

31016_6825_SEQ
SEQUENCE LISTING

<110> Regeneron Pharmaceuticals, Inc.
McWhirter, John
Gurer, Cagan
Macdonald, Lynn
Murphy, Andrew J.

<120> NON-HUMAN ANIMALS HAVING A HUMANIZED A PROLIFERATION-INDUCING
LIGAND GENE

<130> 31016 (6825)

<150> 61/905,986

<151> 2013-11-19

<160> 26

<170> PatentIn version 3.5

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Val Leu Thr Gln Lys His Lys Lys Lys His Ser Val Leu His Leu Val
100 105 110

Pro Val Asn Ile Thr Ser Lys Asp Ser Asp Val Thr Glu Val Met Trp
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Gln Pro Val Leu Arg Arg Gly Arg Gly Leu Glu Ala Gln Gly Asp Ile
130 135 140

Val Arg Val Trp Asp Thr Gly Ile Tyr Leu Leu Tyr Ser Gln Val Leu
145 150 155 160

Phe His Asp Val Thr Phe Thr Met Gly Gln Val Val Ser Arg Glu Gly
165 170 175

Gln Gly Arg Arg Glu Thr Leu Phe Arg Cys Ile Arg Ser Met Pro Ser
180 185 190

Asp Pro Asp Arg Ala Tyr Asn Ser Cys Tyr Ser Ala Gly Val Phe His
195 200 205

Leu His Gln Gly Asp Ile Ile Thr Val Lys Ile Pro Arg Ala Asn Ala
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Lys Leu Ser Leu Ser Pro His Gly Thr Phe Leu Gly Phe Val Lys Leu
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35 40 45

Thr Leu Ser Ala Gln Glu Pro Ser Gln Glu Glu Leu Thr Ala Glu Asp
50 55 60

Arg Arg Glu Pro Pro Glu Leu Asn Pro Gln Thr Glu Glu Ser Gln Asp
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Val Val Pro Phe Leu Glu Gln Leu Val Arg Pro Arg Arg Ser Ala Pro
85 90 95

Lys Gly Arg Lys Ala Arg Pro Arg Arg Ala Ile Ala Ala His Tyr Glu
100 105 110

Val His Pro Arg Pro Gly Gln Asp Gly Ala Gln Ala Gly Val Asp Gly
115 120 125

Thr Val Ser Gly Trp Glu Glu Thr Lys Ile Asn Ser Ser Ser Pro Leu
130 135 140

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Tyr Tyr Leu Tyr Cys Gln Val His Phe Asp Glu Gly Lys Ala Val Tyr
165 170 175

Leu Lys Leu Asp Leu Leu Val Asn Gly Val Leu Ala Leu Arg Cys Leu
180 185 190

Glu Glu Phe Ser Ala Thr Ala Ala Ser Ser Pro Gly Pro Gln Leu Arg
195 200 205

31016_6825_SEQ

Leu Cys Gln Thr Glu Leu Gln Ser Leu Arg Arg Glu Val Ser Arg Leu
210 215 220

Gln Arg Ser Gly Gly Pro Ser Gln Lys Gln Gly Glu Arg Pro Trp Gln
225 230 235 240

Ser Leu Trp Glu Gln Ser Pro Asp Val Leu Glu Ala Trp Lys Asp Gly
245 250 255

Ala Lys Ser Arg Arg Arg Arg Ala Val Leu Thr Gln Lys His Lys Lys
260 265 270

Lys His Ser Val Leu His Leu Val Pro Val Asn Ile Thr Ser Lys Asp
275 280 285

Ser Asp Val Thr Glu Val Met Trp Gln Pro Val Leu Arg Arg Gly Arg
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Tyr Leu Leu Tyr Ser Gln Val Leu Phe His Asp Val Thr Phe Thr Met
325 330 335

