

01 11296.204-WO SQ listing ST25 04-SEP-2008.txt  
SEQUENCE LISTING

<110> Novozymes Biopharma DK A/S

<120> Process for Producing a Recombinant Protein

<130> 11296.204-WO

<150> EP07115833

<151> 2007-09-07

<160> 35

<170> PatentIn version 3.5

<210> 1

<211> 70

<212> PRT

<213> Homo sapiens

<400> 1

Gly Pro Glu Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu Gln Phe  
1 5 10 15

Val Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly Tyr Gly  
20 25 30

Ser Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp Glu Cys Cys  
35 40 45

Phe Arg Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala Pro Leu  
50 55 60

Lys Pro Ala Lys Ser Ala  
65 70

<210> 2

<211> 67

<212> PRT

<213> Homo sapiens

<400> 2

Ala Tyr Arg Pro Ser Glu Thr Leu Cys Gly Gly Glu Leu Val Asp Thr  
1 5 10 15

Leu Gln Phe Val Cys Gly Asp Arg Gly Phe Tyr Phe Ser Arg Pro Ala  
20 25 30

Ser Arg Val Ser Arg Arg Ser Arg Gly Ile Val Glu Glu Cys Cys Phe  
35 40 45

Arg Ser Cys Asp Leu Ala Leu Leu Glu Thr Tyr Cys Ala Thr Pro Ala  
50 55 60

Lys Ser Glu  
65

<210> 3  
 <211> 30  
 <212> PRT  
 <213> Homo sapiens

<400> 3

Phe Val Asn Gln His Leu Cys Gly Ser His Leu Val Glu Ala Leu Tyr  
 1 5 10 15

Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr Pro Lys Thr  
 20 25 30

<210> 4  
 <211> 21  
 <212> PRT  
 <213> Homo sapiens

<400> 4

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

Glu Asn Tyr Cys Asn  
 20

<210> 5  
 <211> 81  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <221> Source  
 <222> (1)..(81)  
 <223> /note="Artificial variant of IGF-I"

<400> 5

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Gly Pro Arg Thr Leu  
 1 5 10 15

Cys Gly Ala Glu Leu Val Asp Ala Leu Gln Phe Val Cys Gly Asp Arg  
 20 25 30

Gly Phe Tyr Phe Asn Lys Pro Thr Gly Tyr Gly Ser Ser Ser Arg Arg  
 35 40 45

Ala Pro Gln Thr Gly Ile Val Asp Glu Cys Cys Phe Arg Ser Cys Asp  
 50 55 60

Leu Arg Arg Leu Glu Met Tyr Cys Ala Pro Leu Lys Pro Ala Lys Ser  
 65 70 75 80

Ala

<210> 6  
 <211> 83

<212> PRT  
 <213> Artificial Sequence

<220>  
 <221> Source  
 <222> (1)..(83)  
 <223> /note="Artificial variant of IGF-I"

<400> 6

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Val Asn Gly Pro Arg  
 1 5 10 15

Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu Gln Phe Val Cys Gly  
 20 25 30

Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly Tyr Gly Ser Ser Ser  
 35 40 45

Arg Arg Ala Pro Gln Thr Gly Ile Val Asp Glu Cys Cys Phe Arg Ser  
 50 55 60

Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala Pro Leu Lys Pro Ala  
 65 70 75 80

Lys Ser Ala

<210> 7  
 <211> 87  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <221> Source  
 <222> (1)..(87)  
 <223> /note="Artificial variant of IGF-1"

<400> 7

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Val Asn Phe Ala His  
 1 5 10 15

Tyr Gly Pro Arg Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu Gln  
 20 25 30

Phe Val Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly Tyr  
 35 40 45

Gly Ser Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp Glu Cys  
 50 55 60

Cys Phe Arg Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala Pro  
 65 70 75 80

Leu Lys Pro Ala Lys Ser Ala

<210> 8  
<211> 88  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> Source  
<222> (1)..(88)  
<223> /note="Artificial variant of IGF-I"

<400> 8

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Val Asn Gly Phe Ala  
1 5 10 15

His Tyr Gly Pro Arg Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu  
20 25 30

Gln Phe Val Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly  
35 40 45

Tyr Gly Ser Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp Glu  
50 55 60

Cys Cys Phe Arg Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala  
65 70 75 80

Pro Leu Lys Pro Ala Lys Ser Ala  
85

<210> 9  
<211> 117  
<212> PRT  
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<220>  
<221> Source  
<222> (1)..(117)  
<223> /note="Artificial variant of IGF-I"

<400> 9

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Ala Asn Ala Val Leu  
1 5 10 15

Arg Ala Gln His Leu His Gln Leu Ala Ala Asp Thr Tyr Tyr Lys Glu  
20 25 30

Phe Glu Arg Ala Tyr Ile Pro Glu Gly Gln Arg Tyr Ser Ile Gln Gly  
35 40 45

Pro Arg Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu Gln Phe Val  
50 55 60

Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly Tyr Gly Ser  
65 70 75 80

Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp Glu Cys Cys Phe  
85 90 95

Arg Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala Pro Leu Lys  
100 105 110

Pro Ala Lys Ser Ala  
115

<210> 10  
<211> 119  
<212> PRT  
<213> Artificial Sequence

<220>  
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<222> (1)..(119)  
<223> /note="Artificial variant of IGF-I"

