Gly Leu Val Ser	Gly Ser Ile Phe	Gly Gly Val			
	35	40	45			
Ser Ser Ser Arg Ile	Thr Ala Ile Ala	Gly Glu Ser Ser	Thr Gly Lys			
	50	55	60			
Thr Tyr Phe Ser Leu	Ala Val Val Lys	Asn Phe Leu Asp	Asn Asn Pro			
	65	70	75	80		
Asp Gly Tyr Cys Leu	Tyr Phe Asp Thr	Glu Ala Ala Val	Asn Lys Gly			
	85	90	95			
Leu Leu Glu Ser Arg	Gly Ile Asp Met	Asn Arg Leu Val	Val Val Asn			

				100					105					110					
Val	Val	Thr	Ile	Glu	Glu	Phe	Arg	Ser	Lys	Ala	Leu	Arg	Ala	Val	Asp				
		115					120					125							
Ile	Tyr	Leu	Lys	Thr	Ser	Glu	Glu	Glu	Arg	Lys	Pro	Cys	Met	Phe	Val				
	130					135					140								
Leu	Asp	Ser	Leu	Gly	Met	Leu	Ser	Thr	Glu	Lys	Glu	Ile	Arg	Asp	Ala				
145					150					155					160				
Leu	Asp	Asp	Lys	Gln	Val	Arg	Asp	Met	Thr	Lys	Ser	Gln	Leu	Val	Lys				
				165					170					175					
Gly	Ala	Phe	Arg	Met	Leu	Thr	Leu	Lys	Leu	Gly	Gln	Ala	Asn	Ile	Pro				
			180					185					190						
Leu	Ile	Val	Thr	Asn	His	Thr	Tyr	Asp	Val	Ile	Gly	Ser	Tyr	Val	Pro				
		195					200					205							
Thr	Lys	Glu	Met	Gly	Gly	Gly	Ser	Gly	Leu	Lys	Tyr	Ala	Ala	Ser	Thr				
	210					215					220								
Ile	Ile	Tyr	Leu	Ser	Lys	Lys	Lys	Glu	Lys	Asp	Gln	Lys	Glu	Val	Ile				
225					230					235					240				
Gly	Asn	Leu	Ile	Lys	Ala	Lys	Thr	His	Lys	Ser	Arg	Leu	Ser	Lys	Glu				
				245					250					255					
Asn	Lys	Glu	Val	Lys	Ile	Arg	Leu	Tyr	Tyr	Asp	Glu	Arg	Gly	Leu	Asp				
			260					265					270						
Arg	Tyr	Tyr	Gly	Leu	Leu	Glu	Leu	Gly	Glu	Ile	Gly	Gly	Met	Trp	Lys				
		275					280					285							
Asn	Val	Ala	Gly	Arg	Tyr	Glu	Met	Asn	Gly	Lys	Lys	Ile	Tyr	Ala	Lys				
	290					295					300								
Glu	Ile	Leu	Lys	Asn	Pro	Thr	Glu	Tyr	Phe	Thr	Asp	Asp	Ile	Met	Glu				
305					310					315					320				

