SEQUENCE LISTING

<110> Regeneron Pharmaceuticals, Inc.

<120> Glucagon-Like Peptide 1 Receptor
Agonists and Uses Thereof

<130> 10377WO01

<160> 14

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 120
<212> PRT
<213> Artificial Sequence

<220>
<223> VH for Comparator

<400> 1

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Gln Val Thr Leu Lys Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser Gln
 1               5                  10                  15
Thr Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Ser
            20                  25                  30
Gly Thr Gly Val Gly Trp Ile Arg Gln Pro Ser Gly Lys Gly Leu Glu
        35                  40                  45
Trp Leu Ser His Ile Trp Trp Asp Asp Val Lys Arg Tyr Asn Pro Ala
    50                  55                  60
Leu Lys Ser Arg Leu Thr Ile Ser Arg Asp Thr Ser Tyr Ser Gln Val
65                  70                  75                  80
Phe Leu Arg Ile Ala Ser Val Asp Thr Ala Asp Thr Ala Thr Tyr Tyr
                85                  90                  95
Cys Ala Arg Ile Leu Asp Gly Thr Gly Pro Met Asp Tyr Trp Gly Gln
            100                 105                 110
Gly Thr Ser Val Thr Val Ser Ser
        115                 120
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<210> 2
<211> 108
<212> PRT
<213> Artificial Sequence

<220>
<223> VL for Comparator

<400> 2

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Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
 1               5                  10                  15
Glu Lys Val Thr Met Thr Cys Ser Ala Ser Ser Arg Val Thr Tyr Met
            20                  25                  30
His Trp Tyr Gln Gln Arg Ser Gly Thr Ser Pro Lys Arg Trp Ile Tyr
        35                  40                  45
Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Ala Arg Phe Ser Gly Ser
    50                  55                  60
Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Ser Met Glu Ala Glu
65                  70                  75                  80
Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp Gly Asn Asn Pro Gln Tyr
                85                  90                  95
Thr Phe Gly Gly Gly Thr Arg Leu Glu Ile Lys Arg
            100                 105
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<210> 3
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> GLP1

<400> 3

```
His Asp Glu Phe Glu Arg His Ala Glu Gly Thr Phe Thr Ser Asp Val
 1               5                  10                  15
Ser Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu
            20                  25                  30
Val Lys Gly Arg Gly
        35
```

<210> 4
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> Mature GLP1

<400> 4

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

<210> 5
<211> 30

<212> PRT
<213> Artificial Sequence

<220>
<223> Des-Ala-GLP1

<400> 5
His Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln
 1   5   10   15
Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
            20   25   30

<210> 6
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> Q-GLP1

<400> 6
Gln His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu
 1   5   10   15
Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
            20   25   30

<210> 7
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> A-GLP1

<400> 7
Ala His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu
 1   5   10   15
Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
            20   25   30

<210> 8
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> des-H-GLP1

<400> 8
Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln
 1   5   10   15
Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
            20   25   30

<210> 9
<211> 273
<212> PRT
<213> Artificial Sequence

<220>
<223> GLP1-3xG4S-hFc

<400> 9
His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
 1   5   10   15
Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly Gly
            20   25   30
Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Asp Lys
        35   40   45
Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro
    50   55   60
Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
65   70   75   80
Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp
                85   90   95
Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
            100   105   110
Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val
        115   120   125
Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu
    130   135   140
Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys
145   150   155   160
Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr
                165   170   175
Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr
            180   185   190
Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
        195   200   205
Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu
    210   215   220
Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys
225   230   235   240
Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu
                245   250   255
Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly

260 265 270
Lys

<210> 10
<211> 274
<212> PRT
<213> Artificial Sequence

<220>
<223> A-GLP1-3xG4S-hFc

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

<210> 11
<211> 274
<212> PRT
<213> Artificial Sequence

<220>
<223> Q-GLP1-3xG4S-hFc

<400> 11
Gln His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu
 1   5   10   15
Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
            20   25   30
Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Asp
        35   40   45
Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly
    50   55   60
Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile
65   70   75   80
Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu
                85   90   95
Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His
            100   105   110
Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg
        115   120   125
Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys
    130   135   140
Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu
145   150   155   160
Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr
                165   170   175
Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu
            180   185   190
Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp
        195   200   205
Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val
    210   215   220
Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp
225   230   235   240
Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
                245   250   255
Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro
            260   265   270
Gly Lys

<210> 12

<211> 272
<212> PRT
<213> Artificial Sequence

<220>
<223> Des-Ala-GLP1-3xG4S-hFc

<400> 12
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His Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln
 1               5                  10                  15
Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly Gly Gly
            20                  25                  30
Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Asp Lys Thr
        35                  40                  45
His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser
    50                  55                  60
Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg
65                  70                  75                  80
Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro
                85                  90                  95
Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala
            100                 105                 110
Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val
        115                 120                 125
Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr
    130                 135                 140
Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr
145                 150                 155                 160
Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu
                165                 170                 175
Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys
            180                 185                 190
Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser
        195                 200                 205
Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp
    210                 215                 220
Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser
225                 230                 235                 240
Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
                245                 250                 255
Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
            260                 265                 270
```

<210> 13
<211> 272
<212> PRT
<213> Artificial Sequence

<220>

<223> Des-H-GLP1-3xG4S-hFc

<400> 13
Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln
 1   5   10   15
Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly Gly Gly
            20   25   30
Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Asp Lys Thr
        35   40   45
His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser
    50   55   60
Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg
65   70   75   80
Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro
                85   90   95
Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala
            100   105   110
Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val
        115   120   125
Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr
    130   135   140
Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr
145   150   155   160
Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu
                165   170   175
Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys
            180   185   190
Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser
        195   200   205
Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp
    210   215   220
Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser
225   230   235   240
Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
                245   250   255
Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
            260   265   270

<210> 14
<211> 276
<212> PRT
<213> Artificial Sequence

<220>
<223> Comparator

<400> 14
His Gly Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Glu
 1   5   10   15

```
Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Gly Gly Gly
            20                  25                  30
Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Ala Glu
        35                  40                  45
Ser Lys Tyr Gly Pro Pro Cys Pro Pro Cys Pro Ala Pro Glu Ala Ala
    50                  55                  60
Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu
65                  70                  75                  80
Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser
                85                  90                  95
Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu
            100                 105                 110
Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr
        115                 120                 125
Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn
    130                 135                 140
Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ser Ser
145                 150                 155                 160
Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln
                165                 170                 175
Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr Lys Asn Gln Val
            180                 185                 190
Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val
        195                 200                 205
Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro
    210                 215                 220
Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Arg Leu Thr
225                 230                 235                 240
Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe Ser Cys Ser Val
                245                 250                 255
Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu
            260                 265                 270
Ser Leu Gly Lys
        275
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