<400> 10

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Ala Asn Ala Val Leu  
1 5 10 15

Arg Ala Gln His Leu His Gln Leu Ala Ala Asp Thr Tyr Tyr Lys Glu  
20 25 30

Phe Glu Arg Ala Tyr Ile Pro Glu Gly Gln Arg Tyr Ser Ile Gln Val  
35 40 45

Asn Gly Pro Arg Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu Gln  
50 55 60

Phe Val Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly Tyr  
65 70 75 80

Gly Ser Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp Glu Cys  
85 90 95

Cys Phe Arg Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala Pro  
100 105 110

Leu Lys Pro Ala Lys Ser Ala  
115

<210> 11  
<211> 123  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> Source

&lt;222&gt; (1)..(123)

&lt;223&gt; /note="Artificial variant of IGF-I"

&lt;400&gt; 11

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Ala Asn Ala Val Leu  
 1 5 10 15

Arg Ala Gln His Leu His Gln Leu Ala Ala Asp Thr Tyr Tyr Lys Glu  
 20 25 30

Phe Glu Arg Ala Tyr Ile Pro Glu Gly Gln Arg Tyr Ser Ile Gln Val  
 35 40 45

Asn Phe Ala His Tyr Gly Pro Arg Thr Leu Cys Gly Ala Glu Leu Val  
 50 55 60

Asp Ala Leu Gln Phe Val Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys  
 65 70 75 80

Pro Thr Gly Tyr Gly Ser Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile  
 85 90 95

Val Asp Glu Cys Cys Phe Arg Ser Cys Asp Leu Arg Arg Leu Glu Met  
 100 105 110

Tyr Cys Ala Pro Leu Lys Pro Ala Lys Ser Ala  
 115 120

&lt;210&gt; 12

&lt;211&gt; 124

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;221&gt; Source

&lt;222&gt; (1)..(124)

&lt;223&gt; /note="Artificial variant of IGF-I"

&lt;400&gt; 12

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Ala Asn Ala Val Leu  
 1 5 10 15

Arg Ala Gln His Leu His Gln Leu Ala Ala Asp Thr Tyr Tyr Lys Glu  
 20 25 30

Phe Glu Arg Ala Tyr Ile Pro Glu Gly Gln Arg Tyr Ser Ile Gln Val  
 35 40 45

Asn Gly Phe Ala His Tyr Gly Pro Arg Thr Leu Cys Gly Ala Glu Leu  
 50 55 60

Val Asp Ala Leu Gln Phe Val Cys Gly Asp Arg Gly Phe Tyr Phe Asn  
 65 70 75 80

Lys Pro Thr Gly Tyr Gly Ser Ser Ser Arg Arg Ala Pro Gln Thr Gly  
85 90 95

Ile Val Asp Glu Cys Cys Phe Arg Ser Cys Asp Leu Arg Arg Leu Glu  
100 105 110

Met Tyr Cys Ala Pro Leu Lys Pro Ala Lys Ser Ala  
115 120

<210> 13  
<211> 85  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> Source  
<222> (1)..(85)  
<223> /note="Artificial variant of IGF-I"

<400> 13

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Leu Ser Thr Gln Gly  
1 5 10 15

Pro Arg Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu Gln Phe Val  
20 25 30

Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly Tyr Gly Ser  
35 40 45

Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp Glu Cys Cys Phe  
50 55 60

Arg Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala Pro Leu Lys  
65 70 75 80

Pro Ala Lys Ser Ala  
85

<210> 14  
<211> 87  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> Source  
<222> (1)..(87)  
<223> /note="Artificial variant of IGF-I"

<400> 14

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Val Asn Leu Ser Thr  
1 5 10 15

Gln Gly Pro Arg Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu Gln  
20 25 30

Phe Val Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly Tyr  
35 40 45

Gly Ser Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp Glu Cys  
50 55 60

Cys Phe Arg Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala Pro  
65 70 75 80

Leu Lys Pro Ala Lys Ser Ala  
85

<210> 15  
<211> 88  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> Source  
<222> (1)..(88)  
<223> /note="Artificial variant of IGF-I"

<400> 15

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Val Asn Gly Leu Ser  
1 5 10 15

Thr Gln Gly Pro Arg Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu  
20 25 30

Gln Phe Val Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly  
35 40 45

Tyr Gly Ser Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp Glu  
50 55 60

Cys Cys Phe Arg Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala  
65 70 75 80

Pro Leu Lys Pro Ala Lys Ser Ala  
85

<210> 16  
<211> 121  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> Source  
<222> (1)..(121)  
<223> /note="Artificial variant of IGF-I"

<400> 16

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Ala Asn Ala Val Leu  
Page 8



1 01 11296.204-WO SQ listing ST25 04-SEP-2008.txt  
5 10 15

Arg Ala Gln His Leu His Gln Leu Ala Ala Asp Thr Tyr Tyr Lys Glu  
20 25 30

Phe Glu Arg Ala Tyr Ile Pro Glu Gly Gln Arg Tyr Ser Ile Gln Leu  
35 40 45

Ser Thr Gln Gly Pro Arg Thr Leu Cys Gly Ala Glu Leu Val Asp Ala  
50 55 60

Leu Gln Phe Val Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr  
65 70 75 80

Gly Tyr Gly Ser Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp  
85 90 95

Glu Cys Cys Phe Arg Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys  
100 105 110

