SEQUENCE LISTING

<110> Aurealis Pharma AG

<120> Chloride-inducible prokaryotic expression system

<130> 56002WO/AW/MC/

<160> 36

<170> BiSSAP 1.3.6

<210> 1
<211> 3201
<212> DNA
<213> Artificial Sequence

<220>
<223> plasmid pAUC1010

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tagaaaacca aggcttgaaa cgttcaattg aaatggcaat taaacaaatt acagcacgtg 180

ttgctttgat tgatagccaa aaagcagcag ttgataaagc aattactgat attgctgaaa 240

aattgtaatt tataaataaa aatcaccttt tagaggtggt ttttttattt ataaattatt 300

cgtttgattt cgctttcgat agaacaatca aatcgtttct gagacgtttt agcgtttatt 360

tcgtttagtt atcggcataa tcgttaaaac aggcgttatc gtagcgtaaa agcccttgag 420

cgtagcgtgg ctttgcagcg aagatgttgt ctgttagatt atgaaagccg atgactgaat 480

gaaataataa gcgcagcgtc cttctatttc ggttggagga ggctcaaggg agtttgaggg 540

aatgaaattc cctcatgggt ttgattttaa aaattgcttg caattttgcc gagcggtagc 600

gctggaaaat ttttgaaaaa aatttggaat ttggaaaaaa atgggggggaa aggaagcgaa 660

ttttgcttcc gtactacgac cccccattaa gtgccgagtg ccaatttttg tgccaaaaac 720

gctctatccc aactggctca agggtttgag gggtttttca atcgccaacg aatcgccaac 780

gttttcgcca acgtttttta taaatctata tttaagtagc tttatttttg tttttatgat 840

tacaaagtga tacactaatt ttataaaatt atttgattgg agtttttaa atggtgattt 900

cagaatcgaa aaaaagagtt atgatttctc tgacaaaaga gcaagataaa aaattaacag 960

atatggcgaa acaaaaagat ttttcaaaat ctgcggttgc ggcgttagct atagaagaat 1020

atgcaagaaa ggaatcagaa caaaaaaaat aagcgaaagc tcgcgttttt agaaggatac 1080

gagttttcgc tacttgtttt tgataaggta attatatcat ggctattaaa aatactaaag 1140

ctagaaattt tggattttta ttatatcctg actcaattcc taatgattgg aaagaaaaat 1200

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gttcatatga atatttgact catgaatcaa aggacgctat tgctaagaat aaacatatat 1500

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aaaagaaatt aaggacttaa aagagcgtat tgaaagatac agagaaatgg aagttgaatt 1920

aagtacaaca atagatttat tgagaggagg gattattgaa taaataaaag ccccccctgac 1980

gaaagtcgac atggtcgatg tctagatgct taaactagag aaaggtttaa aagatgaaaa 2040

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tcactcattt tgcgactgcg gatatggctg atgaaacaaa atttaaaaat caacaggcaa 2580

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ctgacgggtg gacccgtcaa atgcaaggtt tcaaagtgct tgttgatgga aagttttgtg 2940

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tgggaacgaa ggtcactttg attggtcgag ataaggctaa tgaaatcacg acaacagacg 3060

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aaagcagatg ataacctcac t 3201

<210> 2
<211> 1248
<212> DNA
<213> Lactococcus lactis

<220>
<223> PgadC promoter

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ttgacgatta agtcttaaat aagttataat ctcaattgcg taatttctta aatacagaaa 180

taacaactac attggtagac tgattaaaaa gtgtacttga tgaactgtta taaaccttaa 240

aaaaataaaa ataatagttt gggggatgtt aaagatgtat aaaaaatatg gagattgttt 300

taaaaagttg cgaaaccaaa agaatttagg gttatcatac tttagtaaac ttggaataga 360

ccgttcaaat atatctagat ttgaacatgg aaaatgtatg atgagttttg agcgtataga 420

tttgatgtta gaagaaatgc aagttccgtt atctgagtac gaattgattg taaataattt 480

tatgccgaat ttccaagaat tttttatatt agaattggaa aaagctgaat ttagccaaaa 540

tcgagataaa ataaaagagt tgtattctga ggtcaaagaa acggggaatc atttactgac 600

ggttaccgtg aaaacgaagc ttgggaatat aagtcagaca gaagttaaag aaattgaagc 660

ttatctttgc aatattgaag agtggggata ttttgaactt actttatttt attttgtatc 720

tgattatctc aatgtcaatc aattagaatt gctgcttttt aattttgata aaagatgtga 780

aaattactgt agagtcttaa aatatagaag gagactattg caaatagcct ataaaagtgt 840

tgcgatatac gcggctaaag gagaaagaaa aaaagccgaa aatattttag aaatgactaa 900

aaaatatcga actgtgggag tcgatttata ttcagaagta ttaagacatc ttgctagagc 960

tatcattatt tttaattttg aaaatgcaga gattggggaa gaaaaaataa attatgctct 1020

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aaagtatttg aaaaggtcaa tttagtctct tttgagctgt tgctttaaag caacagctca 1140

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ttataacttg tcttttaaaa aattcaatca taaatataag gaggtatg 1248

<210> 3
<211> 27
<212> PRT
<213> Lactococcus lactis

<220>
<223> Usp45 secretion signal

<400> 3
Met Lys Lys Lys Ile Ile Ser Ala Ile Leu Met Ser Thr Val Ile Leu
1 5 10 15
Ser Ala Ala Ala Pro Leu Ser Gly Val Tyr Ala
20 25

<210> 4
<211> 16
<212> RNA
<213> Lactococcus lactis

<220>
<223> 3’ end of 16S RNA

<400> 4
ggaucaccuc cuuucu 16

<210> 5
<211> 155
<212> PRT
<213> Homo sapiens

<220>
<223> mature form of human fibroblast growth factor 2 (hFGF-2)

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

<210> 6
<211> 153
<212> PRT
<213> Artificial Sequence

<220>
<223> recombinant hFGF-2 variant

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

```
    130                 135                 140
Leu Phe Leu Pro Met Ser Ala Lys Ser
145                 150
```

<210> 7
<211> 180
<212> PRT
<213> Artificial Sequence

<220>
<223> recombinant hFGF-2-153 precursor protein

<400> 7

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

<210> 8
<211> 129
<212> PRT
<213> Homo sapiens

<220>
<223> mature form of human interleukin 4 (hIL-4)

