Supplemental Table 1S: Immunoassay information for serum chemistry, adipose and muscle tissue homogenate assay analysis.

Serum chemistry	Assay information
25-Hydroxy Vitamin D, RIA	IDS, AC-35F1
1,25-Dihydroxy Vitamin D, EIA	IDS, AC-62F1
Mouse PTH 1-84 ELISA Kit	Immutopics, 60-2305

Muscle and adipose tissue homogenate assay	Assay information
ATP Assay Kit (colorimetric/Fluorometric)	Abcam, ab83355
Mouse CD137 (TNFRSF9) ELISA kit	LifeSpan BioSciences, LS-F2852-1
Mouse COX2 ELISA kit	LifeSpan BioSciences, LS-F37124-1
Mouse IKK-alpha (phospho-Thr23) ELISA kit	LifeSpan BioSciences, LS-F1537-1
Mouse IL-1 beta ELISA Kit	RayBiotech, ELM-IL1b-CL
Mouse IL-6 ELISA Kit	RayBiotech, ELM-IL6
Mouse MYD88 ELISA kit	LifeSpan BioSciences, LS-F33219-1
Mouse NFKB p50 (phospho-Ser337) ELISA kit	Aviva Systems Biology, OKAG00322
Mouse total NFKB p50 ELISA kit	Mybiosource, MBS031656
Mouse NFKB p65 (phospho-Ser536) ELISA kit	RayBiotech, PEL-NFKBP65-S536-T-1
Mouse total NFKB p65 ELISA kit	RayBiotech, PEL-NFKBP65-S536-T-1
Mouse Prostagladin F2 alpha ELISA kit	MyBioSource, MBS266867
Mouse TBX1 ELISA kit	Antibodies-online, ABIN6221756
Mouse TLR2 ELISA kit	Abcam, ab224880
Mouse TMEM26 ELISA kit	MyBiosource, MBS9319338
Mouse TNF-alpha ELISA Kit	RayBiotech, ELM-TNFa
Mouse TRAF6 ELISA kit	LifeSpan BioSciences, LS-F53451
Mouse Ucp1 ELISA kits	Aviva Systems Biology, OKCD02970
Mouse Ucp2 ELISA kits	Aviva Systems Biology, OKEH05261
Mouse Ucp3 ELISA kits	Aviva Systems Biology, OKEH05259
Total Collagen Assay Kit	Abcam, ab222942

Supplemental Table 2S: PCR primer information.

Gene	Forward primer sequence	Reverse primer sequence
Atrogin-1	CAGCTTCGTGAGCGACCTC	GGCAGTCGAGAAGTCCAGTC
CD137	CGTGCAGAACTCCTGTGATAAC	GTCCACCTATGCTGGAGAAGG
Cox2	AACCCAGGGGATCGAGTGT	CGCAGCTCAGTGTTTGGGAT
Igf1	GTGGGGGCTCGTGTTTCTC	GATCACCGTGCAGTTTTCCA
Murf-1	GTGTGAGGTGCCTACTTGCTC	GCTCAGTCTTCTGTCCTTGGA
MyD88	TCATGTTCTCCATACCCTTGGT	AAACTGCGAGTGGGGTCAG
MyoD	CCACTCCGGGACATAGACTTG	AAAAGCGCAGGTCTGGTGAG
Myostatin	AGTGGATCTAAATGAGGGCAGT	GTTTCCAGGCGCAGCTTAC
Pax7	TCTCCAAGATTCTGTGCCGAT	CGGGGTTCTCTCTCTTATACTCC
PGF2α synthase	TGGTGTGCTGCGAGTGATG	CAGGTACCAAGGCTGGATGTG
Tbx1	CTGTGGGACGAGTTCAATCAG	TTGTCATCTACGGGCACAAAG
Tmem26	TTCCTGTTGCATTCCCTGGTC	GCCGGAGAAAGCCATTTGT
Tlr2	GCAAACGCTGTTCTGCTCAG	AGGCGTCTCCCTCTATTGTATT
Traf6	AAAGCGAGAGATTCTTTCCCTG	ACTGGGGACAATTCACTAGAGC
Gapdh (internal control)	AGGTCGGTGTGAACGGATTTG	TGTAGACCATGTAGTTGAGGTCA

Supplemental Table 3S: Serum and blood chemistry of mice. Twelve-month-old, male, wild type (WT) and $Ctns^{-/-}$ mice were treated with $25(OH)D_3$ (75 μg/kg per day) or $1,25(OH)_2D_3$ (60 ng/kg per day) versus ethylene glycol as vehicle for 6 weeks. Six groups of mice were included: WT+Vehicle, WT+$25(OH)D_3$, WT++$1,25(OH)_2D_3$, $Ctns^{-/-}$+Vehicle, $Ctns^{-/-}$+$25(OH)D_3$, $Ctns^{-/-}$+$1,25(OH)_2D_3$. All mice were fed *ad libitum*. Data are expressed as mean SEM. $^{A}p<0.05$, significantly higher in $Ctns^{-/-}$+Vehicle, $Ctns^{-/-}$+$25(OH)D_3$ or $Ctns^{-/-}$+$1,25(OH)_2D_3$ versus WT+Vehicle, WT+$25(OH)D_3$ or WT+$1,25(OH)_2D_3$, respectively. $^{B}p<0.05$, significantly lower in $Ctns^{-/-}$+Vehicle, $Ctns^{-/-}$+$25(OH)D_3$ or $Ctns^{-/-}$+$1,25(OH)_2D_3$ versus WT+Vehicle, WT+$25(OH)D_3$ or WT+$1,25(OH)_2D_3$, respectively. $^{c}p<0.05$, significantly difference between $Ctns^{-/-}$+$25(OH)D_3$ versus $Ctns^{-/-}$+Vehicle or $Ctns^{-/-}$+$1,25(OH)_2D_3$ versus $Ctns^{-/-}$+Vehicle.

	WT + Vehicle n = 8	WT + $25(OH)D_3$ n = 8	WT + $1,25(OH)_2D_3$ n = 8	$Ctns^{-/-}$ + Vehicle n = 8	$Ctns^{-/-}$ + $25(OH)D_3$ n = 8	$Ctns^{-/-}$ + $1,25(OH)_2D_3$ n = 8
BUN (mg/dL)	32.4 ± 5.5	35.6 ± 6.2	37.5 ± 4.5	79.6 ± 14.6^{A}	73.2 ± 12.2^{A}	71.3 ± 13.7^{A}
Creatinine (mg/dL)	< 0.2	< 0.2	< 0.2	0.7 ± 0.2^{A}	0.5 ± 0.2^{A}	0.9 ± 0.3^{A}
Bicarbonate (mmol/L)	27.8 ± 1.1	27.3 ± 0.6	26.9 ± 0.8	26.8 ± 1.1	27.6 ± 1.2	27.6 ± 2.1
$25(OH)D_3$ (ng/mL)	113.2 ± 12.3	128.3 ± 21.3	109.3 ± 18.3	43.5 ± 15.4^{B}	108.4 ± 18.4^{C}	58.4 ± 9.8^{B}
$1,25(OH)_2D_3$ (pg/mL)	298.4 ± 23.4	289.4 ± 26.5	301.5 ± 32.5	105.6 ± 24.8^{B}	185.6 ± 25.3^{B,C}	287.4 ± 26.1^{C}

Supplemental Table 4S: List of differential expressed genes in gastrocnemius muscle from $Ctns^{-/-}$+Vehicle versus WT+Vehicle mice

Gene ID	Expression (WT + Vehicle)	Expression ($Ctns^{-/-}$ + Vehicle)	log2 Fold Change ($Ctns^{-/-}$ + Vehicle / WT + Vehicle)	P - adjusted	Up/Down-Regulation	P value	Symbol	Desciption
17167	2.78	40.63	3.87	1.46E-15	Up	1.12E-17	Marco	macrophage receptor with collagenous structure
12518	4.76	65.27	3.78	2.73E-20	Up	1.59E-22	Cd79a	CD79A antigen (immunoglobulin-associated alpha)
12482	2.42	31.37	3.70	5.09E-13	Up	4.96E-15	Ms4a1	membrane-spanning 4-domains, subfamily A, member 1
69169	2.40	29.97	3.64	1.55E-12	Up	1.55E-14	Faim3	Fas apoptotic inhibitory molecule 3
12483	4.40	42.36	3.27	7.07E-13	Up	6.93E-15	Cd22	CD22 antigen
16994	3.92	37.00	3.24	2.66E-12	Up	2.68E-14	Ltb	lymphotoxin B
208154	2.26	20.99	3.22	3.43E-09	Up	4.60E-11	Btla	B and T lymphocyte associated
12478	3.55	30.15	3.09	2.55E-10	Up	3.01E-12	Cd19	CD19 antigen
14128	4.23	35.53	3.07	3.15E-11	Up	3.42E-13	Fcer2a	Fc receptor, IgE, low affinity II, alpha polypeptide
12902	2.54	20.99	3.05	1.48E-08	Up	2.21E-10	Cr2	complement receptor 2
108956	2.57	21.17	3.04	1.77E-08	Up	2.68E-10	Apol7c	apolipoprotein L 7c
100048884	2.21	18.13	3.03	5.34E-08	Up	8.57E-10	LOC100048884	novel member of the major urinary protein (Mup) gene family
20299	3.19	25.90	3.02	2.87E-09	Up	3.75E-11	Ccl22	chemokine (C-C motif) ligand 22
83408	5.82	45.36	2.96	1.13E-12	Up	1.11E-14	Gimap3	GTPase, IMAP family member 3
16818	2.88	21.63	2.91	5.22E-08	Up	8.36E-10	Lck	lymphocyte protein tyrosine kinase
15985	4.80	34.82	2.86	3.22E-10	Up	3.81E-12	Cd79b	CD79B antigen
272382	3.49	25.03	2.84	2.38E-08	Up	3.65E-10	Spib	Spi-B transcription factor (Spi-1/PU.1 related)
20343	6.04	41.00	2.76	4.41E-11	Up	4.81E-13	Sell	selectin, lymphocyte
54352	11.90	79.59	2.74	2.44E-18	Up	1.54E-20	Irx5	Iroquois related homeobox 5 (Drosophila)
60361	2.12	13.78	2.70	4.39E-06	Up	9.19E-08	Ms4a4b	membrane-spanning 4-domains, subfamily A, member 4B
211623	4.62	28.81	2.64	1.34E-07	Up	2.31E-09	Plac9a	placenta specific 9a
15002	4.74	28.67	2.60	6.75E-08	Up	1.11E-09	H2-Ob	histocompatibility 2, O region beta locus
243958	2.76	16.47	2.58	5.61E-06	Up	1.22E-07	Siglecg	sialic acid binding Ig-like lectin G
12525	3.12	18.28	2.55	4.53E-06	Up	9.54E-08	Cd8a	CD8 antigen, alpha chain
320484	4.68	27.38	2.55	1.14E-07	Up	1.93E-09	Rasal3	RAS protein activator like 3
17068	2.66	15.07	2.50	1.30E-05	Up	3.04E-07	Ly6d	lymphocyte antigen 6 complex, locus D
23833	10.80	60.32	2.48	4.31E-13	Up	4.18E-15	Cd52	CD52 antigen
55985	6.64	35.72	2.43	2.56E-08	Up	3.94E-10	Cxcl13	chemokine (C-X-C motif) ligand 13
21952	110.93	596.38	2.43	1.96E-103	Up	1.83E-106	Tnni1	troponin I, skeletal, slow 1
19354	16.29	86.86	2.41	2.81E-17	Up	1.92E-19	Rac2	RAS-related C3 botulinum substrate 2
16428	2.32	12.34	2.41	6.06E-05	Up	1.64E-06	Itk	IL2 inducible T cell kinase
13009	96.76	513.96	2.41	9.82E-88	Up	1.32E-90	Csrp3	cysteine and glycine-rich protein 3
381835	4.30	22.68	2.40	2.65E-06	Up	5.33E-08	Gm1078	predicted gene 1078
216859	4.72	24.62	2.38	2.56E-06	Up	5.14E-08	Acap1	ArfGAP with coiled-coil, ankyrin repeat and PH domains 1
22780	4.07	21.14	2.38	8.44E-06	Up	1.89E-07	Ikzf3	IKAROS family zinc finger 3
21955	315.32	1628.27	2.37	3.13E-240	Up	7.32E-244	Tnnt1	troponin T1, skeletal, slow
15430	13.74	70.40	2.36	2.11E-13	Up	2.01E-15	Hoxd10	homeobox D10
16197	4.24	21.70	2.36	4.55E-06	Up	9.69E-08	Il7r	interleukin 7 receptor
170942	51.00	259.37	2.35	5.06E-45	Up	1.54E-47	Erdr1	erythroid differentiation regulator 1
12504	4.57	22.88	2.32	4.39E-06	Up	9.22E-08	Cd4	CD4 antigen
98752	1.60	7.85	2.30	0.000318645	Up	1.03E-05	Fcrla	Fc receptor-like A
791403	15.59	76.03	2.29	1.80E-14	Up	1.55E-16	D830015G02Rik	RIKEN cDNA D830015G02 gene
72049	2.30	11.17	2.28	0.000222183	Up	6.98E-06	Tnfrsf13c	tumor necrosis factor receptor superfamily, member 13c
21924	194.43	939.95	2.27	1.06E-149	Up	6.17E-153	Tnnc1	troponin C, cardiac/slow skeletal
60504	2.92	13.90	2.25	0.000129905	Up	3.82E-06	Il21r	interleukin 21 receptor
140781	1396.81	6539.09	2.23	0	Up	0	Myh7	myosin, heavy polypeptide 7, cardiac muscle, beta
15000	2.27	10.51	2.21	0.000415685	Up	1.40E-05	H2-DMb2	histocompatibility 2, class II, locus Mb2
18985	2.63	12.08	2.20	0.00036109	Up	1.19E-05	Pou2af1	POU domain, class 2, associating factor 1
18507	1.58	7.19	2.18	0.000768127	Up	2.82E-05	Pax5	paired box gene 5
13507	1.58	7.13	2.17	0.000839553	Up	3.14E-05	Dsc3	desmocollin 3
12143	2.54	11.36	2.16	0.000450703	Up	1.55E-05	Blk	B lymphoid kinase
19265	3.52	15.56	2.14	0.000172816	Up	5.27E-06	Ptprcap	protein tyrosine phosphatase, receptor type, C polypeptide-associated protein
12775	4.18	18.18	2.12	0.000110252	Up	3.18E-06	Ccr7	chemokine (C-C motif) receptor 7
29813	92.89	390.94	2.07	4.41E-53	Up	1.11E-55	Zfp385a	zinc finger protein 385A
16797	2.15	8.91	2.05	0.001612755	Up	6.51E-05	Lat	linker for activation of T cells
16069	5.80	23.87	2.04	4.37E-05	Up	1.15E-06	Igj	immunoglobulin joining chain
74734	2.18	8.91	2.03	0.001850485	Up	7.56E-05	Rhoh	ras homolog gene family, member H