Ala Pro Leu Lys Pro Ala Lys Ser Ala  
115 120

<210> 17  
<211> 123  
<212> PRT  
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<220>  
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<222> (1)..(123)  
<223> /note="Artificial variant of IGF-I"  
<400> 17

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Ala Asn Ala Val Leu  
1 5 10 15

Arg Ala Gln His Leu His Gln Leu Ala Ala Asp Thr Tyr Tyr Lys Glu  
20 25 30

Phe Glu Arg Ala Tyr Ile Pro Glu Gly Gln Arg Tyr Ser Ile Gln Val  
35 40 45

Asn Leu Ser Thr Gln Gly Pro Arg Thr Leu Cys Gly Ala Glu Leu Val  
50 55 60

Asp Ala Leu Gln Phe Val Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys  
65 70 75 80

Pro Thr Gly Tyr Gly Ser Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile  
85 90 95

Val Asp Glu Cys Cys Phe Arg Ser Cys Asp Leu Arg Arg Leu Glu Met  
Page 9

Tyr Cys Ala Pro Leu Lys Pro Ala Lys Ser Ala  
115 120

<210> 18  
<211> 124  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> Source  
<222> (1)..(124)  
<223> /note="Artificial variant of IGF-I"

<400> 18

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Ala Asn Ala Val Leu  
1 5 10 15

Arg Ala Gln His Leu His Gln Leu Ala Ala Asp Thr Tyr Tyr Lys Glu  
20 25 30

Phe Glu Arg Ala Tyr Ile Pro Glu Gly Gln Arg Tyr Ser Ile Gln Val  
35 40 45

Asn Gly Leu Ser Thr Gln Gly Pro Arg Thr Leu Cys Gly Ala Glu Leu  
50 55 60

Val Asp Ala Leu Gln Phe Val Cys Gly Asp Arg Gly Phe Tyr Phe Asn  
65 70 75 80

Lys Pro Thr Gly Tyr Gly Ser Ser Ser Arg Arg Ala Pro Gln Thr Gly  
85 90 95

Ile Val Asp Glu Cys Cys Phe Arg Ser Cys Asp Leu Arg Arg Leu Glu  
100 105 110

Met Tyr Cys Ala Pro Leu Lys Pro Ala Lys Ser Ala  
115 120

<210> 19  
<211> 78  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> Source  
<222> (1)..(78)  
<223> /note="Artificial variant of IGF-I"

<400> 19

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Thr Leu Cys Gly Ala  
1 5 10 15

Glu Leu Val Asp Ala Leu Gln Phe Val Cys Gly Asp Arg Gly Phe Tyr  
20 25 30

Phe Asn Lys Pro Thr Gly Tyr Gly Ser Ser Ser Arg Arg Ala Pro Gln  
35 40 45

Thr Gly Ile Val Asp Glu Cys Cys Phe Arg Ser Cys Asp Leu Arg Arg  
50 55 60

Leu Glu Met Tyr Cys Ala Pro Leu Lys Pro Ala Lys Ser Ala  
65 70 75

<210> 20  
<211> 80  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> Source  
<222> (1)..(80)  
<223> /note="Artificial variant of IGF-I"

<400> 20

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Val Asn Thr Leu Cys  
1 5 10 15

Gly Ala Glu Leu Val Asp Ala Leu Gln Phe Val Cys Gly Asp Arg Gly  
20 25 30

Phe Tyr Phe Asn Lys Pro Thr Gly Tyr Gly Ser Ser Ser Arg Arg Ala  
35 40 45

Pro Gln Thr Gly Ile Val Asp Glu Cys Cys Phe Arg Ser Cys Asp Leu  
50 55 60

Arg Arg Leu Glu Met Tyr Cys Ala Pro Leu Lys Pro Ala Lys Ser Ala  
65 70 75 80

<210> 21  
<211> 84  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> Source  
<222> (1)..(84)  
<223> /note="Artificial variant of IGF-I"

<400> 21

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Val Asn Phe Ala His  
1 5 10 15

Tyr Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu Gln Phe Val Cys  
20 25 30

Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly Tyr Gly Ser Ser  
35 40 45

Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp Glu Cys Cys Phe Arg  
50 55 60

Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala Pro Leu Lys Pro  
65 70 75 80

Ala Lys Ser Ala

<210> 22  
<211> 85  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> Source  
<222> (1)..(85)  
<223> /note="Artificial variant of IGF-I"

<400> 22

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Val Asn Gly Phe Ala  
1 5 10 15

His Tyr Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu Gln Phe Val  
20 25 30

Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly Tyr Gly Ser  
35 40 45

Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp Glu Cys Cys Phe  
50 55 60

Arg Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala Pro Leu Lys  
65 70 75 80

Pro Ala Lys Ser Ala  
85

<210> 23  
<211> 114  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> Source  
<222> (1)..(114)  
<223> /note="Artificial variant of IGF-I"

<400> 23

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Ala Asn Ala Val Leu  
1 5 10 15

Arg Ala Gln His Leu His Gln Leu Ala Ala Asp Thr Tyr Tyr Lys Glu  
20 25 30

Phe Glu Arg Ala Tyr Ile Pro Glu Gly Gln Arg Tyr Ser Ile Gln Thr  
35 40 45

Leu Cys Gly Ala Glu Leu Val Asp Ala Leu Gln Phe Val Cys Gly Asp  
50 55 60

Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly Tyr Gly Ser Ser Ser Arg  
65 70 75 80