<400> 8

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His Lys Cys Asp Ile Thr Leu Gln Glu Ile Ile Lys Thr Leu Asn Ser
1               5                   10                  15
Leu Thr Glu Gln Lys Thr Leu Cys Thr Glu Leu Thr Val Thr Asp Ile
            20                  25                  30
Phe Ala Ala Ser Lys Asn Thr Thr Glu Lys Glu Thr Phe Cys Arg Ala
```

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

<210> 9
<211> 130
<212> PRT
<213> Artificial Sequence

<220>
<223> recombinant hIL-4 variant

<400> 9

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

<210> 10
<211> 157
<212> PRT
<213> Artificial Sequence

<220>
<223> recombinant hIL-4 precursor protein

<400> 10

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Met Lys Lys Lys Ile Ile Ser Ala Ile Leu Met Ser Thr Val Ile Leu
```

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

<210> 11
<211> 418
<212> PRT
<213> Homo sapiens

<220>
<223> mature form of human colony stimmulating factor 1 (CSF-1)

<400> 11
Glu Glu Val Ser Glu Tyr Cys Ser His Met Ile Gly Ser Gly His Leu
1 5 10 15
Gln Ser Leu Gln Arg Leu Ile Asp Ser Gln Met Glu Thr Ser Cys Gln
20 25 30
Ile Thr Phe Glu Phe Val Asp Gln Glu Gln Leu Lys Asp Pro Val Cys
35 40 45
Tyr Leu Lys Lys Ala Phe Leu Leu Val Gln Asp Ile Met Glu Asp Thr
50 55 60
Met Arg Phe Arg Asp Asn Thr Pro Asn Ala Ile Ala Ile Val Gln Leu
65 70 75 80
Gln Glu Leu Ser Leu Arg Leu Lys Ser Cys Phe Thr Lys Asp Tyr Glu
85 90 95
Glu His Asp Lys Ala Cys Val Arg Thr Phe Tyr Glu Thr Pro Leu Gln
100 105 110
Leu Leu Glu Lys Val Lys Asn Val Phe Asn Glu Thr Lys Asn Leu Leu
115 120 125
Asp Lys Asp Trp Asn Ile Phe Ser Lys Asn Cys Asn Asn Ser Phe Ala
130 135 140
Glu Cys Ser Ser Gln Asp Val Val Thr Lys Pro Asp Cys Asn Cys Leu
145 150 155 160
Tyr Pro Lys Ala Ile Pro Ser Ser Asp Pro Ala Ser Val Ser Pro His
165 170 175
Gln Pro Leu Ala Pro Ser Met Ala Pro Val Ala Gly Leu Thr Trp Glu
180 185 190

```
Asp Ser Glu Gly Thr Glu Gly Ser Ser Leu Leu Pro Gly Glu Gln Pro
        195                 200                 205
Leu His Thr Val Asp Pro Gly Ser Ala Lys Gln Arg Pro Pro Arg Ser
    210                 215                 220
Thr Cys Gln Ser Phe Glu Pro Pro Glu Thr Pro Val Val Lys Asp Ser
225                 230                 235                 240
Thr Ile Gly Gly Ser Pro Gln Pro Arg Pro Ser Val Gly Ala Phe Asn
                245                 250                 255
Pro Gly Met Glu Asp Ile Leu Asp Ser Ala Met Gly Thr Asn Trp Val
            260                 265                 270
Pro Glu Glu Ala Ser Gly Glu Ala Ser Glu Ile Pro Val Pro Gln Gly
        275                 280                 285
Thr Glu Leu Ser Pro Ser Arg Pro Gly Gly Gly Ser Met Gln Thr Glu
    290                 295                 300
Pro Ala Arg Pro Ser Asn Phe Leu Ser Ala Ser Ser Pro Leu Pro Ala
305                 310                 315                 320
Ser Ala Lys Gly Gln Gln Pro Ala Asp Val Thr Gly Thr Ala Leu Pro
                325                 330                 335
Arg Val Gly Pro Val Arg Pro Thr Gly Gln Asp Trp Asn His Thr Pro
            340                 345                 350
Gln Lys Thr Asp His Pro Ser Ala Leu Leu Arg Asp Pro Pro Glu Pro
        355                 360                 365
Gly Ser Pro Arg Ile Ser Ser Leu Arg Pro Gln Gly Leu Ser Asn Pro
    370                 375                 380
Ser Thr Leu Ser Ala Gln Pro Gln Leu Ser Arg Ser His Ser Ser Gly
385                 390                 395                 400
Ser Val Leu Pro Leu Gly Glu Leu Glu Gly Arg Arg Ser Thr Arg Asp
                405                 410                 415
Arg Arg
```

<210> 12
<211> 159
<212> PRT
<213> Artificial Sequence

<220>
<223> recombinant hCSF-1 variant

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<400> 12
Ala Glu Glu Val Ser Glu Tyr Cys Ser His Met Ile Gly Ser Gly His
1               5                   10                  15
Leu Gln Ser Leu Gln Arg Leu Ile Asp Ser Gln Met Glu Thr Ser Cys
            20                  25                  30
Gln Ile Thr Phe Glu Phe Val Asp Gln Glu Gln Leu Lys Asp Pro Val
        35                  40                  45
Cys Tyr Leu Lys Lys Ala Phe Leu Leu Val Gln Asp Ile Met Glu Asp
    50                  55                  60
Thr Met Arg Phe Arg Asp Asn Thr Pro Asn Ala Ile Ala Ile Val Gln
65                  70                  75                  80
Leu Gln Glu Leu Ser Leu Arg Leu Lys Ser Cys Phe Thr Lys Asp Tyr
                85                  90                  95
Glu Glu His Asp Lys Ala Cys Val Arg Thr Phe Tyr Glu Thr Pro Leu
```