229499	1.80	7.32	2.02	0.002366746	Up	0.000100427	Fcrl1	Fc receptor-like 1
17906	438.75	1750.73	2.00	2.25E-215	Up	9.20E-219	Myl2	myosin, light polypeptide 2, regulatory, cardiac, slow
20849	2.44	9.67	1.99	0.002033903	Up	8.40E-05	Stat4	signal transducer and activator of transcription 4
237256	1.79	7.08	1.98	0.003112721	Up	0.000138985	Zc3h12d	zinc finger CCCH type containing 12D
100041546	1.80	7.02	1.96	0.00353099	Up	0.00016302	Ly6c2	lymphocyte antigen 6 complex, locus C2
19419	3.93	15.24	1.96	0.001011598	Up	3.89E-05	Rasgrp1	RAS guanyl releasing protein 1
12145	4.46	17.02	1.93	0.000625212	Up	2.22E-05	Cxcr5	chemokine (C-X-C motif) receptor 5
666661	1.45	5.53	1.93	0.004309114	Up	0.000206741	Gm8221	apolipoprotein L 7c pseudogene
15438	58.26	221.67	1.93	1.47E-30	Up	5.47E-33	Hoxd9	homeobox D9
14025	2.07	7.71	1.90	0.004876567	Up	0.000236528	Bcl11a	B cell CLL/lymphoma 11A (zinc finger protein)
12502	1.77	6.56	1.89	0.005776509	Up	0.000289618	Cd3g	CD3 antigen, gamma polypeptide
21414	9.97	36.79	1.88	4.60E-06	Up	9.85E-08	Tcf7	transcription factor 7, T cell specific
20307	5.03	18.49	1.88	0.000531244	Up	1.86E-05	Ccl8	chemokine (C-C motif) ligand 8
276891	6.33	22.87	1.85	0.000211951	Up	6.61E-06	Timd4	T cell immunoglobulin and mucin domain containing 4
100503872	5.07	18.13	1.84	0.00105291	Up	4.07E-05	Hotair	HOX transcript antisense RNA (non-protein coding)
16408	10.87	38.76	1.83	4.84E-06	Up	1.04E-07	Itgal	integrin alpha L
74131	8.27	29.41	1.83	4.84E-05	Up	1.29E-06	Sash3	SAM and SH3 domain containing 3
14421	13.08	46.21	1.82	3.90E-07	Up	6.99E-09	B4galnt1	beta-1,4-N-acetyl-galactosaminyl transferase 1
14663	1.38	4.89	1.82	0.008409241	Up	0.0004545	Glycam1	glycosylation dependent cell adhesion molecule 1
381091	2.03	7.16	1.82	0.008191077	Up	0.000438885	H2-Eb2	histocompatibility 2, class II antigen E beta2
12721	31.29	110.28	1.82	9.87E-14	Up	8.87E-16	Coro1a	coronin, actin binding protein 1A
64380	1.73	6.07	1.81	0.009317683	Up	0.000511757	Ms4a4c	membrane-spanning 4-domains, subfamily A, member 4C
19264	29.97	103.03	1.78	1.76E-13	Up	1.65E-15	Ptprc	protein tyrosine phosphatase, receptor type, C
66949	3.09	10.47	1.76	0.00780272	Up	0.000414433	Trim59	tripartite motif-containing 59
110168	2.01	6.79	1.75	0.012377034	Up	0.000720242	Gpr18	G protein-coupled receptor 18
20304	3.77	12.72	1.75	0.005961301	Up	0.000301666	Ccl5	chemokine (C-C motif) ligand 5
18784	23.79	79.82	1.75	2.20E-10	Up	2.58E-12	Pla2g5	phospholipase A2, group V
56696	4.30	14.30	1.73	0.003789593	Up	0.000176728	Gpr132	G protein-coupled receptor 132
100039008	7.58	25.00	1.72	0.00042202	Up	1.43E-05	Mup10	major urinary protein 10
12481	4.91	15.95	1.70	0.003152275	Up	0.000140985	Cd2	CD2 antigen
12507	2.37	7.70	1.70	0.016196104	Up	0.000985965	Cd5	CD5 antigen
16182	2.66	8.60	1.70	0.014034701	Up	0.000831449	Il18r1	interleukin 18 receptor 1
20715	2.34	7.57	1.70	0.016220325	Up	0.000989962	Serpina3g	serine (or cysteine) peptidase inhibitor, clade A, member 3G
15437	94.00	301.37	1.68	1.53E-34	Up	5.27E-37	Hoxd8	homeobox D8
12493	12.05	38.33	1.67	2.03E-05	Up	4.97E-07	Cd37	CD37 antigen
78826	4.01	12.64	1.66	0.009670795	Up	0.000540747	P2ry10	purinergic receptor P2Y, G-protein coupled 10
16364	13.02	41.01	1.66	1.61E-05	Up	3.82E-07	Irf4	interferon regulatory factor 4
246177	10.80	33.96	1.65	9.49E-05	Up	2.69E-06	Myo1g	myosin IG
215243	5.56	17.48	1.65	0.003248655	Up	0.00014714	Traf3ip3	TRAF3 interacting protein 3
239790	203.38	639.14	1.65	6.09E-67	Up	1.07E-69	Ostn	osteocrin
14357	5.60	17.60	1.65	0.003501517	Up	0.000161046	Dtx1	deltex 1 homolog (Drosophila)
22778	12.72	39.94	1.65	2.33E-05	Up	5.74E-07	Ikzf1	IKAROS family zinc finger 1
66755	9.50	29.70	1.65	0.000276626	Up	8.80E-06	4933415F23Rik	RIKEN cDNA 4933415F23 gene
59069	637.59	1985.52	1.64	1.08E-183	Up	5.06E-187	Tpm3	tropomyosin 3, gamma
27273	3402.34	10583.66	1.64	0	Up	0	Pdk4	pyruvate dehydrogenase kinase, isoenzyme 4
74015	2.98	9.26	1.63	0.018525938	Up	0.001168887	Fcho1	FCH domain only 1
20672	58.06	179.45	1.63	3.07E-19	Up	1.88E-21	Sox18	SRY-box containing gene 18
207839	3.23	9.90	1.62	0.016967073	Up	0.001042802	Galnt6	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 6
76074	1.27	3.88	1.61	0.024953785	Up	0.001693084	Gbp8	guanylate-binding protein 8
70450	2.28	6.97	1.61	0.026346158	Up	0.001811462	Unc13d	unc-13 homolog D (C. elegans)
213439	2.25	6.83	1.60	0.027779752	Up	0.001953809	Gpr174	G protein-coupled receptor 174
15001	1.96	5.94	1.60	0.030084439	Up	0.002152777	H2-Oa	histocompatibility 2, O region alpha locus
234695	3.99	12.00	1.59	0.016220325	Up	0.00099028	Rltpr	RGD motif, leucine rich repeats, tropomodulin domain and proline-rich containing
15397	5.86	17.52	1.58	0.005906417	Up	0.000298506	Hoxa11as	HOXA11 antisense RNA (non-protein coding)
16842	3.28	9.75	1.57	0.023666061	Up	0.001578842	Lef1	lymphoid enhancer binding factor 1
12500	1.36	4.03	1.57	0.029849568	Up	0.002132485	Cd3d	CD3 antigen, delta polypeptide
17897	1042.26	3087.67	1.57	4.31E-218	Up	1.51E-221	Myl3	myosin, light polypeptide 3
12802	3.26	9.49	1.54	0.028381393	Up	0.002009375	Cnr2	cannabinoid receptor 2 (macrophage)
227929	10.42	30.30	1.54	0.000683345	Up	2.48E-05	Cytip	cytohesin 1 interacting protein
320495	2.23	6.47	1.54	0.039057882	Up	0.002969783	Ipcef1	interaction protein for cytohesin exchange factors 1
240754	2.55	7.39	1.53	0.036905773	Up	0.002772295	Lax1	lymphocyte transmembrane adaptor 1
70719	33.69	97.50	1.53	1.33E-09	Up	1.68E-11	Hmha1	histocompatibility (minor) HA-1
20737	4.85	13.94	1.52	0.015210863	Up	0.000911782	Spn	sialophorin
328833	2.59	7.41	1.52	0.040572879	Up	0.003106964	Treml2	triggering receptor expressed on myeloid cells-like 2
108105	2.84	8.03	1.50	0.038768094	Up	0.002939342	B3gnt5	UDP-GlcNAc:betaGal beta-1,3-N-acetylglucosaminyltransferase 5

12614	2.53	7.10	1.49	0.046292391	Up	0.003636302	Celsr1	cadherin, EGF LAG seven-pass G-type receptor 1 (flamingo homolog, Drosophila)
320139	4.79	13.47	1.49	0.017864567	Up	0.001116731	Ptpn7	protein tyrosine phosphatase, non-receptor type 7
72891	1.27	3.56	1.49	0.044078445	Up	0.003432011	Xlr4c	X-linked lymphocyte-regulated 4C
244233	1.18	3.31	1.49	0.045066499	Up	0.003522094	Cd163l1	CD163 molecule-like 1
59006	317.70	886.13	1.48	1.41E-73	Up	2.38E-76	Myoz2	myozenin 2
268857	6.42	17.77	1.47	0.010693585	Up	0.000609172	Nlrc3	NLR family, CARD domain containing 3
11938	1526.67	4205.19	1.46	3.79E-269	Up	6.64E-273	Atp2a2	ATPase, Ca++ transporting, cardiac muscle, slow twitch 2
16186	24.28	66.87	1.46	1.39E-06	Up	2.65E-08	Il2rg	interleukin 2 receptor, gamma chain
11464	659.80	1805.17	1.45	8.85E-134	Up	5.68E-137	Actc1	actin, alpha, cardiac muscle 1
20491	5.81	15.80	1.44	0.019095864	Up	0.001211534	Sla	src-like adaptor
224065	3.80	10.29	1.44	0.040717601	Up	0.0031228	Uts2b	urotensin 2B
215632	5.48	14.81	1.43	0.023942687	Up	0.00160149	Psd4	pleckstrin and Sec7 domain containing 4
242248	8.67	23.40	1.43	0.004377	Up	0.000210253	Bank1	B cell scaffold protein with ankyrin repeats 1
108670	10.66	28.73	1.43	0.002036684	Up	8.43E-05	Epsti1	epithelial stromal interaction 1 (breast)
12722	3.79	10.21	1.43	0.042406734	Up	0.003277098	Clca1	chloride channel calcium activated 1
26897	8.73	23.49	1.43	0.006013225	Up	0.000305347	Acot1	acyl-CoA thioesterase 1
17916	9.99	26.74	1.42	0.002991237	Up	0.000132862	Myo1f	myosin IF
13611	5.41	14.42	1.42	0.024019707	Up	0.001609445	S1pr4	sphingosine-1-phosphate receptor 4
17153	24.81	66.13	1.41	1.82E-06	Up	3.52E-08	Mal	myelin and lymphocyte protein, T cell differentiation protein
20345	19.69	52.47	1.41	3.45E-05	Up	8.86E-07	Selplg	selectin, platelet (p-selectin) ligand
18987	5.15	13.65	1.41	0.03174414	Up	0.002306745	Pou2f2	POU domain, class 2, transcription factor 2
69165	19.09	50.09	1.39	7.46E-05	Up	2.08E-06	Cd209b	CD209b antigen
433294	328.96	857.56	1.38	1.35E-63	Up	2.67E-66	Mettl21c	methyltransferase like 21C
232975	4.79	12.45	1.38	0.043316753	Up	0.003362592	Atp1a3	ATPase, Na+/K+ transporting, alpha 3 polypeptide
16205	14.77	38.36	1.38	0.000429372	Up	1.47E-05	Gimap1	GTPase, IMAP family member 1
54204	9.27	24.01	1.37	0.006238418	Up	0.000321012	1-Sep	septin 1
320435	7.65	19.44	1.35	0.016835295	Up	0.001032738	Rinl	Ras and Rab interactor-like
381836	286.25	725.49	1.34	2.33E-46	Up	6.79E-49	Sbk2	SH3-binding domain kinase family, member 2
12265	7.04	17.74	1.33	0.02756234	Up	0.001930212	Ciita	class II transactivator
15170	16.98	42.57	1.33	0.000375781	Up	1.24E-05	Ptpn6	protein tyrosine phosphatase, non-receptor type 6
20613	7.74	19.31	1.32	0.026142104	Up	0.001795906	Snai1	snail homolog 1 (Drosophila)
12984	31.68	78.42	1.31	2.77E-06	Up	5.61E-08	Csf2rb2	colony stimulating factor 2 receptor, beta 2, low-affinity (granulocyte-macrophage)
76884	53.95	132.92	1.30	1.02E-10	Up	1.14E-12	Cyfip2	cytoplasmic FMR1 interacting protein 2
236312	8.86	21.72	1.29	0.01393313	Up	0.000824619	Pyhin1	pyrin and HIN domain family, member 1
101602	6.04	14.76	1.29	0.049761791	Up	0.003958753	AI467606	expressed sequence AI467606
105827	17.74	43.26	1.29	0.000681536	Up	2.47E-05	Amigo2	adhesion molecule with Ig like domain 2
434223	12.19	29.70	1.28	0.005631378	Up	0.000281027	Gm1966	predicted gene 1966
17528	303.86	739.91	1.28	6.30E-52	Up	1.66E-54	Mpz	myelin protein zero
27261	8.02	19.46	1.28	0.030376839	Up	0.002177246	Dok3	docking protein 3
217310	14.71	35.70	1.28	0.002009655	Up	8.29E-05	Hid1	HID1 domain containing
114570	9.86	23.92	1.28	0.011624277	Up	0.000672061	Crip3	cysteine-rich protein 3
13363	7.70	18.59	1.27	0.03589376	Up	0.002681609	Dhh	desert hedgehog
381310	14.83	35.74	1.27	0.003247058	Up	0.000146879	6330403A02Rik	RIKEN cDNA 6330403A02 gene
171207	15.45	37.14	1.27	0.002526086	Up	0.000108663	Arhgap4	Rho GTPase activating protein 4
16565	18.27	43.68	1.26	0.000890801	Up	3.37E-05	Kif21b	kinesin family member 21B
226652	21.90	52.17	1.25	0.000317625	Up	1.03E-05	Arhgap30	Rho GTPase activating protein 30
232174	41.55	98.96	1.25	1.92E-07	Up	3.33E-09	Cyp26b1	cytochrome P450, family 26, subfamily b, polypeptide 1
630499	11.79	27.86	1.24	0.009615448	Up	0.000535969	H2-K2	histocompatibility 2, K region locus 2
14612	22.51	52.99	1.24	0.000232064	Up	7.31E-06	Gja4	gap junction protein, alpha 4
66402	12.74	29.91	1.23	0.008302646	Up	0.00044777	Sln	sarcolipin
105727	7.89	18.51	1.23	0.03778231	Up	0.00284696	Slc38a1	solute carrier family 38, member 1
269116	8.19	19.09	1.22	0.032620994	Up	0.002397119	Nfasc	neurofascin
53374	9.89	22.97	1.22	0.026445854	Up	0.001821404	Chst3	carbohydrate (chondroitin 6/keratan) sulfotransferase 3
545030	18.21	42.03	1.21	0.001569314	Up	6.30E-05	Wdfy4	WD repeat and FYVE domain containing 4
20963	41.58	95.63	1.20	5.43E-07	Up	9.85E-09	Syk	spleen tyrosine kinase
67263	20.16	46.36	1.20	0.000771864	Up	2.84E-05	Zswim6	zinc finger SWIM-type containing 6
23880	10.10	23.19	1.20	0.020881979	Up	0.001344354	Fyb	FYN binding protein
78255	17.28	39.63	1.20	0.002622561	Up	0.000113514	Ralgps2	Ral GEF with PH domain and SH3 binding motif 2
19153	79.27	180.29	1.19	8.08E-12	Up	8.39E-14	Prx	periaxin
20665	17.93	40.53	1.18	0.003219233	Up	0.000145244	Sox10	SRY-box containing gene 10
72121	10.08	22.73	1.17	0.026367646	Up	0.001814478	Dennd2d	DENN/MADD domain containing 2D
20556	16.63	37.36	1.17	0.004592253	Up	0.000221665	Slfn2	schlafen 2
260299	22.04	49.33	1.16	0.00095324	Up	3.64E-05	Cadm4	cell adhesion molecule 4
20750	13.94	31.05	1.16	0.011067277	Up	0.000634981	Spp1	secreted phosphoprotein 1
629147	211.63	470.49	1.15	1.93E-28	Up	7.90E-31	Ctxn3	cortexin 3

432530	13.95	30.77	1.14	0.013211663	Up	0.000778064	Adcy1	adenylate cyclase 1
23893	64.43	141.38	1.13	5.53E-09	Up	7.72E-11	Grem2	gremlin 2 homolog, cysteine knot superfamily (Xenopus laevis)
12508	18.55	40.68	1.13	0.005439508	Up	0.000268696	Cd53	CD53 antigen
56642	405.84	889.06	1.13	3.52E-45	Up	1.05E-47	Ankrd2	ankyrin repeat domain 2 (stretch responsive muscle)
252864	10.05	21.85	1.12	0.040482978	Up	0.003097717	Dusp15	dual specificity phosphatase-like 15
242702	318.15	691.67	1.12	6.97E-40	Up	2.20E-42	Myom3	myomesin family, member 3
13717	90.75	197.06	1.12	8.13E-12	Up	8.49E-14	Eln	elastin
11829	195.95	421.88	1.11	1.93E-24	Up	9.33E-27	Aqp4	aquaporin 4
17357	13.59	28.94	1.09	0.022313163	Up	0.001463841	Marcksl1	MARCKS-like 1
12561	144.95	307.74	1.09	7.30E-16	Up	5.46E-18	Cdh4	cadherin 4
75219	150.16	317.29	1.08	2.53E-17	Up	1.70E-19	Dusp18	dual specificity phosphatase 18
72690	13.59	28.67	1.08	0.024824097	Up	0.001676675	Grrp1	glycine/arginine rich protein 1
100182	32.90	69.21	1.07	0.000592575	Up	2.09E-05	Akna	AT-hook transcription factor
84094	151.47	318.29	1.07	5.07E-17	Up	3.55E-19	Plvap	plasmalemma vesicle associated protein
13497	65.05	136.35	1.07	9.41E-08	Up	1.57E-09	Drp2	dystrophin related protein 2
17472	42.58	88.89	1.06	8.78E-05	Up	2.47E-06	Gbp4	guanylate binding protein 4
238803	16.82	35.07	1.06	0.017054641	Up	0.001053161	Zfp366	zinc finger protein 366
13107	89.13	185.06	1.05	3.51E-10	Up	4.18E-12	Cyp2f2	cytochrome P450, family 2, subfamily f, polypeptide 2
105855	27.31	56.44	1.05	0.001857498	Up	7.61E-05	Nckap1l	NCK associated protein 1 like
94176	21.71	44.80	1.04	0.00577526	Up	0.000288881	Dock2	dedicator of cyto-kinesis 2
24047	13.32	27.30	1.04	0.047637564	Up	0.003761958	Ccl19	chemokine (C-C motif) ligand 19
12983	39.25	80.18	1.03	0.000239969	Up	7.58E-06	Csf2rb	colony stimulating factor 2 receptor, beta, low-affinity (granulocyte-macrophage)
14859	23.66	48.30	1.03	0.006120632	Up	0.000311515	Gsta3	glutathione S-transferase, alpha 3
14199	4115.79	8373.86	1.02	4.94E-219	Up	1.44E-222	Fhl1	four and a half LIM domains 1
17196	269.70	548.31	1.02	5.12E-26	Up	2.33E-28	Mbp	myelin basic protein
214791	20.80	42.18	1.02	0.010896063	Up	0.00062325	Sertad4	SERTA domain containing 4
237436	20.11	40.29	1.00	0.018688114	Up	0.001181301	Gas2l3	growth arrest-specific 2 like 3

Supplemental Table 4S: List of differential expressed genes in gastrocnemius muscle from $Ctns^{-/-}$+Vehicle versus WT+Vehicle mice