Arg Ala Pro Gln Thr Gly Ile Val Asp Glu Cys Cys Phe Arg Ser Cys  
85 90 95

Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala Pro Leu Lys Pro Ala Lys  
100 105 110

Ser Ala

<210> 24  
<211> 116  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> Source  
<222> (1)..(116)  
<223> /note="Artificial variant of IGF-I"

<400> 24

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Ala Asn Ala Val Leu  
1 5 10 15

Arg Ala Gln His Leu His Gln Leu Ala Ala Asp Thr Tyr Tyr Lys Glu  
20 25 30

Phe Glu Arg Ala Tyr Ile Pro Glu Gly Gln Arg Tyr Ser Ile Gln Val  
35 40 45

Asn Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu Gln Phe Val Cys  
50 55 60

Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly Tyr Gly Ser Ser  
65 70 75 80

Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp Glu Cys Cys Phe Arg  
85 90 95

Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala Pro Leu Lys Pro  
100 105 110

Ala Lys Ser Ala  
115

<210> 25  
<211> 120  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> Source  
<222> (1)..(120)  
<223> /note="Artificial variant of IGF-I"

<400> 25

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Ala Asn Ala Val Leu  
1 5 10 15

Arg Ala Gln His Leu His Gln Leu Ala Ala Asp Thr Tyr Tyr Lys Glu  
20 25 30

Phe Glu Arg Ala Tyr Ile Pro Glu Gly Gln Arg Tyr Ser Ile Gln Val  
35 40 45

Asn Phe Ala His Tyr Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu  
50 55 60

Gln Phe Val Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly  
65 70 75 80

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

Cys Cys Phe Arg Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala  
100 105 110

Pro Leu Lys Pro Ala Lys Ser Ala  
115 120

<210> 26  
<211> 121  
<212> PRT  
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<220>  
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<222> (1)..(121)  
<223> /note="Artificial variant of IGF-I"

<400> 26

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Ala Asn Ala Val Leu  
1 5 10 15

Arg Ala Gln His Leu His Gln Leu Ala Ala Asp Thr Tyr Tyr Lys Glu

Phe Glu Arg Ala Tyr Ile Pro Glu Gly Gln Arg Tyr Ser Ile Gln Val  
 35 40 45

Asn Gly Phe Ala His Tyr Thr Leu Cys Gly Ala Glu Leu Val Asp Ala  
 50 55 60

Leu Gln Phe Val Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr  
 65 70 75 80

Gly Tyr Gly Ser Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp  
 85 90 95

Glu Cys Cys Phe Arg Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys  
 100 105 110

Ala Pro Leu Lys Pro Ala Lys Ser Ala  
 115 120

<210> 27  
 <211> 82  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <221> Source  
 <222> (1)..(82)  
 <223> /note="Artificial variant of IGF-I"

<400> 27

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Leu Ser Thr Gln Thr  
 1 5 10 15

Leu Cys Gly Ala Glu Leu Val Asp Ala Leu Gln Phe Val Cys Gly Asp  
 20 25 30

Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly Tyr Gly Ser Ser Ser Arg  
 35 40 45

Arg Ala Pro Gln Thr Gly Ile Val Asp Glu Cys Cys Phe Arg Ser Cys  
 50 55 60

Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala Pro Leu Lys Pro Ala Lys  
 65 70 75 80

Ser Ala

<210> 28  
 <211> 84  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <221> Source  
 <222> (1)..(84)  
 <223> /note="Artificial variant of IGF-I"

<400> 28

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Val Asn Leu Ser Thr  
 1 5 10 15

Gln Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu Gln Phe Val Cys  
 20 25 30

Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly Tyr Gly Ser Ser  
 35 40 45

Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp Glu Cys Cys Phe Arg  
 50 55 60

Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala Pro Leu Lys Pro  
 65 70 75 80

Ala Lys Ser Ala

<210> 29  
 <211> 85  
 <212> PRT  
 <213> Artificial Sequence

<220>  
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 <222> (1)..(85)  
 <223> /note="Artificial variant of IGF-I"

<400> 29

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Val Asn Gly Leu Ser  
 1 5 10 15

Thr Gln Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu Gln Phe Val  
 20 25 30

Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly Tyr Gly Ser  
 35 40 45

Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp Glu Cys Cys Phe  
 50 55 60

Arg Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala Pro Leu Lys  
 65 70 75 80

Pro Ala Lys Ser Ala  
 85



<210> 30  
 <211> 118  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <221> Source  
 <222> (1)..(118)  
 <223> /note="Artificial variant of IGF-I"

<400> 30

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Ala Asn Ala Val Leu  
 1 5 10 15

Arg Ala Gln His Leu His Gln Leu Ala Ala Asp Thr Tyr Tyr Lys Glu  
 20 25 30

Phe Glu Arg Ala Tyr Ile Pro Glu Gly Gln Arg Tyr Ser Ile Gln Leu  
 35 40 45

Ser Thr Gln Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu Gln Phe  
 50 55 60

Val Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly Tyr Gly  
 65 70 75 80

Ser Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp Glu Cys Cys  
 85 90 95

Phe Arg Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala Pro Leu  
 100 105 110

