

SEQUENCE LISTING

<110> ELI LILLY & COMPANY

<120> FORMULATIONS FOR BOVINE GRANULOCYTE COLONY STIMULATING FACTOR AND
VARIANTS THEREOF

<130> X18988

<150> 61/385,629

<151> 2010-09-23

<160> 14

<170> PatentIn version 3.5

<210> 1

<211> 174

<212> PRT

<213> Bos taurus

<400> 1

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

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

Glu Arg Leu Cys Ala Ala His Lys Leu Cys His Pro Glu Glu Leu Met
35 40 45

Leu Leu Arg His Ser Leu Gly Ile Pro Gln Ala Pro Leu Ser Ser Cys
50 55 60

Ser Ser Gln Ser Leu Gln Leu Thr Ser Cys Leu Asn Gln Leu His Gly
65 70 75 80

Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Ala Gly Ile Ser
85 90 95

Pro Glu Leu Ala Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Thr Asp
100 105 110

Phe Ala Thr Asn Ile Trp Leu Gln Met Glu Asp Leu Gly Ala Ala Pro
115 120 125

Ala Val Gln Pro Thr Gln Gly Ala Met Pro Thr Phe Thr Ser Ala Phe
130 135 140

Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser Gln Leu His Arg Phe
145 150 155 160

Leu Glu Leu Ala Tyr Arg Gly Leu Arg Tyr Leu Ala Glu Pro

165

170

<210> 2
 <211> 175
 <212> PRT
 <213> Bos taurus

<400> 2

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

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

Gln Glu Arg Leu Cys Ala Ala His Lys Leu Cys His Pro Glu Glu Leu
 35 40 45

Met Leu Leu Arg His Ser Leu Gly Ile Pro Gln Ala Pro Leu Ser Ser
 50 55 60

Cys Ser Ser Gln Ser Leu Gln Leu Thr Ser Cys Leu Asn Gln Leu His
 65 70 75 80

Gly Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Ala Gly Ile
 85 90 95

Ser Pro Glu Leu Ala Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Thr
 100 105 110

Asp Phe Ala Thr Asn Ile Trp Leu Gln Met Glu Asp Leu Gly Ala Ala
 115 120 125

Pro Ala Val Gln Pro Thr Gln Gly Ala Met Pro Thr Phe Thr Ser Ala
 130 135 140

Phe Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser Gln Leu His Arg
 145 150 155 160

Phe Leu Glu Leu Ala Tyr Arg Gly Leu Arg Tyr Leu Ala Glu Pro
 165 170 175

<210> 3
 <211> 175
 <212> PRT
 <213> Bos taurus

<220>
 <221> misc_feature
 <222> (9)..(9)
 <223> wherein Xaa is para-acetylphenylalanine (pAF)

<400> 3

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

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

Gln Glu Arg Leu Cys Ala Ala His Lys Leu Cys His Pro Glu Glu Leu
 35 40 45

Met Leu Leu Arg His Ser Leu Gly Ile Pro Gln Ala Pro Leu Ser Ser
 50 55 60

Cys Ser Ser Gln Ser Leu Gln Leu Thr Ser Cys Leu Asn Gln Leu His
 65 70 75 80

Gly Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Ala Gly Ile
 85 90 95

Ser Pro Glu Leu Ala Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Thr
 100 105 110

Asp Phe Ala Thr Asn Ile Trp Leu Gln Met Glu Asp Leu Gly Ala Ala
 115 120 125

Pro Ala Val Gln Pro Thr Gln Gly Ala Met Pro Thr Phe Thr Ser Ala
 130 135 140

Phe Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser Gln Leu His Arg
 145 150 155 160

Phe Leu Glu Leu Ala Tyr Arg Gly Leu Arg Tyr Leu Ala Glu Pro
 165 170 175

<210> 4

<211> 175

<212> PRT

<213> Bos taurus

<220>

<221> misc_feature

<222> (63)..(63)

<223> wherein Xaa is para-acetylphenylalanine (pAF)

<400> 4

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

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

Gln Glu Arg Leu Cys Ala Ala His Lys Leu Cys His Pro Glu Glu Leu
 35 40 45

Met Leu Leu Arg His Ser Leu Gly Ile Pro Gln Ala Pro Leu Xaa Ser
 50 55 60

Cys Ser Ser Gln Ser Leu Gln Leu Thr Ser Cys Leu Asn Gln Leu His
 65 70 75 80

Gly Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Ala Gly Ile
 85 90 95

Ser Pro Glu Leu Ala Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Thr
 100 105 110