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Arg Cys Ile Arg Ser Met Pro Ser Asp Pro Asp Arg Ala Tyr Asn Ser
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Cys Tyr Ser Ala Gly Val Phe His Leu His Gln Gly Asp Ile Ile Thr
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Leu Ser Trp Gly Ala Ala Leu Gly Ala Val Ala Cys Ala Met Ala Leu
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Leu Gln Gly Thr Gly Gly Pro Ser Gln Asn Gly Glu Gly Tyr Pro Trp
65 70 75 80

Gln Ser Leu Pro Glu Gln Ser Ser Asp Ala Leu Glu Ala Trp Glu Asn
85 90 95

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

Lys Gln His Ser Val Leu His Leu Val Pro Ile Asn Ala Thr Ser Lys
115 120 125

Asp Asp Ser Asp Val Thr Glu Val Met Trp Gln Pro Ala Leu Arg Arg
130 135 140

Gly Arg Gly Leu Gln Ala Gln Gly Tyr Gly Val Arg Ile Gln Asp Ala
145 150 155 160

Gly Val Tyr Leu Leu Tyr Ser Gln Val Leu Phe Gln Asp Val Thr Phe
165 170 175

Thr Met Gly Gln Val Val Ser Arg Glu Gly Gln Gly Arg Gln Glu Thr
180 185 190

Leu Phe Arg Cys Ile Arg Ser Met Pro Ser His Pro Asp Arg Ala Tyr
195 200 205

Asn Ser Cys Tyr Ser Ala Gly Val Phe His Leu His Gln Gly Asp Ile
210 215 220

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His Gly Thr Phe Leu Gly Phe Val Lys Leu
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 35 40 45

Leu Thr Gln Gln Thr Glu Leu Gln Ser Leu Arg Arg Glu Val Ser Arg
 50 55 60

Leu Gln Gly Thr Gly Gly Pro Ser Gln Asn Gly Glu Gly Tyr Pro Trp
 65 70 75 80

Gln Ser Leu Pro Glu Gln Ser Ser Asp Ala Leu Glu Ala Trp Glu Asn
 85 90 95

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

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

Gly Arg Gly Leu Gln Ala Gln Gly Tyr Gly Val Arg Ile Gln Asp Ala
 130 135 140

Gly Val Tyr Leu Leu Tyr Ser Gln Val Leu Phe Gln Asp Val Thr Phe
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Thr Met Gly Gln Val Val Ser Arg Glu Gly Gln Gly Arg Gln Glu Thr
 165 170 175

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Leu Phe Arg Cys Ile Arg Ser Met Pro Ser His Pro Asp Arg Ala Tyr
180 185 190

Asn Ser Cys Tyr Ser Ala Gly Val Phe His Leu His Gln Gly Asp Ile
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Leu Ser Val Ile Ile Pro Arg Ala Arg Ala Lys Leu Asn Leu Ser Pro
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His Gly Thr Phe Leu Gly Phe Val Lys Leu
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35 40 45

Leu Thr Gln Gln Thr Glu Leu Gln Ser Leu Arg Arg Glu Val Ser Arg
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Leu Gln Gly Thr Gly Gly Pro Ser Gln Asn Gly Glu Gly Tyr Pro Trp
65 70 75 80

Gln Ser Leu Pro Glu Gln Ser Ser Asp Ala Leu Glu Ala Trp Glu Asn
85 90 95

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

Lys Gln His Ser Val Leu His Leu Val Pro Ile Asn Ala Thr Ser Lys

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Gly Arg Gly Leu Gln Ala Gln Gly Tyr Gly Val Arg Ile Gln Asp Ala
145 150 155 160