Lys Pro Ala Lys Ser Ala  
 115

<210> 31  
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 <212> PRT  
 <213> Artificial Sequence

<220>  
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 <222> (1)..(120)  
 <223> /note="Artificial variant of IGF-I"

<400> 31

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Ala Asn Ala Val Leu  
 1 5 10 15

Arg Ala Gln His Leu His Gln Leu Ala Ala Asp Thr Tyr Tyr Lys Glu  
 20 25 30

Phe Glu Arg Ala Tyr Ile Pro Glu Gly Gln Arg Tyr Ser Ile Gln Val  
 35 40 45

Asn Leu Ser Thr Gln Thr Leu Cys Gly Ala Glu Leu Val Asp Ala Leu  
50 55 60

Gln Phe Val Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr Gly  
65 70 75 80

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

Cys Cys Phe Arg Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys Ala  
100 105 110

Pro Leu Lys Pro Ala Lys Ser Ala  
115 120

<210> 32  
<211> 121  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> Source  
<222> (1)..(121)  
<223> /note="Artificial variant of IGF-I"

<400> 32

Met Phe Pro Ala Met Pro Leu Ser Ser Leu Phe Ala Asn Ala Val Leu  
1 5 10 15

Arg Ala Gln His Leu His Gln Leu Ala Ala Asp Thr Tyr Tyr Lys Glu  
20 25 30

Phe Glu Arg Ala Tyr Ile Pro Glu Gly Gln Arg Tyr Ser Ile Gln Val  
35 40 45

Asn Gly Leu Ser Thr Gln Thr Leu Cys Gly Ala Glu Leu Val Asp Ala  
50 55 60

Leu Gln Phe Val Cys Gly Asp Arg Gly Phe Tyr Phe Asn Lys Pro Thr  
65 70 75 80

Gly Tyr Gly Ser Ser Ser Arg Arg Ala Pro Gln Thr Gly Ile Val Asp  
85 90 95

Glu Cys Cys Phe Arg Ser Cys Asp Leu Arg Arg Leu Glu Met Tyr Cys  
100 105 110

Ala Pro Leu Lys Pro Ala Lys Ser Ala  
115 120

<210> 33  
<211> 679  
<212> PRT

<213> Homo sapiens

<220>

<221> VARIANT

<222> (413)..(413)

<223> /replace= "Q"

/replace= "D"

/replace= "E"

/replace= "A"

<220>

<221> VARIANT

<222> (415)..(415)

<223> /note = "May be changed to any amino acid except to S or T.  
Preferably changed to A"

<220>

<221> VARIANT

<222> (611)..(611)

<223> /note = "May be changed to any amino acid"

<220>

<221> VARIANT

<222> (613)..(613)

<223> /note = "May be changed to any amino acid except to S or T.  
Preferably changed to A"

<400> 33

Val Pro Asp Lys Thr Val Arg Trp Cys Ala Val Ser Glu His Glu Ala  
1 5 10 15

Thr Lys Cys Gln Ser Phe Arg Asp His Met Lys Ser Val Ile Pro Ser  
20 25 30

Asp Gly Pro Ser Val Ala Cys Val Lys Lys Ala Ser Tyr Leu Asp Cys  
35 40 45

Ile Arg Ala Ile Ala Ala Asn Glu Ala Asp Ala Val Thr Leu Asp Ala  
50 55 60

Gly Leu Val Tyr Asp Ala Tyr Leu Ala Pro Asn Asn Leu Lys Pro Val  
65 70 75 80

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

Ala Val Ala Val Val Lys Lys Asp Ser Gly Phe Gln Met Asn Gln Leu  
100 105 110

Arg Gly Lys Lys Ser Cys His Thr Gly Leu Gly Arg Ser Ala Gly Trp  
115 120 125

Asn Ile Pro Ile Gly Leu Leu Tyr Cys Asp Leu Pro Glu Pro Arg Lys  
130 135 140

Pro Leu Glu Lys Ala Val Ala Asn Phe Phe Ser Gly Ser Cys Ala Pro  
 145 150 155 160

Cys Ala Asp Gly Thr Asp Phe Pro Gln Leu Cys Gln Leu Cys Pro Gly  
 165 170 175

Cys Gly Cys Ser Thr Leu Asn Gln Tyr Phe Gly Tyr Ser Gly Ala Phe  
 180 185 190

Lys Cys Leu Lys Asp Gly Ala Gly Asp Val Ala Phe Val Lys His Ser  
 195 200 205

Thr Ile Phe Glu Asn Leu Ala Asn Lys Ala Asp Arg Asp Gln Tyr Glu  
 210 215 220

Leu Leu Cys Leu Asp Asn Thr Arg Lys Pro Val Asp Glu Tyr Lys Asp  
 225 230 235 240

Cys His Leu Ala Gln Val Pro Ser His Thr Val Val Ala Arg Ser Met  
 245 250 255

Gly Gly Lys Glu Asp Leu Ile Trp Glu Leu Leu Asn Gln Ala Gln Glu  
 260 265 270

His Phe Gly Lys Asp Lys Ser Lys Glu Phe Gln Leu Phe Ser Ser Pro  
 275 280 285

His Gly Lys Asp Leu Leu Phe Lys Asp Ser Ala His Gly Phe Leu Lys  
 290 295 300

Val Pro Pro Arg Met Asp Ala Lys Met Tyr Leu Gly Tyr Glu Tyr Val  
 305 310 315 320