Gene ID	Expression (WT + Vehicle)	Expression ($Ctns^{-/-}$ + Vehicle)	log2 Fold Change ($Ctns^{-/-}$ + Vehicle / WT + Vehicle)	P - adjusted	Up/Down-Regulation	P value	Symbol	Desciption
16658	480.81	240.00	-1.00	6.55E-22	Down	3.48E-24	Mafb	v-maf musculoaponeurotic fibrosarcoma oncogene family, protein B (avian)
68149	300.79	150.09	-1.00	3.87E-14	Down	3.39E-16	Otub2	OTU domain, ubiquitin aldehyde binding 2
77059	33.92	16.92	-1.00	0.036060923	Down	0.002698308	4931408D14Rik	RIKEN cDNA 4931408D14 gene
14373	215.48	106.60	-1.02	5.96E-11	Down	6.54E-13	G0s2	G0/G1 switch gene 2
57915	559.06	275.19	-1.02	1.53E-27	Down	6.33E-30	Tbc1d1	TBC1 domain family, member 1
14561	85.57	41.72	-1.04	0.000172732	Down	5.25E-06	Gdf11	growth differentiation factor 11
12683	31.92	15.49	-1.04	0.027083476	Down	0.001873222	Cidea	cell death-inducing DNA fragmentation factor, alpha subunit-like effector A
104885	46.63	22.62	-1.04	0.00711274	Down	0.000374049	Tmem179	transmembrane protein 179
93761	54.06	26.17	-1.05	0.002297514	Down	9.68E-05	Smarca1	SWI/SNF related, matrix associated, actin dependent regulator of chromatin, subfamily a, member 1
24066	178.73	86.36	-1.05	3.31E-09	Down	4.39E-11	Spry4	sprouty homolog 4 (Drosophila)
67122	220.17	106.38	-1.05	1.42E-11	Down	1.50E-13	Nrarp	Notch-regulated ankyrin repeat protein
15425	118.54	57.26	-1.05	2.05E-06	Down	4.01E-08	Hoxc6	homeobox C6
18766	25.20	12.11	-1.06	0.045426204	Down	0.003558161	Pkdrej	polycystic kidney disease (polycystin) and REJ (sperm receptor for egg jelly homolog, sea urchin)
22695	344.63	164.71	-1.07	1.03E-18	Down	6.43E-21	Zfp36	zinc finger protein 36
60510	42.47	20.25	-1.07	0.006767721	Down	0.000354325	Syt9	synaptotagmin IX
15925	3103.47	1462.00	-1.09	9.41E-120	Down	7.14E-123	Ide	insulin degrading enzyme
72514	28.09	13.22	-1.09	0.029120571	Down	0.002070203	Fgfbp3	fibroblast growth factor binding protein 3
18787	103.74	47.92	-1.11	2.31E-06	Down	4.63E-08	Serpine1	serine (or cysteine) peptidase inhibitor, clade E, member 1
74155	989.66	450.30	-1.14	1.08E-52	Down	2.78E-55	Errfi1	ERBB receptor feedback inhibitor 1
63953	729.31	331.24	-1.14	6.97E-40	Down	2.20E-42	Dusp10	dual specificity phosphatase 10
18162	334.93	151.55	-1.14	1.66E-20	Down	9.47E-23	Npr3	natriuretic peptide receptor 3
396184	29.35	13.23	-1.15	0.014931571	Down	0.000892426	Flrt1	fibronectin leucine rich transmembrane protein 1
193740	368.01	164.77	-1.16	1.55E-22	Down	7.86E-25	Hspa1a	heat shock protein 1A
72119	75.56	33.76	-1.16	4.39E-05	Down	1.16E-06	Tpx2	TPX2, microtubule-associated protein homolog (Xenopus laevis)
15511	259.61	113.71	-1.19	7.72E-15	Down	6.35E-17	Hspa1b	heat shock protein 1B
12700	445.00	193.40	-1.20	5.36E-23	Down	2.69E-25	Cish	cytokine inducible SH2-containing protein
623281	32.40	13.92	-1.22	0.007749873	Down	0.000411173	Gm11756	predicted gene 11756
67664	26.05	11.11	-1.23	0.016718606	Down	0.001024604	Rnf125	ring finger protein 125
17873	186.09	78.41	-1.25	1.79E-13	Down	1.69E-15	Gadd45b	growth arrest and DNA-damage-inducible 45 beta
16007	494.82	208.01	-1.25	6.94E-33	Down	2.51E-35	Cyr61	cysteine rich protein 61
71198	889.25	366.83	-1.28	7.25E-59	Down	1.61E-61	Otud1	OTU domain containing 1
217369	20.22	8.32	-1.28	0.022742384	Down	0.001500182	Uts2r	urotensin 2 receptor
14284	646.60	263.68	-1.29	1.78E-46	Down	4.99E-49	Fosl2	fos-like antigen 2
20618	434.21	176.01	-1.30	2.51E-26	Down	1.13E-28	Sncg	synuclein, gamma
15426	66.20	26.81	-1.30	1.81E-05	Down	4.35E-07	Hoxc8	homeobox C8
11910	175.39	70.71	-1.31	1.13E-13	Down	1.03E-15	Atf3	activating transcription factor 3
192663	26.74	10.69	-1.32	0.005619603	Down	0.000280111	Abcg4	ATP-binding cassette, sub-family G (WHITE), member 4
69219	130.69	51.74	-1.34	1.06E-10	Down	1.19E-12	Ddah1	dimethylarginine dimethylaminohydrolase 1
23850	13.34	5.26	-1.34	0.042501962	Down	0.003289418	Pappa2	pappalysin 2
19252	1397.17	550.28	-1.34	8.71E-95	Down	8.64E-98	Dusp1	dual specificity phosphatase 1
241727	23.63	9.27	-1.35	0.009402531	Down	0.000517057	Snph	syntaphilin
15205	276.35	107.43	-1.36	2.80E-21	Down	1.54E-23	Hes1	hairy and enhancer of split 1 (Drosophila)
12795	96.43	36.82	-1.39	1.19E-08	Down	1.73E-10	Plk3	polo-like kinase 3
320997	169.73	63.81	-1.41	4.68E-15	Down	3.74E-17	Cyp4f39	cytochrome P450, family 4, subfamily f, polypeptide 39
386463	80.12	29.88	-1.42	9.22E-08	Down	1.53E-09	Cdsn	corneodesmosin
211187	68.48	25.53	-1.42	1.18E-06	Down	2.22E-08	Lrtm2	leucine-rich repeats and transmembrane domains 2
16545	73.35	27.29	-1.43	6.42E-07	Down	1.18E-08	Kera	keratocan
268595	24.27	8.98	-1.43	0.004086403	Down	0.000194863	D430019H16Rik	RIKEN cDNA D430019H16 gene
50781	695.82	256.22	-1.44	2.44E-58	Down	5.56E-61	Dkk3	dickkopf homolog 3 (Xenopus laevis)
215418	157.09	57.63	-1.45	4.64E-14	Down	4.09E-16	Csrnp1	cysteine-serine-rich nuclear protein 1
320485	43.80	15.91	-1.46	7.08E-05	Down	1.96E-06	B230312C02Rik	RIKEN cDNA B230312C02 gene
13710	12.95	4.69	-1.47	0.025780246	Down	0.001763524	Elf3	E74-like factor 3
20855	39.16	13.81	-1.50	0.000117414	Down	3.41E-06	Stc1	stanniocalcin 1
19219	74.41	25.45	-1.55	3.72E-08	Down	5.86E-10	Ptger4	prostaglandin E receptor 4 (subtype EP4)
232493	20.75	6.98	-1.57	0.003990049	Down	0.000188638	Gys2	glycogen synthase 2
21380	576.40	191.28	-1.59	8.08E-56	Down	1.89E-58	Tbx1	T-box 1
72832	19.31	6.41	-1.59	0.003848834	Down	0.000180165	Crtac1	cartilage acidic protein 1
11438	10.38	3.41	-1.61	0.017092321	Down	0.001057483	Chrna4	cholinergic receptor, nicotinic, alpha polypeptide 4
24117	27.09	8.53	-1.67	0.000384068	Down	1.28E-05	Wif1	Wnt inhibitory factor 1

114564	13.53	4.14	-1.71	0.005439508	Down	0.000269241	Csprs	component of Sp100-rs
17691	807.01	232.78	-1.79	3.15E-92	Down	3.31E-95	Sik1	salt inducible kinase 1
18111	810.97	226.49	-1.84	1.31E-89	Down	1.69E-92	Nnat	neuronatin
239463	10.46	2.86	-1.87	0.003947065	Down	0.000185915	Fam83a	family with sequence similarity 83, member A
74747	385.40	103.06	-1.90	3.15E-50	Down	8.47E-53	Ddit4	DNA-damage-inducible transcript 4
21388	12.38	3.21	-1.95	0.001603502	Down	6.47E-05	Tbx5	T-box 5
13653	509.56	114.60	-2.15	4.05E-76	Down	6.61E-79	Egr1	early growth response 1
11838	82.89	18.22	-2.19	1.22E-12	Down	1.21E-14	Arc	activity regulated cytoskeletal-associated protein
16477	793.95	174.28	-2.19	2.21E-118	Down	1.81E-121	Junb	Jun-B oncogene
381823	465.91	101.60	-2.20	2.85E-66	Down	5.16E-69	Apold1	apolipoprotein L domain containing 1
12227	1046.23	215.35	-2.28	1.74E-155	Down	9.16E-159	Btg2	B cell translocation gene 2, anti-proliferative
13655	36.69	6.99	-2.39	5.93E-08	Down	9.59E-10	Egr3	early growth response 3
18227	336.07	59.31	-2.50	4.30E-61	Down	8.79E-64	Nr4a2	nuclear receptor subfamily 4, group A, member 2
16846	424.45	72.13	-2.56	1.31E-77	Down	2.06E-80	Lep	leptin
14281	646.61	102.03	-2.66	4.62E-121	Down	3.24E-124	Fos	FBJ osteosarcoma oncogene
235135	444.34	59.14	-2.91	7.77E-91	Down	8.62E-94	Tmem45b	transmembrane protein 45b
14282	153.85	11.41	-3.75	1.48E-39	Down	4.83E-42	Fosb	FBJ osteosarcoma oncogene B

Supplemental Table 5S: List of differential expressed genes in gastrocnemius muscle from $Ctns^{-/-}$+25(OH)D_3+1,25(OH)$_2D_3$ versus WT+25(OH)D_3+1,25(OH)$_2D_3$ mice

Gene ID	Expression (WT + 25(OH)D3)	Expression ($Ctns^{-/-}$ + 25(OH)D3 + 1,25(OH)2D3)	log2 Fold Change ($Ctns^{-/-}$ + 25(OH)D3 + 1,25(OH)D2D3 / WT + 25(OH)D3 + 1,25(OH)D2D3)	P - adjusted	Up/Down-Regulation	P value	Symbol	Desciption
213742	4.16	1368.16	8.36	2.77E-113	Up	7.05E-116	Xist	inactive X specific transcripts
100039008	4.45	678.96	7.25	3.26E-88	Up	1.11E-90	Mup10	major urinary protein 10
100048884	4.19	344.55	6.36	1.39E-62	Up	7.96E-65	LOC100048884	novel member of the major urinary protein (Mup) gene family
22227	2.79	211.98	6.25	2.49E-45	Up	1.97E-47	Ucp1	uncoupling protein 1 (mitochondrial, proton carrier)
12945	2.33	125.71	5.76	1.81E-33	Up	1.96E-35	Dmbt1	deleted in malignant brain tumors 1
215384	2.18	77.59	5.15	7.11E-25	Up	1.07E-26	Fcgbp	Fc fragment of IgG binding protein
11464	501.19	12134.36	4.60	0	Up	0	Actc1	actin, alpha, cardiac muscle 1
218963	3.96	85.07	4.42	7.58E-26	Up	1.09E-27	Gm1821	ubiquitin pseudogene
12824	4.27	84.11	4.30	2.09E-25	Up	3.05E-27	Col2a1	collagen, type II, alpha 1
15891	1.88	33.53	4.15	2.67E-14	Up	6.55E-16	Ibsp	integrin binding sialoprotein
100303644	2.24	38.44	4.10	6.41E-15	Up	1.51E-16	C130080G10Rik	RIKEN cDNA C130080G10 gene
16691	2.52	39.19	3.96	1.00E-14	Up	2.40E-16	Krt8	keratin 8
17386	2.83	40.18	3.83	1.57E-14	Up	3.78E-16	Mmp13	matrix metallopeptidase 13
613254	2.81	39.22	3.80	2.50E-14	Up	6.12E-16	AA465934	expressed sequence AA465934
619547	42.11	458.60	3.45	4.48E-105	Up	1.27E-107	Rpl34-ps1	ribosomal protein L34, pseudogene 1
242122	1.70	17.51	3.36	1.34E-08	Up	5.35E-10	Vtcn1	V-set domain containing T cell activation inhibitor 1
14955	1235.96	12419.81	3.33	0	Up	0	H19	H19 fetal liver mRNA
17075	1.74	16.78	3.27	5.09E-08	Up	2.17E-09	Epcam	epithelial cell adhesion molecule
791403	18.67	167.76	3.17	9.04E-40	Up	7.94E-42	D830015G02Rik	RIKEN cDNA D830015G02 gene
140781	1666.51	14614.38	3.13	0	Up	0	Myh7	myosin, heavy polypeptide 7, cardiac muscle, beta
21952	165.30	1382.32	3.06	9.43E-287	Up	9.26E-290	Tnni1	troponin I, skeletal, slow 1
18115	300.58	2456.17	3.03	0	Up	0	Nnt	nicotinamide nucleotide transhydrogenase
17841	1.91	14.96	2.97	6.82E-07	Up	3.33E-08	Mup2	major urinary protein 2
100039028	4.25	33.15	2.96	9.59E-07	Up	4.76E-08	Mup11	major urinary protein 11
16669	9.35	72.75	2.96	1.28E-17	Up	2.55E-19	Krt19	keratin 19
26458	2.26	17.29	2.94	4.00E-07	Up	1.90E-08	Slc27a2	solute carrier family 27 (fatty acid transporter), member 2
17906	476.16	3641.31	2.93	0	Up	0	Myl2	myosin, light polypeptide 2, regulatory, cardiac, slow
75745	84.27	633.09	2.91	3.06E-131	Up	6.71E-134	Rian	RNA imprinted and accumulated in nucleus
21924	246.57	1796.25	2.86	0	Up	0	Tnnc1	troponin C, cardiac/slow skeletal
12683	9.58	67.90	2.83	1.72E-16	Up	3.70E-18	Cidea	cell death-inducing DNA fragmentation factor, alpha subunit-like effector A
21955	376.51	2607.61	2.79	0	Up	0	Tnnt1	troponin T1, skeletal, slow
16364	19.25	132.79	2.79	6.78E-29	Up	8.51E-31	Irf4	interferon regulatory factor 4
231252	2.17	13.72	2.66	1.01E-05	Up	5.81E-07	Chrna9	cholinergic receptor, nicotinic, alpha polypeptide 9
19116	7.19	44.46	2.63	6.18E-11	Up	1.99E-12	Prlr	prolactin receptor
170439	33.84	208.61	2.62	4.63E-42	Up	3.82E-44	Elovl6	ELOVL family member 6, elongation of long chain fatty acids (yeast)
15375	1.46	8.79	2.59	6.56E-05	Up	4.26E-06	Foxa1	forkhead box A1
110308	1.47	8.79	2.58	7.43E-05	Up	4.88E-06	Krt5	keratin 5
11830	1.44	8.50	2.56	8.33E-05	Up	5.52E-06	Aqp5	aquaporin 5
17750	69.21	395.89	2.52	8.89E-71	Up	4.11E-73	Mt2	metallothionein 2
15129	204.15	1128.64	2.47	9.39E-190	Up	1.46E-192	Hbb-b1	hemoglobin, beta adult major chain
243078	1.74	9.51	2.45	0.00014619	Up	1.00E-05	Tecrl	trans-2,3-enoyl-CoA reductase-like
110310	2.10	11.47	2.45	9.09E-05	Up	6.07E-06	Krt7	keratin 7
100647	1.72	8.88	2.37	0.00028794	Up	2.09E-05	Upk3b	uroplakin 3B
80797	3.12	16.10	2.37	4.00E-05	Up	2.52E-06	Clca2	chloride channel calcium activated 2
16668	7.77	39.60	2.35	8.44E-09	Up	3.34E-10	Krt18	keratin 18
11656	54.73	275.57	2.33	7.24E-49	Up	5.10E-51	Alas2	aminolevulinic acid synthase 2, erythroid
327959	22.46	112.71	2.33	1.94E-20	Up	3.46E-22	Xaf1	XIAP associated factor 1
20677	26.46	131.23	2.31	4.46E-23	Up	7.37E-25	Sox4	SRY-box containing gene 4
17897	677.09	3325.26	2.30	0	Up	0	Myl3	myosin, light polypeptide 3
66402	14.83	72.58	2.29	3.45E-13	Up	9.37E-15	Sln	sarcolipin
11595	1.41	6.88	2.29	0.00072272	Up	5.71E-05	Acan	aggrecan
17002	1.37	6.59	2.27	0.00081991	Up	6.53E-05	Ltf	lactotransferrin
12740	1.44	6.83	2.25	0.00094381	Up	7.64E-05	Cldn4	claudin 4
11938	1478.89	7002.36	2.24	0	Up	0	Atp2a2	ATPase, Ca++ transporting, cardiac muscle, slow twitch 2