Asp Phe Ala Thr Asn Ile Trp Leu Gln Met Glu Asp Leu Gly Ala Ala
 115 120 125

Pro Ala Val Gln Pro Thr Gln Gly Ala Met Pro Thr Phe Thr Ser Ala
 130 135 140

Phe Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser Gln Leu His Arg
 145 150 155 160

Phe Leu Glu Leu Ala Tyr Arg Gly Leu Arg Tyr Leu Ala Glu Pro
 165 170 175

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

<220>
 <221> misc_feature
 <222> (70)..(70)
 <223> wherein Xaa is para-acetylphenylalanine (pAF)

<400> 5

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

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

Gln Glu Arg Leu Cys Ala Ala His Lys Leu Cys His Pro Glu Glu Leu
 35 40 45

Met Leu Leu Arg His Ser Leu Gly Ile Pro Gln Ala Pro Leu Ser Ser
50 55 60

Cys Ser Ser Gln Ser Xaa Gln Leu Thr Ser Cys Leu Asn Gln Leu His
65 70 75 80

Gly Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Ala Gly Ile
85 90 95

Ser Pro Glu Leu Ala Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Thr
100 105 110

Asp Phe Ala Thr Asn Ile Trp Leu Gln Met Glu Asp Leu Gly Ala Ala
115 120 125

Pro Ala Val Gln Pro Thr Gln Gly Ala Met Pro Thr Phe Thr Ser Ala
130 135 140

Phe Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser Gln Leu His Arg
145 150 155 160

Phe Leu Glu Leu Ala Tyr Arg Gly Leu Arg Tyr Leu Ala Glu Pro
165 170 175

<210> 6
<211> 175
<212> PRT
<213> Bos taurus

<220>
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<222> (126)..(126)
<223> wherein Xaa is para-acetylphenylalanine (pAF)

<400> 6

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

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

Gln Glu Arg Leu Cys Ala Ala His Lys Leu Cys His Pro Glu Glu Leu
35 40 45

Met Leu Leu Arg His Ser Leu Gly Ile Pro Gln Ala Pro Leu Ser Ser
50 55 60

Cys Ser Ser Gln Ser Leu Gln Leu Thr Ser Cys Leu Asn Gln Leu His
65 70 75 80

Gly Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Ala Gly Ile
85 90 95

Ser Pro Glu Leu Ala Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Thr
100 105 110

Asp Phe Ala Thr Asn Ile Trp Leu Gln Met Glu Asp Leu Xaa Ala Ala
115 120 125

Pro Ala Val Gln Pro Thr Gln Gly Ala Met Pro Thr Phe Thr Ser Ala
130 135 140

Phe Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser Gln Leu His Arg
145 150 155 160

Phe Leu Glu Leu Ala Tyr Arg Gly Leu Arg Tyr Leu Ala Glu Pro
165 170 175

<210> 7
<211> 175
<212> PRT
<213> Bos taurus

<220>
<221> misc_feature
<222> (134)..(134)
<223> wherein Xaa is para-acetylphenylalanine (pAF)

<400> 7

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

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

Gln Glu Arg Leu Cys Ala Ala His Lys Leu Cys His Pro Glu Glu Leu
35 40 45

Met Leu Leu Arg His Ser Leu Gly Ile Pro Gln Ala Pro Leu Ser Ser
50 55 60

Cys Ser Ser Gln Ser Leu Gln Leu Thr Ser Cys Leu Asn Gln Leu His
65 70 75 80

Gly Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Ala Gly Ile
85 90 95

Ser Pro Glu Leu Ala Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Thr

100 105 110
 Asp Phe Ala Thr Asn Ile Trp Leu Gln Met Glu Asp Leu Gly Ala Ala
 115 120 125
 Pro Ala Val Gln Pro Xaa Gln Gly Ala Met Pro Thr Phe Thr Ser Ala
 130 135 140
 Phe Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser Gln Leu His Arg
 145 150 155 160
 Phe Leu Glu Leu Ala Tyr Arg Gly Leu Arg Tyr Leu Ala Glu Pro
 165 170 175
 <210> 8
 <211> 175
 <212> PRT
 <213> Bos taurus
 <220>
 <221> misc_feature
 <222> (137)..(137)
 <223> wherein Xaa is para-acetylphenylalanine (pAF)
 <400> 8
 Met Thr Pro Leu Gly Pro Ala Arg Ser Leu Pro Gln Ser Phe Leu Leu
 1 5 10 15
 Lys Cys Leu Glu Gln Val Arg Lys Ile Gln Ala Asp Gly Ala Glu Leu
 20 25 30
 Gln Glu Arg Leu Cys Ala Ala His Lys Leu Cys His Pro Glu Glu Leu
 35 40 45
 Met Leu Leu Arg His Ser Leu Gly Ile Pro Gln Ala Pro Leu Ser Ser
 50 55 60
 Cys Ser Ser Gln Ser Leu Gln Leu Thr Ser Cys Leu Asn Gln Leu His
 65 70 75 80
 Gly Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Ala Gly Ile
 85 90 95
 Ser Pro Glu Leu Ala Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Thr
 100 105 110
 Asp Phe Ala Thr Asn Ile Trp Leu Gln Met Glu Asp Leu Gly Ala Ala
 115 120 125