Thr Ala Ile Arg Asn Leu Arg Glu Gly Thr Cys Pro Glu Ala Pro Thr  
 325 330 335

Asp Glu Cys Lys Pro Val Lys Trp Cys Ala Leu Ser His His Glu Arg  
 340 345 350

Leu Lys Cys Asp Glu Trp Ser Val Asn Ser Val Gly Lys Ile Glu Cys  
 355 360 365

Val Ser Ala Glu Thr Thr Glu Asp Cys Ile Ala Lys Ile Met Asn Gly  
 370 375 380

Glu Ala Asp Ala Met Ser Leu Asp Gly Gly Phe Val Tyr Ile Ala Gly  
 385 390 395 400

Lys Cys Gly Leu Val Pro Val Leu Ala Glu Asn Tyr Asn Lys Ser Asp  
 405 410 415

Asn Cys Glu Asp Thr Pro Glu Ala Gly Tyr Phe Ala Val Ala Val Val  
 Page 20

Lys Lys Ser Ala Ser Asp Leu Thr Trp Asp Asn Leu Lys Gly Lys Lys  
 435 440 445

Ser Cys His Thr Ala Val Gly Arg Thr Ala Gly Trp Asn Ile Pro Met  
 450 455 460

Gly Leu Leu Tyr Asn Lys Ile Asn His Cys Arg Phe Asp Glu Phe Phe  
 465 470 475 480

Ser Glu Gly Cys Ala Pro Gly Ser Lys Lys Asp Ser Ser Leu Cys Lys  
 485 490 495

Leu Cys Met Gly Ser Gly Leu Asn Leu Cys Glu Pro Asn Asn Lys Glu  
 500 505 510

Gly Tyr Tyr Gly Tyr Thr Gly Ala Phe Arg Cys Leu Val Glu Lys Gly  
 515 520 525

Asp Val Ala Phe Val Lys His Gln Thr Val Pro Gln Asn Thr Gly Gly  
 530 535 540

Lys Asn Pro Asp Pro Trp Ala Lys Asn Leu Asn Glu Lys Asp Tyr Glu  
 545 550 555 560

Leu Leu Cys Leu Asp Gly Thr Arg Lys Pro Val Glu Glu Tyr Ala Asn  
 565 570 575

Cys His Leu Ala Arg Ala Pro Asn His Ala Val Val Thr Arg Lys Asp  
 580 585 590

Lys Glu Ala Cys Val His Lys Ile Leu Arg Gln Gln Gln His Leu Phe  
 595 600 605

Gly Ser Asn Val Thr Asp Cys Ser Gly Asn Phe Cys Leu Phe Arg Ser  
 610 615 620

Glu Thr Lys Asp Leu Leu Phe Arg Asp Asp Thr Val Cys Leu Ala Lys  
 625 630 635 640

Leu His Asp Arg Asn Thr Tyr Glu Lys Tyr Leu Gly Glu Glu Tyr Val  
 645 650 655

Lys Ala Val Gly Asn Leu Arg Lys Cys Ser Thr Ser Ser Leu Leu Glu  
 660 665 670

Ala Cys Thr Phe Arg Arg Pro  
 675

<210> 34  
 <211> 698

<212> PRT  
 <213> Homo sapiens

<220>  
 <221> VARIANT  
 <222> (432)..(432)  
 <223> /replace= "Q"

/replace= "D"

/replace="E"

/replace="A"

<220>  
 <221> VARIANT  
 <222> (434)..(434)  
 <223> /note = "May be changed to any amino acid except to S or T.  
 Preferably changed to A"

<220>  
 <221> VARIANT  
 <222> (630)..(630)  
 <223> /note = "May be changed to any amino acid"

<220>  
 <221> VARIANT  
 <222> (632)..(632)  
 <223> /note = "May be changed to any amino acid except to S or T.  
 Preferably changed to A"

<400> 34

Met Arg Leu Ala Val Gly Ala Leu Leu Val Cys Ala Val Leu Gly Leu  
 1 5 10 15

Cys Leu Ala Val Pro Asp Lys Thr Val Arg Trp Cys Ala Val Ser Glu  
 20 25 30

His Glu Ala Thr Lys Cys Gln Ser Phe Arg Asp His Met Lys Ser Val  
 35 40 45

Ile Pro Ser Asp Gly Pro Ser Val Ala Cys Val Lys Lys Ala Ser Tyr  
 50 55 60

Leu Asp Cys Ile Arg Ala Ile Ala Ala Asn Glu Ala Asp Ala Val Thr  
 65 70 75 80

Leu Asp Ala Gly Leu Val Tyr Asp Ala Tyr Leu Ala Pro Asn Asn Leu  
 85 90 95

Lys Pro Val Val Ala Glu Phe Tyr Gly Ser Lys Glu Asp Pro Gln Thr  
 100 105 110

Phe Tyr Tyr Ala Val Ala Val Val Lys Lys Asp Ser Gly Phe Gln Met  
 115 120 125

Asn Gln Leu Arg Gly Lys Lys Ser Cys His Thr Gly Leu Gly Arg Ser  
 130 135 140

Ala Gly Trp Asn Ile Pro Ile Gly Leu Leu Tyr Cys Asp Leu Pro Glu  
145 150 155 160

