

SEQUENCE LISTING

<110> Genexine, Inc.
 NeoImmune Tech., Inc.
 <120> Method for increasing Absolute Lymphocyte Count
 by using IL-7 fusion protein in tumors
 <130> F257963
 <150> US 62/935,828
 <151> 2019-11-15
 <150> US 62/895,787
 <151> 2019-09-04
 <160> 40
 <170> KoPatentIn 3.0
 <210> 1
 <211> 177
 <212> PRT
 <213> Homo sapiens
 <220>
 <223> amino acid sequence of human IL-7 (Accession number: P13232)

<400> 1
 Met Phe His Val Ser Phe Arg Tyr Ile Phe Gly Leu Pro Pro Leu Ile
 1 5 10 15
 Leu Val Leu Leu Pro Val Ala Ser Ser Asp Cys Asp Ile Glu Gly Lys
 20 25 30
 Asp Gly Lys Gln Tyr Glu Ser Val Leu Met Val Ser Ile Asp Gln Leu
 35 40 45
 Leu Asp Ser Met Lys Glu Ile Gly Ser Asn Cys Leu Asn Asn Glu Phe
 50 55 60
 Asn Phe Phe Lys Arg His Ile Cys Asp Ala Asn Lys Glu Gly Met Phe
 65 70 75 80
 Leu Phe Arg Ala Ala Arg Lys Leu Arg Gln Phe Leu Lys Met Asn Ser
 85 90 95

Thr Gly Asp Phe Asp Leu His Leu Leu Lys Val Ser Glu Gly Thr Thr
100 105 110

Ile Leu Leu Asn Cys Thr Gly Gln Val Lys Gly Arg Lys Pro Ala Ala
115 120 125

Leu Gly Glu Ala Gln Pro Thr Lys Ser Leu Glu Glu Asn Lys Ser Leu
130 135 140

Lys Glu Gln Lys Lys Leu Asn Asp Leu Cys Phe Leu Lys Arg Leu Leu
145 150 155 160

Gln Glu Ile Lys Thr Cys Trp Asn Lys Ile Leu Met Gly Thr Lys Glu
165 170 175

His

<210> 2
<211> 154
<212> PRT
<213> Rattus norvegicus

<220>
<223> amino acid sequence of rat IL-7 (Accession number: P56478)

<400> 2
Met Phe His Val Ser Phe Arg Tyr Ile Phe Gly Ile Pro Pro Leu Ile
1 5 10 15

Leu Val Leu Leu Pro Val Thr Ser Ser Asp Cys His Ile Lys Asp Lys
20 25 30

Asp Gly Lys Ala Phe Gly Ser Val Leu Met Ile Ser Ile Asn Gln Leu
35 40 45

Asp Lys Met Thr Gly Thr Asp Ser Asp Cys Pro Asn Asn Glu Pro Asn
50 55 60

Phe Phe Lys Lys His Leu Cys Asp Asp Thr Lys Glu Ala Ala Phe Leu
65 70 75 80

Asn Arg Ala Ala Arg Lys Leu Arg Gln Phe Leu Lys Met Asn Ile Ser
85 90 95

Glu Glu Phe Asn Asp His Leu Leu Arg Val Ser Asp Gly Thr Gln Thr

	100		105		110
Leu Val	Asn Cys Thr Ser Lys	Glu Glu Lys Thr Ile	Lys Glu Gln Lys		
	115	120	125		
Lys Asn Asp Pro Cys Phe	Leu Lys Arg Leu Leu Arg	Glu Ile Lys Thr			
	130	135	140		
Cys Trp Asn Lys Ile	Leu Lys Gly Ser Ile				
145	150				

<210> 3
 <211> 154
 <212> PRT
 <213> Mus musculus

<220>
 <223> amino acid sequence of mouse IL-7 (Accession number: P10168)

<400> 3
Met Phe His Val Ser Phe Arg Tyr Ile Phe Gly Ile Pro Pro Leu Ile
1 5 10 15
Leu Val Leu Leu Pro Val Thr Ser Ser Glu Cys His Ile Lys Asp Lys
20 25 30
Glu Gly Lys Ala Tyr Glu Ser Val Leu Met Ile Ser Ile Asp Glu Leu
35 40 45
Asp Lys Met Thr Gly Thr Asp Ser Asn Cys Pro Asn Asn Glu Pro Asn
50 55 60
Phe Phe Arg Lys His Val Cys Asp Asp Thr Lys Glu Ala Ala Phe Leu
65 70 75 80
Asn Arg Ala Ala Arg Lys Leu Lys Gln Phe Leu Lys Met Asn Ile Ser
85 90 95
Glu Glu Phe Asn Val His Leu Leu Thr Val Ser Gln Gly Thr Gln Thr
100 105 110
Leu Val Asn Cys Thr Ser Lys Glu Glu Lys Asn Val Lys Glu Gln Lys
115 120 125
Lys Asn Asp Ala Cys Phe Leu Lys Arg Leu Leu Arg Glu Ile Lys Thr
130 135 140

Cys Trp Asn Lys Ile Leu Lys Gly Ser Ile
145 150

<210> 4
<211> 177
<212> PRT
<213> Chlorocebus sabaeus

<220>
<223> amino acid sequence of monkey IL-7 (Accession number :
NP_001279008)

<400> 4
Met Phe His Val Ser Phe Arg Tyr Ile Phe Gly Leu Pro Pro Leu Ile
1 5 10 15
Leu Val Leu Leu Pro Val Ala Ser Ser Asp Cys Asp Ile Glu Gly Lys
20 25 30
Asp Gly Lys Gln Tyr Glu Ser Val Leu Met Val Ser Ile Asp Gln Leu
35 40 45
Leu Asp Ser Met Lys Glu Ile Gly Ser Asn Cys Leu Asn Asn Glu Phe
50 55 60
Asn Phe Phe Lys Arg His Leu Cys Asp Asp Asn Lys Glu Gly Met Phe
65 70 75 80
Leu Phe Arg Ala Ala Arg Lys Leu Lys Gln Phe Leu Lys Met Asn Ser
85 90 95
Thr Gly Asp Phe Asp Leu His Leu Leu Lys Val Ser Glu Gly Thr Thr
100 105 110
Ile Leu Leu Asn Cys Thr Gly Lys Val Lys Gly Arg Lys Pro Ala Ala
115 120 125
Leu Gly Glu Pro Gln Pro Thr Lys Ser Leu Glu Glu Asn Lys Ser Leu
130 135 140
Lys Glu Gln Lys Lys Leu Asn Asp Ser Cys Phe Leu Lys Arg Leu Leu
145 150 155 160
Gln Lys Ile Lys Thr Cys Trp Asn Lys Ile Leu Met Gly Thr Lys Glu
165 170 175

His

<210> 5
<211> 176
<212> PRT
<213> Bos taurus

<220>
<223> amino acid sequence of cow IL-7 (Accession number: P26895)

