We claim:

1. A polypeptide comprising a fibronectin type III tenth (^{10}Fn3) domain, wherein:

(i) the polypeptide binds myostatin with a K_D of less than 500 nM; and

(ii) the amino acid sequences of the BC, DE and FG loops of the ^{10}Fn3 domain comprise the amino acid sequences of SEQ ID NOs: 34, 39 and 75, respectively, wherein one loop of the BC, DE and FG loops of the ^{10}Fn3 domain optionally has one amino acid substitution relative to the respective BC, DE and FG loops of SEQ ID NO: 34, 39 and 75.

2. The polypeptide of claim 1, wherein

(i) the serine at position 3 of the BC loop (SEQ ID NO: 34) is substituted with an amino acid selected from the group consisting of A, C, D, F, H, I, K, L, N, Q, R, T, V, W, and Y;

(ii) the leucine at position 4 of the BC loop (SEQ ID NO: 34) is substituted with an amino acid selected from the group consisting of M and V;

(iii) the proline at position 5 of the BC loop (SEQ ID NO: 34) is substituted with an amino acid selected from the group consisting of A, C, D, E, I, K, L, M, N, Q, R, S, T, V, and Y;

(vi) the histidine at position 6 of the BC loop (SEQ ID NO: 34) is substituted with an amino acid selected from A, C, D, E, F, G, I, K, L, M, N, Q, R, S, T, V, W, and Y;

(vii) the glutamine at position 7 of the BC loop (SEQ ID NO: 34) is substituted with an amino acid selected from the group consisting of A, C, D, E, F, G, H, I, K, L, M, N, P, R, S, T, V, W, and Y;

(viii) the glycine at position 8 of the BC loop (SEQ ID NO: 34) is substituted with the amino acid S;

(ix) the lysine at position 9 of the BC loop (SEQ ID NO: 34) is substituted with an amino acid selected from the group consisting of A, C, D, E, F, G, H, I, L, M, N, Q, R, S, T, V, W, and Y;

(x) the alanine at position 10 of the BC loop (SEQ ID NO: 34) is substituted with an amino acid selected from the group consisting of C, G, L, M, S, and T; or

(xi) the asparagine at position 11 of the BC loop (SEQ ID NO: 34) is substituted with an amino acid selected from the group consisting of A, C, F, H, P, Q, R, S, and Y.

3. The polypeptide of claim 1, wherein the valine at position 5 of the DE loop (SEQ ID NO: 39) is substituted with an amino acid selected from the group consisting of A, C, D, E, F, I, K, L, M, N, Q, S, and T.

4. The polypeptide of claim 1, wherein:

(i) the valine at position 2 of the FG loop (SEQ ID NO: 75) is substituted with an amino acid selected from the group consisting of A, C, F, I, L, M, Q, T, W, and Y;

(iii) the threonine at position 3 of the FG loop (SEQ ID NO: 75) is substituted with an amino acid selected from the group consisting of A, C, F, G, H, I, K, L, M, N, Q, R, S, V, W, and Y;

(iv) the aspartic acid at position 4 of the FG loop (SEQ ID NO: 75) is substituted with an amino acid selected from the group consisting of A, C, E, F, G, H, I, K, L, M, N, P, Q, R, S, T, V, W, and Y;

(v) the threonine at position 5 of the FG loop (SEQ ID NO: 75) is substituted to with an amino acid selected from the group consisting of A, C, D, E, F, G, H, I, K, L, M, N, P, Q, R, S, V, W, and Y;

(vi) the glycine at position 6 of the FG loop (SEQ ID NO: 75) is substituted to with an amino acid selected from the group consisting of A, C, D, E, F, H, I, K, L, M, N, Q, R, S, T, V, W, and Y;

(vii) the tyrosine at position 7 of the FG loop (SEQ ID NO: 75) is substituted with an amino acid selected from the group consisting of A, C, F, H, I, L, M, N, P, S, T, V, and W;

(viii) the leucine at position 8 of the FG loop (SEQ ID NO: 75) is substituted with an amino acid selected from the group consisting of A, C, E, F, H, I, K, M, N, Q, R, S, T, V, W, and Y;

(ix) the lysine at position 9 of the FG loop (SEQ ID NO: 75) is substituted with an amino acid selected from the group consisting of A, C, D, E, F, G, H, I, L, M, N, P, Q, R, S, T, V, W, and Y;

(x) the tyrosine at position 10 of the FG loop (SEQ ID NO: 75) is substituted with an amino acid selected from the group consisting of F or W; or

(xi) the tyrosine at position 11 of the FG loop (SEQ ID NO: 75) is substituted with an amino acid selected from the group consisting of A, C, D, E, F, G, H, I, K, L, M, N, P, Q, R, S, T, V, or W.

