Control 1	93.9 ± 0.7	18.0	8.99E+06	*5.00E-05*	≤ 5.56E-12	≥231

For k_d values that are italicized, no dissociation of the analyte was observed under these experimental conditions, and the value of k_d was therefore fixed at 5.0E-05 s^{-1}

Table 5: Binding Characteristics of Anti-Activin A Antibodies to Activin B at 25°C

Antibody	Amount of mAb Captured (RU ± SE)	50nM Ag Bound (RU)	k_a ($M^{-1}s^{-1}$)	k_d (s^{-1})	K_D (Molar)	$t_{1/2}$ (min)
H4H10423P	83.1 ± 0.6	4.7	4.89E+05	3.02E-02	6.18E-08	0.4
H4H10429P	112.3 ± 0.7	26.4	3.49E+06	1.31E-02	3.75E-09	0.9
H4H10432P2	104.4 ± 1.8	5.1	NB	NB	NB	NB
H4H10436P2	110.8 ± 3.9	32.8	9.52E+06	5.28E-04	5.54E-11	21.9
H4H10440P2	75.7 ± 0.8	18.8	1.06E+06	1.16E-03	1.09E-09	10.0
H4H10442P2	136 ± 0.7	3.4	NB	NB	NB	NB
H4H10430P	88 ± 0.5	3.9	NB	NB	NB	NB
H4H10446P2	101.5 ± 0.4	3.6	NB	NB	NB	NB
H4H10468P2	92.5 ± 0.2	6.2	NB	NB	NB	NB
Control 1	84.1 ± 0.3	6.4	NB	NB	NB	NB

Table 6: Binding Characteristics of Anti-Activin A Antibodies to Activin B at 37°C

Antibody	Amount of mAb Captured (RU ± SE)	50nM Ag Bound (RU)	k_a ($M^{-1}s^{-1}$)	k_d (s^{-1})	K_D (Molar)	$t_{1/2}$ (min)
H4H10423P	96 ± 1.2	4.4	NB	NB	NB	NB
H4H10429P	142.8 ± 1.3	25.3	3.43E+06	3.43E-02	9.98E-09	0.3
H4H10432P2	134.1 ± 1.7	5.1	NB	NB	NB	NB
H4H10436P2	132 ± 1.4	38.1	9.78E+06	1.36E-03	1.39E-10	8.5
H4H10440P2	94 ± 4.5	20.9	1.28E+06	4.19E-03	3.29E-09	2.8
H4H10442P2	173.1 ± 1.4	4.4	NB	NB	NB	NB
H4H10430P	105.8 ± 1.3	3.6	NB	NB	NB	NB
H4H10446P2	131.4 ± 1.2	3.8	NB	NB	NB	NB
H4H10468P2	95.5 ± 1	3.4	NB	NB	NB	NB
Control 1	90.2 ± 0.9	2.7	NB	NB	NB	NB

Table 7: Binding Characteristics of Anti-Activin A Antibodies to Activin AB at 25°C

Antibody	Amount of mAb Captured (RU ± SE)	50nM Ag Bound (RU)	k_a ($M^{-1}s^{-1}$)	k_d (s^{-1})	K_D (Molar)	$t_{1/2}$ (min)
H4H10423P	81.3 ± 0.5	14.7	6.13E+05	2.03E-02	3.31E-08	0.6
H4H10429P	110.7 ± 0.5	40.0	4.53E+06	1.03E-04	2.28E-11	111.7
H4H10432P2	101.2 ± 1.6	38.3	4.00E+06	2.27E-03	5.68E-10	5.1
H4H10436P2	107.5 ± 0.3	28.2	7.66E+06	2.61E-04	3.41E-11	44.2
H4H10440P2	73.7 ± 0.4	15.5	2.97E+06	5.26E-04	1.77E-10	22.0
H4H10442P2	133.3 ± 0.6	34.6	5.53E+06	1.77E-03	3.20E-10	6.5
H4H10430P	86.9 ± 0.5	33.0	1.17E+07	2.17E-04	1.85E-11	53.3
H4H10446P2	99.8 ± 0.4	31.9	4.99E+06	4.06E-03	8.15E-10	2.8
H4H10468P2	92.1 ± 0.2	34.7	3.76E+06	2.09E-03	5.56E-10	5.5
Control 1	83.5 ± 0.6	31.1	3.44E+06	2.83E-04	8.22E-11	40.9

H4H10452P2	5.8E-11			
H4H10468P2	3.9E-11	Block at High Conc.	2.3E-09	3.4E-09
H2aM10965N	3.5E-09			
mIgG isotype control	Non-Blocker			
hIgG isotype control	Non-Blocker	Non-Blocker	Non-Blocker	Non-Blocker
Control 1	8.3E-11	Non-Blocker	5.4E-10	1.1E-09

[00150] . The bioassay using A204/CAGAx12-Luc cells could also be stimulated by GDF8 (R&D Systems, Cat # 788-G8/CF) and GDF11 (R&D Systems, Cat # 1958-GD-010/CF). To test for functional inhibition of these ligands with activin A antibodies, the assay was performed using conditions described above but substituting GDF8 or GDF11 for the activating ligand, which resulted in EC50 values of 188 pM and 84 pM, respectively. In this assay, activation by a constant concentration of 0.50 nM GDF8 or 0.40 nM GDF11 was completely blocked by Control 4 with IC_{50} values of 298pM and 214pM, respectively. Using these same constant concentrations of ligands, no inhibition of either GDF8 or GDF11 was observed by the activin A antibodies, H4H10446P2 and H4H10430P, when tested at up to 100nM of the antibodies. On a separate day, the activin A antibodies H4H10429P and H4H10436P2 were tested for inhibition in this assay in the presence of constant concentrations of 250pM GDF8 or 250 pM GDF11, and no inhibition was observed after incubation of the cells with up to 150 nM of the tested activin A antibodies; GDF8 and GDF11 alone in this assay exhibited EC50 values of 124pM and 166pM, respectively. These data demonstrate that the Activin A antibodies H4H10446P2, H4H10430P, H4H10429P and H4H10436P2 do not functionally inhibit GDF8 or GDF11.

Example 7. Stimulation of Skeletal Muscle Hypertrophy using Activin A Antibodies

[00151] Skeletal muscle hypertrophy induced by administration of a myostatin-specific antagonist, the anti-GDF8 antibody H4H1657N2 (see US 2011-0293630 A1), or a combination of H4H1657N2 and different anti-Activin A antibodies, was evaluated in CB17 SCID mice. The extent of hypertrophy was measured relative to treatment with an isotype-matched control antibody. Also included in these studies was treatment with the extracellular domain of human ActRIIB, produced with a C-terminal human IgG1 Fc domain (Control 4, SEQ ID No: 227). Control 4 has been previously shown to induce muscle hypertrophy *in vivo* and also to bind and block the activity of multiple TGF-beta family member ligands (Souza, TA *et al.* Mol Endocrinol 22:2689-702 (2008); Lee, SJ *et al.* Proc Natl Acad Sci U.S.A. 102(50):18117-22 (2005)).

[00152] A total of eight anti-Activin A antibodies of the invention and Control 1 were tested in combination with H4H1657N2 or alone in eight studies, in comparison to isotype control, Control 4, H4H1657N2 alone, or Control 2 (an anti-Activin RIIB antibody having VH/VL of the antibody MOR08159 described in US 2010/0272734 A1) treatment groups. For the studies, male CB17 SCID mice (Taconic, #CB17SC-M) of approximately 10 weeks of age were divided evenly according to body weight into 6 groups of 5 mice. Groups of mice were treated in each