<400> 5
Met Phe His Val Ser Phe Arg Tyr Ile Phe Gly Ile Pro Pro Leu Ile
1 5 10 15
Leu Val Leu Leu Pro Val Ala Ser Ser Asp Cys Asp Ile Ser Gly Lys
20 25 30
Asp Gly Gly Ala Tyr Gln Asn Val Leu Met Val Asn Ile Asp Asp Leu
35 40 45
Asp Asn Met Ile Asn Phe Asp Ser Asn Cys Leu Asn Asn Glu Pro Asn
50 55 60
Phe Phe Lys Lys His Ser Cys Asp Asp Asn Lys Glu Ala Ser Phe Leu
65 70 75 80
Asn Arg Ala Ser Arg Lys Leu Arg Gln Phe Leu Lys Met Asn Ile Ser
85 90 95
Asp Asp Phe Lys Leu His Leu Ser Thr Val Ser Gln Gly Thr Leu Thr
100 105 110
Leu Leu Asn Cys Thr Ser Lys Gly Lys Gly Arg Lys Pro Pro Ser Leu
115 120 125
Ser Glu Ala Gln Pro Thr Lys Asn Leu Glu Glu Asn Lys Ser Ser Lys
130 135 140
Glu Gln Lys Lys Gln Asn Asp Leu Cys Phe Leu Lys Ile Leu Leu Gln
145 150 155 160
Lys Ile Lys Thr Cys Trp Asn Lys Ile Leu Arg Gly Ile Lys Glu His
165 170 175

<210> 6
 <211> 176
 <212> PRT
 <213> Ovis aries

<220>
 <223> amino acid sequence of sheep IL-7 (Accession number : Q28540)

<400> 6
 Met Phe His Val Ser Phe Arg Tyr Ile Phe Gly Ile Pro Pro Leu Ile
 1 5 10 15
 Leu Val Leu Leu Pro Val Ala Ser Ser Asp Cys Asp Phe Ser Gly Lys
 20 25 30
 Asp Gly Gly Ala Tyr Gln Asn Val Leu Met Val Ser Ile Asp Asp Leu
 35 40 45
 Asp Asn Met Ile Asn Phe Asp Ser Asn Cys Leu Asn Asn Glu Pro Asn
 50 55 60
 Phe Phe Lys Lys His Ser Cys Asp Asp Asn Lys Glu Ala Ser Phe Leu
 65 70 75 80
 Asn Arg Ala Ala Arg Lys Leu Lys Gln Phe Leu Lys Met Asn Ile Ser
 85 90 95
 Asp Asp Phe Lys Leu His Leu Ser Thr Val Ser Gln Gly Thr Leu Thr
 100 105 110
 Leu Leu Asn Cys Thr Ser Lys Gly Lys Gly Arg Lys Pro Pro Ser Leu
 115 120 125
 Gly Glu Ala Gln Pro Thr Lys Asn Leu Glu Glu Asn Lys Ser Leu Lys
 130 135 140
 Glu Gln Arg Lys Gln Asn Asp Leu Cys Phe Leu Lys Ile Leu Leu Gln
 145 150 155 160
 Lys Ile Lys Thr Cys Trp Asn Lys Ile Leu Arg Gly Ile Thr Glu His
 165 170 175

<210> 7
 <211> 384
 <212> PRT

<213> Homo sapiens

<220>

<223> amino acid sequence of human IgD constant region (Genbank accession No. P01880)

<400> 7

Ala Pro Thr Lys Ala Pro Asp Val Phe Pro Ile Ile Ser Gly Cys Arg
1 5 10 15

His Pro Lys Asp Asn Ser Pro Val Val Leu Ala Cys Leu Ile Thr Gly
20 25 30

Tyr His Pro Thr Ser Val Thr Val Thr Trp Tyr Met Gly Thr Gln Ser
35 40 45

Gln Pro Gln Arg Thr Phe Pro Glu Ile Gln Arg Arg Asp Ser Tyr Tyr
50 55 60

Met Thr Ser Ser Gln Leu Ser Thr Pro Leu Gln Gln Trp Arg Gln Gly
65 70 75 80

Glu Tyr Lys Cys Val Val Gln His Thr Ala Ser Lys Ser Lys Lys Glu
85 90 95

Ile Phe Arg Trp Pro Glu Ser Pro Lys Ala Gln Ala Ser Ser Val Pro
100 105 110

Thr Ala Gln Pro Gln Ala Glu Gly Ser Leu Ala Lys Ala Thr Thr Ala
115 120 125

Pro Ala Thr Thr Arg Asn Thr Gly Arg Gly Gly Glu Glu Lys Lys Lys
130 135 140

Glu Lys Glu Lys Glu Glu Gln Glu Glu Arg Glu Thr Lys Thr Pro Glu
145 150 155 160

Cys Pro Ser His Thr Gln Pro Leu Gly Val Tyr Leu Leu Thr Pro Ala
165 170 175

Val Gln Asp Leu Trp Leu Arg Asp Lys Ala Thr Phe Thr Cys Phe Val
180 185 190

Val Gly Ser Asp Leu Lys Asp Ala His Leu Thr Trp Glu Val Ala Gly
195 200 205

Lys Val Pro Thr Gly Gly Val Glu Glu Gly Leu Leu Glu Arg His Ser

210		215		220
Asn Gly Ser Gln Ser Gln His Ser Arg Leu Thr Leu Pro Arg Ser Leu				
225		230		235
Trp Asn Ala Gly Thr Ser Val Thr Cys Thr Leu Asn His Pro Ser Leu				
	245		250	255
Pro Pro Gln Arg Leu Met Ala Leu Arg Glu Pro Ala Ala Gln Ala Pro				
	260		265	270
Val Lys Leu Ser Leu Asn Leu Leu Ala Ser Ser Asp Pro Pro Glu Ala				
	275		280	285
Ala Ser Trp Leu Leu Cys Glu Val Ser Gly Phe Ser Pro Pro Asn Ile				
	290		295	300
Leu Leu Met Trp Leu Glu Asp Gln Arg Glu Val Asn Thr Ser Gly Phe				
	305		310	315
Ala Pro Ala Arg Pro Pro Pro Gln Pro Gly Ser Thr Thr Phe Trp Ala				
	325		330	335
Trp Ser Val Leu Arg Val Pro Ala Pro Pro Ser Pro Gln Pro Ala Thr				
	340		345	350
Tyr Thr Cys Val Val Ser His Glu Asp Ser Arg Thr Leu Leu Asn Ala				
	355		360	365
Ser Arg Ser Leu Glu Val Ser Tyr Val Thr Asp His Gly Pro Met Lys				
	370		375	380

<210> 8
 <211> 327
 <212> PRT
 <213> Homo sapiens

 <220>
 <223> amino acid sequence of Partial human IgG4 constant region
 (Genbank accession No. AAH25985)

<400> 8
 Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg
 1 5 10 15

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

Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser
275 280 285

Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser
290 295 300

Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser
305 310 315 320

Leu Ser Leu Ser Leu Gly Lys
325

<210> 9

<211> 245

<212> PRT

<213> Artificial Sequence

<220>

<223> amino acid sequence of hyFc

<400> 9

Arg Asn Thr Gly Arg Gly Gly Glu Glu Lys Lys Lys Glu Lys Glu Lys
1 5 10 15

Glu Glu Gln Glu Glu Arg Glu Thr Lys Thr Pro Glu Cys Pro Ser His
20 25 30

Thr Gln Pro Leu Gly Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
35 40 45

Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
50 55 60

Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val
65 70 75 80

Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser
85 90 95

Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu
100 105 110

Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser
115 120 125

Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro
 130 135 140
 Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln
 145 150 155 160
 Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala
 165 170 175
 Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr
 180 185 190
 Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu
 195 200 205
 Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser
 210 215 220
 Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
 225 230 235 240
 Leu Ser Leu Gly Lys
 245

<210> 10
 <211> 245
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of hyFcM1