Gln Leu Asp Asn Ile Ala Lys Glu His Phe Ser Tyr Gly Thr Asn
325 330 335

<210> 31
<211> 336
<212> PRT
<213> Prochlorococcus phage P-SSM4

<400> 31

Met Asn Phe Leu Lys Asp Ile Ala Lys Glu Ile Gly Asn Asp Tyr Ala
1 5 10 15

Ser Leu Val Ser Glu Gly Val Ser Ala Gly Asp Thr Ala Gly Phe Ile
20 25 30

Asp Thr Gly Ser Tyr Ile Phe Asn Ala Leu Leu Ser Gly Ser Ile Tyr
35 40 45

Gly Gly Ile Pro Asn Asn Lys Ile Thr Ala Ile Ala Gly Glu Thr Ser
50 55 60

Thr Gly Lys Thr Phe Phe Cys Leu Gly Met Val Gln His Phe Leu Glu
65 70 75 80

Ser Asn Pro Asp Ala Gly Val Ile Tyr Phe Glu Ser Glu Ser Ala Ile
85 90 95

Ser Lys Gln Met Ile Glu Asp Arg Gly Ile Asp Ser Asn Arg Met Leu
100 105 110

Leu Val Pro Val Thr Thr Val Gln Glu Phe Arg Leu Gln Ala Ile Lys
115 120 125

Ile Leu Asp Lys Tyr Asn Glu Gln Thr Ala Glu Glu Arg Lys Pro Leu
130 135 140

Met Phe Val Leu Asp Ser Leu Gly Met Leu Ser Thr Ser Lys Glu Val
145 150 155 160

Glu Asp Ser Glu Ala Gly Lys Glu Thr Arg Asp Met Thr Arg Ala Gln
165 170 175

Val Val Lys Ser Ile Phe Arg Val Leu Thr Leu Lys Leu Gly Lys Ala
180 185 190

Asn Val Pro Leu Ile Val Thr Asn His Thr Tyr Asp Val Val Gly Ala
195 200 205

Tyr Ile Pro Thr Lys Glu Met Gly Gly Gly Ser Gly Leu Lys Tyr Ala
210 215 220

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

Glu Val Val Gly Asn Ile Ile Lys Cys Lys Thr Ala Lys Ser Arg Leu
245 250 255

Thr Lys Glu Asn Ser Asp Val Lys Thr Arg Leu Tyr Tyr Asp Arg Gly
260 265 270

Leu Asp Arg Tyr Tyr Gly Leu Leu Glu Leu Gly Glu Lys His Gly Val
275 280 285

Phe Ser Arg Lys Gly Asn Arg Val Val Val Gly Asp Ser Ser Val Tyr
290 295 300

Pro Ser Ala Ile Leu Ala Asp Pro Asp Lys Tyr Phe Thr Glu Glu Leu
305 310 315 320

Met Glu Lys Leu Asp Glu Ala Ala Ala Lys Glu Phe Arg Tyr Gly Asn
325 330 335

<210> 32

<211> 343

<212> PRT

<213> Synechococcus phage S-PM2

<400> 32

Met Ser Phe Leu Asp Ser Val Ile Lys Asp Ser Lys Asn Glu Tyr Ala
1 5 10 15

Ala Phe Ala Ser Glu Gly Val Ala Ala Gly Asp Val Glu Ser Phe Val
20 25 30

Asp Thr Gly Ser Tyr Ile Phe Asn Ala Leu Val Ser Gly Ser Ile Phe
35 40 45

Gly Gly Ile Pro Ser Asn Lys Ile Thr Ala Leu Ala Gly Glu Ser Gly
50 55 60

Thr Gly Lys Thr Phe Phe Cys Leu Ser Val Val Arg Asn Phe Leu Asn
65 70 75 80

Thr Asp Pro Asp Ala Gly Val Ile Tyr Phe Glu Thr Glu Ser Ala Ile
85 90 95

Ser Lys Gln Met Ile Glu Ser Arg Gly Ile Asp Ser Thr Arg Met Ile
100 105 110

Ile Phe Pro Val Asp Thr Ile Glu Asp Phe Arg Thr Gln Ala Val Arg
115 120 125

Ile Ile Asp Lys Tyr Met Glu Gln Asn Lys Ser Glu Arg Lys Pro Leu
130 135 140

Met Phe Val Leu Asp Ser Leu Gly Met Leu Ala Thr Lys Lys Glu Val
145 150 155 160

Glu Asp Ala Ser Asn Asp Lys Gln Val Arg Asp Met Thr Lys Ala Gln
165 170 175

Ile Val Lys Ser Ala Phe Arg Ile Leu Thr Leu Lys Met Gly Lys Ala
180 185 190

Asn Ile Pro Met Leu Val Thr Asn His Thr Tyr Asp Val Val Gly Ser
195 200 205

Tyr Val Pro Thr Lys Glu Met Gly Gly Gly Ser Gly Leu Lys Tyr Ser
210 215 220

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

Asp Leu Val Gly Asn Ile Ile Lys Cys Glu Ala Lys Lys Ser Arg Leu
245 250 255