Gly Val Tyr Leu Leu Tyr Ser Gln Val Leu Phe Gln Asp Val Thr Phe
165 170 175

Thr Met Gly Gln Val Val Ser Arg Glu Gly Gln Gly Arg Gln Glu Thr
180 185 190

Leu Phe Arg Cys Ile Arg Ser Met Pro Ser His Pro Asp Arg Ala Tyr
195 200 205

Asn Ser Cys Tyr Ser Ala Gly Val Phe His Leu His Gln Gly Asp Ile
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Leu Ser Val Ile Ile Pro Arg Ala Arg Ala Lys Leu Asn Leu Ser Pro
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His Gly Thr Phe Leu Gly Leu
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Leu Ser Trp Gly Ala Ala Leu Gly Ala Val Ala Cys Ala Met Ala Leu
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Leu Gln Gly Thr Gly Gly Pro Ser Gln Asn Gly Glu Gly Tyr Pro Trp
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Gln Ser Leu Pro Glu Gln Gln His Ser Val Leu His Leu Val Pro Ile
85 90 95

Asn Ala Thr Ser Lys Asp Asp Ser Asp Val Thr Glu Val Met Trp Gln
100 105 110

Pro Ala Leu Arg Arg Gly Arg Gly Leu Gln Ala Gln Gly Tyr Gly Val
115 120 125

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

Gln Asp Val Thr Phe Thr Met Gly Gln Val Val Ser Arg Glu Gly Gln
145 150 155 160

Gly Arg Gln Glu Thr Leu Phe Arg Cys Ile Arg Ser Met Pro Ser His
165 170 175

Pro Asp Arg Ala Tyr Asn Ser Cys Tyr Ser Ala Gly Val Phe His Leu
180 185 190

His Gln Gly Asp Ile Leu Ser Val Ile Ile Pro Arg Ala Arg Ala Lys
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Leu Asn Leu Ser Pro His Gly Thr Phe Leu Gly Phe Val Lys Leu
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Leu Ser Trp Gly Ala Ala Leu Gly Ala Val Ala Cys Ala Met Ala Leu
35 40 45

Leu Thr Gln Gln Thr Glu Leu Gln Ser Leu Arg Arg Glu Val Ser Arg
50 55 60

Leu Gln Gly Thr Gly Gly Pro Ser Gln Asn Gly Glu Gly Tyr Pro Trp
65 70 75 80

Gln Ser Leu Pro Glu Gln His Ser Val Leu His Leu Val Pro Ile Asn
85 90 95

Ala Thr Ser Lys Asp Asp Ser Asp Val Thr Glu Val Met Trp Gln Pro
100 105 110

Ala Leu Arg Arg Gly Arg Gly Leu Gln Ala Gln Gly Tyr Gly Val Arg
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Ile Gln Asp Ala Gly Val Tyr Leu Leu Tyr Ser Gln Val Leu Phe Gln
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Asp Val Thr Phe Thr Met Gly Gln Val Val Ser Arg Glu Gly Gln Gly
145 150 155 160

Arg Gln Glu Thr Leu Phe Arg Cys Ile Arg Ser Met Pro Ser His Pro
165 170 175

Asp Arg Ala Tyr Asn Ser Cys Tyr Ser Ala Gly Val Phe His Leu His
180 185 190

Gln Gly Asp Ile Leu Ser Val Ile Ile Pro Arg Ala Arg Ala Lys Leu
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Asn Leu Ser Pro His Gly Thr Phe Leu Gly Phe Val Lys Leu
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 35 40 45

Gln Gly Thr Gly Gly Pro Ser Gln Asn Gly Glu Gly Tyr Pro Trp Gln
 50 55 60

Ser Leu Pro Glu Gln His Ser Val Leu His Leu Val Pro Ile Asn Ala
 65 70 75 80

Thr Ser Lys Asp Asp Ser Asp Val Thr Glu Val Met Trp Gln Pro Ala
 85 90 95

Leu Arg Arg Gly Arg Gly Leu Gln Ala Gln Gly Tyr Gly Val Arg Ile
 100 105 110

Gln Asp Ala Gly Val Tyr Leu Leu Tyr Ser Gln Val Leu Phe Gln Asp
 115 120 125

Val Thr Phe Thr Met Gly Gln Val Val Ser Arg Glu Gly Gln Gly Arg
 130 135 140

Gln Glu Thr Leu Phe Arg Cys Ile Arg Ser Met Pro Ser His Pro Asp
 145 150 155 160

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Arg Ala Tyr Asn Ser Cys Tyr Ser Ala Gly Val Phe His Leu His Gln
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Leu Ser Pro His Gly Thr Phe Leu Gly Phe Val Lys Leu
195 200 205