<400> 10
 Arg Asn Thr Gly Arg Gly Gly Glu Glu Lys Lys Gly Gly Lys Glu Lys
 1 5 10 15
 Glu Glu Gln Glu Glu Arg Glu Thr Lys Thr Pro Glu Cys Pro Ser His
 20 25 30
 Thr Gln Pro Leu Gly Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
 35 40 45
 Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
 50 55 60
 Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val

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

<210> 11
 <211> 245
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of hyFcM2

<400> 11
 Arg Asn Thr Gly Arg Gly Gly Glu Glu Lys Lys Gly Ser Lys Glu Lys
 1 5 10 15

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

<210> 12

<211> 245
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of hyFcM3

<400> 12
 Arg Asn Thr Gly Arg Gly Gly Glu Glu Lys Lys Ser Gly Lys Glu Lys
 1 5 10 15
 Glu Glu Gln Glu Glu Arg Glu Thr Lys Thr Pro Glu Cys Pro Ser His
 20 25 30
 Thr Gln Pro Leu Gly Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
 35 40 45
 Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
 50 55 60
 Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val
 65 70 75 80
 Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser
 85 90 95
 Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu
 100 105 110
 Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser
 115 120 125
 Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro
 130 135 140
 Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln
 145 150 155 160
 Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala
 165 170 175
 Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr
 180 185 190
 Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu
 195 200 205

Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser
 210 215 220

Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
 225 230 235 240

Leu Ser Leu Gly Lys
 245

<210> 13
 <211> 245
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of hyFcM4

<400> 13
 Arg Asn Thr Gly Arg Gly Gly Glu Glu Lys Lys Ser Ser Lys Glu Lys
 1 5 10 15

Glu Glu Gln Glu Glu Arg Glu Thr Lys Thr Pro Glu Cys Pro Ser His
 20 25 30

Thr Gln Pro Leu Gly Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
 35 40 45

Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
 50 55 60

Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val
 65 70 75 80

Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser
 85 90 95

Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu
 100 105 110

Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser
 115 120 125

Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro
 130 135 140

Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln

145 150 155 160
 Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala
 165 170 175
 Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr
 180 185 190
 Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu
 195 200 205
 Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser
 210 215 220
 Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
 225 230 235 240
 Leu Ser Leu Gly Lys
 245

<210> 14
 <211> 243
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of mouse IgG Fc variant

<400> 14
 Ala Ser Ala Glu Pro Arg Gly Pro Thr Ile Lys Pro Cys Pro Pro Cys
 1 5 10 15
 Lys Cys Pro Ala Pro Asn Leu Glu Gly Gly Pro Ser Val Phe Ile Phe
 20 25 30
 Pro Pro Lys Ile Lys Asp Val Leu Met Ile Ser Leu Ser Pro Ile Val
 35 40 45
 Thr Cys Val Val Val Asp Val Ser Glu Asp Asp Pro Asp Val Gln Ile
 50 55 60
 Ser Trp Phe Val Asn Asn Val Glu Val His Thr Ala Gln Thr Gln Thr
 65 70 75 80
 His Arg Glu Asp Tyr Asn Ser Thr Leu Arg Val Val Ser Ala Leu Pro
 85 90 95

Ile Gln His Gln Asp Trp Met Ser Gly Lys Ala Phe Ala Cys Ala Val
 100 105 110
 Asn Asn Lys Asp Leu Pro Ala Pro Ile Glu Arg Thr Ile Ser Lys Pro
 115 120 125
 Lys Gly Ser Val Arg Ala Pro Gln Val Tyr Val Leu Pro Pro Pro Glu
 130 135 140
 Glu Glu Met Thr Lys Lys Gln Val Thr Leu Thr Cys Met Val Thr Asp
 145 150 155 160
 Phe Met Pro Glu Asp Ile Tyr Val Glu Trp Thr Asn Asn Gly Lys Thr
 165 170 175
 Glu Leu Asn Tyr Lys Asn Thr Glu Pro Val Leu Asp Ser Asp Gly Ser
 180 185 190
 Tyr Phe Met Tyr Ser Lys Leu Arg Val Glu Lys Lys Asn Trp Val Glu
 195 200 205
 Arg Asn Ser Tyr Ser Cys Ser Val Val His Glu Gly Leu His Asn His
 210 215 220
 His Thr Thr Lys Ser Phe Ser Arg Thr Pro Gly Lys Gly Gly Gly Asn
 225 230 235 240
 Ser Gly Ser

<210> 15
 <211> 153
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of modified IL-7(M)

<400> 15
 Met Asp Cys Asp Ile Glu Gly Lys Asp Gly Lys Gln Tyr Glu Ser Val
 1 5 10 15
 Leu Met Val Ser Ile Asp Gln Leu Leu Asp Ser Met Lys Glu Ile Gly
 20 25 30

Ser Asn Cys Leu Asn Asn Glu Phe Asn Phe Phe Lys Arg His Ile Cys
 35 40 45
 Asp Ala Asn Lys Glu Gly Met Phe Leu Phe Arg Ala Ala Arg Lys Leu
 50 55 60
 Arg Gln Phe Leu Lys Met Asn Ser Thr Gly Asp Phe Asp Leu His Leu
 65 70 75 80
 Leu Lys Val Ser Glu Gly Thr Thr Ile Leu Leu Asn Cys Thr Gly Gln
 85 90 95
 Val Lys Gly Arg Lys Pro Ala Ala Leu Gly Glu Ala Gln Pro Thr Lys
 100 105 110
 Ser Leu Glu Glu Asn Lys Ser Leu Lys Glu Gln Lys Lys Leu Asn Asp
 115 120 125
 Leu Cys Phe Leu Lys Arg Leu Leu Gln Glu Ile Lys Thr Cys Trp Asn
 130 135 140
 Lys Ile Leu Met Gly Thr Lys Glu His
 145 150

<210> 16
 <211> 154
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> amino acid sequence of modified IL-7(MM)

<400> 16
 Met Met Asp Cys Asp Ile Glu Gly Lys Asp Gly Lys Gln Tyr Glu Ser
 1 5 10 15
 Val Leu Met Val Ser Ile Asp Gln Leu Leu Asp Ser Met Lys Glu Ile
 20 25 30
 Gly Ser Asn Cys Leu Asn Asn Glu Phe Asn Phe Phe Lys Arg His Ile
 35 40 45
 Cys Asp Ala Asn Lys Glu Gly Met Phe Leu Phe Arg Ala Ala Arg Lys
 50 55 60
 Leu Arg Gln Phe Leu Lys Met Asn Ser Thr Gly Asp Phe Asp Leu His

65		70		75		80									
Leu	Leu	Lys	Val	Ser	Glu	Gly	Thr	Thr	Ile	Leu	Leu	Asn	Cys	Thr	Gly
				85					90					95	
Gln	Val	Lys	Gly	Arg	Lys	Pro	Ala	Ala	Leu	Gly	Glu	Ala	Gln	Pro	Thr
			100				105						110		
Lys	Ser	Leu	Glu	Glu	Asn	Lys	Ser	Leu	Lys	Glu	Gln	Lys	Lys	Leu	Asn
		115					120					125			
Asp	Leu	Cys	Phe	Leu	Lys	Arg	Leu	Leu	Gln	Glu	Ile	Lys	Thr	Cys	Trp
	130					135					140				
Asn	Lys	Ile	Leu	Met	Gly	Thr	Lys	Glu	His						
145					150										

<210> 17
 <211> 155
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of modified IL-7(MMM)