Thr Arg Glu Gly Ser Lys Val Lys Thr Arg Leu Phe Phe Asp Gln Arg
260 265 270

Gly Leu Glu Arg Tyr Tyr Gly Met Leu Glu Leu Gly Glu Arg Ala Gly
275 280 285

Leu Trp Lys Asn Thr Ala Gly Arg Tyr Glu Ile Asn Gly Lys Lys Val
290 295 300

Tyr Gly Lys Gln Ile Leu Ala Asn Pro Asp Glu Phe Phe Thr Glu Glu
305 310 315 320

Ile Leu Gln Glu Leu Asp Lys Gln Ala Gln Arg Glu Phe Leu Tyr Gly
325 330 335

Ala Ser Asp Asp Gly Glu Asp
340

<210> 33

<211> 393

<212> PRT

<213> Enterobacteria phage RB32

<400> 33

Met Ser Ile Ala Asp Leu Lys Ser Arg Leu Ile Lys Ala Ser Thr Ser
1 5 10 15

Lys Met Thr Ala Glu Leu Thr Thr Ser Lys Phe Phe Asn Glu Lys Asp
20 25 30

Val Ile Arg Thr Lys Ile Pro Met Leu Asn Ile Ala Ile Ser Gly Ala
35 40 45

Ile Asp Gly Gly Met Gln Ser Gly Leu Thr Ile Phe Ala Gly Pro Ser
50 55 60

Lys His Phe Lys Ser Asn Met Ser Leu Thr Met Val Ala Ala Tyr Leu
65 70 75 80

Asn Lys Tyr Pro Asp Ala Val Cys Leu Phe Tyr Asp Ser Glu Phe Gly
85 90 95

Ile Thr Pro Ala Tyr Leu Arg Ser Met Gly Val Asp Pro Glu Arg Val
100 105 110

Ile His Thr Pro Ile Gln Ser Val Glu Gln Leu Lys Ile Asp Met Val
115 120 125

Asn Gln Leu Glu Ala Ile Glu Arg Gly Glu Lys Val Ile Val Phe Ile
130 135 140

Asp Ser Ile Gly Asn Met Ala Ser Lys Lys Glu Thr Glu Asp Ala Leu
145 150 155 160

Asn Glu Lys Ser Val Ala Asp Met Thr Arg Ala Lys Ser Leu Lys Ser
165 170 175

Leu Phe Arg Ile Val Thr Pro Tyr Phe Ser Ile Lys Asn Ile Pro Cys
180 185 190

Val Ala Val Asn His Thr Ile Glu Thr Ile Glu Met Phe Ser Lys Thr
195 200 205

Val Met Thr Gly Gly Thr Gly Val Met Tyr Ser Ala Asp Thr Val Phe
210 215 220

Ile Ile Gly Lys Arg Gln Ile Lys Asp Gly Ser Asp Leu Gln Gly Tyr
225 230 235 240

Gln Phe Val Leu Asn Val Glu Lys Ser Arg Thr Val Lys Glu Lys Ser
245 250 255

Lys Phe Lys Ile Asp Val Lys Phe Asp Gly Gly Ile Asp Pro Tyr Ser
260 265 270

Gly Leu Leu Asp Met Ala Leu Glu Leu Gly Phe Val Val Lys Pro Lys
275 280 285

Asn Gly Trp Tyr Ala Arg Glu Phe Leu Asp Glu Glu Thr Gly Glu Met
290 295 300

Ile Arg Glu Glu Lys Ser Trp Arg Ala Lys Asp Thr Asn Cys Thr Thr
305 310 315 320

Phe Trp Gly Pro Leu Phe Lys His Gln Pro Phe Arg Asp Ala Ile Lys
325 330 335

Arg Ala Tyr Gln Leu Gly Ala Ile Asp Ser Asn Glu Ile Val Glu Ala
340 345 350

Glu Val Asp Glu Leu Ile Asn Ser Lys Val Glu Lys Phe Lys Ser Pro
355 360 365

Glu Ser Lys Ser Lys Ser Ala Ala Asp Leu Glu Thr Asp Leu Glu Gln
370 375 380

Leu Ser Asp Met Glu Glu Phe Asn Glu
385 390

<210> 34
<211> 366
<212> PRT
<213> Vibrio phage nt-1

<400> 34

Met Ser Asp Leu Leu Lys Ser Leu Lys Lys Ser Ser Thr Ser Gly Tyr
1 5 10 15

Ala His Val Leu Ser Glu Ser Gln Phe Met Phe Glu Lys Asp His Thr
20 25 30

Arg Thr Tyr Val Pro Ala Ile Asn Ile Ala Phe Ser Gly Glu Val Asp
35 40 45

Gly Gly Leu Thr Ser Gly Leu Thr Val Leu Ala Gly Pro Ser Lys His
50 55 60

Phe Lys Ser Asn Leu Gly Leu Val Gly Val Ala Ala Tyr Leu Lys Lys
65 70 75 80

Tyr Pro Glu Ala Ile Cys Val Phe Ile Asp Thr Glu Phe Gly Ile Thr
85 90 95

Pro Ser Tyr Leu Lys Ser Gln Gly Val Asp Pro Glu Arg Val Leu His
100 105 110

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