100503605	1107.41	5236.09	2.24	1.92E-179	Up	3.22E-182	Beta-s	hemoglobin subunit beta-1-like
18667	1.31	5.97	2.19	0.0013867	Up	0.00011729	Pgr	progesterone receptor
20533	3.67	16.54	2.17	0.00010727	Up	7.23E-06	Slc4a1	solute carrier family 4 (anion exchanger), member 1
20617	9.73	43.27	2.15	2.73E-08	Up	1.12E-09	Snca	synuclein, alpha
50528	1.64	7.30	2.15	0.00152064	Up	0.00013012	Tmprss2	transmembrane protease, serine 2
12096	1.29	5.66	2.14	0.00195103	Up	0.00017066	Bglap	bone gamma carboxyglutamate protein
17883	21.01	90.63	2.11	3.23E-15	Up	7.49E-17	Myh3	myosin, heavy polypeptide 3, skeletal muscle, embryonic
21648	61.16	262.66	2.10	1.27E-36	Up	1.26E-38	Dynlt1b	dynein light chain Tctex-type 1B
16664	1.26	5.36	2.09	0.00258264	Up	0.00023233	Krt14	keratin 14
27273	2540.21	10726.84	2.08	0	Up	0	Pdk4	pyruvate dehydrogenase kinase, isoenzyme 4
110257	1046.30	4393.77	2.07	0	Up	0	Hba-a2	hemoglobin alpha, adult chain 2
19735	38.71	161.76	2.06	3.93E-24	Up	6.20E-26	Rgs2	regulator of G-protein signaling 2
12705	2.32	9.59	2.04	0.00196669	Up	0.00017215	Cited1	Cbp/p300-interacting transactivator with Glu/Asp-rich carboxy-terminal domain 1
15122	1701.80	6926.27	2.03	0	Up	0	Hba-a1	hemoglobin alpha, adult chain 1
68162	9.94	40.41	2.02	1.39E-07	Up	6.22E-09	A930003A15Rik	RIKEN cDNA A930003A15 gene
242022	6.64	26.82	2.01	1.62E-05	Up	9.65E-07	Frem2	Fras1 related extracellular matrix protein 2
14183	7.64	30.78	2.01	4.80E-06	Up	2.61E-07	Fgfr2	fibroblast growth factor receptor 2
110935	1.26	5.04	2.00	0.00438907	Up	0.0004207	Atp6v1b1	ATPase, H+ transporting, lysosomal V1 subunit B1
631323	3.26	12.97	1.99	0.0009692	Up	7.91E-05	Gm12250	predicted gene 12250
15930	1.26	5.03	1.99	0.00468817	Up	0.00045208	Ido1	indoleamine 2,3-dioxygenase 1
16372	2.27	8.99	1.98	0.00304457	Up	0.00027846	Irx2	Iroquois related homeobox 2 (Drosophila)
13371	14.01	55.26	1.98	6.10E-09	Up	2.37E-10	Dio2	deiodinase, iodothyronine, type II
100040724	6.64	26.17	1.98	2.78E-05	Up	1.71E-06	Mirg	miRNA containing gene
11839	1.28	5.01	1.97	0.00528645	Up	0.00051832	Areg	amphiregulin
13999	1.62	6.33	1.97	0.00521995	Up	0.0005112	Gm14288	predicted gene 14288
20568	1.90	7.37	1.95	0.00477603	Up	0.00046165	Slpi	secretory leukocyte peptidase inhibitor
100502868	6.24	23.90	1.94	6.02E-05	Up	3.89E-06	Gm20597	predicted gene, 20597
114479	1.95	7.32	1.91	0.00651257	Up	0.00065246	Slc5a5	solute carrier family 5 (sodium iodide symporter), member 5
50706	125.90	472.96	1.91	5.72E-63	Up	3.24E-65	Postn	periostin, osteoblast specific factor
268709	29.63	111.19	1.91	1.26E-15	Up	2.84E-17	Fam107a	family with sequence similarity 107, member A
403183	21.28	79.47	1.90	9.95E-12	Up	2.96E-13	Mettl21e	methyltransferase like 21E
13661	1.89	7.05	1.90	0.00683392	Up	0.00068979	Ehf	ets homologous factor
14104	1384.81	5158.88	1.90	0	Up	0	Fasn	fatty acid synthase
76293	39.94	147.97	1.89	3.77E-20	Up	6.86E-22	Mfap4	microfibrillar-associated protein 4
17263	189.55	697.04	1.88	1.48E-87	Up	5.22E-90	Meg3	maternally expressed 3
17748	184.57	678.47	1.88	9.01E-85	Up	3.23E-87	Mt1	metallothionein 1
16819	3.54	13.01	1.88	0.00198229	Up	0.00017363	Lcn2	lipocalin 2
109254	2.91	10.67	1.88	0.00385846	Up	0.00036315	Adtrp	androgen dependent TFPI regulating protein
18725	3.98	14.23	1.84	0.00253389	Up	0.00022751	Pira2	paired-Ig-like receptor A2
277468	1.16	4.13	1.84	0.01094799	Up	0.00118158	Slc39a12	solute carrier family 39 (zinc transporter), member 12
109620	1.88	6.73	1.84	0.00995749	Up	0.00105685	Dsp	desmoplakin
76509	1.53	5.42	1.83	0.01189343	Up	0.00129805	1600029D21Rik	RIKEN cDNA 1600029D21 gene
20379	29.61	104.59	1.82	1.25E-13	Up	3.26E-15	Sfrp4	secreted frizzled-related protein 4
104816	3.17	11.08	1.81	0.00467457	Up	0.0004505	Aspg	asparaginase homolog (S. cerevisiae)
634650	3.20	11.05	1.79	0.00558248	Up	0.00054993	Gbp11	guanylate binding protein 11
17207	112.51	388.21	1.79	3.47E-47	Up	2.59E-49	Mcf2l	mcf.2 transforming sequence-like
235130	18.54	63.34	1.77	6.86E-09	Up	2.68E-10	Adamts15	a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 15
59006	325.41	1110.04	1.77	4.68E-128	Up	1.05E-130	Myoz2	myozenin 2
21420	1.13	3.84	1.77	0.01559196	Up	0.00177648	Tfap2c	transcription factor AP-2, gamma
237091	1.13	3.83	1.76	0.01580854	Up	0.00180846	Lhfpl1	lipoma HMGIC fusion partner-like 1
77794	11.86	40.16	1.76	3.99E-06	Up	2.13E-07	Adamtsl2	ADAMTS-like 2
70466	1.82	6.11	1.74	0.01695272	Up	0.00195209	Ckap2l	cytoskeleton associated protein 2-like
26432	33.18	108.38	1.71	2.12E-13	Up	5.62E-15	Plod2	procollagen lysine, 2-oxoglutarate 5-dioxygenase 2
12700	137.09	445.57	1.70	5.55E-52	Up	3.75E-54	Cish	cytokine inducible SH2-containing protein
22097	1.17	3.79	1.69	0.02220077	Up	0.00267629	Tsix	X (inactive)-specific transcript, antisense
14462	3.14	10.11	1.69	0.01112298	Up	0.00120497	Gata3	GATA binding protein 3
18054	1.10	3.53	1.69	0.0227182	Up	0.00275264	Ngp	neutrophilic granule protein
67701	2.12	6.82	1.68	0.02055729	Up	0.0024396	Wfdc2	WAP four-disulfide core domain 2
12813	2.13	6.81	1.68	0.02085463	Up	0.00248573	Col10a1	collagen, type X, alpha 1
53311	1641.53	5261.07	1.68	0	Up	0	Mybph	myosin binding protein H
268697	1.11	3.53	1.68	0.02380207	Up	0.00290808	Ccnb1	cyclin B1
107476	339.34	1070.10	1.66	9.54E-115	Up	2.37E-117	Acaca	acetyl-Coenzyme A carboxylase alpha
18726	2.08	6.53	1.65	0.02399588	Up	0.00294195	Lilra6	leukocyte immunoglobulin-like receptor, subfamily A (with TM domain), member 6
110876	14.12	43.89	1.64	5.18E-06	Up	2.85E-07	Scn2a1	sodium channel, voltage-gated, type II, alpha 1
327954	2.11	6.50	1.63	0.02792863	Up	0.003529	Dnahc2	dynein, axonemal, heavy chain 2

14038	1.05	3.25	1.62	0.02993279	Up	0.00383931	Wfdc18	WAP four-disulfide core domain 18
22431	1.06	3.24	1.62	0.03047739	Up	0.00392501	Wt1	Wilms tumor 1 homolog
12609	313.00	960.77	1.62	2.41E-98	Up	7.37E-101	Cebpd	CCAAT/enhancer binding protein (C/EBP), delta
18948	4.25	13.00	1.61	0.01241882	Up	0.001364	Pnmt	phenylethanolamine-N-methyltransferase
69352	3.43	10.48	1.61	0.01498265	Up	0.00169321	Necab1	N-terminal EF-hand calcium binding protein 1
19143	3.44	10.49	1.61	0.01532767	Up	0.00174017	St14	suppression of tumorigenicity 14 (colon carcinoma)
140709	4.09	12.47	1.61	0.00999362	Up	0.00106184	Col26a1	collagen, type XXVI, alpha 1
13711	1.40	4.23	1.60	0.03722635	Up	0.0049523	Elf5	E74-like factor 5
217154	3.13	9.46	1.60	0.02113855	Up	0.00252813	Stac2	SH3 and cysteine rich domain 2
112407	243.51	734.02	1.59	3.77E-65	Up	2.07E-67	Egln3	EGL nine homolog 3 (C. elegans)
76884	53.08	159.72	1.59	1.20E-17	Up	2.39E-19	Cyfip2	cytoplasmic FMR1 interacting protein 2
56458	318.67	957.21	1.59	2.53E-93	Up	8.34E-96	Foxo1	forkhead box O1
109151	219.79	659.18	1.58	1.42E-60	Up	8.21E-63	Chd9	chromodomain helicase DNA binding protein 9
59069	767.14	2287.37	1.58	1.21E-211	Up	1.74E-214	Tpm3	tropomyosin 3, gamma
171531	8.07	24.06	1.58	0.00093081	Up	7.52E-05	Mlph	melanophilin
13009	251.34	748.73	1.57	4.75E-75	Up	1.95E-77	Csrp3	cysteine and glycine-rich protein 3
18784	29.45	87.55	1.57	8.68E-10	Up	3.11E-11	Pla2g5	phospholipase A2, group V
223838	19.07	56.51	1.57	5.86E-07	Up	2.83E-08	Adamts20	a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 20
75104	1.08	3.21	1.57	0.038139	Up	0.00509404	Mmd2	monocyte to macrophage differentiation-associated 2
231507	5.45	16.09	1.56	0.00714299	Up	0.00072552	Plac8	placenta-specific 8
18563	1189.33	3479.57	1.55	1.42E-283	Up	1.47E-286	Pcx	pyruvate carboxylase
12814	19.84	58.02	1.55	1.97E-06	Up	1.02E-07	Col11a1	collagen, type XI, alpha 1
12994	1.01	2.96	1.55	0.04165555	Up	0.00564858	Csn3	casein kappa
16665	1.01	2.96	1.55	0.04165555	Up	0.00564858	Krt15	keratin 15
268857	10.44	30.33	1.54	0.000434	Up	3.26E-05	Nlrc3	NLR family, CARD domain containing 3
12818	116.37	337.43	1.54	7.90E-34	Up	8.44E-36	Col14a1	collagen, type XIV, alpha 1
100042065	1.02	2.95	1.53	0.04484457	Up	0.00616393	Gm3646	predicted gene 3646
100040972	150.06	430.41	1.52	9.17E-40	Up	8.10E-42	Tceal7	transcription elongation factor A (SII)-like 7
13447	5.75	16.45	1.52	0.00827398	Up	0.00086101	Doc2b	double C2, beta
329278	2.41	6.88	1.52	0.04416924	Up	0.00605834	Tnn	tenascin N
12841	2.75	7.86	1.52	0.03889984	Up	0.00521421	Col9a3	collagen, type IX, alpha 3
108912	2.76	7.83	1.50	0.04207965	Up	0.00571824	Cdca2	cell division cycle associated 2
20255	9.12	25.69	1.49	0.00187624	Up	0.00016326	Scg3	secretogranin III
104886	17.45	49.14	1.49	1.87E-05	Up	1.13E-06	Rab15	RAB15, member RAS oncogene family
244646	2.69	7.57	1.49	0.04289496	Up	0.00584391	Pkd1l3	polycystic kidney disease 1 like 3
320563	17.05	47.93	1.49	1.38E-05	Up	8.10E-07	Islr2	immunoglobulin superfamily containing leucine-rich repeat 2
170942	158.35	444.07	1.49	4.58E-41	Up	3.89E-43	Erdr1	erythroid differentiation regulator 1
17060	22.41	62.49	1.48	1.03E-06	Up	5.17E-08	Blnk	B cell linker
140742	189.29	527.41	1.48	1.44E-49	Up	9.97E-52	Sesn1	sestrin 1
13052	8.40	23.41	1.48	0.00277752	Up	0.00025114	Cxadr	coxsackie virus and adenovirus receptor
241391	3.35	9.23	1.46	0.03798235	Up	0.00506709	Galnt5	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 5
234515	20.41	56.17	1.46	5.68E-06	Up	3.14E-07	Inpp4b	inositol polyphosphate-4-phosphatase, type II
12842	1403.24	3857.74	1.46	6.05E-272	Up	6.64E-275	Col1a1	collagen, type I, alpha 1
69065	339.88	921.59	1.44	1.26E-79	Up	4.89E-82	Chac1	ChaC, cation transport regulator 1
244886	39.66	107.54	1.44	9.39E-11	Up	3.06E-12	AI118078	expressed sequence AI118078
17392	15.08	40.61	1.43	0.00019204	Up	1.34E-05	Mmp3	matrix metallopeptidase 3
381835	11.35	30.41	1.42	0.00093651	Up	7.58E-05	Gm1078	predicted gene 1078
20216	16.32	43.69	1.42	5.86E-05	Up	3.77E-06	Acsm3	acyl-CoA synthetase medium-chain family member 3
17345	8.67	23.15	1.42	0.00392753	Up	0.00037053	Mki67	antigen identified by monoclonal antibody Ki 67
16371	3.63	9.62	1.40	0.04413939	Up	0.0060517	Irx1	Iroquois related homeobox 1 (Drosophila)
12350	19912.78	52668.39	1.40	0	Up	0	Car3	carbonic anhydrase 3
14063	7.01	18.52	1.40	0.01056889	Up	0.00113334	F2rl1	coagulation factor II (thrombin) receptor-like 1
70417	10.75	28.39	1.40	0.00252525	Up	0.00022629	Megf10	multiple EGF-like-domains 10
271424	267.87	699.83	1.39	1.24E-58	Up	7.34E-61	Ip6k3	inositol hexaphosphate kinase 3
74100	34.64	90.01	1.38	1.85E-08	Up	7.44E-10	Arpp21	cyclic AMP-regulated phosphoprotein, 21
15438	90.94	236.25	1.38	1.03E-20	Up	1.81E-22	Hoxd9	homeobox D9
12159	30.97	80.42	1.38	9.46E-08	Up	4.16E-09	Bmp4	bone morphogenetic protein 4
11539	272.24	706.46	1.38	3.44E-56	Up	2.15E-58	Adora1	adenosine A1 receptor
12703	4.99	12.92	1.37	0.03209072	Up	0.00416059	Socs1	suppressor of cytokine signaling 1
15437	139.76	360.67	1.37	3.10E-26	Up	4.38E-28	Hoxd8	homeobox D8
228775	5.01	12.91	1.37	0.03441294	Up	0.00451536	Trib3	tribbles homolog 3 (Drosophila)
68709	44.36	114.08	1.36	1.02E-09	Up	3.68E-11	Cilp2	cartilage intermediate layer protein 2
100041621	5.48	14.09	1.36	0.03885815	Up	0.00520638	Gm3435	predicted gene 3435
107684	7.79	20.01	1.36	0.01634071	Up	0.0018769	Coro2a	coronin, actin binding protein 2A
29813	147.63	377.81	1.36	2.58E-29	Up	3.23E-31	Zfp385a	zinc finger protein 385A

14229	276.57	706.44	1.35	1.40E-53	Up	9.39E-56	Fkbp5	FK506 binding protein 5
22229	907.04	2300.42	1.34	1.37E-150	Up	2.62E-153	Ucp3	uncoupling protein 3 (mitochondrial, proton carrier)
213011	4.99	12.59	1.33	0.0427525	Up	0.00581956	Zfp583	zinc finger protein 583
16002	179.31	451.72	1.33	2.00E-33	Up	2.17E-35	Igf2	insulin-like growth factor 2
23831	209.25	520.09	1.31	1.07E-37	Up	1.04E-39	Car14	carbonic anhydrase 14
17684	311.50	773.39	1.31	1.26E-58	Up	7.48E-61	Cited2	Cbp/p300-interacting transactivator, with Glu/Asp-rich carboxy-terminal domain, 2
140474	5.63	13.94	1.31	0.03757275	Up	0.00500594	Muc4	mucin 4
170952	10.32	25.51	1.31	0.00672255	Up	0.00067661	Prima1	proline rich membrane anchor 1
230099	8.96	21.89	1.29	0.01251491	Up	0.00137817	Car9	carbonic anhydrase 9
320485	56.59	138.00	1.29	4.71E-11	Up	1.48E-12	B230312C02Rik	RIKEN cDNA B230312C02 gene
11829	269.78	647.72	1.26	5.41E-48	Up	3.91E-50	Aqp4	aquaporin 4
56791	43.92	105.31	1.26	1.99E-08	Up	8.03E-10	Ube2l6	ubiquitin-conjugating enzyme E2L 6
216459	59.02	140.58	1.25	9.41E-10	Up	3.38E-11	Myl6b	myosin, light polypeptide 6B
69590	44.89	106.65	1.25	1.34E-08	Up	5.31E-10	Gpx8	glutathione peroxidase 8 (putative)
14428	12.90	30.54	1.24	0.00369363	Up	0.00034724	Galr2	galanin receptor 2
101401	62.55	147.69	1.24	2.49E-11	Up	7.64E-13	Adamts9	a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 9
99899	6.24	14.64	1.23	0.04888311	Up	0.00683765	Ifi44	interferon-induced protein 44
21906	8.26	19.25	1.22	0.02845148	Up	0.00361315	Otop1	otopetrin 1
14783	381.50	888.22	1.22	2.41E-54	Up	1.56E-56	Grb10	growth factor receptor bound protein 10
70807	660.67	1530.85	1.21	2.00E-93	Up	6.46E-96	Arrdc2	arrestin domain containing 2
242702	440.35	1019.64	1.21	3.26E-67	Up	1.69E-69	Myom3	myomesin family, member 3
57258	32.28	74.54	1.21	1.34E-05	Up	7.85E-07	Xpo4	exportin 4
13106	515.35	1186.10	1.20	3.82E-75	Up	1.54E-77	Cyp2e1	cytochrome P450, family 2, subfamily e, polypeptide 1
268903	107.23	246.57	1.20	2.62E-16	Up	5.65E-18	Nrip1	nuclear receptor interacting protein 1
547127	86.21	198.01	1.20	8.67E-14	Up	2.19E-15	Tmem181b-ps	transmembrane protein 181B, pseudogene
21973	8.25	18.93	1.20	0.03368574	Up	0.00439464	Top2a	topoisomerase (DNA) II alpha
12550	8.86	20.32	1.20	0.0233597	Up	0.00284802	Cdh1	cadherin 1
11489	13.20	30.24	1.20	0.00573327	Up	0.00056809	Adam12	a disintegrin and metallopeptidase domain 12 (meltrin alpha)
230775	6.86	15.68	1.19	0.04790871	Up	0.00666145	Bai2	brain-specific angiogenesis inhibitor 2
20425	69.54	158.90	1.19	5.55E-11	Up	1.77E-12	Shmt1	serine hydroxymethyltransferase 1 (soluble)
66255	7.89	17.97	1.19	0.038907	Up	0.00521742	Hsbp1l1	heat shock factor binding protein 1-like 1
433938	522.96	1183.72	1.18	8.51E-73	Up	3.83E-75	Mn1	meningioma 1
69480	31.91	72.18	1.18	2.85E-05	Up	1.76E-06	Ttc9	tetratricopeptide repeat domain 9
20856	21.85	49.42	1.18	0.00039195	Up	2.92E-05	Stc2	stanniocalcin 2
231991	11.24	25.25	1.17	0.01791917	Up	0.00208719	Creb5	cAMP responsive element binding protein 5
229595	221.07	495.87	1.17	8.52E-33	Up	9.50E-35	Adamtsl4	ADAMTS-like 4
71093	46.97	105.22	1.16	1.09E-06	Up	5.50E-08	Atoh8	atonal homolog 8 (Drosophila)
18845	178.44	398.89	1.16	8.37E-26	Up	1.20E-27	Plxna2	plexin A2
56788	8.84	19.67	1.15	0.03409386	Up	0.00446086	Scube2	signal peptide, CUB domain, EGF-like 2
58909	171.09	379.39	1.15	1.19E-24	Up	1.81E-26	Fam13a	family with sequence similarity 13, member A
12660	21.87	48.43	1.15	0.00085257	Up	6.82E-05	Chka	choline kinase alpha
58185	26.53	58.72	1.15	0.00019936	Up	1.39E-05	Rsad2	radical S-adenosyl methionine domain containing 2
12373	256.41	567.20	1.15	4.71E-34	Up	5.01E-36	Casq2	calsequestrin 2
69368	84.52	186.75	1.14	9.31E-12	Up	2.75E-13	Wdfy1	WD repeat and FYVE domain containing 1
71481	20.17	44.49	1.14	0.00121503	Up	0.00010172	Alpk1	alpha-kinase 1
11556	54.85	120.21	1.13	7.79E-08	Up	3.38E-09	Adrb3	adrenergic receptor, beta 3
20319	41.84	91.49	1.13	2.63E-06	Up	1.37E-07	Sfrp2	secreted frizzled-related protein 2
20672	73.81	161.33	1.13	1.37E-10	Up	4.49E-12	Sox18	SRY-box containing gene 18
23956	118.43	258.63	1.13	1.05E-16	Up	2.21E-18	Neu2	neuraminidase 2
56839	13.87	30.24	1.12	0.01241882	Up	0.0013635	Lgi1	leucine-rich repeat LGI family, member 1
13717	133.44	290.70	1.12	2.48E-18	Up	4.82E-20	Eln	elastin
12575	226.71	493.28	1.12	1.33E-30	Up	1.58E-32	Cdkn1a	cyclin-dependent kinase inhibitor 1A (P21)
67510	35.50	77.20	1.12	2.37E-05	Up	1.45E-06	Tvp23b	trans-golgi network vesicle protein 23B
269642	35.81	77.61	1.12	1.60E-05	Up	9.48E-07	Nat8l	N-acetyltransferase 8-like
12643	126.85	274.75	1.11	1.87E-15	Up	4.28E-17	Chad	chondroadherin
64899	34.21	73.87	1.11	7.43E-05	Up	4.88E-06	Lpin3	lipin 3
234593	20.84	44.80	1.10	0.00216197	Up	0.00019086	Ndrg4	N-myc downstream regulated gene 4
12048	159.41	342.67	1.10	1.69E-20	Up	3.00E-22	Bcl2l1	BCL2-like 1
213393	203.41	436.62	1.10	6.23E-25	Up	9.32E-27	8430408G22Rik	RIKEN cDNA 8430408G22 gene
269423	41.94	89.99	1.10	2.53E-05	Up	1.55E-06	3110057O12Rik	RIKEN cDNA 3110057O12 gene
268481	19.51	41.84	1.10	0.00330437	Up	0.00030527	Krt222	keratin 222
23984	36.48	78.24	1.10	2.49E-05	Up	1.52E-06	Pde10a	phosphodiesterase 10A
63954	13.51	28.93	1.10	0.01669599	Up	0.00192156	Rbp7	retinol binding protein 7, cellular
100503043	130.42	278.19	1.09	7.22E-17	Up	1.50E-18	Armcx4	armadillo repeat containing, X-linked 4
14933	14.49	30.91	1.09	0.01346064	Up	0.00149787	Gyk	glycerol kinase