<400>	17														
Met	Met	Met	Asp	Cys	Asp	Ile	Glu	Gly	Lys	Asp	Gly	Lys	Gln	Tyr	Glu
1				5					10					15	
Ser	Val	Leu	Met	Val	Ser	Ile	Asp	Gln	Leu	Leu	Asp	Ser	Met	Lys	Glu
			20					25					30		
Ile	Gly	Ser	Asn	Cys	Leu	Asn	Asn	Glu	Phe	Asn	Phe	Phe	Lys	Arg	His
		35					40					45			
Ile	Cys	Asp	Ala	Asn	Lys	Glu	Gly	Met	Phe	Leu	Phe	Arg	Ala	Ala	Arg
	50					55					60				
Lys	Leu	Arg	Gln	Phe	Leu	Lys	Met	Asn	Ser	Thr	Gly	Asp	Phe	Asp	Leu
65					70					75					80
His	Leu	Leu	Lys	Val	Ser	Glu	Gly	Thr	Thr	Ile	Leu	Leu	Asn	Cys	Thr
			85						90					95	
Gly	Gln	Val	Lys	Gly	Arg	Lys	Pro	Ala	Ala	Leu	Gly	Glu	Ala	Gln	Pro
			100					105					110		

Thr Lys Ser Leu Glu Glu Asn Lys Ser Leu Lys Glu Gln Lys Lys Leu
115 120 125

Asn Asp Leu Cys Phe Leu Lys Arg Leu Leu Gln Glu Ile Lys Thr Cys
130 135 140

Trp Asn Lys Ile Leu Met Gly Thr Lys Glu His
145 150 155

<210> 18

<211> 155

<212> PRT

<213> Artificial Sequence

<220>

<223> amino acid sequence of modified IL-7(MGM)

<400> 18

Met Gly Met Asp Cys Asp Ile Glu Gly Lys Asp Gly Lys Gln Tyr Glu
1 5 10 15

Ser Val Leu Met Val Ser Ile Asp Gln Leu Leu Asp Ser Met Lys Glu
20 25 30

Ile Gly Ser Asn Cys Leu Asn Asn Glu Phe Asn Phe Phe Lys Arg His
35 40 45

Ile Cys Asp Ala Asn Lys Glu Gly Met Phe Leu Phe Arg Ala Ala Arg
50 55 60

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

His Leu Leu Lys Val Ser Glu Gly Thr Thr Ile Leu Leu Asn Cys Thr
85 90 95

Gly Gln Val Lys Gly Arg Lys Pro Ala Ala Leu Gly Glu Ala Gln Pro
100 105 110

Thr Lys Ser Leu Glu Glu Asn Lys Ser Leu Lys Glu Gln Lys Lys Leu
115 120 125

Asn Asp Leu Cys Phe Leu Lys Arg Leu Leu Gln Glu Ile Lys Thr Cys
130 135 140

Trp Asn Lys Ile Leu Met Gly Thr Lys Glu His
 145 150 155

<210> 19
 <211> 155
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of modified IL-7(DDD)

<400> 19
 Asp Asp Asp Asp Cys Asp Ile Glu Gly Lys Asp Gly Lys Gln Tyr Glu
 1 5 10 15

Ser Val Leu Met Val Ser Ile Asp Gln Leu Leu Asp Ser Met Lys Glu
 20 25 30

Ile Gly Ser Asn Cys Leu Asn Asn Glu Phe Asn Phe Phe Lys Arg His
 35 40 45

Ile Cys Asp Ala Asn Lys Glu Gly Met Phe Leu Phe Arg Ala Ala Arg
 50 55 60

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

His Leu Leu Lys Val Ser Glu Gly Thr Thr Ile Leu Leu Asn Cys Thr
 85 90 95

Gly Gln Val Lys Gly Arg Lys Pro Ala Ala Leu Gly Glu Ala Gln Pro
 100 105 110

Thr Lys Ser Leu Glu Glu Asn Lys Ser Leu Lys Glu Gln Lys Lys Leu
 115 120 125

Asn Asp Leu Cys Phe Leu Lys Arg Leu Leu Gln Glu Ile Lys Thr Cys
 130 135 140

Trp Asn Lys Ile Leu Met Gly Thr Lys Glu His
 145 150 155

<210> 20
 <211> 156
 <212> PRT

<213> Artificial Sequence

<220>

<223> amino acid sequence of modified IL-7(MMMM)

<400> 20

Met Met Met Met Asp Cys Asp Ile Glu Gly Lys Asp Gly Lys Gln Tyr
1 5 10 15

Glu Ser Val Leu Met Val Ser Ile Asp Gln Leu Leu Asp Ser Met Lys
20 25 30

Glu Ile Gly Ser Asn Cys Leu Asn Asn Glu Phe Asn Phe Phe Lys Arg
35 40 45

His Ile Cys Asp Ala Asn Lys Glu Gly Met Phe Leu Phe Arg Ala Ala
50 55 60

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

Leu His Leu Leu Lys Val Ser Glu Gly Thr Thr Ile Leu Leu Asn Cys
85 90 95

Thr Gly Gln Val Lys Gly Arg Lys Pro Ala Ala Leu Gly Glu Ala Gln
100 105 110

Pro Thr Lys Ser Leu Glu Glu Asn Lys Ser Leu Lys Glu Gln Lys Lys
115 120 125

Leu Asn Asp Leu Cys Phe Leu Lys Arg Leu Leu Gln Glu Ile Lys Thr
130 135 140

Cys Trp Asn Lys Ile Leu Met Gly Thr Lys Glu His
145 150 155

<210> 21

<211> 398

<212> PRT

<213> Artificial Sequence

<220>

<223> amino acid sequence of modified IL-7(M) fused hyFc

<400> 21

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

Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys
 260 265 270
 Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser
 275 280 285
 Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro
 290 295 300
 Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
 305 310 315 320
 Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly
 325 330 335
 Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp
 340 345 350
 Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp
 355 360 365
 Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His
 370 375 380
 Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys
 385 390 395

<210> 22
 <211> 399
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of modified IL-7(MM) fused hyFc

<400> 22
 Met Met Asp Cys Asp Ile Glu Gly Lys Asp Gly Lys Gln Tyr Glu Ser
 1 5 10 15
 Val Leu Met Val Ser Ile Asp Gln Leu Leu Asp Ser Met Lys Glu Ile
 20 25 30
 Gly Ser Asn Cys Leu Asn Asn Glu Phe Asn Phe Phe Lys Arg His Ile
 35 40 45
 Cys Asp Ala Asn Lys Glu Gly Met Phe Leu Phe Arg Ala Ala Arg Lys

305 310 315 320
 Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn
 325 330 335
 Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser
 340 345 350
 Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg
 355 360 365
 Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu
 370 375 380
 His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys
 385 390 395

<210> 23
 <211> 400
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of modified IL-7(MMM) fused hyFc

<400> 23
 Met Met Met Asp Cys Asp Ile Glu Gly Lys Asp Gly Lys Gln Tyr Glu
 1 5 10 15
 Ser Val Leu Met Val Ser Ile Asp Gln Leu Leu Asp Ser Met Lys Glu
 20 25 30
 Ile Gly Ser Asn Cys Leu Asn Asn Glu Phe Asn Phe Phe Lys Arg His
 35 40 45
 Ile Cys Asp Ala Asn Lys Glu Gly Met Phe Leu Phe Arg Ala Ala Arg
 50 55 60
 Lys Leu Arg Gln Phe Leu Lys Met Asn Ser Thr Gly Asp Phe Asp Leu
 65 70 75 80
 His Leu Leu Lys Val Ser Glu Gly Thr Thr Ile Leu Leu Asn Cys Thr
 85 90 95
 Gly Gln Val Lys Gly Arg Lys Pro Ala Ala Leu Gly Glu Ala Gln Pro
 100 105 110