5. The polypeptide of claim 1, wherein the BC, DE and FG loops comprise the amino acid sequences set forth in SEQ ID NOs: 34, 39 and 75, respectively.

6. The polypeptide of any one of the preceding claims, wherein the polypeptide comprises an amino acid sequence at least 80%, 85%, 90%, 95%, 98%, 99% or 100% identical to the non-BC, non-DE, and non-FG loop regions of SEQ ID NO: 331, 273, 281, or 118.

7. The polypeptide of any one of the preceding claims, wherein the polypeptide comprises an amino acid sequence that is at least 80%, 85%, 90%, 95%, 98%, 99%, or 100% identical to any one of SEQ ID NOs: 331, 273, 281, or 118.

8. The polypeptide of claim 7, wherein the polypeptide comprises the amino acid sequence of SEQ ID NO: 331.

9. The polypeptide of claim 7, wherein the polypeptide comprises the amino acid sequence of SEQ ID NO: 273.

10. The polypeptide of any one of the preceding claims, wherein the polypeptides binds to a region within amino acids 56-66 of SEQ ID NO: 3.

11. The polypeptide of any one of the preceding claims, wherein the polypeptide binds to a region within amino acids 85-101 and 56-66 of SEQ ID NO: 3.

12. The polypeptide of any one of the preceding claims, wherein the polypeptide does not compete for binding to myostatin with ActRIIB and/or the polypeptide competes for binding to myostatin with ALK4 and/or ALK5.

13. The polypeptide of any one of the preceding claims, further comprising one or more pharmacokinetic (PK) moieties selected from the group consisting of polyethylene glycol, sialic acid, Fc, Fc fragment, transferrin, serum albumin, a serum albumin binding protein, and a serum immunoglobulin binding protein.

14. A pharmaceutical composition comprising a polypeptide of any one of the preceding claims, and a carrier.

15. An isolated nucleic acid molecule encoding the polypeptide of any one of claims 1-13.

16. A cell comprising a nucleic acid of claim 15.

17. The polypeptide of any one of claims 1-13 or the composition of claim 14 for use in a method of treating a muscular, neurological or metabolic disorder that is associated with muscle wasting and/or muscle atrophy, or a bone degenerative disorder.

18. The polypeptide or composition for use according to claim 17, wherein administration of the polypeptide to the subject results in at least one of the following biological effects:

(a) an increase in muscle mass or volume;

(b) an increase in the number of muscle cells;

(c) an increase in the size of muscle cells; and

(d) an increase in muscle strength.

19. The polypeptide or composition for use according to claim 17 or 18, wherein the subject has a myopathy or neuropathy.

20. The polypeptide or composition for use according to any one of claims 17-19, wherein the subject has a muscular dystrophy.

21. The polypeptide or composition for use according to claim 20, wherein the subject has Duchenne's muscular dystrophy.

22. The polypeptide of any one of claims 1-13 or the composition of claim 14 for use in treating a metabolic disorder selected from obesity, type II diabetes mellitus, diabetes associated disorders, metabolic syndrome and hyperglycemia.

23. The polypeptide or composition for use according to claim 22, wherein administration of the polypeptide to the subject results in at least one of the following biological effects:

(a) an increase in insulin sensitivity;

(b) an increase in glucose uptake by cells in the subject;

(c) a decrease in blood glucose levels; and

(d) a decrease in body fat.

24. A method of detecting or measuring myostatin in a sample comprising contacting the sample with the polypeptide of any one of claims 1-13, and detecting or measuring binding of the polypeptide to myostatin.