What is claimed:

1. A polypeptide comprising an apelin peptide fused to an Fc domain wherein the N-terminus of the apelin peptide is fused to the C-terminus of the Fc domain optionally via a peptide linker.

2. The polypeptide of claim 1, wherein the apelin peptide is selected from the group consisting of apelin42-77 (apelin-36), apelin61-77 (apelin-17), apelin63-77 (apelin-15), apelin64-77 (apelin-14), apelin65-77 (apelin-13), apelin66-77 (apelin-12), apelin67-77 (apelin-11), apelin68-77 (apelin-10), apelin73-77 (apelin-5), apelin61-76, apelin61-75, apelin61-74, apelin65-77 (apelin-F13A), apelin65-76, apelin65-75, apelin66-76, apelin67-76, apelin66-75, apelin 67-75, and [Pyr^{1}]Apelin-13.

3. The polypeptide of claim 2, wherein the apelin peptide is apelin-13.

4. The polypeptide of claim 1, wherein the apelin peptide comprises the amino acid sequence selected from the group consisting of SEQ ID NO: 42, SEQ ID NO: 43 and SEQ ID NO: 44.

5. The polypeptide of claim 1, wherein the apelin peptide is fused to the Fc domain via one or more peptide linkers.

6. The polypeptide of claim 4, wherein the apelin peptide is fused to the Fc domain via one or more Gly-Ser linkers.

7. The polypeptide of claim 5, wherein the apelin peptide is fused to the C-terminus of said Fc domain via one or more Gly-Ser linkers.

8. The polypeptide of claim 1 wherein the Fc domain is selected from the group consisting of IgG1 CH2 domain and IgG1 CH3 domain; IgG4 CH2 domain and IgG4 CH3 domain; IgG1 CH2 domain and IgG4 CH3 domain; and IgG4 CH2 domain and an IgG1 CH3 domain.

9. The polypeptide of claim 1, wherein the Fc domain comprises one or more of the following amino acid residues: E or Q at position 250; L or F at position 428; L, Y, F, W or T at position 252; S or T at position 254; S, R, Q, E or D at position 256; H, L, R, S, P, Q or K at position 433; H, F or Y at position 434; F at position 308; or I at position 259.

10. The polypeptide of claim 1, wherein the Fc domain comprises an IgG hinge domain.

11. The polypeptide of claim 10, wherein the Fc domain comprises an IgG hinge domain comprising SEQ ID NO: 14, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO:21, or SEQ ID NO: 22.

12. The polypeptide of claim 1, wherein the polypeptide forms at least one disulfide bond with a second polypeptide.

13. The polypeptide of claim 1, wherein the polypeptide is a monomeric fusion polypeptide capable of forming a dimer.

14. The polypeptide of claim 1, wherein the polypeptide has 99% or greater sequence identity to the amino acid sequence comprising SEQ ID NO: 2.

15. The polypeptide of claim 14 comprising the amino acid sequence comprising SEQ ID NO: 2.

16. The polypeptide of claim 1, wherein the polypeptide has 99% or greater sequence identity to the amino acid sequence comprising SEQ ID NO: 39, SEQ ID NO: 40, or SEQ ID NO: 41.

17. The polypeptide of claim 16 comprising the amino acid sequence comprising SEQ ID NO: 39, SEQ ID NO: 40, or SEQ ID NO: 41.

18. The polypeptide of any one of claims 1-17, wherein the Fc domain is a human IgG Fc domain.

19. The polypeptide of any one of claims 1-18 that has increased serum stability relative to the apelin peptide and exhibits an EC50 of less than 1 nm when measured in an *in vitro* APLNR activation assay.

20. A nucleic acid encoding the polypeptide of any one of claims 1-19.

21. The nucleic acid molecule of claim 20 linked to a nucleotide sequence encoding a signal peptide.

22. The nucleic acid molecule of claim 21 comprising the nucleotide sequence of SEQ ID NO: 25.

23. A vector comprising a nucleic acid molecule of any one of claims 20, 21 and 22.

24. The vector of claim 23, wherein the nucleic acid molecule is operably linked to an expression control sequence suitable for expression in a host cell.

25. The vector of claim 24, wherein the expression control sequence comprises a promoter selected from the group consisting of SV40, CMV, CMV-IE, CMV-MIE, UbC, RSV, SL3-3, MMTV, Ubi and HIV LTR.

26. The vector of claim 23 or claim 24, wherein the expression control sequence comprises an expression cassette selected from the group consisting of TetR-ER_{LBD}T2 fusion gene driven by the CMV-MIE promoter, blasticidin resistance gene driven by the SV40 promoter, and Arc-ER_{LBD}T2 fusion gene driven by the CMV-MIE promoter.

27. The vector of claim 25 or claim 26, wherein the promoter is a CMV-MIE/TetO or CMV-MIE/Arc hybrid promoter.

28. The vector of any one of claims 23-27 comprising one or more selectable marker genes selected from the group consisting of bla, bls, BSD, bsr, Sh ble, hpt, tetR, tetM, npt, kanR and pac.