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

Cys Ala Pro Cys Ala Asp Gly Thr Asp Phe Pro Gln Leu Cys Gln Leu  
180 185 190

Cys Pro Gly Cys Gly Cys Ser Thr Leu Asn Gln Tyr Phe Gly Tyr Ser  
195 200 205

Gly Ala Phe Lys Cys Leu Lys Asp Gly Ala Gly Asp Val Ala Phe Val  
210 215 220

Lys His Ser Thr Ile Phe Glu Asn Leu Ala Asn Lys Ala Asp Arg Asp  
225 230 235 240

Gln Tyr Glu Leu Leu Cys Leu Asp Asn Thr Arg Lys Pro Val Asp Glu  
245 250 255

Tyr Lys Asp Cys His Leu Ala Gln Val Pro Ser His Thr Val Val Ala  
260 265 270

Arg Ser Met Gly Gly Lys Glu Asp Leu Ile Trp Glu Leu Leu Asn Gln  
275 280 285

Ala Gln Glu His Phe Gly Lys Asp Lys Ser Lys Glu Phe Gln Leu Phe  
290 295 300

Ser Ser Pro His Gly Lys Asp Leu Leu Phe Lys Asp Ser Ala His Gly  
305 310 315 320

Phe Leu Lys Val Pro Pro Arg Met Asp Ala Lys Met Tyr Leu Gly Tyr  
325 330 335

Glu Tyr Val Thr Ala Ile Arg Asn Leu Arg Glu Gly Thr Cys Pro Glu  
340 345 350

Ala Pro Thr Asp Glu Cys Lys Pro Val Lys Trp Cys Ala Leu Ser His  
355 360 365

His Glu Arg Leu Lys Cys Asp Glu Trp Ser Val Asn Ser Val Gly Lys  
370 375 380

Ile Glu Cys Val Ser Ala Glu Thr Thr Glu Asp Cys Ile Ala Lys Ile  
385 390 395 400

Met Asn Gly Glu Ala Asp Ala Met Ser Leu Asp Gly Gly Phe Val Tyr  
405 410 415

Ile Ala Gly Lys Cys Gly Leu Val Pro Val Leu Ala Glu Asn Tyr Asn  
 420 425 430  
 Lys Ser Asp Asn Cys Glu Asp Thr Pro Glu Ala Gly Tyr Phe Ala Val  
 435 440 445  
 Ala Val Val Lys Lys Ser Ala Ser Asp Leu Thr Trp Asp Asn Leu Lys  
 450 455 460  
 Gly Lys Lys Ser Cys His Thr Ala Val Gly Arg Thr Ala Gly Trp Asn  
 465 470 475 480  
 Ile Pro Met Gly Leu Leu Tyr Asn Lys Ile Asn His Cys Arg Phe Asp  
 485 490 495  
 Glu Phe Phe Ser Glu Gly Cys Ala Pro Gly Ser Lys Lys Asp Ser Ser  
 500 505 510  
 Leu Cys Lys Leu Cys Met Gly Ser Gly Leu Asn Leu Cys Glu Pro Asn  
 515 520 525  
 Asn Lys Glu Gly Tyr Tyr Gly Tyr Thr Gly Ala Phe Arg Cys Leu Val  
 530 535 540  
 Glu Lys Gly Asp Val Ala Phe Val Lys His Gln Thr Val Pro Gln Asn  
 545 550 555 560  
 Thr Gly Gly Lys Asn Pro Asp Pro Trp Ala Lys Asn Leu Asn Glu Lys  
 565 570 575  
 Asp Tyr Glu Leu Leu Cys Leu Asp Gly Thr Arg Lys Pro Val Glu Glu  
 580 585 590  
 Tyr Ala Asn Cys His Leu Ala Arg Ala Pro Asn His Ala Val Val Thr  
 595 600 605  
 Arg Lys Asp Lys Glu Ala Cys Val His Lys Ile Leu Arg Gln Gln Gln  
 610 615 620  
 His Leu Phe Gly Ser Asn Val Thr Asp Cys Ser Gly Asn Phe Cys Leu  
 625 630 635 640  
 Phe Arg Ser Glu Thr Lys Asp Leu Leu Phe Arg Asp Asp Thr Val Cys  
 645 650 655  
 Leu Ala Lys Leu His Asp Arg Asn Thr Tyr Glu Lys Tyr Leu Gly Glu  
 660 665 670  
 Glu Tyr Val Lys Ala Val Gly Asn Leu Arg Lys Cys Ser Thr Ser Ser  
 675 680 685  
 Leu Leu Glu Ala Cys Thr Phe Arg Arg Pro



690

695

<210> 35  
 <211> 679  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <221> Source  
 <222> (1)..(679)  
 <223> /note="Artificial variant of transferrin"