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35 40 45

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50 55 60

Asp Gln Asp Pro Ser Glu Leu Asn Pro Gln Thr Glu Glu Ser Gln Asp
65 70 75 80

Pro Ala Pro Phe Leu Asn Arg Leu Val Arg Pro Arg Arg Ser Ala Pro
85 90 95

Lys Gly Arg Lys Thr Arg Ala Arg Arg Ala Ile Ala Ala His Tyr Glu
100 105 110

Val His Pro Arg Pro Gly Gln Asp Gly Ala Gln Ala Gly Val Asp Gly
115 120 125

Thr Val Ser Gly Trp Glu Glu Ala Arg Ile Asn Ser Ser Ser Pro Leu

31016_6825_SEQ

130

135

140

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Tyr Tyr Leu Tyr Cys Gln Ser Ser Asp Ala Leu Glu Ala Trp Glu Asn
 165 170 175

Gly Glu Arg Ser Arg Lys Arg Arg Ala Val Leu Thr Gln Lys Gln Lys
 180 185 190

Lys Gln His Ser Val Leu His Leu Val Pro Ile Asn Ala Thr Ser Lys
 195 200 205

Asp Asp Ser Asp Val Thr Glu Val Met Trp Gln Pro Ala Leu Arg Arg
 210 215 220

Gly Arg Gly Leu Gln Ala Gln Gly Tyr Gly Val Arg Ile Gln Asp Ala
 225 230 235 240

Gly Val Tyr Leu Leu Tyr Ser Gln Val Leu Phe Gln Asp Val Thr Phe
 245 250 255

Thr Met Gly Gln Val Val Ser Arg Glu Gly Gln Gly Arg Gln Glu Thr
 260 265 270

Leu Phe Arg Cys Ile Arg Ser Met Pro Ser His Pro Asp Arg Ala Tyr
 275 280 285

Asn Ser Cys Tyr Ser Ala Gly Val Phe His Leu His Gln Gly Asp Ile
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Leu Ser Val Ile Ile Pro Arg Ala Arg Ala Lys Leu Asn Leu Ser Pro
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His Gly Thr Phe Leu Gly Phe Val Lys Leu
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35 40 45

Leu Arg Arg Glu Val Ser Arg Leu Gln Arg Ser Gly Gly Pro Ser Gln
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Lys Gln Gly Glu Arg Pro Trp Gln Ser Leu Trp Glu Gln Ser Ser Asp
65 70 75 80

Ala Leu Glu Ala Trp Glu Asn Gly Glu Arg Ser Arg Lys Arg Arg Ala
85 90 95

Val Leu Thr Gln Lys Gln Lys Lys Gln His Ser Val Leu His Leu Val
100 105 110

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

Trp Gln Pro Ala Leu Arg Arg Gly Arg Gly Leu Gln Ala Gln Gly Tyr
130 135 140

Gly Val Arg Ile Gln Asp Ala Gly Val Tyr Leu Leu Tyr Ser Gln Val
145 150 155 160

Leu Phe Gln Asp Val Thr Phe Thr Met Gly Gln Val Val Ser Arg Glu
165 170 175

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Gly Gln Gly Arg Gln Glu Thr Leu Phe Arg Cys Ile Arg Ser Met Pro
180 185 190

Ser His Pro Asp Arg Ala Tyr Asn Ser Cys Tyr Ser Ala Gly Val Phe
195 200 205

His Leu His Gln Gly Asp Ile Leu Ser Val Ile Ile Pro Arg Ala Arg
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31016_6825_SEQ

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22