Thr	Lys	Ser	Leu	Glu	Glu	Asn	Lys	Ser	Leu	Lys	Glu	Gln	Lys	Lys	Leu	
		115							120							
Asn	Asp	Leu	Cys	Phe	Leu	Lys	Arg	Leu	Leu	Gln	Glu	Ile	Lys	Thr	Cys	
		130							135							
Trp	Asn	Lys	Ile	Leu	Met	Gly	Thr	Lys	Glu	His	Arg	Asn	Thr	Gly	Arg	
		145							150							
Gly	Gly	Glu	Glu	Lys	Lys	Lys	Glu	Lys	Glu	Lys	Glu	Glu	Gln	Glu	Glu	
								165								
								170								
Arg	Glu	Thr	Lys	Thr	Pro	Glu	Cys	Pro	Ser	His	Thr	Gln	Pro	Leu	Gly	
								180								
								185								
Val	Phe	Leu	Phe	Pro	Pro	Lys	Pro	Lys	Asp	Thr	Leu	Met	Ile	Ser	Arg	
								195								
								200								
Thr	Pro	Glu	Val	Thr	Cys	Val	Val	Val	Asp	Val	Ser	Gln	Glu	Asp	Pro	
								210								
								215								
Glu	Val	Gln	Phe	Asn	Trp	Tyr	Val	Asp	Gly	Val	Glu	Val	His	Asn	Ala	
								225								
								230								
Lys	Thr	Lys	Pro	Arg	Glu	Glu	Gln	Phe	Asn	Ser	Thr	Tyr	Arg	Val	Val	
								245								
								250								
Ser	Val	Leu	Thr	Val	Leu	His	Gln	Asp	Trp	Leu	Asn	Gly	Lys	Glu	Tyr	
								260								
								265								
Lys	Cys	Lys	Val	Ser	Asn	Lys	Gly	Leu	Pro	Ser	Ser	Ile	Glu	Lys	Thr	
								275								
								280								
Ile	Ser	Lys	Ala	Lys	Gly	Gln	Pro	Arg	Glu	Pro	Gln	Val	Tyr	Thr	Leu	
								290								
								295								
Pro	Pro	Ser	Gln	Glu	Glu	Met	Thr	Lys	Asn	Gln	Val	Ser	Leu	Thr	Cys	
								305								
								310								
Leu	Val	Lys	Gly	Phe	Tyr	Pro	Ser	Asp	Ile	Ala	Val	Glu	Trp	Glu	Ser	
								325								
								330								
Asn	Gly	Gln	Pro	Glu	Asn	Asn	Tyr	Lys	Thr	Thr	Pro	Pro	Val	Leu	Asp	
								340								
								345								
Ser	Asp	Gly	Ser	Phe	Phe	Leu	Tyr	Ser	Arg	Leu	Thr	Val	Asp	Lys	Ser	
								355								
								360								
								365								

Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
 370 375 380

Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys
 385 390 395 400

<210> 24
 <211> 400
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> amino acid sequence of modified IL-7(MGM) fused hyFc

<400> 24
 Met Gly Met Asp Cys Asp Ile Glu Gly Lys Asp Gly Lys Gln Tyr Glu
 1 5 10 15

Ser Val Leu Met Val Ser Ile Asp Gln Leu Leu Asp Ser Met Lys Glu
 20 25 30

Ile Gly Ser Asn Cys Leu Asn Asn Glu Phe Asn Phe Phe Lys Arg His
 35 40 45

Ile Cys Asp Ala Asn Lys Glu Gly Met Phe Leu Phe Arg Ala Ala Arg
 50 55 60

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

His Leu Leu Lys Val Ser Glu Gly Thr Thr Ile Leu Leu Asn Cys Thr
 85 90 95

Gly Gln Val Lys Gly Arg Lys Pro Ala Ala Leu Gly Glu Ala Gln Pro
 100 105 110

Thr Lys Ser Leu Glu Glu Asn Lys Ser Leu Lys Glu Gln Lys Lys Leu
 115 120 125

Asn Asp Leu Cys Phe Leu Lys Arg Leu Leu Gln Glu Ile Lys Thr Cys
 130 135 140

Trp Asn Lys Ile Leu Met Gly Thr Lys Glu His Arg Asn Thr Gly Arg
 145 150 155 160

Gly	Gly	Glu	Glu	Lys	Lys	Lys	Glu	Lys	Glu	Lys	Glu	Glu	Gln	Glu	Glu		
				165					170					175			
Arg	Glu	Thr	Lys	Thr	Pro	Glu	Cys	Pro	Ser	His	Thr	Gln	Pro	Leu	Gly		
			180					185					190				
Val	Phe	Leu	Phe	Pro	Pro	Lys	Pro	Lys	Asp	Thr	Leu	Met	Ile	Ser	Arg		
		195					200					205					
Thr	Pro	Glu	Val	Thr	Cys	Val	Val	Val	Asp	Val	Ser	Gln	Glu	Asp	Pro		
		210				215					220						
Glu	Val	Gln	Phe	Asn	Trp	Tyr	Val	Asp	Gly	Val	Glu	Val	His	Asn	Ala		
225					230					235					240		
Lys	Thr	Lys	Pro	Arg	Glu	Glu	Gln	Phe	Asn	Ser	Thr	Tyr	Arg	Val	Val		
				245					250					255			
Ser	Val	Leu	Thr	Val	Leu	His	Gln	Asp	Trp	Leu	Asn	Gly	Lys	Glu	Tyr		
			260					265					270				
Lys	Cys	Lys	Val	Ser	Asn	Lys	Gly	Leu	Pro	Ser	Ser	Ile	Glu	Lys	Thr		
		275					280					285					
Ile	Ser	Lys	Ala	Lys	Gly	Gln	Pro	Arg	Glu	Pro	Gln	Val	Tyr	Thr	Leu		
	290					295					300						
Pro	Pro	Ser	Gln	Glu	Glu	Met	Thr	Lys	Asn	Gln	Val	Ser	Leu	Thr	Cys		
305					310					315					320		
Leu	Val	Lys	Gly	Phe	Tyr	Pro	Ser	Asp	Ile	Ala	Val	Glu	Trp	Glu	Ser		
				325					330					335			
Asn	Gly	Gln	Pro	Glu	Asn	Asn	Tyr	Lys	Thr	Thr	Pro	Pro	Val	Leu	Asp		
			340					345					350				
Ser	Asp	Gly	Ser	Phe	Phe	Leu	Tyr	Ser	Arg	Leu	Thr	Val	Asp	Lys	Ser		
		355					360					365					
Arg	Trp	Gln	Glu	Gly	Asn	Val	Phe	Ser	Cys	Ser	Val	Met	His	Glu	Ala		
	370					375					380						
Leu	His	Asn	His	Tyr	Thr	Gln	Lys	Ser	Leu	Ser	Leu	Ser	Leu	Gly	Lys		
385					390					395					400		

