We claim:

1. A fusion protein comprising an insulin polypeptide and an Fc fragment, wherein the insulin polypeptide and the Fc fragment are connected by a linker, wherein the fusion protein comprises the following sequence:

FVNQHLCGSHLVEALALVCGERGFHYGGGGGGSGGGGGIVEQCCTSTCSLDQLENY
CGGGGGAGGGGAGGGGAGGGGGDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMIS
RTPEVTCVVVDVSHEDPEVKFNWYVDGVEVHNAKTKPREEQYSSTYRVVSVLTVL
HQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSRDELTKNQVSLT
CLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNV
FSCSVMHEALHNHYTQKSLSLSPG (SEQ ID NO: 87).

2. A fusion protein comprising an insulin polypeptide and an Fc fragment, wherein the insulin polypeptide and the Fc fragment are connected by a linker, wherein the Fc fragment is of human origin and comprises the following sequence:

DKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVVDVSHEDPEVKFNWY
VDGVEVHNAKTKPREEQYX$_1$STYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIE
KTISKAKGQPREPQVYTLPPSRDELTKNQVSLTCLVKGFYPSDIAVEWESNGQPENN
YKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPG
(SEQ ID NO: 77) wherein X_1 is S, D, A, or R, wherein the insulin polypeptide consists of an insulin B-chain analog linked to an insulin A-chain analog via a C-chain, wherein the 16th amino acid from the N-terminus of the insulin B-chain analog (i.e., B16) of the insulin polypeptide is alanine (i.e., B16A).

3. The fusion protein of claim 2, wherein the insulin polypeptide comprises the following sequence:
FVNQHLCGSX$_1$LVEALALVCGERGFHYGGGGGGSGGGGGIVEQCCX$_2$STCSLDQLEN
YC (SEQ ID NO: 9), wherein X_1 is not D, and X_2 is not H.

4. The fusion protein of claim 3, wherein the insulin polypeptide comprises the following sequence:
FVNQHLCGSHLVEALALVCGERGFHYGGGGGGSGGGGGIVEQCCTSTCSLDQLENY
C (SEQ ID NO: 10).

5. The fusion protein of claim 2, wherein the linker comprises the following sequence: GGGGGAGGGGAGGGGAGGGGG (SEQ ID NO: 67).

6. The fusion protein of claim 2, wherein the linker comprises the following sequence: GGGGGQGGGGQGGGGQGGGGG (SEQ ID NO: 13).

7. The fusion protein of claim 6, wherein the fusion protein comprises the following sequence:
FVNQHLCGSHLVEALALVCGERGFHYGGGGGGSGGGGGIVEQCCTSTCSLDQLENY
CGGGGGQGGGGQGGGGQGGGGGDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMIS
RTPEVTCVVVDVSHEDPEVKFNWYVDGVEVHNAKTKPREEQYSSTYRVVSVLTVL
HQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSRDELTKNQVSLT
CLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNV
FSCSVMHEALHNHYTQKSLSLSPG (SEQ ID NO: 78).

8. The fusion protein of claim 6, wherein the fusion protein comprises the following sequence:
FVNQHLCGSHLVEALALVCGERGFHYGGGGGGSGGGGGIVEQCCTSTCSLDQLENY
CGGGGGQGGGGQGGGGQGGGGGDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMIS
RTPEVTCVVVDVSHEDPEVKFNWYVDGVEVHNAKTKPREEQYDSTYRVVSVLTVL
HQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSRDELTKNQVSLT
CLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNV
FSCSVMHEALHNHYTQKSLSLSPG (SEQ ID NO: 80).

9. The fusion protein of claim 6, wherein the fusion protein comprises the following sequence:
FVNQHLCGSHLVEALALVCGERGFHYGGGGGGSGGGGGIVEQCCTSTCSLDQLENY
CGGGGGQGGGGQGGGGQGGGGGDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMIS
RTPEVTCVVVDVSHEDPEVKFNWYVDGVEVHNAKTKPREEQYASTYRVVSVLTVL
HQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSRDELTKNQVSLT
CLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNV
FSCSVMHEALHNHYTQKSLSLSPG (SEQ ID NO: 82).

10. The fusion protein of claim 6, wherein the fusion protein comprises the following sequence:
FVNQHLCGSHLVEALALVCGERGFHYGGGGGGSGGGGGIVEQCCTSTCSLDQLENY
CGGGGGQGGGGQGGGGQGGGGGDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMIS
RTPEVTCVVVDVSHEDPEVKFNWYVDGVEVHNAKTKPREEQYRSTYRVVSVLTVL
HQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSRDELTKNQVSLT
CLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNV
FSCSVMHEALHNHYTQKSLSLSPG (SEQ ID NO: 84).

11. The fusion protein of claim 2, wherein the linker comprises the following sequence:

GGGGAGGGG (SEQ ID NO: 11)

12. The fusion protein of claim 11, wherein the fusion protein comprises the following sequence:
FVNQHLCGSHLVEALALVCGERGFHYGGGGGGSGGGGGIVEQCCTSTCSLDQLENY
CGGGGAGGGGDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVVDVS
HEDPEVKFNWYVDGVEVHNAKTKPREEQYSSTYRVVSVLTVLHQDWLNGKEYKC
KVSNKALPAPIEKTISKAKGQPREPQVYTLPPSRDELTKNQVSLTCLVKGFYPSDIAV

EWESNGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNVFSCSVMHEALHNH YTQKSLSLSPG (SEQ ID NO: 89).

13. The fusion protein of claim 2 comprising domains in the following orientation from N- to C- terminus: (N-terminus) — insulin polypeptide — linker — Fc fragment — (C-terminus).

14. The fusion protein of claim 2, wherein the fusion protein is a homodimer, and wherein the percentage homodimer of the fusion protein is greater than 90%.

15. The fusion protein of claim 2, wherein the fusion protein is made using one of HEK293 cells or CHO cells, and the resulting homodimer titer after purification using Protein A beads or a Protein A column is greater than 150 mg/L.

16. The fusion protein of claim 2, wherein the insulin receptor IC50 for the fusion protein is less than or equal to 5000 nM.

17. The fusion protein of claim 2, wherein the human FcRn receptor EC50 for the fusion protein is less than or equal to 1000 ng/mL.

18. The fusion protein of claim 2, wherein the human Fc(gamma)RI receptor assay OD450 Ratio at a biotinylated-Fc(gamma)RI concentration of 3000 ng/mL of the fusion protein is less than or equal to 0.50.

19. The fusion protein of claim 2, wherein the human C1q assay OD450 Ratio at a biotinylated-C1q concentration of 1000 ng/mL is less than or equal to 0.35.

20. The fusion protein of claim 2, wherein the fusion protein is formulated as a pharmaceutical composition, and wherein the fusion protein is present in the pharmaceutical composition at a concentration of about 3 mg/mL or greater.