```
            100                 105                 110
Gln Leu Leu Glu Lys Val Lys Asn Val Phe Asn Glu Thr Lys Asn Leu
        115                 120                 125
Leu Asp Lys Asp Trp Asn Ile Phe Ser Lys Asn Cys Asn Asn Ser Phe
    130                 135                 140
Ala Glu Cys Ser Ser Gln Gly His Glu Arg Gln Ser Glu Gly Ser
145                 150                 155
```

<210> 13
<211> 186
<212> PRT
<213> Artificial Sequence

<220>
<223> recombinant hCSF-1 precursor protein

<400> 13

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Met Lys Lys Lys Ile Ile Ser Ala Ile Leu Met Ser Thr Val Ile Leu
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Ser Ala Ala Ala Pro Leu Ser Gly Val Tyr Ala Ala Glu Glu Val Ser
            20                  25                  30
Glu Tyr Cys Ser His Met Ile Gly Ser Gly His Leu Gln Ser Leu Gln
        35                  40                  45
Arg Leu Ile Asp Ser Gln Met Glu Thr Ser Cys Gln Ile Thr Phe Glu
    50                  55                  60
Phe Val Asp Gln Glu Gln Leu Lys Asp Pro Val Cys Tyr Leu Lys Lys
65                  70                  75                  80
Ala Phe Leu Leu Val Gln Asp Ile Met Glu Asp Thr Met Arg Phe Arg
                85                  90                  95
Asp Asn Thr Pro Asn Ala Ile Ala Ile Val Gln Leu Gln Glu Leu Ser
            100                 105                 110
Leu Arg Leu Lys Ser Cys Phe Thr Lys Asp Tyr Glu Glu His Asp Lys
        115                 120                 125
Ala Cys Val Arg Thr Phe Tyr Glu Thr Pro Leu Gln Leu Leu Glu Lys
    130                 135                 140
Val Lys Asn Val Phe Asn Glu Thr Lys Asn Leu Leu Asp Lys Asp Trp
145                 150                 155                 160
Asn Ile Phe Ser Lys Asn Cys Asn Asn Ser Phe Ala Glu Cys Ser Ser
                165                 170                 175
Gln Gly His Glu Arg Gln Ser Glu Gly Ser
            180                 185
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<210> 14
<211> 2899
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic CFI construct

<400> 14

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tagatttgac gattaagtct taaataagtt ataatctcaa ttgcgtaatt tcttaaatac 180

agaaataaca actacattgg tagactgatt aaaaagtgta cttgatgaac tgttataaac 240

cttaaaaaaa taaaaataat agtttggggg atgttaaaga tgtataaaaa atatggagat 300

tgttttaaaa agttgcgaaa ccaaaagaat ttagggttat catactttag taaacttgga 360

atagaccgtt caaatatatc tagatttgaa catggaaaat gtatgatgag ttttgagcgt 420

atagatttga tgttagaaga aatgcaagtt ccgttatctg agtacgaatt gattgtaaat 480

aattttatgc cgaatttcca agaatttttt atattagaat tggaaaaagc tgaatttagc 540

caaaatcgag ataaaataaa agagttgtat tctgaggtca aagaaacggg gaatcattta 600

ctgacggtta ccgtgaaaac gaagcttggg aatataagtc agacagaagt taaagaaatt 660

gaagcttatc tttgcaatat tgaagagtgg ggatattttg aacttacttt attttatttt 720

gtatctgatt atctcaatgt caatcaatta gaattgctgc tttttaattt tgataaaaga 780

tgtgaaaatt actgtagagt cttaaaatat agaaggagac tattgcaaat agcctataaa 840

agtgttgcga tatacgcggc taaaggagaa agaaaaaaag ccgaaaatat tttagaaatg 900

actaaaaaat atcgaactgt gggagtcgat ttatattcag aagtattaag acatcttgct 960

agagctatca ttatttttaa ttttgaaaat gcagagattg gggaagaaaa aataaattat 1020

gctcttgaga ttttggaaga atttggagga aagaagataa aagaattcta tcagaataaa 1080

atggaaaagt atttgaaaag gtcaatttag tctcttttga gctgttgctt taaagcaaca 1140

gctcaaaaga gattttcttt attctagagc atatactaga gggtgaagat aggttgtctg 1200

aagcattata acttgtcttt taaaaaattc aatcataaat ataaggaggt atgatgaaaa 1260

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ctggagttta tgcagcagaa gaagttagtg agtactgtag tcatatgatt ggttctggac 1380

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ttgaatttgt agaccaagaa caacttaaag atccagtatg ttatcttaag aaagcttttc 1500

ttttagtcca agacataatg gaagatacaa tgagattcag agacaatact cctaacgcta 1560

tcgccattgt ccaattacaa gaactttctt taagattgaa aagttgcttc actaaagatt 1620

atgaggaaca tgataaagct tgtgttcgaa cattttatga aactcctttg caattattgg 1680

aaaaagtgaa aaatgttttc aatgagacga agaatttgtt ggataaagat tggaatatat 1740

tcagtaagaa ttgtaataac tcatttgccg aatgttcaag ccagggtcat gaacgtcaat 1800

cagaaggctc ttaataaacg cgtattaata aggaggctaa ctaatgaaaa aaaagattat 1860

ctcagctatt ttaatgtcta cagtgatact ttctgctgca gccccgttgt caggtgttta 1920

cgctgctggt tccattacga ccttgccggc tttaccagag gacggaggtt caggagcctt 1980

tccaccaggg cactttaaag atcccaaacg tctatattgt aaaaatggag gcttctttct 2040

gcgaattcat cctgatggac gtgtagatgg tgtgcgtgag aaaagtgatc ctcatatcaa 2100

actccaactt caggcagaag aaagaggcgt cgtaagtata aaaggagttt gcgcgaatcg 2160

ttacttagct atgaaagaag acggtcgatt attggcctct aagtgtgtta ctgatgaatg 2220

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atcatggtac gttgcactta aaaggacagg tcaatataaa ttagggtcta agacaggacc 2340

tggtcaaaaa gcaattttgt tcttaccaat gtcggctaaa agttaataaa cgcgtgaaat 2400

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cttaagcgct gctgccccat tgtcaggtgt ttatgcagca cataagtgtg atataacatt 2520

acaagaaatt atcaaaaccc ttaatagttt aactgaacag aagactttgt gtaccgaatt 2580

aactgtaact gatatttttg ctgcttctaa aaatacaact gaaaaagaga cattttgtcg 2640

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<211> 157
<212> PRT
<213> Mus musculus

<220>
<223> mature form of mouse interleukin 18 (mIL-18)

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Asp Gln Val Leu Phe Val Asp Lys Arg Gln Pro Val Phe Glu Asp Met