<400> 35

Val Pro Asp Lys Thr Val Arg Trp Cys Ala Val Ser Glu His Glu Ala  
 1 5 10 15

Thr Lys Cys Gln Ser Phe Arg Asp His Met Lys Ser Val Ile Pro Ser  
 20 25 30

Asp Gly Pro Ser Val Ala Cys Val Lys Lys Ala Ser Tyr Leu Asp Cys  
 35 40 45

Ile Arg Ala Ile Ala Ala Asn Glu Ala Asp Ala Val Thr Leu Asp Ala  
 50 55 60

Gly Leu Val Tyr Asp Ala Tyr Leu Ala Pro Asn Asn Leu Lys Pro Val  
 65 70 75 80

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

Ala Val Ala Val Val Lys Lys Asp Ser Gly Phe Gln Met Asn Gln Leu  
 100 105 110

Arg Gly Lys Lys Ser Cys His Thr Gly Leu Gly Arg Ser Ala Gly Trp  
 115 120 125

Asn Ile Pro Ile Gly Leu Leu Tyr Cys Asp Leu Pro Glu Pro Arg Lys  
 130 135 140

Pro Leu Glu Lys Ala Val Ala Asn Phe Phe Ser Gly Ser Cys Ala Pro  
 145 150 155 160

Cys Ala Asp Gly Thr Asp Phe Pro Gln Leu Cys Gln Leu Cys Pro Gly  
 165 170 175

Cys Gly Cys Ser Thr Leu Asn Gln Tyr Phe Gly Tyr Ser Gly Ala Phe  
 180 185 190

Lys Cys Leu Lys Asp Gly Ala Gly Asp Val Ala Phe Val Lys His Ser  
 195 200 205

Thr Ile Phe Glu Asn Leu Ala Asn Lys Ala Asp Arg Asp Gln Tyr Glu  
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210

215

220

Leu Leu Cys Leu Asp Asn Thr Arg Lys Pro Val Asp Glu Tyr Lys Asp  
225 230 235 240

Cys His Leu Ala Gln Val Pro Ser His Thr Val Val Ala Arg Ser Met  
245 250 255

Gly Gly Lys Glu Asp Leu Ile Trp Glu Leu Leu Asn Gln Ala Gln Glu  
260 265 270

His Phe Gly Lys Asp Lys Ser Lys Glu Phe Gln Leu Phe Ser Ser Pro  
275 280 285

His Gly Lys Asp Leu Leu Phe Lys Asp Ser Ala His Gly Phe Leu Lys  
290 295 300

Val Pro Pro Arg Met Asp Ala Lys Met Tyr Leu Gly Tyr Glu Tyr Val  
305 310 315 320

Thr Ala Ile Arg Asn Leu Arg Glu Gly Thr Cys Pro Glu Ala Pro Thr  
325 330 335

Asp Glu Cys Lys Pro Val Lys Trp Cys Ala Leu Ser His His Glu Arg  
340 345 350

Leu Lys Cys Asp Glu Trp Ser Val Asn Ser Val Gly Lys Ile Glu Cys  
355 360 365

Val Ser Ala Glu Thr Thr Glu Asp Cys Ile Ala Lys Ile Met Asn Gly  
370 375 380

Glu Ala Asp Ala Met Ser Leu Asp Gly Gly Phe Val Tyr Ile Ala Gly  
385 390 395 400

Lys Cys Gly Leu Val Pro Val Leu Ala Glu Asn Tyr Asn Lys Ala Asp  
405 410 415

Asn Cys Glu Asp Thr Pro Glu Ala Gly Tyr Phe Ala Val Ala Val Val  
420 425 430

Lys Lys Ser Ala Ser Asp Leu Thr Trp Asp Asn Leu Lys Gly Lys Lys  
435 440 445

Ser Cys His Thr Ala Val Gly Arg Thr Ala Gly Trp Asn Ile Pro Met  
450 455 460

Gly Leu Leu Tyr Asn Lys Ile Asn His Cys Arg Phe Asp Glu Phe Phe  
465 470 475 480

Ser Glu Gly Cys Ala Pro Gly Ser Lys Lys Asp Ser Ser Leu Cys Lys  
485 490 495

Leu Cys Met Gly Ser Gly Leu Asn Leu Cys Glu Pro Asn Asn Lys Glu  
 500 505 510  
 Gly Tyr Tyr Gly Tyr Thr Gly Ala Phe Arg Cys Leu Val Glu Lys Gly  
 515 520 525  
 Asp Val Ala Phe Val Lys His Gln Thr Val Pro Gln Asn Thr Gly Gly  
 530 535 540  
 Lys Asn Pro Asp Pro Trp Ala Lys Asn Leu Asn Glu Lys Asp Tyr Glu  
 545 550 555 560  
 Leu Leu Cys Leu Asp Gly Thr Arg Lys Pro Val Glu Glu Tyr Ala Asn  
 565 570 575  
 Cys His Leu Ala Arg Ala Pro Asn His Ala Val Val Thr Arg Lys Asp  
 580 585 590  
 Lys Glu Ala Cys Val His Lys Ile Leu Arg Gln Gln Gln His Leu Phe  
 595 600 605  
 Gly Ser Asn Val Ala Asp Cys Ser Gly Asn Phe Cys Leu Phe Arg Ser  
 610 615 620  
 Glu Thr Lys Asp Leu Leu Phe Arg Asp Asp Thr Val Cys Leu Ala Lys  
 625 630 635 640  
 Leu His Asp Arg Asn Thr Tyr Glu Lys Tyr Leu Gly Glu Glu Tyr Val  
 645 650 655  
 Lys Ala Val Gly Asn Leu Arg Lys Cys Ser Thr Ser Ser Leu Leu Glu  
 660 665 670  
 Ala Cys Thr Phe Arg Arg Pro  
 675