IFNβ G162C-Ig direct fusion construct open reading frame

```
   1 ATGCCTGGGAAGATGGTCGTGATCCTTGGAGCCTCAAATATACTTTGGATAATGTTTGCA  60
     M  P  G  K  M  V  V  I  L  G  A  S  N  I  L  W  I  M  F  A

  61 GCTTCTCAAGCCATGAGCTACAACTTGCTTGGATTCCTACAAAGAAGCAGCAATTTTCAG 120
     A  S  Q  A  M  S  Y  N  L  L  G  F  L  Q  R  S  S  N  F  Q

 121 TGTCAGAAGCTCCTGTGGCAATTGAATGGGAGGCTTGAATACTGCCTCAAGGACAGGATG 180
     C  Q  K  L  L  W  Q  L  N  G  R  L  E  Y  C  L  K  D  R  M

 181 AACTTTGACATCCCTGAGGAGATTAAGCAGCTGCAGCAGTTCCAGAAGGAGGACGCCGCA 240
     N  F  D  I  P  E  E  I  K  Q  L  Q  Q  F  Q  K  E  D  A  A

 241 TTGACCATCTATGAGATGCTCCAGAACATCTTTGCTATTTTCAGACAAGATTCATCTAGC 300
     L  T  I  Y  E  M  L  Q  N  I  F  A  I  F  R  Q  D  S  S  S

 301 ACTGGCTGGAATGAGACTATTGTTGAGAACCTCCTGGCTAATGTCTATCATCAGATAAAC 360
     T  G  W  N  E  T  I  V  E  N  L  L  A  N  V  Y  H  Q  I  N

 361 CATCTGAAGACAGTCCTGGAAGAAAAACTGGAGAAAGAAGATTTCACCAGGGGAAAACTC 420
     H  L  K  T  V  L  E  E  K  L  E  K  E  D  F  T  R  G  K  L

 421 ATGAGCAGTCTGCACCTGAAAGAGTATTATGGGAGGATTCTGCATTACCTGAAGGCCAAG 480
     M  S  S  L  H  L  K  R  Y  Y  G  R  I  L  H  Y  L  K  A  K
```

FIG. 1-A

```
481 GAGTACAGTCACTGTGCCTGGACCATAGTCAGAGTGGAAATCCTAAGGAACTTTTACTTC 540
      E  Y  S  H  C  A  W  T  I  V  R  V  E  I  L  R  N  F  Y  F

541 ATTAACAGACTTACATGTTACCTCCGAAACGTCGACAAAACTCACACATGCCCACCGTGC 600
      I  N  R  L  T  C  Y  L  R  N  V  D  K  T  H  T  C  P  P  C

601 CCAGCACCTGAACTCCTGGGGGGACCGTCAGTCTTCCTCTTCCCCCCAAAACCCAAGGAC 660
      P  A  P  E  L  L  G  G  P  S  V  F  L  F  P  P  K  P  K  D

661 ACCCTCATGATCTCCCGGACCCCTGAGGTCACATGCGTGGTGGTGGACGTGAGCCACGAA 720
      T  L  M  I  S  R  T  P  E  V  T  C  V  V  V  D  V  S  H  E

721 GACCCTGAGGTCAAGTTCAACTGGTACGTGGACGGCGTGGAGGTGCATAATGCCAAGACA 780
      D  P  E  V  K  F  N  W  Y  V  D  G  V  E  V  H  N  A  K  T

781 AAGCCGCGGGAGGAGCAGTACAACAGCACGTACCGTGTGGTCAGCGTCCTCACCGTCCTG 840
      K  P  R  E  E  Q  Y  N  S  T  Y  R  V  V  S  V  L  T  V  L

841 CACCAGGACTGGCTGAATGGCAAGGAGTACAAGTGCAAGGTCTCCAACAAAGCCCTCCCA 900
      H  Q  D  W  L  N  G  K  E  Y  K  C  K  V  S  N  K  A  L  P

901 GCCCCCATCGAGAAAACCATCTCCAAAGCCAAAGGGCAGCCCCGAGAACCACAGGTGTAC 960
      A  P  I  E  K  T  I  S  K  A  K  G  Q  P  R  E  P  Q  V  Y
```

FIG. 1 B

```
961 ACCCTGCCCCCCATCCCGGGATGAGCTGACCAAGAACCAGGTCAGCCTGACCTGCCTGGTC 1020
      T  L  P  P  S  R  D  E  L  T  K  N  Q  V  S  L  T  C  L  V

1021 AAAGGCTTCTATCCCAGCGACATCGCCGTGGAGTGGGAGAGCAATGGGCAGCCGGAGAAC 1080
       K  G  F  Y  P  S  D  I  A  V  E  W  E  S  N  G  Q  P  E  N

1081 AACTACAAGACCACGCCTCCCGTGTTGGACTCCGACGGCTCCTTCTTCCTCTACAGCAAG 1140
       N  Y  K  T  T  P  P  V  L  D  S  D  G  S  F  F  L  Y  S  K

1141 CTCACCGTGGACAAGAGCAGGTGGCAGCAGGGGAACGTCTTCTCATGCTCCGTGATGCAT 1200
       L  T  V  D  K  S  R  W  Q  Q  G  N  V  F  S  C  S  V  M  H

1201 GAGGCTCTGCACAACCACTACACGCAGAAGAGCCTCTCCCTGTCTCCCGGGAAATGA    1257
       E  A  L  H  N  H  Y  T  Q  K  S  L  S  L  S  P  G  K  *
```