<210> 25
<211> 401

<212> PRT
<213> Artificial Sequence

<220>
<223> amino acid sequence of modified IL-7(MMMM) fused hyFc

<400> 25
Met Met Met Met Asp Cys Asp Ile Glu Gly Lys Asp Gly Lys Gln Tyr
1 5 10 15
Glu Ser Val Leu Met Val Ser Ile Asp Gln Leu Leu Asp Ser Met Lys
20 25 30
Glu Ile Gly Ser Asn Cys Leu Asn Asn Glu Phe Asn Phe Phe Lys Arg
35 40 45
His Ile Cys Asp Ala Asn Lys Glu Gly Met Phe Leu Phe Arg Ala Ala
50 55 60
Arg Lys Leu Arg Gln Phe Leu Lys Met Asn Ser Thr Gly Asp Phe Asp
65 70 75 80
Leu His Leu Leu Lys Val Ser Glu Gly Thr Thr Ile Leu Leu Asn Cys
85 90 95
Thr Gly Gln Val Lys Gly Arg Lys Pro Ala Ala Leu Gly Glu Ala Gln
100 105 110
Pro Thr Lys Ser Leu Glu Glu Asn Lys Ser Leu Lys Glu Gln Lys Lys
115 120 125
Leu Asn Asp Leu Cys Phe Leu Lys Arg Leu Leu Gln Glu Ile Lys Thr
130 135 140
Cys Trp Asn Lys Ile Leu Met Gly Thr Lys Glu His Arg Asn Thr Gly
145 150 155 160
Arg Gly Gly Glu Glu Lys Lys Lys Glu Lys Glu Lys Glu Glu Gln Glu
165 170 175
Glu Arg Glu Thr Lys Thr Pro Glu Cys Pro Ser His Thr Gln Pro Leu
180 185 190
Gly Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
195 200 205
Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp

210	215	220
Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn 225 230 235 240		
Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr Arg Val 245 250 255		
Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu 260 265 270		
Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys 275 280 285		
Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr 290 295 300		
Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr 305 310 315 320		
Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu 325 330 335		
Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu 340 345 350		
Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys 355 360 365		
Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val Met His Glu 370 375 380		
Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly 385 390 395 400		
Lys		

<210> 26
 <211> 397
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> amino acid sequence of human IL-7 fused hyFc

<400> 26
 Asp Cys Asp Ile Glu Gly Lys Asp Gly Lys Gln Tyr Glu Ser Val Leu
 1 5 10 15
 Met Val Ser Ile Asp Gln Leu Leu Asp Ser Met Lys Glu Ile Gly Ser
 20 25 30
 Asn Cys Leu Asn Asn Glu Phe Asn Phe Phe Lys Arg His Ile Cys Asp
 35 40 45
 Ala Asn Lys Glu Gly Met Phe Leu Phe Arg Ala Ala Arg Lys Leu Arg
 50 55 60
 Gln Phe Leu Lys Met Asn Ser Thr Gly Asp Phe Asp Leu His Leu Leu
 65 70 75 80
 Lys Val Ser Glu Gly Thr Thr Ile Leu Leu Asn Cys Thr Gly Gln Val
 85 90 95
 Lys Gly Arg Lys Pro Ala Ala Leu Gly Glu Ala Gln Pro Thr Lys Ser
 100 105 110
 Leu Glu Glu Asn Lys Ser Leu Lys Glu Gln Lys Lys Leu Asn Asp Leu
 115 120 125
 Cys Phe Leu Lys Arg Leu Leu Gln Glu Ile Lys Thr Cys Trp Asn Lys
 130 135 140
 Ile Leu Met Gly Thr Lys Glu His Arg Asn Thr Gly Arg Gly Gly Glu
 145 150 155 160
 Glu Lys Lys Lys Glu Lys Glu Lys Glu Glu Gln Glu Glu Arg Glu Thr
 165 170 175
 Lys Thr Pro Glu Cys Pro Ser His Thr Gln Pro Leu Gly Val Phe Leu
 180 185 190
 Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu
 195 200 205
 Val Thr Cys Val Val Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln
 210 215 220
 Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys
 225 230 235 240
 Pro Arg Glu Glu Gln Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu
 245 250 255

Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys
260 265 270

Val Ser Asn Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys
275 280 285

Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser
290 295 300

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

Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln
325 330 335

Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly
340 345 350

Ser Phe Phe Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln
355 360 365

Glu Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn
370 375 380

His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys
385 390 395

<210> 27

<211> 395

<212> PRT

<213> Artificial Sequence

<220>

<223> amino acid sequence of human IL-7 fused nonlytic mouse Fc

<400> 27

Asp Cys Asp Ile Glu Gly Lys Asp Gly Lys Gln Tyr Glu Ser Val Leu
1 5 10 15

Met Val Ser Ile Asp Gln Leu Leu Asp Ser Met Lys Glu Ile Gly Ser
20 25 30

Asn Cys Leu Asn Asn Glu Phe Asn Phe Phe Lys Arg His Ile Cys Asp
35 40 45

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

Thr Leu Thr Cys Met Val Thr Asp Phe Met Pro Glu Asp Ile Tyr Val
305 310 315 320

Glu Trp Thr Asn Asn Gly Lys Thr Glu Leu Asn Tyr Lys Asn Thr Glu
325 330 335

Pro Val Leu Asp Ser Asp Gly Ser Tyr Phe Met Tyr Ser Lys Leu Arg
340 345 350

Val Glu Lys Lys Asn Trp Val Glu Arg Asn Ser Tyr Ser Cys Ser Val
355 360 365

Val His Glu Gly Leu His Asn His His Thr Thr Lys Ser Phe Ser Arg
370 375 380

Thr Pro Gly Lys Gly Gly Gly Asn Ser Gly Ser
385 390 395

<210> 28
<211> 531
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of human IL-7

<400> 28
atgttccacg tgagcttcag gtacatcttc ggcctgccac ccctgatacct ggtgctgctg 60
cctgtggcca gctccgactg cgacatcgag ggaaaagacg gcaagcagta cgaaagcgtg 120
ctgatggtgt ccatcgacca gctgctggat tctatgaagg agattgggag taactgcctg 180
aacaatgagt tcaacttctt caaacggcac atttgtgatg ccaacaagga gggaatgttc 240
ctgtttcggg ccgctagaaa actgaggcag ttcctgaaga tgaacagcac cggagacttt 300
gatctgcata tgctgaaagt gtctgagggc accacaatcc tgctgaactg cactgggcag 360
gtgaaaggaa ggaagcctgc cgctctggga gaggctcagc caaccaagtc actggaggaa 420
aacaaaagcc tgaaggaaca gaagaaactg aatgacctgt gctttctgaa acggctgctg 480
caggagatca aaacatgttg gaacaagatt ctgatgggca caaaggaaca c 531

<210> 29
<211> 534
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of modified IL-7(M)

<400> 29
atgttccacg tgagcttcag atacatcttc ggcctgcccc ccctgatacct ggtgctgctg 60
cccgtggcca gcagcatgga ctgcgacatc gagggcaagg acggcaagca gtacgagagc 120
gtgctgatgg tgagcatcga ccagctgctg gacagcatga aggagatcgg cagcaactgc 180
ctgaacaacg agttcaactt cttcaagaga cacatctgcg acgccaacaa ggagggcatg 240
ttcctgttca gagccgccag aaagctgaga cagttcctga agatgaacag caccggcgac 300
ttcgacctgc acctgctgaa ggtgagcgag ggcacaacca tcctgctgaa ctgcaccggc 360
caggtgaagg gcagaaagcc cgccgccctg ggcgaggccc agcccaccaa gaggcctggag 420
gagaacaaga gcctgaagga gcagaagaag ctgaacgacc tgtgcttcct gaagagactg 480
ctgcaggaga tcaagacctg ctggaacaag atcctgatgg gcaccaagga gcac 534