Leu Lys Asp Leu Ala Glu Arg Lys Arg Ala Lys Lys Ala Gly Glu Glu
130 135 140

Pro Asp Arg Val Val Phe Phe Ile Asp Ser Val Gly Asn Val Ala Ser
145 150 155 160

Ala Lys Glu Ile Asp Asp Ala Gln Asn Glu Lys Ser Val Ala Asp Met
165 170 175

Ser Arg Ala Lys Gln Leu Lys Ser Leu Phe Arg Ile Ile Thr Pro Tyr
180 185 190

Phe Thr Met Leu Asp Ile Pro Cys Ile Ala Ile Asn His Thr Tyr Gln
195 200 205

Thr Gln Glu Met Tyr Ser Lys Thr Val Met Ser Gly Gly Thr Gly Ile
210 215 220

Met Tyr Ser Ala Asp Thr Val Ile Ile Leu Gly Lys Gln Gln Glu Lys
225 230 235 240

Asp Gly Lys Glu Ile Ile Gly Tyr His Phe Ile Met Asn Ile Glu Lys
245 250 255

Ser Arg Phe Val Lys Glu Lys Met Lys Val Lys Leu Thr Val Thr Tyr
260 265 270

Glu His Gly Ile Asp Gln Phe Ser Gly Leu Leu Asp Ile Ala Leu Gln
275 280 285

Thr Gly His Val Val Lys Pro Ser Asn Gly Trp Tyr Gln Arg Ala Phe
290 295 300

Ile Asp Glu Glu Thr Gly Glu Ile Glu Ile Glu Glu Lys Lys Tyr Arg
305 310 315 320

Ala Lys Glu Thr Gln Thr Leu Ser Phe Trp Lys Glu Ile Ile Asn Ser
325 330 335

Pro Thr Phe Lys Thr Gly Val Lys Arg Leu Tyr Cys Leu Gly Gln Leu
340 345 350

Asp Glu Ser Glu Leu Leu Asp Glu Val Asp Ser Leu Phe Asp
355 360 365

<210> 35

<211> 381

<212> PRT

<213> Enterobacteria phage RB16

<400> 35

Met Ser Asn Lys Ala Leu Leu Lys Lys Leu Ile Lys Asn Ser Asn Ser
1 5 10 15

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

Lys Thr Arg Thr Arg Val Pro Ile Leu Asn Leu Val Leu Ser Gly Ala
35 40 45

Phe Asp Gly Gly Leu Thr Ser Gly Leu Thr Leu Ile Ala Gly Pro Ser
50 55 60

Lys His Phe Lys Ser Asn Leu Gly Leu Val Ala Val Ala Ala Tyr Leu
65 70 75 80

Lys Ala Asn Glu Asp Ala Val Cys Leu Phe Tyr Asp Ser Glu Lys Gly
85 90 95

Val Thr Lys Ser Tyr Leu Lys Ser Met Gly Val Asp Pro Asp Arg Val
100 105 110

Val Tyr Thr Arg Ile Thr Thr Val Glu Gln Leu Arg Asn Asp Val Val
115 120 125

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

Asp Ser Val Gly Asn Thr Ala Ser Lys Lys Glu Leu Lys Asp Ala Leu
145 150 155 160

Glu Asp Asn Asp Lys Gln Asp Met Thr Arg Ala Lys Ala Leu Lys Gly
165 170 175

Met Phe Arg Met Val Thr Pro Tyr Leu Ala Asp Ile Asp Ile Pro Met
180 185 190

Val Cys Ile Cys His Thr Tyr Asp Thr Gln Glu Met Tyr Ser Lys Lys
195 200 205

Val Ile Ser Gly Gly Thr Gly Leu Met Tyr Ser Ala Asp Thr Ala Ile
210 215 220

Ile Leu Gly Lys Gln Gln Val Lys Glu Gly Thr Glu Val Val Gly Tyr
225 230 235 240

Asp Phe Ile Met Asn Val Glu Lys Ser Arg Phe Val Lys Glu Lys Ser
245 250 255

Lys Phe Lys Leu His Val Thr Tyr Glu Gly Gly Ile Ser Met Phe Ser
260 265 270

Gly Leu Leu Asp Leu Ala Met Glu Met Asn Phe Val Gln Thr Pro Thr
275 280 285

Lys Gly Trp Arg Gly Arg Ala Phe Leu Asn Thr Glu Thr Gly Glu Leu
290 295 300

Glu Leu Glu Glu Lys Lys Trp Arg Glu Ala Glu Thr Asn Cys Ile Glu
305 310 315 320

Phe Trp Lys Pro Leu Phe Lys His Gln Pro Phe Ile Asp Ala Ile Gln
325 330 335

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

Glu Asp Leu Tyr Ser Asp Asp Val Val Glu Ser Asn Lys Val Asp Phe
355 360 365

Asp Asp Asp Ile Pro Asp Asp Val Asp Leu Met Glu Glu
370 375 380