545428	21.59	45.76	1.08	0.00394694	Up	0.0003733	Ccdc141	coiled-coil domain containing 141
12825	2840.03	6012.18	1.08	6.48E-267	Up	7.86E-270	Col3a1	collagen, type III, alpha 1
140493	17.13	36.25	1.08	0.00682542	Up	0.00068786	Kcnn3	potassium intermediate/small conductance calcium-activated channel, subfamily N, member 3
16658	292.07	617.33	1.08	2.85E-33	Up	3.13E-35	Mafb	v-maf musculoaponeurotic fibrosarcoma oncogene family, protein B (avian)
226438	619.27	1306.62	1.08	2.15E-65	Up	1.17E-67	Igfn1	immunoglobulin-like and fibronectin type III domain containing 1
259302	19.79	41.57	1.07	0.00354618	Up	0.00033233	Srgap3	SLIT-ROBO Rho GTPase activating protein 3
20927	23.14	48.49	1.07	0.00176028	Up	0.00015205	Abcc8	ATP-binding cassette, sub-family C (CFTR/MRP), member 8
17756	19.84	41.51	1.07	0.00545218	Up	0.00053583	Map2	microtubule-associated protein 2
13175	30.82	64.03	1.05	0.0003987	Up	2.98E-05	Dclk1	doublecortin-like kinase 1
238803	26.10	54.15	1.05	0.00090867	Up	7.32E-05	Zfp366	zinc finger protein 366
22592	153.41	318.17	1.05	2.84E-17	Up	5.75E-19	Ercc5	excision repair cross-complementing rodent repair deficiency, complementation group 5
217835	95.11	197.10	1.05	4.05E-11	Up	1.27E-12	Rin3	Ras and Rab interactor 3
14219	316.00	647.73	1.04	1.59E-32	Up	1.80E-34	Ctgf	connective tissue growth factor
12702	50.41	103.15	1.03	2.88E-06	Up	1.51E-07	Socs3	suppressor of cytokine signaling 3
53608	107.13	218.93	1.03	1.91E-11	Up	5.82E-13	Map3k6	mitogen-activated protein kinase kinase kinase 6
105171	587.19	1194.60	1.02	9.18E-59	Up	5.35E-61	Arrdc3	arrestin domain containing 3
226178	1002.61	2030.17	1.02	9.29E-94	Up	2.95E-96	Wbp1l	WW domain binding protein 1 like
12374	157.69	318.25	1.01	1.10E-16	Up	2.32E-18	Casr	calcium-sensing receptor
74646	111.08	223.57	1.01	2.01E-11	Up	6.14E-13	Spsb1	splA/ryanodine receptor domain and SOCS box containing 1
104099	78.42	157.39	1.00	2.61E-08	Up	1.06E-09	Itga9	integrin alpha 9
228966	36.76	73.68	1.00	0.0002352	Up	1.67E-05	Ppp1r3d	protein phosphatase 1, regulatory subunit 3D
20365	22.74	45.59	1.00	0.00437601	Up	0.00041894	Serf1	small EDRK-rich factor 1
210530	23.73	47.56	1.00	0.00338355	Up	0.00031396	Leprel1	leprecan-like 1
319636	77.40	155.08	1.00	2.40E-08	Up	9.75E-10	Fsd1l	fibronectin type III and SPRY domain containing 1-like
16168	41.44	82.93	1.00	9.65E-05	Up	6.49E-06	Il15	interleukin 15

Supplemental Table 5S: List of differential expressed genes in gastrocnemius muscle from $Ctns^{-/-}$+25(OH)D_3+1,25(OH)$_2D_3$ versus WT+25(OH)D_3+1,25(OH)$_2D_3$ mice

Gene ID	Expression (WT + 25(OH)D3)	Expression ($Ctns^{-/-}$ + 25(OH)D3 + 1,25(OH)2D3)	log2 Fold Change ($Ctns^{-/-}$ + 25(OH)D3 + 1,25(OH)D2D3 / WT + 25(OH)D3 + 1,25(OH)D2D3)	P - adjusted	Up/Down-Regulation	P value	Symbol	Desciption
319162	153.16	76.54	-1.00	1.61E-08	Down	6.45E-10	Hist3h2a	histone cluster 3, H2a
69142	48.82	24.34	-1.00	0.00507504	Down	0.00049525	Cd209f	CD209f antigen
110075	30.18	15.02	-1.01	0.02729094	Down	0.00343738	Bmp3	bone morphogenetic protein 3
214854	38.54	18.97	-1.02	0.00835111	Down	0.00087139	Neurl3	neuralized homolog 3 homolog (Drosophila)
102294	77.84	38.18	-1.03	9.11E-05	Down	6.09E-06	Cyp4v3	cytochrome P450, family 4, subfamily v, polypeptide 3
20250	487.24	238.73	-1.03	1.93E-25	Down	2.80E-27	Scd2	stearoyl-Coenzyme A desaturase 2
14677	174.09	85.19	-1.03	1.17E-09	Down	4.24E-11	Gnai1	guanine nucleotide binding protein (G protein), alpha inhibiting 1
70415	38.17	18.66	-1.03	0.00922868	Down	0.00097416	2610018G03Rik	RIKEN cDNA 2610018G03 gene
53886	84.75	41.27	-1.04	8.68E-05	Down	5.78E-06	Cdkl2	cyclin-dependent kinase-like 2 (CDC2-related kinase)
14204	43.19	20.96	-1.04	0.00394532	Down	0.00037292	Il4i1	interleukin 4 induced 1
22778	22.83	11.08	-1.04	0.04930346	Down	0.0069097	Ikzf1	IKAROS family zinc finger 1
74365	38.80	18.73	-1.05	0.00908968	Down	0.00095791	Lonrf3	LON peptidase N-terminal domain and ring finger 3
11754	890.91	428.73	-1.06	5.22E-47	Down	3.98E-49	Aoc3	amine oxidase, copper containing 3
226049	71.14	34.22	-1.06	0.00011929	Down	8.11E-06	Dmrt2	doublesex and mab-3 related transcription factor 2
12721	62.19	29.90	-1.06	0.00026854	Down	1.93E-05	Coro1a	coronin, actin binding protein 1A
29815	118.10	56.74	-1.06	5.46E-07	Down	2.63E-08	Bcar3	breast cancer anti-estrogen resistance 3
545554	27.86	13.36	-1.06	0.02146355	Down	0.00256947	Ankrd34a	ankyrin repeat domain 34A
268878	66.12	31.64	-1.06	0.0003057	Down	2.23E-05	Atp13a5	ATPase type 13A5
195727	32.84	15.69	-1.07	0.01178779	Down	0.00128448	Nhs	Nance-Horan syndrome (human)
14561	91.45	43.53	-1.07	9.11E-06	Down	5.20E-07	Gdf11	growth differentiation factor 11
66859	117.77	55.74	-1.08	2.18E-07	Down	9.99E-09	Slc16a9	solute carrier family 16 (monocarboxylic acid transporters), member 9
665574	31.15	14.73	-1.08	0.01432751	Down	0.00160841	Gm7694	predicted gene 7694
17937	129.71	61.14	-1.09	1.49E-07	Down	6.73E-09	Nab2	Ngfi-A binding protein 2
99377	41.14	19.38	-1.09	0.00405768	Down	0.0003852	Sall4	sal-like 4 (Drosophila)
666048	105.12	49.49	-1.09	1.01E-06	Down	5.04E-08	Trabd2b	TraB domain containing 2B
22359	3788.82	1782.04	-1.09	2.02E-177	Down	3.51E-180	Vldlr	very low density lipoprotein receptor
23794	427.87	200.38	-1.09	3.18E-25	Down	4.65E-27	Adamts5	a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 5 (aggrecanase-2)
18753	175.34	81.95	-1.10	1.75E-10	Down	5.81E-12	Prkcd	protein kinase C, delta
72119	75.43	35.25	-1.10	4.40E-05	Down	2.79E-06	Tpx2	TPX2, microtubule-associated protein homolog (Xenopus laevis)
66487	31.72	14.82	-1.10	0.01602025	Down	0.00183454	Smim4	small itegral membrane protein 4
15483	130.77	61.05	-1.10	1.98E-08	Down	8.00E-10	Hsd11b1	hydroxysteroid 11-beta dehydrogenase 1
56222	260.99	120.97	-1.11	3.98E-16	Down	8.71E-18	Cited4	Cbp/p300-interacting transactivator, with Glu/Asp-rich carboxy-terminal domain, 4
381605	21.16	9.76	-1.12	0.03486085	Down	0.00458218	Tbc1d2	TBC1 domain family, member 2
66733	518.52	238.22	-1.12	4.01E-30	Down	4.92E-32	Kcng4	potassium voltage-gated channel, subfamily G, member 4
23928	40.12	18.41	-1.12	0.00332164	Down	0.00030706	Lamc3	laminin gamma 3
15203	57.47	26.32	-1.13	0.00022911	Down	1.62E-05	Heph	hephaestin
18574	18.50	8.43	-1.13	0.04298497	Down	0.00586362	Pde1b	phosphodiesterase 1B, Ca2+-calmodulin dependent
15446	61.70	28.09	-1.14	0.00027714	Down	2.00E-05	Hpgd	hydroxyprostaglandin dehydrogenase 15 (NAD)
218454	132.95	60.17	-1.14	3.76E-08	Down	1.57E-09	Lhfpl2	lipoma HMGIC fusion partner-like 2
12409	304.60	137.25	-1.15	1.90E-19	Down	3.55E-21	Cbr2	carbonyl reductase 2
17873	183.38	82.60	-1.15	1.81E-12	Down	5.09E-14	Gadd45b	growth arrest and DNA-damage-inducible 45 beta
56405	74.09	33.29	-1.15	1.62E-05	Down	9.60E-07	Dusp14	dual specificity phosphatase 14
68149	262.61	117.77	-1.16	1.72E-16	Down	3.70E-18	Otub2	OTU domain, ubiquitin aldehyde binding 2
319229	43.41	19.41	-1.16	0.00149229	Down	0.00012752	Sctr	secretin receptor
242721	146.03	65.07	-1.17	3.98E-10	Down	1.36E-11	Klhdc7a	kelch domain containing 7A
327958	65.08	29.00	-1.17	5.17E-05	Down	3.30E-06	Pitpnm3	PITPNM family member 3
63953	549.02	241.55	-1.18	2.40E-33	Down	2.62E-35	Dusp10	dual specificity phosphatase 10
240638	19.45	8.49	-1.20	0.0285663	Down	0.00363598	Slc16a12	solute carrier family 16 (monocarboxylic acid transporters), member 12
56221	32.45	14.10	-1.20	0.00363085	Down	0.0003411	Ccl24	chemokine (C-C motif) ligand 24
101809	51.68	22.45	-1.20	0.00033435	Down	2.46E-05	Spred3	sprouty-related, EVH1 domain containing 3
72514	22.72	9.87	-1.20	0.02005192	Down	0.00237615	Fgfbp3	fibroblast growth factor binding protein 3
19662	117.72	50.85	-1.21	4.86E-09	Down	1.86E-10	Rbp4	retinol binding protein 4, plasma
12479	122.68	52.90	-1.21	5.38E-09	Down	2.07E-10	Cd1d1	CD1d1 antigen
58182	19.77	8.49	-1.22	0.022435	Down	0.00271299	Prokr1	prokineticin receptor 1

494504	137.35	57.83	-1.25	7.13E-11	Down	2.31E-12	Apcdd1	adenomatosis polyposis coli down-regulated 1
22698	56.68	23.78	-1.25	6.81E-05	Down	4.43E-06	Zfp39	zinc finger protein 39
319317	68.33	28.45	-1.26	1.17E-05	Down	6.80E-07	Snhg11	small nucleolar RNA host gene 11
244757	199.76	82.54	-1.28	2.20E-13	Down	5.82E-15	Glb1l2	galactosidase, beta 1-like 2
83429	81.27	33.46	-1.28	1.74E-06	Down	8.97E-08	Ctns	cystinosis, nephropathic
15205	302.84	124.07	-1.29	5.02E-23	Down	8.32E-25	Hes1	hairy and enhancer of split 1 (Drosophila)
54612	332.15	136.03	-1.29	2.79E-24	Down	4.33E-26	Sfrp5	secreted frizzled-related sequence protein 5
71724	14.40	5.89	-1.29	0.03560532	Down	0.00469238	Aox3	aldehyde oxidase 3
330721	12.07	4.89	-1.30	0.04742965	Down	0.00657405	Nek5	NIMA (never in mitosis gene a)-related expressed kinase 5
93712	27.70	11.20	-1.31	0.01250513	Down	0.00137637	Pcdhga4	protocadherin gamma subfamily A, 4
396184	28.67	11.57	-1.31	0.00362241	Down	0.0003401	Flrt1	fibronectin leucine rich transmembrane protein 1
18712	324.83	131.08	-1.31	1.56E-24	Down	2.38E-26	Pim1	proviral integration site 1
56437	41.72	16.81	-1.31	0.00026854	Down	1.93E-05	Rrad	Ras-related associated with diabetes
100039246	309.47	124.43	-1.31	8.18E-24	Down	1.32E-25	Plac9b	placenta specific 9b
14962	269.84	108.29	-1.32	2.83E-20	Down	5.08E-22	Cfb	complement factor B
60527	255.54	102.28	-1.32	3.24E-20	Down	5.86E-22	Fads3	fatty acid desaturase 3
245038	14.03	5.59	-1.33	0.03253069	Down	0.00423079	Dclk3	doublecortin-like kinase 3
225164	253.48	100.99	-1.33	9.17E-20	Down	1.69E-21	Mib1	mindbomb homolog 1 (Drosophila)
17294	182.87	72.80	-1.33	5.13E-15	Down	1.20E-16	Mest	mesoderm specific transcript
17761	110.65	43.98	-1.33	7.90E-10	Down	2.79E-11	Map7	microtubule-associated protein 7
14859	28.37	11.20	-1.34	0.00227762	Down	0.000202	Gsta3	glutathione S-transferase, alpha 3
11910	240.23	94.64	-1.34	3.20E-20	Down	5.77E-22	Atf3	activating transcription factor 3
239463	13.37	5.26	-1.35	0.03209406	Down	0.00416288	Fam83a	family with sequence similarity 83, member A
12223	26.32	10.26	-1.36	0.00344487	Down	0.00032124	Btc	betacellulin, epidermal growth factor family member
72203	259.69	101.03	-1.36	1.39E-19	Down	2.57E-21	2610507I01Rik	RIKEN cDNA 2610507I01 gene
69165	35.96	13.93	-1.37	0.00068685	Down	5.40E-05	Cd209b	CD209b antigen
20519	50.65	19.52	-1.38	2.72E-05	Down	1.67E-06	Slc22a3	solute carrier family 22 (organic cation transporter), member 3
12829	48.98	18.86	-1.38	3.90E-05	Down	2.45E-06	Col4a4	collagen, type IV, alpha 4
57890	21.88	8.40	-1.38	0.00964837	Down	0.00102125	Il17re	interleukin 17 receptor E
67122	176.24	67.17	-1.39	3.89E-16	Down	8.49E-18	Nrarp	Notch-regulated ankyrin repeat protein
381823	344.01	130.54	-1.40	1.84E-27	Down	2.47E-29	Apold1	apolipoprotein L domain containing 1
16835	229.78	86.74	-1.41	4.90E-20	Down	8.98E-22	Ldlr	low density lipoprotein receptor
20716	170.52	64.25	-1.41	3.06E-15	Down	7.08E-17	Serpina3n	serine (or cysteine) peptidase inhibitor, clade A, member 3N
69219	130.18	48.74	-1.42	9.10E-12	Down	2.69E-13	Ddah1	dimethylarginine dimethylaminohydrolase 1
229011	64.28	23.85	-1.43	9.28E-07	Down	4.60E-08	Samd10	sterile alpha motif domain containing 10
235135	270.50	99.98	-1.44	3.22E-25	Down	4.72E-27	Tmem45b	transmembrane protein 45b
16625	103.22	38.12	-1.44	5.56E-10	Down	1.94E-11	Serpina3c	serine (or cysteine) peptidase inhibitor, clade A, member 3C
208898	11.67	4.30	-1.44	0.02593799	Down	0.00323251	Unc13c	unc-13 homolog C (C. elegans)
232409	15.33	5.63	-1.44	0.01328833	Down	0.0014764	Clec2e	C-type lectin domain family 2, member e
69566	41.88	15.35	-1.45	0.00014107	Down	9.67E-06	2310016D03Rik	RIKEN cDNA 2310016D03 gene
240131	1221.20	447.61	-1.45	7.98E-102	Down	2.31E-104	Lrrc30	leucine rich repeat containing 30
11838	50.92	18.61	-1.45	1.52E-05	Down	9.00E-07	Arc	activity regulated cytoskeletal-associated protein
106014	114.14	41.48	-1.46	9.67E-11	Down	3.16E-12	Fam19a5	family with sequence similarity 19, member A5
216859	9.28	3.37	-1.46	0.0396713	Down	0.00534513	Acap1	ArfGAP with coiled-coil, ankyrin repeat and PH domains 1
19219	52.95	19.21	-1.46	4.78E-06	Down	2.60E-07	Ptger4	prostaglandin E receptor 4 (subtype EP4)
74843	865.37	312.83	-1.47	1.23E-77	Down	4.90E-80	Mss51	MSS51 mitochondrial translational activator
226123	54.27	19.57	-1.47	3.74E-06	Down	1.99E-07	Morn4	MORN repeat containing 4
18430	50.60	18.24	-1.47	8.12E-06	Down	4.61E-07	Oxtr	oxytocin receptor
56013	59.92	21.56	-1.47	1.15E-06	Down	5.78E-08	Srcin1	SRC kinase signaling inhibitor 1
237858	217.12	77.87	-1.48	1.07E-20	Down	1.89E-22	Tusc5	tumor suppressor candidate 5
67888	215.06	76.89	-1.48	3.66E-20	Down	6.63E-22	Tmem100	transmembrane protein 100
15002	11.28	4.03	-1.49	0.02449105	Down	0.00300732	H2-Ob	histocompatibility 2, O region beta locus
192188	265.09	94.06	-1.49	4.79E-26	Down	6.81E-28	Stab2	stabilin 2
268534	7.61	2.70	-1.50	0.04298497	Down	0.00585914	Sntg2	syntrophin, gamma 2
71206	14.25	5.05	-1.50	0.01435024	Down	0.00161179	Katnal2	katanin p60 subunit A-like 2
22160	67.19	23.60	-1.51	2.21E-07	Down	1.02E-08	Twist1	twist basic helix-loop-helix transcription factor 1
18782	54.47	18.72	-1.54	3.99E-06	Down	2.14E-07	Pla2g2d	phospholipase A2, group IID
380702	3.97	1.36	-1.54	0.04744918	Down	0.00658306	Shisa6	shisa homolog 6 (Xenopus laevis)
72500	61.49	21.01	-1.55	6.35E-07	Down	3.08E-08	Ier5l	immediate early response 5-like
236539	174.73	59.70	-1.55	9.34E-18	Down	1.85E-19	Phgdh	3-phosphoglycerate dehydrogenase
217682	8.24	2.74	-1.59	0.02502146	Down	0.00309226	Plekhd1	pleckstrin homology domain containing, family D (with coiled-coil domains) member 1
18619	128.73	42.57	-1.60	1.22E-13	Down	3.16E-15	Penk	preproenkephalin
12741	215.77	71.29	-1.60	1.17E-23	Down	1.90E-25	Cldn5	claudin 5
11752	31.78	10.47	-1.60	0.00026161	Down	1.87E-05	Anxa8	annexin A8
244911	13.53	4.44	-1.61	0.00906142	Down	0.00095441	C2cd4a	C2 calcium-dependent domain containing 4A