<210> 30
<211> 537
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of modified IL-7(MM)

<400> 30
atgttccacg tgagcttcag atacatcttc ggcctgcccc ccctgatacct ggtgctgctg 60
cccgtggcca gcagcatgat ggactgcgac atcgagggca aggacggcaa gcagtacgag 120
agcgtgctga tggtagcat cgaccagctg ctggacagca tgaaggagat cggcagcaac 180
tgcctgaaca acgagttcaa cttcttcaag agacacatct gcgacgcca caaggagggc 240
atgttcctgt tcagagccgc cagaaagctg agacagttcc tgaagatgaa cagcaccggc 300

gacttcgacc tgcacctgct gaaggtgagc gagggcacia ccatacctgct gaactgcacc 360
ggccaggtga agggcagaaa gcccgccgcc ctgggcgagg cccagcccac caagagcctg 420
gaggagaaca agagcctgaa ggagcagaag aagctgaacg acctgtgctt cctgaagaga 480
ctgctgcagg agatcaagac ctgctggaac aagatcctga tgggcaccaa ggagcac 537

<210> 31
<211> 540
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of modified IL-7(MMM)

<400> 31
atgttccacg tgagcttcag atacatcttc ggcctgcccc ccctgatact ggtgctgctg 60
cccgtagcca gcagcatgat gatggactgc gacatcgagg gcaaggacgg caagcagtac 120
gagagcgtgc tgatggtgag catcgaccag ctgctggaca gcatgaagga gatcggcagc 180
aactgcctga acaacgagtt caacttcttc aagagacaca tctgcgacgc caacaaggag 240
ggcatgttcc tgttcagagc cgccagaaaag ctgagacagt tcctgaagat gaacagcacc 300
ggcgacttcg acctgcacct gctgaagggtg agcgagggca caaccatact gctgaactgc 360
accggccagg tgaagggcag aaagcccgcc gccctgggagc agggccagcc caccaagagc 420
ctggaggaga acaagagcct gaaggagcag aagaagctga acgacctgtg cttcctgaag 480
agactgctgc aggagatcaa gacctgctgg aacaagatcc tgatgggcac caaggagcac 540

<210> 32
<211> 540
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of modified IL-7(MGM)

<400> 32
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cctgtggcca gctccatggg gatggactgc gacatcgagg gaaaagacgg caagcagtac 120
gaaagcgtgc tgatggtgtc catcgaccag ctgctggatt ctatgaagga gattgggagt 180
aactgcctga acaatgagtt caacttcttc aaacggcaca tttgtgatgc caacaaggag 240
ggaatgttcc tgtttcgggc cgctagaaaa ctgaggcagt tcctgaagat gaacagcacc 300
ggagactttg atctgcatct gctgaaagtg tctgagggca ccacaatcct gctgaactgc 360
actgggcagg tgaaaggaag gaagcctgcc gctctgggag aggctcagcc aaccaagtca 420
ctggaggaaa acaaaagcct gaaggaacag aagaaactga atgacctgtg ctttctgaaa 480
cggctgctgc aggagatcaa aacatgttgg aacaagattc tgatgggcac caaggagcac 540

<210> 33
<211> 540
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of modified IL-7(DDD)

<400> 33
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cccgtggcca gcagcgacga tgacgactgc gacatcgagg gcaaggacgg caagcagtac 120
gagagcgtgc tgatggtgag catcgaccag ctgctggaca gcatgaagga gatcggcagc 180
aactgcctga acaacgagtt caacttcttc aagagacaca tctgcgacgc caacaaggag 240
ggcatgttcc tgttcagagc cgccagaaaag ctgagacagt tcctgaagat gaacagcacc 300
ggcgacttcg acctgcacct gctgaaggtg agcgagggca caaccatcct gctgaactgc 360
accggccagg tgaagggcag aaagcccgcc gccctgggagc aggcccagcc caccaagagc 420
ctggaggaga acaagagcct gaaggagcag aagaagctga acgacctgtg cttcctgaag 480

agactgctgc aggagatcaa gacctgctgg aacaagatcc tgatgggcac caaggagcac 540

<210> 34
<211> 543
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of modified IL-7(MMMM)

<400> 34
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cccgtggcca gcagcatgat gatgatggac tgcgacatcg agggcaagga cggcaagcag 120
tacgagagcg tgctgatggt gagcatcgac cagctgctgg acagcatgaa ggagatcggc 180
agcaactgcc tgaacaacga gttcaacttc ttcaagagac acatctgcga cgccaacaag 240
gagggcatgt tcctgttcag agccgccaga aagctgagac agttcctgaa gatgaacagc 300
accggcgact tcgacctgca cctgctgaag gtgagcgagg gcacaaccat cctgctgaac 360
tgcaccggcc aggtgaaggg cagaaagccc gccgccctgg gcgaggccca gcccaccaag 420
agcctggagg agaacaagag cctgaaggag cagaagaagc tgaacgacct gtgcttcctg 480
aagagactgc tgcaggagat caagacctgc tggaacaaga tcctgatggg caccaaggag 540
cac 543

<210> 35
<211> 1284
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of modified IL-7(M) fused hyFc

<400> 35
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cccgtggcca gcagcatgga ctgcgacatc gagggcaagg acggcaagca gtacgagagc 120

gtgctgatgg	tgagcatcga	ccagctgctg	gacagcatga	aggagatcgg	cagcaactgc	180
ctgaacaacg	agttcaactt	cttcaagaga	cacatctgcg	acgccaacaa	ggagggcatg	240
ttcctgttca	gagccgccag	aaagctgaga	cagttcctga	agatgaacag	caccggcgac	300
ttcgacctgc	acctgctgaa	ggtgagcgag	ggcacaacca	tcctgctgaa	ctgcaccggc	360
caggtgaagg	gcagaaagcc	cgccgccctg	ggcgaggccc	agcccaccaa	gagcctggag	420
gagaacaaga	gcctgaagga	gcagaagaag	ctgaacgacc	tgtgcttcct	gaagagactg	480
ctgcaggaga	tcaagacctg	ctggaacaag	atcctgatgg	gcaccaagga	gcacaggaac	540
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gagaccaaga	cccccgagtg	ccccagccac	accagcccc	tgggcgtgtt	cctgttccct	660
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gatgtgagcc	aggaagatcc	cgaagtgcag	ttcaactggg	acgtggatgg	cgtggaagtg	780
cacaacgcca	agaccaagcc	cagagaagag	cagttcaact	ccacctacag	agtggtgagc	840
gtgctgaccg	tgctgcacca	ggactggctg	aacggcaagg	agtacaagtg	caaggtgtcc	900
aacaaaggcc	tgcccagctc	catcgagaag	accatcagca	aagccaaagg	ccagcccaga	960
gaaccccagg	tgtacaccct	gcctcccagc	caggaagaga	tgaccaagaa	ccaggtgtcc	1020
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ggccagcccc	agaacaatta	caagacaacc	cctcccgtgc	tggatagcga	tggcagcttc	1140
tttctgtaca	gcagactgac	cgtggacaag	agcagatggc	aggaaggcaa	cgtgttcagc	1200
tgcagcgtga	tgcacgaagc	cctgcacaac	cactacaccc	agaagagcct	gtccctgagc	1260
ctgggcaagt	gactcgagtc	taga				1284