Pro Ala Val Gln Pro Thr Gln Gly Xaa Met Pro Thr Phe Thr Ser Ala
 130 135 140

Phe Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser Gln Leu His Arg
 145 150 155 160

Phe Leu Glu Leu Ala Tyr Arg Gly Leu Arg Tyr Leu Ala Glu Pro
 165 170 175

<210> 9
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 <212> PRT
 <213> Bos taurus

<220>
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 <222> (9)..(9)
 <223> wherein Xaa is para-acetylphenylalanine (pAF) linked to a
 poly(ethylene glycol) moiety

<400> 9

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

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

Gln Glu Arg Leu Cys Ala Ala His Lys Leu Cys His Pro Glu Glu Leu
 35 40 45

Met Leu Leu Arg His Ser Leu Gly Ile Pro Gln Ala Pro Leu Ser Ser
 50 55 60

Cys Ser Ser Gln Ser Leu Gln Leu Thr Ser Cys Leu Asn Gln Leu His
 65 70 75 80

Gly Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Ala Gly Ile
 85 90 95

Ser Pro Glu Leu Ala Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Thr
 100 105 110

Asp Phe Ala Thr Asn Ile Trp Leu Gln Met Glu Asp Leu Gly Ala Ala
 115 120 125

Pro Ala Val Gln Pro Thr Gln Gly Ala Met Pro Thr Phe Thr Ser Ala
 130 135 140

Phe Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser Gln Leu His Arg
 145 150 155 160

Phe Leu Glu Leu Ala Tyr Arg Gly Leu Arg Tyr Leu Ala Glu Pro
 165 170 175

<210> 10
 <211> 175
 <212> PRT
 <213> Bos taurus

<220>
 <221> misc_feature
 <222> (63)..(63)
 <223> Xaa can be any naturally occurring amino acid

<220>
 <221> misc_feature
 <222> (64)..(64)
 <223> wherein Xaa is para-acetylphenylalanine (pAF) linked to a
 poly(ethylene glycol) moiety

<400> 10

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

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

Gln Glu Arg Leu Cys Ala Ala His Lys Leu Cys His Pro Glu Glu Leu
 35 40 45

Met Leu Leu Arg His Ser Leu Gly Ile Pro Gln Ala Pro Leu Xaa Ser
 50 55 60

Cys Ser Ser Gln Ser Leu Gln Leu Thr Ser Cys Leu Asn Gln Leu His
 65 70 75 80

Gly Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Ala Gly Ile
 85 90 95

Ser Pro Glu Leu Ala Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Thr
 100 105 110

Asp Phe Ala Thr Asn Ile Trp Leu Gln Met Glu Asp Leu Gly Ala Ala
 115 120 125

Pro Ala Val Gln Pro Thr Gln Gly Ala Met Pro Thr Phe Thr Ser Ala
 130 135 140

Phe Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser Gln Leu His Arg
 145 150 155 160

Phe Leu Glu Leu Ala Tyr Arg Gly Leu Arg Tyr Leu Ala Glu Pro
 165 170 175

<210> 11
 <211> 175
 <212> PRT
 <213> Bos taurus

<220>
 <221> misc_feature
 <222> (70)..(70)
 <223> wherein Xaa is para-acetylphenylalanine (pAF) linked to a
 poly(ethylene glycol) moiety

<400> 11

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

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

Gln Glu Arg Leu Cys Ala Ala His Lys Leu Cys His Pro Glu Glu Leu
 35 40 45

Met Leu Leu Arg His Ser Leu Gly Ile Pro Gln Ala Pro Leu Ser Ser
 50 55 60

Cys Ser Ser Gln Ser Xaa Gln Leu Thr Ser Cys Leu Asn Gln Leu His
 65 70 75 80

Gly Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Ala Gly Ile
 85 90 95

Ser Pro Glu Leu Ala Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Thr
 100 105 110