16477	665.83	218.57	-1.61	6.93E-70	Down	3.44E-72	Junb	Jun-B oncogene
60510	26.55	8.71	-1.61	0.00043084	Down	3.23E-05	Syt9	synaptotagmin IX
21388	12.53	4.11	-1.61	0.01099661	Down	0.0011881	Tbx5	T-box 5
55985	19.54	6.41	-1.61	0.00226729	Down	0.00020095	Cxcl13	chemokine (C-X-C motif) ligand 13
74596	59.12	19.38	-1.61	4.00E-07	Down	1.90E-08	Cds1	CDP-diacylglycerol synthase 1
276891	18.81	6.14	-1.62	0.00318011	Down	0.00029214	Timd4	T cell immunoglobulin and mucin domain containing 4
207911	49.44	16.11	-1.62	4.12E-06	Down	2.22E-07	Mchr1	melanin-concentrating hormone receptor 1
216148	158.12	51.44	-1.62	8.26E-18	Down	1.63E-19	Shc2	SHC (Src homology 2 domain containing) transforming protein 2
114249	127.79	41.51	-1.62	9.28E-15	Down	2.22E-16	Npnt	nephronectin
56747	8.54	2.77	-1.62	0.02091716	Down	0.00249561	Sez6l	seizure related 6 homolog like
22095	79.11	25.31	-1.64	1.41E-09	Down	5.14E-11	Tshr	thyroid stimulating hormone receptor
12029	429.26	137.21	-1.65	1.19E-46	Down	9.22E-49	Bcl6b	B cell CLL/lymphoma 6, member B
78334	536.10	169.71	-1.66	6.02E-55	Down	3.86E-57	Cdk19	cyclin-dependent kinase 19
14281	611.75	193.46	-1.66	1.51E-66	Down	7.94E-69	Fos	FBJ osteosarcoma oncogene
18985	5.57	1.75	-1.67	0.02499413	Down	0.00308659	Pou2af1	POU domain, class 2, associating factor 1
386463	68.41	21.40	-1.68	1.59E-08	Down	6.36E-10	Cdsn	corneodesmosin
13655	22.08	6.85	-1.69	0.00101133	Down	8.31E-05	Egr3	early growth response 3
68800	14.49	4.48	-1.69	0.00445666	Down	0.00042769	1110059M19Rik	RIKEN cDNA 1110059M19 gene
16373	96.09	29.64	-1.70	6.60E-12	Down	1.91E-13	Irx3	Iroquois related homeobox 3 (Drosophila)
15242	31.80	9.80	-1.70	7.34E-05	Down	4.81E-06	Hhex	hematopoietically expressed homeobox
11497	3.57	1.10	-1.70	0.02166002	Down	0.0025955	Adam3	a disintegrin and metallopeptidase domain 3 (cyritestin)
239845	5.09	1.57	-1.70	0.02320701	Down	0.00282512	Gpr156	G protein-coupled receptor 156
93707	7.39	2.27	-1.70	0.01964192	Down	0.00232076	Pcdhgc4	protocadherin gamma subfamily C, 4
14563	4.84	1.48	-1.70	0.02249429	Down	0.00272146	Gdf5	growth differentiation factor 5
21940	11.21	3.44	-1.71	0.00755433	Down	0.00077691	Cd27	CD27 antigen
237847	52.48	16.05	-1.71	2.14E-07	Down	9.78E-09	Rtn4rl1	reticulon 4 receptor-like 1
11668	2279.82	696.46	-1.71	3.32E-204	Down	4.98E-207	Aldh1a1	aldehyde dehydrogenase family 1, subfamily A1
100041585	65.25	19.92	-1.71	1.11E-07	Down	4.94E-09	Amd2	S-adenosylmethionine decarboxylase 2
330723	135.32	41.29	-1.71	1.17E-15	Down	2.61E-17	Htra4	HtrA serine peptidase 4
619665	6.14	1.84	-1.74	0.01791704	Down	0.0020859	Klf14	Kruppel-like factor 14
14545	359.95	107.42	-1.74	5.32E-44	Down	4.27E-46	Gdap1	ganglioside-induced differentiation-associated-protein 1
71198	949.58	282.54	-1.75	1.40E-109	Down	3.79E-112	Otud1	OTU domain containing 1
626578	75.70	22.45	-1.75	8.05E-10	Down	2.86E-11	Gbp10	guanylate-binding protein 10
80796	3.86	1.13	-1.77	0.01532263	Down	0.00173871	Calm4	calmodulin 4
320092	293.60	85.93	-1.77	1.91E-36	Down	1.92E-38	E030003E18Rik	RIKEN cDNA E030003E18 gene
12145	3.87	1.13	-1.77	0.01505475	Down	0.0017031	Cxcr5	chemokine (C-X-C motif) receptor 5
93721	6.45	1.87	-1.78	0.01382356	Down	0.00154134	Cpn1	carboxypeptidase N, polypeptide 1
70192	17.80	5.17	-1.78	0.00105697	Down	8.71E-05	Cd209g	CD209g antigen
15439	669.31	190.31	-1.81	5.63E-79	Down	2.21E-81	Hp	haptoglobin
276950	17.41	4.89	-1.83	0.00099697	Down	8.16E-05	Slfn8	schlafen 8
12795	91.71	25.75	-1.83	1.10E-12	Down	3.07E-14	Plk3	polo-like kinase 3
74513	89.38	25.06	-1.83	1.33E-12	Down	3.73E-14	Neto2	neuropilin (NRP) and tolloid (TLL)-like 2
12483	9.10	2.55	-1.83	0.00682542	Down	0.00068814	Cd22	CD22 antigen
20343	9.39	2.60	-1.85	0.00636786	Down	0.00063723	Sell	selectin, lymphocyte
18505	15.38	4.25	-1.85	0.0015361	Down	0.00013167	Pax3	paired box gene 3
272382	6.80	1.86	-1.87	0.00795393	Down	0.0008231	Spib	Spi-B transcription factor (Spi-1/PU.1 related)
104582	5.76	1.57	-1.87	0.00920332	Down	0.00097042	Rprml	reprimo-like
114564	14.42	3.89	-1.89	0.00136217	Down	0.00011498	Csprs	component of Sp100-rs
100502636	18.62	5.00	-1.90	0.00066459	Down	5.20E-05	Gm19299	predicted gene, 19299
620078	5.79	1.54	-1.91	0.00727438	Down	0.00074223	C130026I21Rik	RIKEN cDNA C130026I21 gene
17927	274.20	71.10	-1.95	8.54E-39	Down	7.74E-41	Myod1	myogenic differentiation 1
27222	10.05	2.60	-1.95	0.00298982	Down	0.00027207	Atp1a4	ATPase, Na+/K+ transporting, alpha 4 polypeptide
19207	23.03	5.93	-1.96	8.67E-05	Down	5.77E-06	Ptch2	patched homolog 2
18419	15.37	3.94	-1.96	0.00071884	Down	5.67E-05	Otog	otogelin
18162	549.61	140.35	-1.97	6.36E-74	Down	2.76E-76	Npr3	natriuretic peptide receptor 3
78102	18.37	4.61	-2.00	0.00023501	Down	1.67E-05	8430426J06Rik	RIKEN cDNA 8430426J06 gene
69564	1404.80	345.97	-2.02	4.37E-185	Down	7.07E-188	Nmrk2	nicotinamide riboside kinase 2
16069	30.99	7.61	-2.03	4.14E-06	Down	2.24E-07	Igj	immunoglobulin joining chain
21844	312.83	76.11	-2.04	4.05E-47	Down	3.06E-49	Tiam1	T cell lymphoma invasion and metastasis 1
434510	8.04	1.95	-2.04	0.00260019	Down	0.00023406	Gm5627	predicted gene 5627
211480	11.00	2.66	-2.05	0.00136801	Down	0.00011556	Kcnj14	potassium inwardly-rectifying channel, subfamily J, member 14
14412	40.64	9.60	-2.08	8.57E-08	Down	3.75E-09	Slc6a13	solute carrier family 6 (neurotransmitter transporter, GABA), member 13
53320	19.69	4.60	-2.10	6.24E-05	Down	4.04E-06	Folh1	folate hydrolase 1
211187	97.89	22.54	-2.12	2.71E-16	Down	5.86E-18	Lrtm2	leucine-rich repeats and transmembrane domains 2
74556	7.04	1.62	-2.12	0.00190038	Down	0.00016568	Themis3	thymocyte selection associated family member 3

20618	474.04	107.94	-2.13	1.46E-73	Down	6.40E-76	Sncg	synuclein, gamma
21380	476.64	108.30	-2.14	1.07E-72	Down	4.90E-75	Tbx1	T-box 1
14573	16.30	3.68	-2.15	0.00016811	Down	1.16E-05	Gdnf	glial cell line derived neurotrophic factor
69169	10.61	2.38	-2.16	0.00083989	Down	6.70E-05	Faim3	Fas apoptotic inhibitory molecule 3
11438	8.97	2.01	-2.16	0.00113768	Down	9.47E-05	Chrna4	cholinergic receptor, nicotinic, alpha polypeptide 4
12902	5.98	1.34	-2.16	0.00169516	Down	0.00014603	Cr2	complement receptor 2
84112	29.93	6.69	-2.16	1.98E-06	Down	1.02E-07	Sucnr1	succinate receptor 1
72832	19.31	4.32	-2.16	4.89E-05	Down	3.11E-06	Crtac1	cartilage acidic protein 1
12478	9.26	2.06	-2.17	0.00104231	Down	8.58E-05	Cd19	CD19 antigen
192663	21.55	4.76	-2.18	3.43E-05	Down	2.14E-06	Abcg4	ATP-binding cassette, sub-family G (WHITE), member 4
81879	150.50	32.86	-2.20	5.15E-25	Down	7.67E-27	Tfcp2l1	transcription factor CP2-like 1
75697	6.32	1.34	-2.24	0.00097638	Down	7.98E-05	C2cd4b	C2 calcium-dependent domain containing 4B
13421	11.94	2.38	-2.33	0.00017473	Down	1.21E-05	Dnase1l3	deoxyribonuclease 1-like 3
268595	34.15	6.78	-2.33	1.18E-07	Down	5.26E-09	D430019H16Rik	RIKEN cDNA D430019H16 gene
170706	235.61	46.54	-2.34	4.61E-39	Down	4.13E-41	Tmem37	transmembrane protein 37
16516	56.54	10.70	-2.40	3.89E-12	Down	1.11E-13	Kcnj15	potassium inwardly-rectifying channel, subfamily J, member 15
330863	25.51	4.79	-2.41	1.05E-06	Down	5.29E-08	Trim67	tripartite motif-containing 67
319734	56.50	10.39	-2.44	3.17E-12	Down	8.97E-14	Cacna2d4	calcium channel, voltage-dependent, alpha 2/delta subunit 4
12482	9.59	1.74	-2.46	0.00012809	Down	8.75E-06	Ms4a1	membrane-spanning 4-domains, subfamily A, member 1
11702	14494.83	2584.21	-2.49	0	Down	0	Amd1	S-adenosylmethionine decarboxylase 1
12274	15.85	2.80	-2.50	1.67E-05	Down	9.98E-07	C6	complement component 6
232941	13.87	2.45	-2.50	3.06E-05	Down	1.89E-06	Ppm1n	protein phosphatase, Mg2+/Mn2+ dependent, 1N (putative)
12518	17.16	2.81	-2.61	4.44E-06	Down	2.40E-07	Cd79a	CD79A antigen (immunoglobulin-associated alpha)
18227	382.52	61.12	-2.65	9.75E-75	Down	4.05E-77	Nr4a2	nuclear receptor subfamily 4, group A, member 2
73339	14.46	2.20	-2.72	6.00E-06	Down	3.33E-07	1700047G03Rik	RIKEN cDNA 1700047G03 gene
230810	157.85	23.90	-2.72	1.53E-30	Down	1.82E-32	Slc30a2	solute carrier family 30 (zinc transporter), member 2
14128	10.47	1.52	-2.78	1.12E-05	Down	6.48E-07	Fcer2a	Fc receptor, IgE, low affinity II, alpha polypeptide
63993	12.81	1.85	-2.79	5.23E-06	Down	2.88E-07	Slc5a7	solute carrier family 5 (choline transporter), member 7
17167	14.08	1.91	-2.88	1.94E-06	Down	1.00E-07	Marco	macrophage receptor with collagenous structure
18111	658.46	77.88	-3.08	8.27E-137	Down	1.67E-139	Nnat	neuronatin
20860	14.69	1.63	-3.17	1.63E-07	Down	7.38E-09	Sult1e1	sulfotransferase family 1E, member 1
20527	213.84	23.54	-3.18	9.18E-50	Down	6.31E-52	Slc2a3	solute carrier family 2 (facilitated glucose transporter), member 3
242894	154.16	15.62	-3.30	1.01E-37	Down	9.79E-40	Actr3b	ARP3 actin-related protein 3B
73598	155.17	14.99	-3.37	3.23E-38	Down	3.06E-40	1700001O22Rik	RIKEN cDNA 1700001O22 gene
277898	39.58	3.39	-3.54	1.20E-13	Down	3.10E-15	Slc15a5	solute carrier family 15, member 5
16846	911.84	50.91	-4.16	8.55E-214	Down	1.14E-216	Lep	leptin
109828	301.19	14.87	-4.34	3.20E-74	Down	1.35E-76	C7	complement component 7
208151	186.49	6.69	-4.80	1.39E-47	Down	1.02E-49	Tmem132b	transmembrane protein 132B
50781	1148.25	40.15	-4.84	3.26E-250	Down	4.15E-253	Dkk3	dickkopf homolog 3 (Xenopus laevis)
20592	106.01	2.25	-5.56	1.59E-30	Down	1.91E-32	Kdm5d	lysine (K)-specific demethylase 5D
22290	144.55	2.36	-5.94	1.86E-36	Down	1.86E-38	Uty	ubiquitously transcribed tetratricopeptide repeat gene, Y chromosome
26908	472.19	2.82	-7.39	1.08E-65	Down	5.80E-68	Eif2s3y	eukaryotic translation initiation factor 2, subunit 3, structural gene Y-linked
26900	827.16	3.04	-8.09	2.57E-84	Down	9.51E-87	Ddx3y	DEAD (Asp-Glu-Ala-Asp) box polypeptide 3, Y-linked

Supplemental Table 6S: List of differential expressed genes in gastrocnemius muscle from $Ctns^{-/-}$+ $25(OH)D_3$+ $1,25(OH)_2D_3$ versus $Ctns^{-/-}$+ Vehicle mice