<210> 36
 <211> 1272
 <212> DNA
 <213> Artificial Sequence

<220>

<223> nucleotide sequence of modified IL-7(MM) fused hyFc

<400> 36

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cccgtggcca gcagcatgat ggactgagac atcgagggca aggacggcaa gcagtacgag    120
agcgtgctga tggtagcatg cgaccagctg ctggacagca tgaaggagat cggcagcaac    180
tgcctgaaca acgagttcaa cttcttcaag agacacatct gcgacgcca caaggagggc    240
atgttcctgt tcagagccgc cagaaagctg agacagttcc tgaagatgaa cagcaccggc    300
gacttcgacc tgcacctgct gaaggtgagc gagggcacia ccatacctgct gaactgcacc    360
ggccagggtga agggcagaaa gcccgccgcc ctgggcgagg cccagcccac caagagcctg    420
gaggagaaca agagcctgaa ggagcagaag aagctgaacg acctgtgctt cctgaagaga    480
ctgctgcagg agatcaagac ctgctggaac aagatcctga tgggcaccaa ggagcacagg    540
aacacaggca gaggcggcga ggagaagaag aaggagaagg agaaggagga gcaggaggaa    600
agagagacca agacccccga gtgccccagc cacaccagc ccctgggcgt gttcctgttc    660
cctcccaagc ccaaggacac cctgatgata agcagaaccc ccgaggtgac ctgcgtggtc    720
gtggatgtga gccaggaaga tcccgaagtg cagttcaact ggtacgtgga tggcgtggaa    780
gtgcacaacg ccaagaccaa gccagagaa gagcagttca actccaccta cagagtgggtg    840
agcgtgctga ccgtgctgca ccaggactgg ctgaacggca aggagtacaa gtgcaagggtg    900
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agagaacccc aggtgtacac cctgcctccc agccaggaag agatgaccaa gaaccagggtg   1020
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aacggccagc ccgagaacaa ttacaagaca acccctcccg tgctggatag cgatggcagc   1140
ttctttctgt acagcagact gaccgtggac aagagcagat ggcaggaagg caacgtgttc   1200
agctgcagcg tgatgcacga agccctgcac aaccactaca ccagaagag cctgtccctg   1260
agcctgggca ag                                         1272
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<210> 37
 <211> 1275
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> nucleotide sequence of modified IL-7(MMM) fused hyFc

<400> 37
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 cccgtggcca gcagcatgat gatggactgc gacatcgagg gcaaggacgg caagcagtac 120
 gagagcgtgc tgatggtgag catcgaccag ctgctggaca gcatgaagga gatcggcagc 180
 aactgcctga acaacgagtt caacttcttc aagagacaca tctgcgacgc caacaaggag 240
 ggcatgttcc tgttcagagc cgccagaaaag ctgagacagt tcctgaagat gaacagcacc 300
 ggcgacttcg acctgcacct gctgaagggtg agcgagggca caaccatcct gctgaactgc 360
 accggccagg tgaagggcag aaagcccgcc gccctgggagc agggccagcc caccaagagc 420
 ctggaggaga acaagagcct gaaggagcag aagaagctga acgacctgtg cttcctgaag 480
 agactgctgc aggagatcaa gacctgctgg aacaagatcc tgatgggcac caaggagcac 540
 aggaacacag gcagaggcgg cgaggagaag aagaaggaga aggagaagga ggagcaggag 600
 gaaagagaga ccaagacccc cgagtgcctc agccacaccc agcccctggg cgtgttcctg 660
 ttccctcca agcccaagga caccctgatg atcagcagaa ccccgaggt gacctgcgtg 720
 gtcgtggatg tgagccagga agatcccgaa gtgcagttca actggtacgt ggatggcgtg 780
 gaagtgcaca acgccaagac caagcccaga gaagagcagt tcaactccac ctacagagtg 840
 gtgagcgtgc tgaccgtgct gcaccaggac tggctgaacg gcaaggagta caagtgaag 900
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 agcaacggcc agcccagaaa caattacaag acaaccctc ccgtgctgga tagcgatggc 1140

agcttctttc tgtacagcag actgaccgtg gacaagagca gatggcagga aggcaacgtg 1200
 ttcagctgca gcgtgatgca cgaagccctg cacaaccact acaccagaa gagcctgtcc 1260
 ctgagcctgg gcaag 1275

<210> 38
 <211> 1275
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> nucleotide sequence of modified IL-7(MGM) fused hyFc

<400> 38
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 gaaagcgtgc tgatggtgtc catcgaccag ctgctggatt ctatgaagga gattgggagt 180
 aactgcctga acaatgagtt caacttcttc aaacggcaca tttgtgatgc caacaaggag 240
 ggaatgttcc tgtttcgggc cgctagaaaa ctgaggcagt tcctgaagat gaacagcacc 300
 ggagactttg atctgcatct gctgaaagtg tctgagggca ccacaatcct gctgaactgc 360
 actgggcagg tgaaaggaag gaagcctgcc gctctgggag aggctcagcc aaccaagtca 420
 ctggaggaaa acaaaagcct gaaggaacag aagaaactga atgacctgtg ctttctgaaa 480
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 gaaagagaga ctaagacccc agaatgtccc agccatactc agcccctggg ggtgttcctg 660
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 gtcgtggatg tgagccagga agatcccgaa gtgcagttca actggtacgt ggatggcgtg 780
 gaagtgcaca acgccaagac caagcccaga gaagagcagt tcaactccac ctacagagtg 840
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gtgtccctga cctgcctggt gaaaggcttc taccacagcg acatcgccgt ggagtgggaa 1080
agcaacggcc agcccgagaa caattacaag acaaccctc ccgtgctgga tagcgatggc 1140
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ttcagctgca gcgtgatgca cgaagccctg cacaaccact acaccagaa gagcctgtcc 1260
ctgagcctgg gcaag 1275

<210> 39
<211> 1278
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleotide sequence of modified IL-7(MMMM) fused hyFc

<400> 39
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tacgagagcg tgctgatggt gagcatcgac cagctgctgg acagcatgaa ggagatcggc 180
agcaactgcc tgaacaacga gttcaacttc ttcaagagac acatctgcga cgccaacaag 240
gagggcatgt tcctgttcag agccgccaga aagctgagac agttcctgaa gatgaacagc 300
accggcgact tcgacctgca cctgctgaag gtgagcgagg gcacaaccat cctgctgaac 360
tgcaccggcc aggtgaaggg cagaaagccc gccgccctgg gcgaggccca gcccaccaag 420
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cacaggaaca caggcagagg cggcgaggag aagaagaagg agaaggagaa ggaggagcag 600
gaggaaagag agaccaagac ccccgagtgc cccagccaca cccagcccct gggcgtgttc 660
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gtggctcgtgg atgtgagcca ggaagatccc gaagtgcagt tcaactggta cgtggatggc 780
gtggaagtgc acaacgcaa gaccaagccc agagaagagc agttcaactc cacctacaga 840
gtggtgagcg tgctgaccgt gctgcaccag gactggctga acggcaagga gtacaagtgc 900
aaggtgtcca acaaaggcct gcccagctcc atcgagaaga ccatcagcaa agccaaaggc 960
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<210> 40
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic oligopeptide

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<400> 40
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