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Thr Asp Ile Asp Gln Ser Ala Ser Glu Pro Gln Thr Arg Leu Ile Ile
        35                  40                  45
Tyr Met Tyr Lys Asp Ser Glu Val Arg Gly Leu Ala Val Thr Leu Ser
    50                  55                  60
Val Lys Asp Ser Lys Met Ser Thr Leu Ser Cys Lys Asn Lys Ile Ile
65                  70                  75                  80
Ser Phe Glu Glu Met Asp Pro Pro Glu Asn Ile Asp Asp Ile Gln Ser
                85                  90                  95
Asp Leu Ile Phe Phe Gln Lys Arg Val Pro Gly His Asn Lys Met Glu
            100                 105                 110
Phe Glu Ser Ser Leu Tyr Glu Gly His Phe Leu Ala Cys Gln Lys Glu
        115                 120                 125
Asp Asp Ala Phe Lys Leu Ile Leu Lys Lys Lys Asp Glu Asn Gly Asp
    130                 135                 140
Lys Ser Val Met Phe Thr Leu Thr Asn Leu His Gln Ser
145                 150                 155

<210> 17
<211> 158
<212> PRT
<213> Artificial Sequence


<220>
<223> recombinant variant of mIL-18

<400> 17
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Asn Asp Gln Val Leu Phe Val Asp Lys Arg Gln Pro Val Phe Glu Asp
            20                  25                  30
Met Thr Asp Ile Asp Gln Ser Ala Ser Glu Pro Gln Thr Arg Leu Ile
        35                  40                  45
Ile Tyr Met Tyr Lys Asp Ser Glu Val Arg Gly Leu Ala Val Thr Leu
    50                  55                  60
Ser Val Lys Asp Ser Lys Met Ser Thr Leu Ser Cys Lys Asn Lys Ile
65                  70                  75                  80
Ile Ser Phe Glu Glu Met Asp Pro Pro Glu Asn Ile Asp Asp Ile Gln
                85                  90                  95
Ser Asp Leu Ile Phe Phe Gln Lys Arg Val Pro Gly His Asn Lys Met
            100                 105                 110
Glu Phe Glu Ser Ser Leu Tyr Glu Gly His Phe Leu Ala Cys Gln Lys
        115                 120                 125
Glu Asp Asp Ala Phe Lys Leu Ile Leu Lys Lys Lys Asp Glu Asn Gly
    130                 135                 140
Asp Lys Ser Val Met Phe Thr Leu Thr Asn Leu His Gln Ser
145                 150                 155

<210> 18
<211> 185
<212> PRT
<213> Artificial Sequence
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<220>
<223> recombinant mIL-18 precusor protein

<400> 18
Met Lys Lys Lys Ile Ile Ser Ala Ile Leu Met Ser Thr Val Ile Leu
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Ser Ala Ala Ala Pro Leu Ser Gly Val Tyr Ala Ala Asn Phe Gly Arg
            20   25   30
Leu His Cys Thr Thr Ala Val Ile Arg Asn Ile Asn Asp Gln Val Leu
        35   40   45
Phe Val Asp Lys Arg Gln Pro Val Phe Glu Asp Met Thr Asp Ile Asp
    50   55   60
Gln Ser Ala Ser Glu Pro Gln Thr Arg Leu Ile Ile Tyr Met Tyr Lys
65   70   75   80
Asp Ser Glu Val Arg Gly Leu Ala Val Thr Leu Ser Val Lys Asp Ser
                85   90   95
Lys Met Ser Thr Leu Ser Cys Lys Asn Lys Ile Ile Ser Phe Glu Glu
            100   105   110
Met Asp Pro Pro Glu Asn Ile Asp Asp Ile Gln Ser Asp Leu Ile Phe
        115   120   125
Phe Gln Lys Arg Val Pro Gly His Asn Lys Met Glu Phe Glu Ser Ser
    130   135   140
Leu Tyr Glu Gly His Phe Leu Ala Cys Gln Lys Glu Asp Asp Ala Phe
145   150   155   160
Lys Leu Ile Leu Lys Lys Lys Asp Glu Asn Gly Asp Lys Ser Val Met
                165   170   175
Phe Thr Leu Thr Asn Leu His Gln Ser
            180   185

<210> 19
<211> 125
<212> PRT
<213> Mus musculus

<220>
<223> mature form of mouse granulocyte-macrophage colony-stimulating
      factor (GM-CSF)

<400> 19
Ser Ala Pro Thr Arg Ser Pro Ile Thr Val Thr Arg Pro Trp Lys His
1   5   10   15
Val Glu Ala Ile Lys Glu Ala Leu Asn Leu Leu Asp Asp Met Pro Val
            20   25   30
Thr Leu Asn Glu Glu Val Glu Val Val Ser Asn Glu Phe Ser Phe Lys
        35   40   45
Lys Leu Thr Cys Val Gln Thr Arg Leu Lys Ile Phe Glu Gln Gly Leu
    50   55   60
Arg Gly Asn Phe Thr Lys Leu Lys Gly Ala Leu Asn Met Thr Ala Ser
65   70   75   80
Tyr Tyr Gln Thr Tyr Cys Pro Pro Thr Pro Glu Thr Asp Cys Glu Thr
                85   90   95
Gln Val Thr Thr Tyr Ala Asp Phe Ile Asp Ser Leu Lys Thr Phe Leu

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            100                 105                 110
Thr Asp Ile Pro Phe Glu Cys Lys Lys Pro Gly Gln Lys
        115                 120                 125
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<210> 20
<211> 125
<212> PRT
<213> Artificial Sequence

<220>
<223> recombinant variant of mGM-CSF

<400> 20

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1               5                   10                  15
Val Glu Ala Ile Lys Glu Ala Leu Asn Leu Leu Asp Asp Met Pro Val
            20                  25                  30
Thr Leu Asn Glu Glu Val Glu Val Val Ser Asn Glu Phe Ser Phe Lys
        35                  40                  45
Lys Leu Thr Cys Val Gln Thr Arg Leu Lys Ile Phe Glu Gln Gly Leu
    50                  55                  60
Arg Gly Asn Phe Thr Lys Leu Lys Gly Ala Leu Asn Met Thr Ala Ser
65                  70                  75                  80
Tyr Tyr Gln Thr Tyr Cys Pro Pro Thr Pro Glu Thr Asp Cys Glu Thr
                85                  90                  95
Gln Val Thr Thr Tyr Ala Asp Phe Ile Asp Ser Leu Lys Thr Phe Leu
            100                 105                 110