Gene ID	Expression ($Ctns^{-/-}$ + Vehicle)	Expression ($Ctns^{-/-}$+ 25(OH)D3 + 1,25(OH)2D3)	log2 Fold Change ($Ctns^{-/-}$ + 25(OH)D3 + 1,25(OH)D2D3 / $Ctns^{-/-}$ + Vehicle)	P - adjusted	Up/Down-Regulation	P value	Symbol	Desciption
213742	3.70	1308.90	8.47	4.25E-103	Up	9.31E-106	Xist	inactive X specific transcripts
22227	3.20	202.79	5.99	6.79E-44	Up	4.19E-46	Ucp1	uncoupling protein 1 (mitochondrial, proton carrier)
12945	2.40	120.12	5.65	6.85E-32	Up	6.39E-34	Dmbt1	deleted in malignant brain tumors 1
215384	2.85	74.13	4.70	5.95E-23	Up	7.89E-25	Fcgbp	Fc fragment of IgG binding protein
218963	3.16	81.18	4.68	9.93E-25	Up	1.23E-26	Gm1821	ubiquitin pseudogene
100039008	29.20	650.18	4.48	2.95E-144	Up	4.09E-147	Mup10	major urinary protein 10
12824	4.75	80.41	4.08	1.48E-23	Up	1.93E-25	Col2a1	collagen, type II, alpha 1
15891	1.93	31.96	4.05	1.90E-13	Up	4.35E-15	Ibsp	integrin binding sialoprotein
17386	2.60	38.27	3.88	4.76E-14	Up	1.02E-15	Mmp13	matrix metallopeptidase 13
100048884	22.50	330.07	3.87	1.58E-75	Up	5.66E-78	LOC100048884	novel member of the major urinary protein (Mup) gene family
16691	2.60	37.40	3.85	9.50E-14	Up	2.11E-15	Krt8	keratin 8
613254	2.89	37.37	3.70	2.37E-13	Up	5.49E-15	AA465934	expressed sequence AA465934
14282	11.11	100.25	3.17	1.07E-24	Up	1.32E-26	Fosb	FBJ osteosarcoma oncogene B
17750	43.51	378.58	3.12	1.06E-79	Up	3.49E-82	Mt2	metallothionein 2
75745	69.87	605.66	3.12	1.14E-128	Up	1.85E-131	Rian	RNA imprinted and accumulated in nucleus
242122	2.04	16.73	3.04	2.91E-07	Up	1.22E-08	Vtcn1	V-set domain containing T cell activation inhibitor 1
320485	16.68	131.30	2.98	3.37E-29	Up	3.51E-31	B230312C02Rik	RIKEN cDNA B230312C02 gene
17075	2.09	16.02	2.94	1.04E-06	Up	4.64E-08	Epcam	epithelial cell adhesion molecule
100303644	4.88	36.99	2.92	2.74E-10	Up	8.19E-12	C130080G10Rik	RIKEN cDNA C130080G10 gene
74747	105.29	735.92	2.81	1.54E-141	Up	2.22E-144	Ddit4	DNA-damage-inducible transcript 4
619547	63.91	439.29	2.78	7.72E-81	Up	2.40E-83	Rpl34-ps1	ribosomal protein L34, pseudogene 1
80797	2.27	15.23	2.74	3.95E-06	Up	1.92E-07	Clca2	chloride channel calcium activated 2
17841	2.24	14.25	2.67	9.88E-06	Up	5.02E-07	Mup2	major urinary protein 2
11464	1847.73	11610.65	2.65	0	Up	0	Actc1	actin, alpha, cardiac muscle 1
14955	1937.50	11885.76	2.62	0	Up	0	H19	H19 fetal liver mRNA
20533	2.56	15.54	2.60	1.00E-05	Up	5.09E-07	Slc4a1	solute carrier family 4 (anion exchanger), member 1
110310	1.87	10.87	2.54	6.65E-05	Up	3.93E-06	Krt7	keratin 7
15375	1.48	8.34	2.50	0.000146578	Up	9.32E-06	Foxa1	forkhead box A1
18115	417.24	2351.54	2.49	0	Up	0	Nnt	nicotinamide nucleotide transhydrogenase
104816	1.82	10.23	2.49	0.000101422	Up	6.28E-06	Aspg	asparaginase homolog (S. cerevisiae)
110308	1.49	8.33	2.48	0.000163643	Up	1.06E-05	Krt5	keratin 5
11830	1.46	8.05	2.47	0.000182591	Up	1.19E-05	Aqp5	aquaporin 5
12814	10.21	55.06	2.43	2.35E-11	Up	6.34E-13	Col11a1	collagen, type XI, alpha 1
68162	7.22	38.49	2.41	1.85E-08	Up	6.90E-10	A930003A15Rik	RIKEN cDNA A930003A15 gene
100040724	4.68	24.80	2.40	2.12E-06	Up	9.93E-08	Mirg	miRNA containing gene
100039028	5.75	30.39	2.40	0.00026057	Up	1.77E-05	Mup11	major urinary protein 11
68709	20.66	108.60	2.39	1.20E-19	Up	1.90E-21	Cilp2	cartilage intermediate layer protein 2
16669	13.34	69.58	2.38	3.42E-13	Up	8.00E-15	Krt19	keratin 19
170439	38.91	199.36	2.36	1.57E-34	Up	1.36E-36	Elovl6	ELOVL family member 6, elongation of long chain fatty acids (yeast)
16545	28.04	136.73	2.29	6.20E-23	Up	8.26E-25	Kera	keratocan
20677	25.72	125.28	2.28	4.75E-21	Up	6.87E-23	Sox4	SRY-box containing gene 4
100647	1.74	8.42	2.28	0.000602838	Up	4.43E-05	Upk3b	uroplakin 3B
26458	3.51	16.65	2.25	8.03E-05	Up	4.84E-06	Slc27a2	solute carrier family 27 (fatty acid transporter), member 2
17748	140.45	649.27	2.21	2.03E-95	Up	4.79E-98	Mt1	metallothionein 1
12813	1.35	6.24	2.20	0.001264617	Up	0.000100458	Col10a1	collagen, type X, alpha 1
11595	1.42	6.51	2.20	0.001340287	Up	0.000106935	Acan	aggrecan
403183	16.65	75.80	2.19	1.66E-13	Up	3.77E-15	Mettl21e	methyltransferase like 21E
20856	10.43	46.74	2.16	5.96E-09	Up	2.07E-10	Stc2	stanniocalcin 2
12739	1.33	5.95	2.16	0.001668747	Up	0.000136794	Cldn3	claudin 3
12740	1.45	6.47	2.16	0.001708871	Up	0.000140378	Cldn4	claudin 4
19116	9.77	42.69	2.13	3.98E-08	Up	1.52E-09	Prlr	prolactin receptor
17263	152.61	663.93	2.12	1.23E-29	Up	1.27E-31	Meg3	maternally expressed 3
16668	8.73	37.87	2.12	3.16E-07	Up	1.33E-08	Krt18	keratin 18

327959	24.94	107.64	2.11	7.73E-17	Up	1.41E-18	Xaf1	XIAP associated factor 1
18667	1.31	5.65	2.10	0.002442895	Up	0.000210393	Pgr	progesterone receptor
12841	1.70	7.19	2.08	0.002494216	Up	0.000215244	Col9a3	collagen, type IX, alpha 3
50528	1.65	6.91	2.06	0.002796706	Up	0.000244623	Tmprss2	transmembrane protease, serine 2
230775	3.48	14.52	2.06	0.000526916	Up	3.83E-05	Bai2	brain-specific angiogenesis inhibitor 2
12096	1.29	5.36	2.05	0.003339711	Up	0.00029899	Bglap	bone gamma carboxyglutamate protein
105171	280.10	1142.32	2.03	2.10E-147	Up	2.67E-150	Arrdc3	arrestin domain containing 3
100040972	101.33	411.81	2.02	7.43E-57	Up	3.47E-59	Tceal7	transcription elongation factor A (SII)-like 7
16664	1.26	5.07	2.01	0.004303334	Up	0.00039915	Krt14	keratin 14
12683	16.21	65.01	2.00	2.04E-10	Up	5.99E-12	Cidea	cell death-inducing DNA fragmentation factor, alpha subunit-like effector A
14462	2.36	9.39	1.99	0.00293865	Up	0.000259019	Gata3	GATA binding protein 3
12609	232.82	919.03	1.98	2.61E-119	Up	4.52E-122	Cebpd	CCAAT/enhancer binding protein (C/EBP), delta
67701	1.61	6.32	1.97	0.00499052	Up	0.000474973	Wfdc2	WAP four-disulfide core domain 2
268709	27.42	106.51	1.96	1.43E-14	Up	2.98E-16	Fam107a	family with sequence similarity 107, member A
12705	2.34	9.10	1.96	0.003706123	Up	0.000337561	Cited1	Cbp/p300-interacting transactivator with Glu/Asp-rich carboxy-terminal domain 1
329278	1.66	6.33	1.93	0.006502372	Up	0.000641413	Tnn	tenascin N
110935	1.26	4.77	1.92	0.006969518	Up	0.00069426	Atp6v1b1	ATPase, H+ transporting, lysosomal V1 subunit B1
271424	176.89	669.30	1.92	5.28E-85	Up	1.40E-87	Ip6k3	inositol hexaphosphate kinase 3
242022	6.82	25.62	1.91	5.97E-05	Up	3.49E-06	Frem2	Fras1 related extracellular matrix protein 2
105404	2.62	9.78	1.90	0.004034632	Up	0.000370399	BB123696	expressed sequence BB123696
11839	1.28	4.74	1.89	0.008227995	Up	0.000844286	Areg	amphiregulin
15129	292.04	1079.54	1.89	1.00E-112	Up	1.91E-115	Hbb-b1	hemoglobin, beta adult major chain
244810	4.42	15.89	1.85	0.001364369	Up	0.000109011	AW551984	expressed sequence AW551984
223838	15.08	53.77	1.83	4.36E-08	Up	1.67E-09	Adamts20	a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 20
18491	3.67	12.95	1.82	0.003404782	Up	0.000306385	Pappa	pregnancy-associated plasma protein A
100503605	1432.50	5010.93	1.81	3.71E-112	Up	7.26E-115	Beta-s	hemoglobin subunit beta-1-like
17691	237.31	819.78	1.79	4.41E-94	Up	1.07E-96	Sik1	salt inducible kinase 1
20617	12.03	41.47	1.79	3.57E-06	Up	1.73E-07	Snca	synuclein, alpha
17883	25.30	86.82	1.78	2.41E-11	Up	6.53E-13	Myh3	myosin, heavy polypeptide 3, skeletal muscle, embryonic
53311	1468.22	5033.64	1.78	0	Up	0	Mybph	myosin binding protein H
13711	1.15	3.91	1.76	0.015874483	Up	0.001827483	Elf5	E74-like factor 5
109620	1.89	6.38	1.75	0.015667286	Up	0.001798211	Dsp	desmoplakin
12818	95.99	322.87	1.75	1.81E-37	Up	1.38E-39	Col14a1	collagen, type XIV, alpha 1
17002	1.91	6.41	1.75	0.016173876	Up	0.001865679	Ltf	lactotransferrin
16372	2.57	8.63	1.74	0.011419113	Up	0.001234267	Irx2	Iroquois related homeobox 2 (Drosophila)
109151	188.27	630.47	1.74	7.14E-64	Up	3.04E-66	Chd9	chromodomain helicase DNA binding protein 9
11656	80.61	263.61	1.71	6.14E-30	Up	6.23E-32	Alas2	aminolevulinic acid synthase 2, erythroid
240327	2.93	9.55	1.70	0.01227173	Up	0.001347648	Gm4951	predicted gene 4951
140474	4.03	13.10	1.70	0.006390157	Up	0.000627707	Muc4	mucin 4
21420	1.12	3.63	1.69	0.021969819	Up	0.002673925	Tfap2c	transcription factor AP-2, gamma
241727	9.49	30.62	1.69	0.000174832	Up	1.14E-05	Snph	syntaphilin
237091	1.13	3.62	1.69	0.022266144	Up	0.002717324	Lhfpl1	lipoma HMGIC fusion partner-like 1
140709	3.67	11.80	1.69	0.00887865	Up	0.000926917	Col26a1	collagen, type XXVI, alpha 1
18787	49.11	157.67	1.68	1.05E-17	Up	1.82E-19	Serpine1	serine (or cysteine) peptidase inhibitor, clade E, member 1
110257	1318.85	4204.57	1.67	3.51E-275	Up	2.63E-278	Hba-a2	hemoglobin alpha, adult chain 2
114479	2.21	7.02	1.67	0.022266781	Up	0.002718686	Slc5a5	solute carrier family 5 (sodium iodide symporter), member 5
11639	37.54	118.57	1.66	3.17E-13	Up	7.40E-15	Ak4	adenylate kinase 4
53412	2270.60	7086.30	1.64	0	Up	0	Ppp1r3c	protein phosphatase 1, regulatory (inhibitor) subunit 3C
73149	4.62	14.37	1.64	0.006138996	Up	0.000598788	Clec4a3	C-type lectin domain family 4, member a3
12842	1191.30	3691.28	1.63	0	Up	0	Col1a1	collagen, type I, alpha 1
22097	1.17	3.58	1.61	0.03028541	Up	0.003922944	Tsix	X (inactive)-specific transcript, antisense
140742	165.06	504.35	1.61	2.55E-51	Up	1.37E-53	Sesn1	sestrin 1
15122	2170.40	6626.41	1.61	0	Up	0	Hba-a1	hemoglobin alpha, adult chain 1
12816	60.28	182.56	1.60	1.34E-19	Up	2.13E-21	Col12a1	collagen, type XII, alpha 1
72169	1.50	4.53	1.60	0.036224623	Up	0.00488856	Trim29	tripartite motif-containing 29
56458	302.87	915.53	1.60	5.10E-86	Up	1.32E-88	Foxo1	forkhead box O1
11695	7.39	22.34	1.60	0.001371213	Up	0.000109637	Alx4	aristaless-like homeobox 4
12805	2.56	7.68	1.58	0.030335713	Up	0.003931209	Cntn1	contactin 1
16819	4.22	12.49	1.57	0.012949871	Up	0.001431824	Lcn2	lipocalin 2
13447	5.29	15.61	1.56	0.008186011	Up	0.000838562	Doc2b	double C2, beta
81799	4.59	13.47	1.55	0.012043719	Up	0.001319831	C1qtnf3	C1q and tumor necrosis factor related protein 3
66139	1.05	3.07	1.55	0.039742953	Up	0.005471042	Tmem8c	transmembrane protein 8C
14038	1.05	3.07	1.55	0.039852485	Up	0.005490715	Wfdc18	WAP four-disulfide core domain 18

24117	8.41	24.52	1.54	0.001415924	Up	0.00011362	Wif1	Wnt inhibitory factor 1
13371	18.24	53.10	1.54	1.46E-05	Up	7.61E-07	Dio2	deiodinase, iodothyronine, type II
22402	3.96	11.52	1.54	0.020852057	Up	0.002515902	Wisp1	WNT1 inducible signaling pathway protein 1
14104	1714.37	4937.98	1.53	0	Up	0	Fasn	fatty acid synthase
277468	1.39	4.00	1.52	0.04994523	Up	0.007260924	Slc39a12	solute carrier family 39 (zinc transporter), member 12
16364	44.45	127.38	1.52	5.79E-13	Up	1.38E-14	Irf4	interferon regulatory factor 4
12643	92.47	262.88	1.51	2.65E-24	Up	3.35E-26	Chad	chondroadherin
19143	3.54	10.04	1.51	0.027754812	Up	0.003540751	St14	suppression of tumorigenicity 14 (colon carcinoma)
20739	2.54	7.19	1.50	0.043982208	Up	0.006191535	Spta1	spectrin alpha, erythrocytic 1
100042149	1.08	3.03	1.49	0.049263562	Up	0.007130962	Gm3696	predicted gene 3696
75104	1.08	3.03	1.49	0.04933417	Up	0.007146871	Mmd2	monocyte to macrophage differentiation-associated 2
14264	697.54	1949.32	1.48	2.46E-155	Up	2.70E-158	Fmod	fibromodulin
12845	47.14	131.43	1.48	8.44E-13	Up	2.03E-14	Comp	cartilage oligomeric matrix protein
320563	16.52	45.89	1.47	4.02E-05	Up	2.30E-06	Islr2	immunoglobulin superfamily containing leucine-rich repeat 2
11539	243.66	675.18	1.47	6.07E-54	Up	2.98E-56	Adora1	adenosine A1 receptor
22695	168.18	463.97	1.46	2.86E-41	Up	1.89E-43	Zfp36	zinc finger protein 36
76293	52.14	141.95	1.44	8.92E-13	Up	2.15E-14	Mfap4	microfibrillar-associated protein 4
15200	61.56	167.11	1.44	1.22E-15	Up	2.38E-17	Hbegf	heparin-binding EGF-like growth factor
106369	5.57	15.10	1.44	0.015907025	Up	0.001832146	Ypel1	yippee-like 1 (Drosophila)
56838	9.75	26.43	1.44	0.002434258	Up	0.000209228	Ccl28	chemokine (C-C motif) ligand 28
16527	21.62	57.92	1.42	5.23E-06	Up	2.57E-07	Kcnk3	potassium channel, subfamily K, member 3
67606	53.16	142.40	1.42	3.98E-13	Up	9.35E-15	Fibin	fin bud initiation factor homolog (zebrafish)
433938	424.85	1132.75	1.41	2.70E-87	Up	6.84E-90	Mn1	meningioma 1
14783	320.75	849.96	1.41	7.93E-67	Up	3.20E-69	Grb10	growth factor receptor bound protein 10
330119	7.26	19.23	1.40	0.009058669	Up	0.000948996	Adamts3	a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 3
20255	9.43	24.55	1.38	0.006060324	Up	0.000589368	Scg3	secretogranin III
93761	26.75	69.27	1.37	1.65E-06	Up	7.63E-08	Smarca1	SWI/SNF related, matrix associated, actin dependent regulator of chromatin, subfamily a, member 1
13587	4.14	10.71	1.37	0.046031968	Up	0.006543427	Ear2	eosinophil-associated, ribonuclease A family, member 2
631323	4.93	12.67	1.36	0.036950475	Up	0.005014205	Gm12250	predicted gene 12250
171531	9.00	23.07	1.36	0.00615032	Up	0.000600921	Mlph	melanophilin
232493	6.78	17.37	1.36	0.020991652	Up	0.002535165	Gys2	glycogen synthase 2
13052	8.78	22.49	1.36	0.007909625	Up	0.000804778	Cxadr	coxsackie virus and adenovirus receptor
21906	7.19	18.29	1.35	0.014747871	Up	0.00166633	Otop1	otopetrin 1
12608	485.96	1233.77	1.34	1.34E-83	Up	3.77E-86	Cebpb	CCAAT/enhancer binding protein (C/EBP), beta
74155	459.42	1156.49	1.33	1.18E-82	Up	3.47E-85	Errfi1	ERBB receptor feedback inhibitor 1
227731	988.31	2476.19	1.33	2.77E-161	Up	2.87E-164	Slc25a25	solute carrier family 25 (mitochondrial carrier, phosphate carrier), member 25
107581	45.42	113.76	1.32	4.36E-09	Up	1.48E-10	Col16a1	collagen, type XVI, alpha 1
14260	4.42	11.08	1.32	0.04934311	Up	0.00715101	Fmn1	formin 1
14229	270.06	676.19	1.32	3.13E-48	Up	1.75E-50	Fkbp5	FK506 binding protein 5
50934	166.37	413.63	1.31	6.49E-31	Up	6.40E-33	Slc7a8	solute carrier family 7 (cationic amino acid transporter, y+ system), member 8
213393	168.11	417.65	1.31	1.51E-28	Up	1.63E-30	8430408G22Rik	RIKEN cDNA 8430408G22 gene
70807	589.86	1463.81	1.31	2.45E-93	Up	6.06E-96	Arrdc2	arrestin domain containing 2
20927	18.78	46.29	1.30	0.000193471	Up	1.27E-05	Abcc8	ATP-binding cassette, sub-family C (CFTR/MRP), member 8
55963	5.16	12.70	1.30	0.045165656	Up	0.006391981	Slc1a4	solute carrier family 1 (glutamate/neutral amino acid transporter), member 4
226438	509.26	1250.34	1.30	4.65E-83	Up	1.34E-85	Igfn1	immunoglobulin-like and fibronectin type III domain containing 1
12267	7.26	17.76	1.29	0.022348059	Up	0.002731186	C3ar1	complement component 3a receptor 1
53422	60.57	147.96	1.29	1.13E-11	Up	2.97E-13	Ybx2	Y box protein 2
17207	152.85	371.93	1.28	2.60E-27	Up	2.95E-29	Mcf2l	mcf.2 transforming sequence-like
12843	1753.97	4235.48	1.27	2.45E-197	Up	2.40E-200	Col1a2	collagen, type I, alpha 2
12575	195.58	472.04	1.27	2.55E-33	Up	2.26E-35	Cdkn1a	cyclin-dependent kinase inhibitor 1A (P21)
16658	244.94	590.92	1.27	6.89E-40	Up	4.80E-42	Mafb	v-maf musculoaponeurotic fibrosarcoma oncogene family, protein B (avian)
99151	27.91	67.25	1.27	1.46E-05	Up	7.62E-07	Cercam	cerebral endothelial cell adhesion molecule
13653	116.24	279.14	1.26	2.37E-20	Up	3.57E-22	Egr1	early growth response 1
64899	29.38	70.47	1.26	1.24E-05	Up	6.42E-07	Lpin3	lipin 3
14183	12.44	29.80	1.26	0.004191648	Up	0.000387583	Fgfr2	fibroblast growth factor receptor 2
52331	247.22	588.40	1.25	4.99E-40	Up	3.42E-42	Stbd1	starch binding domain 1
268903	99.23	235.96	1.25	4.30E-16	Up	8.11E-18	Nrip1	nuclear receptor interacting protein 1
19242	8.55	20.27	1.25	0.019185043	Up	0.002268319	Ptn	pleiotrophin
19716	56.75	134.40	1.24	7.10E-10	Up	2.23E-11	Bex1	brain expressed gene 1
21648	104.68	246.38	1.23	0.002388083	Up	0.000204763	Dynlt1b	dynein light chain Tctex-type 1B
21923	49.94	117.53	1.23	4.11E-08	Up	1.57E-09	Tnc	tenascin C
19735	66.25	155.49	1.23	1.60E-10	Up	4.59E-12	Rgs2	regulator of G-protein signaling 2
22390	52.50	123.04	1.23	4.38E-09	Up	1.49E-10	Wee1	WEE 1 homolog 1 (S. pombe)