Asp Phe Ala Thr Asn Ile Trp Leu Gln Met Glu Asp Leu Gly Ala Ala
 115 120 125

Pro Ala Val Gln Pro Thr Gln Gly Ala Met Pro Thr Phe Thr Ser Ala
 130 135 140

Phe Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser Gln Leu His Arg
 145 150 155 160

Phe Leu Glu Leu Ala Tyr Arg Gly Leu Arg Tyr Leu Ala Glu Pro
 165 170 175

<210> 12

<211> 175
 <212> PRT
 <213> Bos taurus

<220>
 <221> misc_feature
 <222> (126)..(126)
 <223> wherein Xaa is para-acetylphenylalanine (pAF) linked to a
 poly(ethylene glycol) moiety
 <400> 12

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

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

Gln Glu Arg Leu Cys Ala Ala His Lys Leu Cys His Pro Glu Glu Leu
 35 40 45

Met Leu Leu Arg His Ser Leu Gly Ile Pro Gln Ala Pro Leu Ser Ser
 50 55 60

Cys Ser Ser Gln Ser Leu Gln Leu Thr Ser Cys Leu Asn Gln Leu His
 65 70 75 80

Gly Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Ala Gly Ile
 85 90 95

Ser Pro Glu Leu Ala Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Thr
 100 105 110

Asp Phe Ala Thr Asn Ile Trp Leu Gln Met Glu Asp Leu Xaa Ala Ala
 115 120 125

Pro Ala Val Gln Pro Thr Gln Gly Ala Met Pro Thr Phe Thr Ser Ala
 130 135 140

Phe Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser Gln Leu His Arg
 145 150 155 160

Phe Leu Glu Leu Ala Tyr Arg Gly Leu Arg Tyr Leu Ala Glu Pro
 165 170 175

<210> 13
 <211> 175
 <212> PRT
 <213> Bos taurus

<220>

<221> misc_feature
 <222> (134)..(134)
 <223> wherein Xaa is para-acetylphenylalanine (pAF) linked to a poly(ethylene glycol) moiety

<400> 13

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

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

Gln Glu Arg Leu Cys Ala Ala His Lys Leu Cys His Pro Glu Glu Leu
 35 40 45

Met Leu Leu Arg His Ser Leu Gly Ile Pro Gln Ala Pro Leu Ser Ser
 50 55 60

Cys Ser Ser Gln Ser Leu Gln Leu Thr Ser Cys Leu Asn Gln Leu His
 65 70 75 80

Gly Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Ala Gly Ile
 85 90 95

Ser Pro Glu Leu Ala Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Thr
 100 105 110

Asp Phe Ala Thr Asn Ile Trp Leu Gln Met Glu Asp Leu Gly Ala Ala
 115 120 125

Pro Ala Val Gln Pro Xaa Gln Gly Ala Met Pro Thr Phe Thr Ser Ala
 130 135 140

Phe Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser Gln Leu His Arg
 145 150 155 160

Phe Leu Glu Leu Ala Tyr Arg Gly Leu Arg Tyr Leu Ala Glu Pro
 165 170 175

<210> 14
 <211> 175
 <212> PRT
 <213> Bos taurus

<220>
 <221> misc_feature
 <222> (137)..(137)
 <223> wherein Xaa is para-acetylphenylalanine (pAF) linked to a poly(ethylene glycol) moiety

<400> 14

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

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

Gln Glu Arg Leu Cys Ala Ala His Lys Leu Cys His Pro Glu Glu Leu
35 40 45

Met Leu Leu Arg His Ser Leu Gly Ile Pro Gln Ala Pro Leu Ser Ser
50 55 60

Cys Ser Ser Gln Ser Leu Gln Leu Thr Ser Cys Leu Asn Gln Leu His
65 70 75 80

Gly Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Ala Gly Ile
85 90 95

Ser Pro Glu Leu Ala Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Thr
100 105 110

Asp Phe Ala Thr Asn Ile Trp Leu Gln Met Glu Asp Leu Gly Ala Ala
115 120 125

Pro Ala Val Gln Pro Thr Gln Gly Xaa Met Pro Thr Phe Thr Ser Ala
130 135 140

Phe Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser Gln Leu His Arg
145 150 155 160

Phe Leu Glu Leu Ala Tyr Arg Gly Leu Arg Tyr Leu Ala Glu Pro
165 170 175