Thr Asp Ile Pro Phe Glu Cys Lys Lys Pro Gly Gln Lys
        115                 120                 125
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<210> 21
<211> 152
<212> PRT
<213> Artificial Sequence

<220>
<223> recombinant mGM-CSF precursor protein

<400> 21

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Met Lys Lys Lys Ile Ile Ser Ala Ile Leu Met Ser Thr Val Ile Leu
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            20                  25                  30
Ser Pro Ile Thr Val Thr Arg Pro Trp Lys His Val Glu Ala Ile Lys
        35                  40                  45
Glu Ala Leu Asn Leu Leu Asp Asp Met Pro Val Thr Leu Asn Glu Glu
    50                  55                  60
Val Glu Val Val Ser Asn Glu Phe Ser Phe Lys Lys Leu Thr Cys Val
65                  70                  75                  80
Gln Thr Arg Leu Lys Ile Phe Glu Gln Gly Leu Arg Gly Asn Phe Thr
                85                  90                  95
Lys Leu Lys Gly Ala Leu Asn Met Thr Ala Ser Tyr Tyr Gln Thr Tyr
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            100                 105                 110
Cys Pro Pro Thr Pro Glu Thr Asp Cys Glu Thr Gln Val Thr Thr Tyr
        115                 120                 125
Ala Asp Phe Ile Asp Ser Leu Lys Thr Phe Leu Thr Asp Ile Pro Phe
    130                 135                 140
Glu Cys Lys Lys Pro Gly Gln Lys
145                 150
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<210> 22
<211> 2309
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic mEG construct

<400> 22

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tagatttgac gattaagtct taaataagtt ataatctcaa ttgcgtaatt tcttaaatac     180

agaaataaca actacattgg tagactgatt aaaaagtgta cttgatgaac tgttataaac     240

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tgttttaaaa agttgcgaaa ccaaaagaat ttagggttat catactttag taaacttgga     360

atagaccgtt caaatatatc tagatttgaa catggaaaat gtatgatgag ttttgagcgt     420

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caaaatcgag ataaaataaa agagttgtat tctgaggtca aagaaacggg gaatcattta     600

ctgacggtta ccgtgaaaac gaagcttggg aatataagtc agacagaagt taaagaaatt     660

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gtatctgatt atctcaatgt caatcaatta gaattgctgc tttttaattt tgataaaaga     780

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<212> DNA
<213> Artificial Sequence

<220>
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agttagagga ttagctgtaa cattaagtgt taaagatagt aaaatgagta cattatcatg 1560

taaaaacaaa ataatttcat ttgaagaaat ggacccacct gaaaatattg atgatattca 1620

atcagattta attttctttc aaaaacgtgt tccaggtcat aacaaaatgg aatttgaatc 1680

tagtttatat gaaggtcact ttttagcttg tcaaaaagaa gatgatgctt ttaaattaat 1740

tttaaagaaa aaagatgaaa atggagataa atcagttatg tttacattaa ctaatttaca 1800

tcaatcataa taaacgcgta ttaataagga ggctaactaa tgaaaaagaa aatcatttca 1860

gcgattttga tgtcaacggt tattttaagc gcagcagctc cattatctgg agtttatgca 1920

gccccaacac gtagtccaat aacagtaact agaccttgga aacatgttga agcaattaaa 1980

gaagcattaa atttattaga tgatatgcca gtaacattaa atgaagaagt tgaagtagta 2040

agtaatgaat ttagttttaa aaaattaaca tgtgttcaaa ctagattaaa aatttttgaa 2100

caaggattaa gaggtaattt tactaaatta aaaggtgctt taaatatgac agctagttat 2160

tatcaaacat attgtccacc aacacctgaa actgattgtg aaacacaagt aactacatat 2220

gctgatttta ttgattcatt aaaaacattt ttaactgata ttccttttga atgtaaaaaa 2280

ccaggacaaa aataataagg catgcggtac cactagttct agagagctca agctttcttt 2340

gaaccaaaat tagaaaacca aggcttgaaa cgttcaattg aaatggcaat taaacaaatt 2400

acagcacgtg ttgctttgat tgatagccaa aaagcagcag ttgataaagc aattactgat 2460

attgctgaaa aattgtaatt tataaataaa aatcaccttt tagaggtggt ttttttattt 2520

ataaattatt cgtttgattt cgctttcgat agaacaatca aatcgtttct gagacgtttt 2580

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agcccttgag cgtagcgtgg ctttgcagcg aagatgttgt ctgttagatt atgaaagccg 2700

atgactgaat gaaataataa gcgcagcgtc cttctatttc ggttggagga ggctcaaggg 2760

agtttgaggg aatgaaattc cctcatgggt ttgattttaa aaattgcttg caattttgcc 2820

gagcggtagc gctggaaaat ttttgaaaaa aatttggaat ttggaaaaaa atgggggggaa 2880

aggaagcgaa ttttgcttcc gtactacgac cccccattaa gtgccgagtg ccaatttttg 2940

tgccaaaaac gctctatccc aactggctca agggtttgag gggtttttca atcgccaacg 3000

aatcgccaac gttttcgcca acgtttttta taaatctata tttaagtagc tttatttttg 3060

tttttatgat tacaaagtga tacactaatt ttataaaatt atttgattgg agtttttaa 3120

atggtgattt cagaatcgaa aaaaagagtt atgatttctc tgacaaaaga gcaagataaa 3180

aaattaacag atatggcgaa acaaaaagat ttttcaaaat ctgcggttgc ggcgttagct 3240

atagaagaat atgcaagaaa ggaatcagaa caaaaaaaat aagcgaaagc tcgcgttttt 3300

agaaggatac gagttttcgc tacttgtttt tgataaggta attatatcat ggctattaaa 3360

aatactaaag ctagaaattt tggattttta ttatatcctg actcaattcc taatgattgg 3420

aaagaaaaat tagagagttt gggcgtatct atggctgtca gtcctttaca cgatatggac 3480

gaaaaaaaag ataaagatac atggaatagt agtgatgtta tacgaaatgg aaagcactat 3540

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gactataatt tggtaaatac aaaagattta atggctttta ttcgccttag gggagcggag 3900

tttggaattt taaatacgaa tgatgtaaaa gatattgttt caacaaactc tagcgccttt 3960

agattatggt ttgagggcaa ttatcagtgt ggatatagag caagttatgc aaaggttctt 4020

gatgctgaaa cgggggaaat aaaatgacaa acaaagaaaa agagttattt gctgaaaatg 4080

aggaattaaa aaaagaaatt aaggacttaa aagagcgtat tgaaagatac agagaaatgg 4140