FIG. 1 C

IFNβ G162C-Ig fusion G4S linker construct open reading frame

```
   1 ATGCCTGGGAAGATGGTCGTGATCCTTGGAGCCTCAATATACTTTGGATAATGTTTGCA 60
     M  P  G  K  M  V  V  I  L  G  A  S  N  I  L  W  I  M  F  A

  61 GCTTCTCAAGCCATGAGCTACAACTTGCTTGGATTCCTACAAAGAAGCAGCAATTTTCAG 120
     A  S  Q  A  M  S  Y  N  L  L  G  F  L  Q  R  S  S  N  F  Q

 121 TGTCAGAAGCTCCTGTGGCAATTGAATGGGAGGCTTGAATACTGCCTCAAGGACAGGATG 180
     C  Q  K  L  L  W  Q  L  N  G  R  L  E  Y  C  L  K  D  R  M

 181 AACTTTGACATCCCTGAGGAGATTAAGCAGCTGCAGCAGTTCCAGAAGGAGGACGCCGCA 240
     N  F  D  I  P  E  E  I  K  Q  L  Q  Q  F  Q  K  E  D  A  A

 241 TTGACCATCTATGAGATGCTCCAGAACATCTTTGCTATTTTCAGACAAGATTCATCTAGC 300
     L  T  I  Y  E  M  L  Q  N  I  F  A  I  F  R  Q  D  S  S  S

 301 ACTGGCTGGAATGAGACTATTGTTGAGAACCTCCTGGCTAATGTCTATCATCAGATAAAC 360
     T  G  W  N  E  T  I  V  E  N  L  L  A  N  V  Y  H  Q  I  N

 361 CATCTGAAGACAGTCCTGGAAGAAAAACTGGAGAAAGATTTCACCAGGGGAAAACTC 420
     H  L  K  T  V  L  E  E  K  L  E  K  E  D  F  T  R  G  K  L
```

FIG. 2A

```
421 ATGAGCAGTCTGCACCTGAAAAGATATTATGGGAGGATTCTGCATTACCTGAAGGCCAAG 480
      M  S  S  L  H  L  K  K  R  Y  Y  G  G  R  I  L  H  Y  L  K  A  K

481 GAGTACAGTCACTGTGCCTGGACCATAGTCAGAGTGGAAATCCTAAGGAACTTTTACTTC 540
      E  Y  S  H  C  A  W  T  I  V  R  V  E  I  L  R  N  F  Y  F

541 ATTAACAGACTTACATGTTACCTCCGAAACGGCGGTGGTGGCAGCGTCGACAAAACTCAC 600
      I  N  R  L  T  C  Y  L  R  N  G  G  G  G  S  V  D  K  T  H

601 ACATGCCCACCGTGCCCAGCACCTGAACTCCTGGGGGGACCGTCAGTCTTCCTCTTCCCC 660
      T  C  P  P  C  P  A  P  E  L  L  G  G  P  S  V  F  L  F  P

661 CCAAAACCCAAGGACACCCTCATGATCTCCCGGACCCCTGAGGTCACATGCGTGGTGGTG 720
      P  K  P  K  D  T  L  M  I  S  R  T  P  E  V  T  C  V  V  V

721 GACGTGAGCCACGAAGACCCTGAGGTCAAGTTCAACTGGTACGTGGACGGCGTGGAGGTG 780
      D  V  S  H  E  D  P  E  V  K  F  N  W  Y  V  D  G  V  E  V

781 CATAATGCCAAGACAAAGCCGCGGGAGGAGCAGTACAACAGCACGTACCGTGTGGTCAGC 840
      H  N  A  K  T  K  P  R  E  E  Q  Y  N  S  T  Y  R  V  V  S

841 GTCCTCACCGTCCTGCACCAGGACTGGCTGAATGGCAAGGAGTACAAGTGCAAGGTCTCC 900
      V  L  T  V  L  H  Q  D  W  L  N  G  K  E  Y  K  C  K  V  S

901 AACAAAGCCCTCCCAGCCCCCATCGAGAAAACCATCTCCAAAGCCAAAGGGCAGCCCCGA 960
      N  K  A  L  P  A  P  I  E  K  T  I  S  K  A  K  G  Q  P  R
```

FIG. 2B

```
961  GAACCACAGGTGTACACCCTGCCCCCATCCCGGGATGAGCTGACCAAGAACCAGGTCAGC 1020
       E  P  Q  V  Y  T  L  P  P  S  R  D  E  L  T  K  N  Q  V  S

1021 CTGACCTGCCTGGTCAAAGGCTTCTATCCCAGCGACATCGCCGTGGAGTGGGAGAGCAAT 1080
       L  T  C  L  V  K  G  F  Y  P  S  D  I  A  V  E  W  E  S  N

1081 GGGCAGCCGGAGAACAACTACAAGACCACGCCTCCCGTGTTGGACTCCGACGGCTCCTTC 1140
       G  Q  P  E  N  N  Y  K  T  T  P  P  V  L  D  S  D  G  S  F

1141 TTCCTCTACAGCAAGCTCACCGTGGACAAGAGCAGGTGGCAGCAGGGGAACGTCTTCTCA 1200
       F  L  Y  S  K  L  T  V  D  K  S  R  W  Q  Q  G  N  V  F  S

1201 TGCTCCGTGATGCATGAGGCTCTGCACAACCACTACACGCAGAAGAGCCTCTCCCTGTCT 1260
       C  S  V  M  H  E  A  L  H  N  H  Y  T  Q  K  S  L  S  L  S

1261 CCCGGGAAATGA 1272
       P  G  K  *
```

FIG. 2C