29. A cell comprising a nucleic acid molecule of any one of claims 20, 21 and 22.

30. The cell of claim 29 comprising a vector of any one of claims 20-28.

31. The cell of claim 29 or claim 30, wherein the nucleic acid is integrated into the genome of the cell.

32. The cell of any one of claims 29-31 comprising a nucleic acid encoding a protein expression enhancer.

33. The cell of any one of claims 29-32 comprising a nucleic acid encoding an XBP polypeptide.

34. The cell of any one of claims 29-33, wherein the cell is a eukaryotic cell.

35. The cell of any one of claims 29-34, wherein the cell is selected from the group consisting of CHO, COS, retinal cell, Vero, CV1, 293, MDCK, HaK, BHK, HeLa, HepG2, WI38, MRC 5, Colo25, HB 8065, HL-60, Jurkat, Daudi, A431 (epidermal), CV-1, U937, 3T3, L cell, C127 cell, SP2/0, NS-0, MMT cell, tumor cell, a cell line derived from any of the aforementioned cells, and a PER.C6® cell.

36. The cell of any one of claims 29-35, wherein the cell is an animal cell.

37. The cell of any one of claims 29-36, wherein the cell is a mammalian cell.

38. The cell of any one of claims 29-37, wherein the cell is a CHO cell.

39. The cell of any one of claims 29-38, wherein the cell is a CHO-K1 cell.

40. A process for determining activation of an APLN receptor (APLNR), which comprises

a. contacting cells expressing APLNR with a test molecule, under conditions permitting activation of the APLNR**,**

b. measuring APLNR activity,

c. separately contacting cells expressing APLNR with an apelin Fc-fusion protein under the same conditions as in step (a), and

d. measuring APLNR activity of the cells in step (c) in the same manner as step (b), and

wherein the measurement of APLNR activity in step (b) compared to the measurement of APLNR activity in step (d) determines that the test molecule activates the APLNR.

41. The process of claim 40, wherein a higher measurement of APLNR activity in step (b) compared to step (d) indicates that the test molecule is an APLNR agonist.

42. The process of claim 41, wherein the higher measurement of activity in step (b) is an EC50 less than about 50 nM.

43. The process of claim 42, wherein the higher measurement of activity in step (b) is an EC50 less than about 1 nM.

44. The process of claim 40, wherein step (a) comprises contacting cells with both the test molecule and the apelin Fc-fusion protein, and wherein a lower measurement of APLNR activity in step (b) compared to step (d) indicates that the test molecule is an APLNR antagonist.

45. A method of making an isolated fusion protein comprising apelin peptide, said method comprising:

a. transfecting a host cell with a nucleic acid molecule encoding said fusion protein, wherein said nucleic acid molecule comprises a nucleotide sequence encoding a signal peptide, fused to a nucleotide sequence encoding an Fc domain of human IgG linked to a nucleotide sequence encoding an apelin peptide, at the N-terminus of said apelin peptide, and

b. making said fusion protein by expressing the nucleic acid molecule of (a) in said host cell.

46. The method of claim 45, wherein the signal peptide comprises SEQ ID NO: 9.

47. The method of claim 45 or claim 46, wherein the fusion protein optionally comprises a nucleotide sequence encoding a peptide linker fused to the C-terminus of said signal peptide.

48. The method of any one of claims 45-47 further comprising the steps of culturing the host cell of step (b), wherein the host cell is secreting said fusion protein into a cell culture medium; and isolating the fusion protein from the cell culture media.

49. The method of any one of claims 45-48, wherein the isolated fusion protein comprises a polypeptide comprising the amino acid sequence selected from the group consisting of: SEQ ID NO: 2, SEQ ID NO: 39, SEQ ID NO.40, and SEQ ID NO;41.

50. The method of any one of claims 45-49, wherein the fusion protein comprises a monomeric fusion polypeptide capable of forming a dimer.

51. The method of any one of claims 45-50, wherein the host cell is selected from the group consisting of CHO, COS, retinal cell, Vero, CV1, 293, MDCK, HaK, BHK, HeLa, HepG2, WI38, MRC 5, Colo25, HB 8065, HL-60, Jurkat, Daudi, A431 (epidermal), CV-1, U937, 3T3, L cell, C127 cell, SP2/0, NS-0, MMT cell, tumor cell, a cell line derived from any of the aforementioned cells, and a PER.C6® cell.

52. The use of a polypeptide according to claims 1-19 in the manufacture of a medicament for the treatment of a disease or condition selected from the group consisting of cardiovascular disease, acute decompensated heart failure, congestive heart failure, myocardial infarction, cardiomyopathy, ischemia, ischemia/reperfusion injury, pulmonary hypertension, diabetes, obesity, cancer, metastatic disease, pathological angiogenesis, retinopathy, fibrosis and HIV infection.