aagttgaatt aagtacaaca atagatttat tgagaggagg gattattgaa taaataaaag 4200

ccccccctgac gaaagtcgac atggtcgatg tctagatgct taaactagag aaaggtttaa 4260

aagatgaaaa cttcaccaca tcgtaatact tcagctattg ttgatttaaa agcgattaga 4320

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gaactttcag atttaaaaat tcatattggt gtagattctg gtatgggtcg gattggtatt 4680

cgtgatgttg aagaagctaa tcagatgatt gaacttgctg ataaatatgc gattaatttt 4740

gaaggaattt tcactcattt tgcgactgcg gatatggctg atgaaacaaa atttaaaaat 4800

caacaggcaa gatttaacaa aattatggcc ggattatcac gtcaaccaaa atttatacac 4860

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gggatttcaa tgtatggctt gaatccaagt ggtaaaactt tggaacttcc ttttgaaatt 4980

gaacccgctc tctctttagt ttctgaattg actcatataa aaaaaatagc tgcaggtgaa 5040

acggttggtt atggtgcaac ttatgagacg agtgaagaaa cttggattgg aactgttcca 5100

attggttacg ctgacgggtg gacccgtcaa atgcaaggtt tcaaagtgct tgttgatgga 5160

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tcttaccctt tgggaacgaa ggtcactttg attggtcgag ataaggctaa tgaaatcacg 5280

acaacagacg ttgctgattg gcgtggaacg attaattatg aagtgctttg cttactttct 5340

gatagaatca aaagaatcta taaataaaat taaaaaaact gtatttttac agttttttg 5400

ttttctgtta aaagcagatg ataacctcac ta 5432

<210> 24
<211> 312
<212> PRT
<213> Mus musculus

<220>
<223> mature form of mouse interleukin 12 (mIL-12) subunit beta

<400> 24
Met Trp Glu Leu Glu Lys Asp Val Tyr Val Val Glu Val Asp Trp Thr
1 5 10 15
Pro Asp Ala Pro Gly Glu Thr Val Asn Leu Thr Cys Asp Thr Pro Glu
20 25 30
Glu Asp Asp Ile Thr Trp Thr Ser Asp Gln Arg His Gly Val Ile Gly
35 40 45
Ser Gly Lys Thr Leu Thr Ile Thr Val Lys Glu Phe Leu Asp Ala Gly
50 55 60
Gln Tyr Thr Cys His Lys Gly Gly Glu Thr Leu Ser His Ser His Leu
65 70 75 80
Leu Leu His Lys Lys Glu Asn Gly Ile Trp Ser Thr Glu Ile Leu Lys
85 90 95
Asn Phe Lys Asn Lys Thr Phe Leu Lys Cys Glu Ala Pro Asn Tyr Ser
100 105 110
Gly Arg Phe Thr Cys Ser Trp Leu Val Gln Arg Asn Met Asp Leu Lys
115 120 125
Phe Asn Ile Lys Ser Ser Ser Ser Ser Pro Asp Ser Arg Ala Val Thr
130 135 140
Cys Gly Met Ala Ser Leu Ser Ala Glu Lys Val Thr Leu Asp Gln Arg
145 150 155 160
Asp Tyr Glu Lys Tyr Ser Val Ser Cys Gln Glu Asp Val Thr Cys Pro
165 170 175
Thr Ala Glu Glu Thr Leu Pro Ile Glu Leu Ala Leu Glu Ala Arg Gln
180 185 190

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Gln Asn Lys Tyr Glu Asn Tyr Ser Thr Ser Phe Phe Ile Arg Asp Ile
        195                 200                 205
Ile Lys Pro Asp Pro Pro Lys Asn Leu Gln Met Lys Pro Leu Lys Asn
    210                 215                 220
Ser Gln Val Glu Val Ser Trp Glu Tyr Pro Asp Ser Trp Ser Thr Pro
225                 230                 235                 240
His Ser Tyr Phe Ser Leu Lys Phe Phe Val Arg Ile Gln Arg Lys Lys
                245                 250                 255
Glu Lys Met Lys Glu Thr Glu Glu Gly Cys Asn Gln Lys Gly Ala Phe
            260                 265                 270
Leu Val Glu Lys Thr Ser Thr Glu Val Gln Cys Lys Gly Gly Asn Val
        275                 280                 285
Cys Val Gln Ala Gln Asp Arg Tyr Tyr Asn Ser Ser Cys Ser Lys Trp
    290                 295                 300
Ala Cys Val Pro Cys Arg Val Arg
305                 310

<210> 25
<211> 193
<212> PRT
<213> Mus musculus


<220>
<223> mature form of mouse interleukin 12 (mIL-12) subunit alpha
      isoform 2

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

<210> 26
<211> 523
<212> PRT
<213> Artificial Sequence

<220>
<223> recombinant mIL-12 fusion protein

<400> 26
Ala Asp Met Trp Glu Leu Glu Lys Asp Val Tyr Val Val Glu Val Asp
1 5 10 15
Trp Thr Pro Asp Ala Pro Gly Glu Thr Val Asn Leu Thr Cys Asp Thr
20 25 30
Pro Glu Glu Asp Asp Ile Thr Trp Thr Ser Asp Gln Arg His Gly Val
35 40 45
Ile Gly Ser Gly Lys Thr Leu Thr Ile Thr Val Lys Glu Phe Leu Asp
50 55 60
Ala Gly Gln Tyr Thr Cys His Lys Gly Gly Glu Thr Leu Ser His Ser
65 70 75 80
His Leu Leu Leu His Lys Lys Glu Asn Gly Ile Trp Ser Thr Glu Ile
85 90 95
Leu Lys Asn Phe Lys Asn Lys Thr Phe Leu Lys Cys Glu Ala Pro Asn
100 105 110
Tyr Ser Gly Arg Phe Thr Cys Ser Trp Leu Val Gln Arg Asn Met Asp
115 120 125
Leu Lys Phe Asn Ile Lys Ser Ser Ser Ser Ser Pro Asp Ser Arg Ala
130 135 140
Val Thr Cys Gly Met Ala Ser Leu Ser Ala Glu Lys Val Thr Leu Asp
145 150 155 160
Gln Arg Asp Tyr Glu Lys Tyr Ser Val Ser Cys Gln Glu Asp Val Thr
165 170 175
Cys Pro Thr Ala Glu Glu Thr Leu Pro Ile Glu Leu Ala Leu Glu Ala
180 185 190
Arg Gln Gln Asn Lys Tyr Glu Asn Tyr Ser Thr Ser Phe Phe Ile Arg
195 200 205
Asp Ile Ile Lys Pro Asp Pro Pro Lys Asn Leu Gln Met Lys Pro Leu
210 215 220
Lys Asn Ser Gln Val Glu Val Ser Trp Glu Tyr Pro Asp Ser Trp Ser
225 230 235 240
Thr Pro His Ser Tyr Phe Ser Leu Lys Phe Phe Val Arg Ile Gln Arg
245 250 255
Lys Lys Glu Lys Met Lys Glu Thr Glu Glu Gly Cys Asn Gln Lys Gly
260 265 270
Ala Phe Leu Val Glu Lys Thr Ser Thr Glu Val Gln Cys Lys Gly Gly
275 280 285
Asn Val Cys Val Gln Ala Gln Asp Arg Tyr Tyr Asn Ser Ser Cys Ser
290 295 300
Lys Trp Ala Cys Val Pro Cys Arg Val Arg Ser Gly Gly Gly Gly Ser
305 310 315 320
Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Arg Val Ile Pro Val Ser
325 330 335
Gly Pro Ala Arg Cys Leu Ser Gln Ser Arg Asn Leu Leu Lys Thr Thr

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            340                 345                 350
Asp Asp Met Val Lys Thr Ala Arg Glu Lys Leu Lys His Tyr Ser Cys
        355                 360                 365
Thr Ala Glu Asp Ile Asp His Glu Asp Ile Thr Arg Asp Gln Thr Ser
    370                 375                 380
Thr Leu Lys Thr Cys Leu Pro Leu Glu Leu His Lys Asn Glu Ser Cys
385                 390                 395                 400
Leu Ala Thr Arg Glu Thr Ser Ser Thr Thr Arg Gly Ser Cys Leu Pro
                405                 410                 415
Pro Gln Lys Thr Ser Leu Met Met Thr Leu Cys Leu Gly Ser Ile Tyr
            420                 425                 430
Glu Asp Leu Lys Met Tyr Gln Thr Glu Phe Gln Ala Ile Asn Ala Ala
        435                 440                 445
Leu Gln Asn His Asn His Gln Gln Ile Ile Leu Asp Lys Gly Met Leu
    450                 455                 460
Val Ala Ile Asp Glu Leu Met Gln Ser Leu Asn His Asn Gly Glu Thr
465                 470                 475                 480
Leu Arg Gln Lys Pro Pro Val Gly Glu Ala Asp Pro Tyr Arg Val Lys
                485                 490                 495
Met Lys Leu Cys Ile Leu Leu His Ala Phe Ser Thr Arg Val Val Thr
            500                 505                 510
Ile Asn Arg Val Met Gly Tyr Leu Ser Ser Ala
        515                 520
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<210> 27
<211> 550
<212> PRT
<213> Artificial Sequence

<220>
<223> recombinant mIL-12 precursor protein

<400> 27

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Met Lys Lys Lys Ile Ile Ser Ala Ile Leu Met Ser Thr Val Ile Leu
1               5                   10                  15
Ser Ala Ala Ala Pro Leu Ser Gly Val Tyr Ala Ala Asp Met Trp Glu
            20                  25                  30
Leu Glu Lys Asp Val Tyr Val Val Glu Val Asp Trp Thr Pro Asp Ala
        35                  40                  45
Pro Gly Glu Thr Val Asn Leu Thr Cys Asp Thr Pro Glu Glu Asp Asp
    50                  55                  60
Ile Thr Trp Thr Ser Asp Gln Arg His Gly Val Ile Gly Ser Gly Lys
65                  70                  75                  80
Thr Leu Thr Ile Thr Val Lys Glu Phe Leu Asp Ala Gly Gln Tyr Thr
                85                  90                  95
Cys His Lys Gly Gly Glu Thr Leu Ser His Ser His Leu Leu Leu His
            100                 105                 110
Lys Lys Glu Asn Gly Ile Trp Ser Thr Glu Ile Leu Lys Asn Phe Lys
        115                 120                 125
Asn Lys Thr Phe Leu Lys Cys Glu Ala Pro Asn Tyr Ser Gly Arg Phe
    130                 135                 140
Thr Cys Ser Trp Leu Val Gln Arg Asn Met Asp Leu Lys Phe Asn Ile
145                 150                 155                 160
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Lys Ser Ser Ser Ser Ser Pro Asp Ser Arg Ala Val Thr Cys Gly Met
                165                 170                 175
Ala Ser Leu Ser Ala Glu Lys Val Thr Leu Asp Gln Arg Asp Tyr Glu
            180                 185                 190
Lys Tyr Ser Val Ser Cys Gln Glu Asp Val Thr Cys Pro Thr Ala Glu
        195                 200                 205
Glu Thr Leu Pro Ile Glu Leu Ala Leu Glu Ala Arg Gln Gln Asn Lys
    210                 215                 220
Tyr Glu Asn Tyr Ser Thr Ser Phe Phe Ile Arg Asp Ile Ile Lys Pro
225                 230                 235                 240
Asp Pro Pro Lys Asn Leu Gln Met Lys Pro Leu Lys Asn Ser Gln Val
                245                 250                 255
Glu Val Ser Trp Glu Tyr Pro Asp Ser Trp Ser Thr Pro His Ser Tyr
            260                 265                 270
Phe Ser Leu Lys Phe Phe Val Arg Ile Gln Arg Lys Lys Glu Lys Met
        275                 280                 285
Lys Glu Thr Glu Glu Gly Cys Asn Gln Lys Gly Ala Phe Leu Val Glu
    290                 295                 300
Lys Thr Ser Thr Glu Val Gln Cys Lys Gly Gly Asn Val Cys Val Gln
305                 310                 315                 320
Ala Gln Asp Arg Tyr Tyr Asn Ser Ser Cys Ser Lys Trp Ala Cys Val
                325                 330                 335
Pro Cys Arg Val Arg Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
            340                 345                 350
Gly Gly Gly Gly Ser Arg Val Ile Pro Val Ser Gly Pro Ala Arg Cys
        355                 360                 365
Leu Ser Gln Ser Arg Asn Leu Leu Lys Thr Thr Asp Asp Met Val Lys
    370                 375                 380
Thr Ala Arg Glu Lys Leu Lys His Tyr Ser Cys Thr Ala Glu Asp Ile
385                 390                 395                 400
Asp His Glu Asp Ile Thr Arg Asp Gln Thr Ser Thr Leu Lys Thr Cys
                405                 410                 415
Leu Pro Leu Glu Leu His Lys Asn Glu Ser Cys Leu Ala Thr Arg Glu
            420                 425                 430
Thr Ser Ser Thr Thr Arg Gly Ser Cys Leu Pro Pro Gln Lys Thr Ser
        435                 440                 445
Leu Met Met Thr Leu Cys Leu Gly Ser Ile Tyr Glu Asp Leu Lys Met
    450                 455                 460
Tyr Gln Thr Glu Phe Gln Ala Ile Asn Ala Ala Leu Gln Asn His Asn
465                 470                 475                 480
His Gln Gln Ile Ile Leu Asp Lys Gly Met Leu Val Ala Ile Asp Glu
                485                 490                 495
Leu Met Gln Ser Leu Asn His Asn Gly Glu Thr Leu Arg Gln Lys Pro
            500                 505                 510
Pro Val Gly Glu Ala Asp Pro Tyr Arg Val Lys Met Lys Leu Cys Ile
        515                 520                 525
Leu Leu His Ala Phe Ser Thr Arg Val Val Thr Ile Asn Arg Val Met
    530                 535                 540
Gly Tyr Leu Ser Ser Ala
545                 550
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<210> 28
<211> 168
<212> PRT

<213> Mus musculus

<220>
<223> mature form of mouse interferon alpha-2 (mIFNa2)

<400> 28
Gly Cys Asp Leu Pro His Thr Tyr Asn Leu Arg Asn Lys Arg Ala Leu
1   5   10   15
Lys Val Leu Ala Gln Met Arg Arg Leu Pro Phe Leu Ser Cys Leu Lys
            20   25   30
Asp Arg Gln Asp Phe Gly Phe Pro Leu Glu Lys Val Asp Asn Gln Gln
        35   40   45
Ile Gln Lys Ala Gln Ala Ile Pro Val Leu Arg Asp Leu Thr Gln Gln
    50   55   60
Thr Leu Asn Leu Phe Thr Ser Lys Ala Ser Ser Ala Ala Trp Asn Thr
65   70   75   80
Thr Leu Leu Asp Ser Phe Cys Asn Asp Leu His Gln Gln Leu Asn Asp
                85   90   95
Leu Gln Thr Cys Leu Met Gln Gln Val Gly Val Gln Glu Pro Pro Leu
            100   105   110
Thr Gln Glu Asp Ala Leu Leu Ala Val Arg Lys Tyr Phe His Arg Ile
        115   120   125
Thr Val Tyr Leu Arg Glu Lys Lys His Ser Pro Cys Ala Trp Glu Val
    130   135   140
Val Arg Ala Glu Val Trp Arg Ala Leu Ser Ser Ser Val Asn Leu Leu
145   150   155   160
Pro Arg Leu Ser Glu Glu Lys Glu
                165

<210> 29
<211> 169
<212> PRT
<213> Artificial Sequence

<220>
<223> recombinant variant of mIFNa2

<400> 29
Ala Gly Cys Asp Leu Pro His Thr Tyr Asn Leu Arg Asn Lys Arg Ala
1   5   10   15
Leu Lys Val Leu Ala Gln Met Arg Arg Leu Pro Phe Leu Ser Cys Leu
            20   25   30
Lys Asp Arg Gln Asp Phe Gly Phe Pro Leu Glu Lys Val Asp Asn Gln
        35   40   45
Gln Ile Gln Lys Ala Gln Ala Ile Pro Val Leu Arg Asp Leu Thr Gln
    50   55   60
Gln Thr Leu Asn Leu Phe Thr Ser Lys Ala Ser Ser Ala Ala Trp Asn
65   70   75   80
Thr Thr Leu Leu Asp Ser Phe Cys Asn Asp Leu His Gln Gln Leu Asn
                85   90   95
Asp Leu Gln Thr Cys Leu Met Gln Gln Val Gly Val Gln Glu Pro Pro
            100   105   110

Leu Thr Gln Glu Asp Ala Leu Leu Ala Val Arg Lys Tyr Phe His Arg
        115   120   125
Ile Thr Val Tyr Leu Arg Glu Lys Lys His Ser Pro Cys Ala Trp Glu
    130   135   140
Val Val Arg Ala Glu Val Trp Arg Ala Leu Ser Ser Ser Val Asn Leu
145   150   155   160
Leu Pro Arg Leu Ser Glu Glu Lys Glu
                165

<210> 30
<211> 196
<212> PRT
<213> Artificial Sequence

<220>
<223> recombinant mIFNa2 precursor protein

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

<210> 31
<211> 4135
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic mTEA construct

<400> 31
agatctgagc gttgtataag cttttatgtc tttctatatc aacttttaat agaaatataa 60

agtaatataa atgtttttat aataaattat gtgagatata ttttttttgtc cgtactggta 120

tagatttgac gattaagtct taaataagtt ataatctcaa ttgcgtaatt tcttaaatac 180

agaaataaca actacattgg tagactgatt aaaaagtgta cttgatgaac tgttataaac 240

cttaaaaaaa taaaaataat agtttggggg atgttaaaga tgtataaaaa atatggagat 300

tgttttaaaa agttgcgaaa ccaaaagaat ttagggttat catactttag taaacttgga 360

atagaccgtt caaatatatc tagatttgaa catggaaaat gtatgatgag ttttgagcgt 420

atagatttga tgttagaaga aatgcaagtt ccgttatctg agtacgaatt gattgtaaat 480

aattttatgc cgaatttcca agaatttttt atattagaat tggaaaaagc tgaatttagc 540

caaaatcgag ataaaataaa agagttgtat tctgaggtca aagaaacggg gaatcattta 600

ctgacggtta ccgtgaaaac gaagcttggg aatataagtc agacagaagt taaagaaatt 660

gaagcttatc tttgcaatat tgaagagtgg ggatattttg aacttacttt attttatttt 720

gtatctgatt atctcaatgt caatcaatta gaattgctgc tttttaattt tgataaaaga 780

tgtgaaaatt actgtagagt cttaaaatat agaaggagac tattgcaaat agcctataaa 840

agtgttgcga tatacgcggc taaaggagaa agaaaaaaag ccgaaaatat tttagaaatg 900

actaaaaaat atcgaactgt gggagtcgat ttatattcag aagtattaag acatcttgct 960

agagctatca ttatttttaa ttttgaaaat gcagagattg gggaagaaaa aataaattat 1020

gctcttgaga ttttggaaga atttggagga aagaagataa aagaattcta tcagaataaa 1080

atggaaaagt atttgaaaag gtcaatttag tctcttttga gctgttgctt taaagcaaca 1140

gctcaaaaga gattttcttt attctagagc atatactaga gggtgaagat aggttgtctg 1200

aagcattata acttgtcttt taaaaaattc aatcataaat ataaggaggt atgatgaaga 1260

aaaagattat tagtgcaatt ttaatgtcaa cggtcatctt aagcgctgct gccccattgt 1320

caggtgttta tgcagccgat atgtgggaat tagaaaaaga tgtttatgtt gtagaagttg 1380

attggacacc agatgctcct ggtgaaacag ttaatttaac atgtgatact ccagaagaag 1440

atgatattac atggacatct gatcaacgac atggagttat tggtagtgga aaaacattaa 1500

caattacagt taaagaattt ttagatgctg gacaatatac ttgtcataaa ggaggtgaaa 1560

cattatctca ttcacattta ttattacata aaaaagaaaa tggtatttgg tcaactgaaa 1620

tcttaaaaaa ttttaaaaat aagacatttt taaaatgtga agctcctaat tattctggta 1680

gatttacttg ttcatggtta gttcaaagaa atatggattt aaaatttaat attaaatcaa 1740

gttcaagtag tcctgatagt agagctgtaa catgtggaat ggcaagttta tctgctgaaa 1800

aagtaacact tgatcaacgt gattatgaaa aatattctgt tagttgtcaa gaagatgtta 1860

cttgtccaac agctgaagaa acattaccaa ttgaattagc attagaagct agacaacaaa 1920

acaaatatga aaattatagt acatctttct ttattcgtga cattattaaa cctgatccac 1980

ctaaaaattt acaaatgaaa cctttaaaaa atagtcaagt tgaagttagt tgggaatatc 2040

cagattcatg gtcaacacca cattcatatt tttcattaaa attctttgtt agaattcaac 2100

gtaaaaaaga aaaaatgaaa gaaactgaag aaggttgtaa ccaaaaaggt gcatttttag 2160

ttgaaaaaac tagtactgaa gttcaatgta aaggtggtaa tgtatgtgtt caagctcaag 2220

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