666945	20.44	47.85	1.23	0.000436881	Up	3.12E-05	Gm10638	predicted gene 10638
12825	2457.69	5752.00	1.23	7.70E-250	Up	6.21E-253	Col3a1	collagen, type III, alpha 1
244886	44.08	102.99	1.22	7.93E-08	Up	3.14E-09	AI118078	expressed sequence AI118078
50706	193.96	452.87	1.22	1.80E-29	Up	1.87E-31	Postn	periostin, osteoblast specific factor
12835	648.68	1502.47	1.21	4.26E-84	Up	1.18E-86	Col6a3	collagen, type VI, alpha 3
633640	253.34	586.45	1.21	1.09E-36	Up	8.54E-39	Gm7120	predicted gene 7120
654812	117.48	271.84	1.21	8.53E-19	Up	1.41E-20	Angptl7	angiopoietin-like 7
547127	81.91	189.45	1.21	1.67E-13	Up	3.80E-15	Tmem181b-ps	transmembrane protein 181B, pseudogene
18742	19.08	43.93	1.20	0.001595151	Up	0.000129657	Pitx3	paired-like homeodomain transcription factor 3
23984	32.63	74.82	1.20	1.11E-05	Up	5.68E-07	Pde10a	phosphodiesterase 10A
228966	30.84	70.37	1.19	2.34E-05	Up	1.27E-06	Ppp1r3d	protein phosphatase 1, regulatory subunit 3D
26432	45.74	104.11	1.19	3.36E-07	Up	1.42E-08	Plod2	procollagen lysine, 2-oxoglutarate 5-dioxygenase 2
382427	132.69	301.51	1.18	4.37E-19	Up	7.11E-21	Best3	bestrophin 3
64103	29.06	65.93	1.18	4.75E-05	Up	2.74E-06	Tnmd	tenomodulin
75750	17.54	39.60	1.18	0.002240685	Up	0.000189824	Slc10a6	solute carrier family 10 (sodium/bile acid cotransporter family), member 6
233878	8.19	18.47	1.17	0.035245005	Up	0.004731978	Sez6l2	seizure related 6 homolog like 2
14219	275.48	620.29	1.17	1.63E-31	Up	1.53E-33	Ctgf	connective tissue growth factor
60599	142.98	321.89	1.17	1.83E-20	Up	2.72E-22	Trp53inp1	transformation related protein 53 inducible nuclear protein 1
23956	110.31	247.70	1.17	2.57E-15	Up	5.12E-17	Neu2	neuraminidase 2
71481	19.02	42.54	1.16	0.001609109	Up	0.00013107	Alpk1	alpha-kinase 1
246048	40.50	89.99	1.15	2.33E-06	Up	1.10E-07	Chodl	chondrolectin
12514	28.38	62.83	1.15	0.000115847	Up	7.24E-06	Cd68	CD68 antigen
14664	72.00	159.29	1.15	7.50E-10	Up	2.35E-11	Slc6a9	solute carrier family 6 (neurotransmitter transporter, glycine), member 9
17150	16.82	37.21	1.15	0.005570868	Up	0.000537593	Mfap2	microfibrillar-associated protein 2
100503043	120.43	265.99	1.14	9.61E-16	Up	1.86E-17	Armcx4	armadillo repeat containing, X-linked 4
231633	15.75	34.78	1.14	0.007279352	Up	0.00072932	Tmem119	transmembrane protein 119
23831	225.55	497.38	1.14	2.27E-28	Up	2.47E-30	Car14	carbonic anhydrase 14
244416	10.63	23.44	1.14	0.029695722	Up	0.003834578	Ppp1r3b	protein phosphatase 1, regulatory (inhibitor) subunit 3B
269423	38.99	85.93	1.14	1.79E-05	Up	9.55E-07	3110057O12Rik	RIKEN cDNA 3110057O12 gene
14933	13.42	29.56	1.14	0.010849762	Up	0.001163346	Gyk	glycerol kinase
77794	17.60	38.75	1.14	0.003313453	Up	0.000296115	Adamtsl2	ADAMTS-like 2
18563	1512.48	3328.91	1.14	5.12E-145	Up	6.79E-148	Pcx	pyruvate carboxylase
259302	18.15	39.61	1.13	0.003370117	Up	0.000302294	Srgap3	SLIT-ROBO Rho GTPase activating protein 3
226691	98.29	214.45	1.13	5.82E-13	Up	1.39E-14	AI607873	expressed sequence AI607873
12700	197.07	427.20	1.12	4.59E-20	Up	7.15E-22	Cish	cytokine inducible SH2-containing protein
21952	611.68	1323.32	1.11	1.32E-69	Up	4.96E-72	Tnni1	troponin I, skeletal, slow 1
56847	17.98	38.82	1.11	0.003981597	Up	0.000364259	Aldh1a3	aldehyde dehydrogenase family 1, subfamily A3
329941	13.37	28.81	1.11	0.020719135	Up	0.00249867	Col8a2	collagen, type VIII, alpha 2
12227	218.76	470.94	1.11	2.75E-26	Up	3.20E-28	Btg2	B cell translocation gene 2, anti-proliferative
99439	9.21	19.77	1.10	0.047568871	Up	0.006822583	Duox1	dual oxidase 1
234593	20.05	42.89	1.10	0.003038853	Up	0.000268551	Ndrg4	N-myc downstream regulated gene 4
66402	32.67	69.89	1.10	0.000147488	Up	9.43E-06	Sln	sarcolipin
226695	101.73	217.61	1.10	1.21E-12	Up	2.95E-14	Ifi205	interferon activated gene 205
104099	70.38	150.50	1.10	4.06E-09	Up	1.38E-10	Itga9	integrin alpha 9
53608	98.22	209.48	1.09	1.82E-12	Up	4.49E-14	Map3k6	mitogen-activated protein kinase kinase kinase 6
231991	11.36	24.22	1.09	0.031951045	Up	0.004192113	Creb5	cAMP responsive element binding protein 5
30806	9.82	20.91	1.09	0.048483401	Up	0.006995674	Adamts8	a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 8
56277	10.47	22.18	1.08	0.041873779	Up	0.005817479	Tmem45a	transmembrane protein 45a
12660	21.93	46.46	1.08	0.002674517	Up	0.000232654	Chka	choline kinase alpha
14172	9.97	21.11	1.08	0.043395874	Up	0.006083978	Fgf18	fibroblast growth factor 18
20425	71.99	152.19	1.08	9.94E-09	Up	3.58E-10	Shmt1	serine hydroxymethyltransferase 1 (soluble)
18845	180.90	381.83	1.08	4.54E-20	Up	7.04E-22	Plxna2	plexin A2
74646	101.47	214.03	1.08	1.20E-12	Up	2.92E-14	Spsb1	splA/ryanodine receptor domain and SOCS box containing 1
242050	41.11	86.53	1.07	1.78E-05	Up	9.46E-07	Igsf10	immunoglobulin superfamily, member 10
319480	56.60	118.96	1.07	3.70E-07	Up	1.57E-08	Itga11	integrin alpha 11
20319	41.61	87.35	1.07	2.14E-05	Up	1.15E-06	Sfrp2	secreted frizzled-related protein 2
140781	6677.92	13986.68	1.07	2.18E-290	Up	1.51E-293	Myh7	myosin, heavy polypeptide 7, cardiac muscle, beta
16002	206.84	432.08	1.06	1.68E-21	Up	2.41E-23	Igf2	insulin-like growth factor 2
18124	75.68	158.06	1.06	1.30E-08	Up	4.76E-10	Nr4a3	nuclear receptor subfamily 4, group A, member 3
208777	22.32	46.52	1.06	0.003272006	Up	0.000290853	Sned1	sushi, nidogen and EGF-like domains 1
320997	64.67	134.64	1.06	5.42E-08	Up	2.11E-09	Cyp4f39	cytochrome P450, family 4, subfamily f, polypeptide 39
67573	16.63	34.61	1.06	0.015337066	Up	0.001755005	Loxl4	lysyl oxidase-like 4
69671	326.33	679.17	1.06	7.40E-33	Up	6.70E-35	Tmem52	transmembrane protein 52

192657	250.03	519.71	1.06	5.46E-28	Up	6.04E-30	Ell2	elongation factor RNA polymerase II 2
56484	82.60	171.29	1.05	3.53E-09	Up	1.18E-10	Foxo3	forkhead box O3
17060	28.93	59.95	1.05	0.000742012	Up	5.58E-05	Blnk	B cell linker
13982	144.72	299.53	1.05	1.26E-15	Up	2.49E-17	Esr1	estrogen receptor 1 (alpha)
12832	297.64	613.06	1.04	4.20E-29	Up	4.41E-31	Col5a2	collagen, type V, alpha 2
235320	321.94	660.30	1.04	9.96E-34	Up	8.78E-36	Zbtb16	zinc finger and BTB domain containing 16
15951	62.68	128.55	1.04	4.50E-07	Up	1.92E-08	Ifi204	interferon activated gene 204
329152	46.81	95.88	1.03	1.08E-05	Up	5.53E-07	Hecw2	HECT, C2 and WW domain containing E3 ubiquitin protein ligase 2
70625	80.25	164.25	1.03	1.22E-08	Up	4.46E-10	Med26	mediator complex subunit 26
381308	37.16	75.90	1.03	0.000171938	Up	1.12E-05	Mnda	myeloid cell nuclear differentiation antigen
15529	169.76	346.65	1.03	1.42E-18	Up	2.35E-20	Sdc2	syndecan 2
98170	25.03	51.05	1.03	0.002295296	Up	0.000195564	Tmem132a	transmembrane protein 132A
69368	87.62	178.74	1.03	7.89E-10	Up	2.49E-11	Wdfy1	WD repeat and FYVE domain containing 1
18030	197.88	403.26	1.03	6.72E-21	Up	9.80E-23	Nfil3	nuclear factor, interleukin 3, regulated
81703	35.54	72.39	1.03	0.000149846	Up	9.61E-06	Jdp2	Jun dimerization protein 2
12338	27.09	55.14	1.03	0.00183185	Up	0.000151642	Capn6	calpain 6
215418	58.32	118.69	1.03	1.14E-06	Up	5.12E-08	Csrnp1	cysteine-serine-rich nuclear protein 1
331532	90.06	182.40	1.02	9.37E-10	Up	2.98E-11	Tceal5	transcription elongation factor A (SII)-like 5
69590	50.53	102.18	1.02	6.57E-06	Up	3.27E-07	Gpx8	glutathione peroxidase 8 (putative)
21835	203.59	411.17	1.01	2.26E-20	Up	3.38E-22	Thrsp	thyroid hormone responsive
791403	80.05	161.39	1.01	7.55E-09	Up	2.67E-10	D830015G02Rik	RIKEN cDNA D830015G02 gene
268481	19.91	40.09	1.01	0.008329793	Up	0.000858093	Krt222	keratin 222
58994	31.13	62.62	1.01	0.000805031	Up	6.12E-05	Smpd3	sphingomyelin phosphodiesterase 3, neutral
57258	35.45	71.31	1.01	0.000504858	Up	3.65E-05	Xpo4	exportin 4
16007	211.93	425.69	1.01	1.82E-20	Up	2.69E-22	Cyr61	cysteine rich protein 61
320878	991.03	1990.60	1.01	1.73E-81	Up	5.28E-84	Mical2	microtubule associated monooxygenase, calponin and LIM domain containing 2
17022	288.05	578.36	1.01	4.28E-26	Up	5.03E-28	Lum	lumican
14605	1713.87	3435.03	1.00	3.58E-117	Up	6.60E-120	Tsc22d3	TSC22 domain family, member 3
21826	168.92	338.55	1.00	3.12E-17	Up	5.56E-19	Thbs2	thrombospondin 2

Supplemental Table 6S: List of differential expressed genes in gastrocnemius muscle from $Ctns^{-/-}$+ $25(OH)D_3$+ $1,25(OH)_2D_3$ versus $Ctns^{-/-}$+ Vehicle mice

Gene ID	Expression ($Ctns^{-/-}$ + Vehicle)	Expression ($Ctns^{-/-}$+ 25(OH)D3 + 1,25(OH)2D3)	log2 Fold Change ($Ctns^{-/-}$ + 25(OH)D3 + 1,25(OH)D2D3 / $Ctns^{-/-}$ + Vehicle)	P - adjusted	Up/Down-Regulation	P value	Symbol	Desciption
67896	812.82	404.96	-1.01	1.82E-32	Down	1.68E-34	Ccdc80	coiled-coil domain containing 80
67445	97.15	48.23	-1.01	1.80E-05	Down	9.61E-07	C1qtnf4	C1q and tumor necrosis factor related protein 4
19416	43.63	21.66	-1.01	0.005637374	Down	0.000544661	Rasd1	RAS, dexamethasone-induced 1
67263	47.60	23.58	-1.01	0.003426938	Down	0.000308972	Zswim6	zinc finger SWIM-type containing 6
17701	37.45	18.53	-1.02	0.011526025	Down	0.001249072	Msx1	homeobox, msh-like 1
67212	206.84	101.14	-1.03	5.13E-11	Down	1.43E-12	Mrpl55	mitochondrial ribosomal protein L55
22359	3498.64	1705.49	-1.04	7.00E-137	Down	1.09E-139	Vldlr	very low density lipoprotein receptor
56615	673.49	327.48	-1.04	2.22E-26	Down	2.55E-28	Mgst1	microsomal glutathione S-transferase 1
327958	56.98	27.70	-1.04	0.000753253	Down	5.67E-05	Pitpnm3	PITPNM family member 3
75530	90.48	43.91	-1.04	2.98E-05	Down	1.65E-06	Lyrm7	LYR motif containing 7
73873	33.14	16.04	-1.05	0.014350487	Down	0.001609849	Fam161a	family with sequence similarity 161, member A
56077	65.22	31.56	-1.05	0.00042754	Down	3.04E-05	Dgke	diacylglycerol kinase, epsilon
100736249	34.49	16.59	-1.06	0.009667684	Down	0.001026011	Mira	mistral long non-coding RNA
72500	41.31	19.86	-1.06	0.007330324	Down	0.000735272	Ier5l	immediate early response 5-like
434223	30.70	14.75	-1.06	0.015094116	Down	0.001719374	Gm1966	predicted gene 1966
57738	57.84	27.72	-1.06	0.000616993	Down	4.54E-05	Slc15a2	solute carrier family 15 (H+/peptide transporter), member 2
72121	23.45	11.23	-1.06	0.035230804	Down	0.004723978	Dennd2d	DENN/MADD domain containing 2D
15439	380.36	181.75	-1.07	7.28E-18	Down	1.25E-19	Hp	haptoglobin
100038347	22.52	10.72	-1.07	0.048197889	Down	0.006937806	Fam174b	family with sequence similarity 174, member B
16855	75.09	35.69	-1.07	6.90E-05	Down	4.10E-06	Lgals4	lectin, galactose binding, soluble 4
20519	39.01	18.52	-1.07	0.004814888	Down	0.000456036	Slc22a3	solute carrier family 22 (organic cation transporter), member 3
56405	67.24	31.89	-1.08	0.000237887	Down	1.60E-05	Dusp14	dual specificity phosphatase 14
100182	70.85	33.58	-1.08	0.000213193	Down	1.42E-05	Akna	AT-hook transcription factor
494504	116.61	55.23	-1.08	2.51E-07	Down	1.04E-08	Apcdd1	adenomatosis polyposis coli down-regulated 1
207911	32.09	15.19	-1.08	0.01647621	Down	0.001907256	Mchr1	melanin-concentrating hormone receptor 1
320092	172.83	81.84	-1.08	2.95E-10	Down	8.83E-12	E030003E18Rik	RIKEN cDNA E030003E18 gene
56222	244.73	115.71	-1.08	1.43E-14	Down	2.95E-16	Cited4	Cbp/p300-interacting transactivator, with Glu/Asp-rich carboxy-terminal domain, 4
545030	43.19	20.42	-1.08	0.002603532	Down	0.000226029	Wdfy4	WD repeat and FYVE domain containing 4
56437	33.92	16.01	-1.08	0.010590789	Down	0.001132525	Rrad	Ras-related associated with diabetes
12984	80.44	37.96	-1.08	3.65E-05	Down	2.06E-06	Csf2rb2	colony stimulating factor 2 receptor, beta 2, low-affinity (granulocyte-macrophage)
26411	22.00	10.36	-1.09	0.042617907	Down	0.005942971	Map4k1	mitogen-activated protein kinase kinase kinase kinase 1
21689	25.33	11.91	-1.09	0.02393654	Down	0.002965333	Tekt1	tektin 1
12364	212.29	99.60	-1.09	9.59E-13	Down	2.33E-14	Casp12	caspase 12
319162	156.31	73.30	-1.09	8.34E-10	Down	2.65E-11	Hist3h2a	histone cluster 3, H2a
93712	22.15	10.37	-1.09	0.039156444	Down	0.00537676	Pcdhga4	protocadherin gamma subfamily A, 4
15203	54.09	25.30	-1.10	0.000796499	Down	6.04E-05	Heph	hephaestin
100043102	35.68	16.65	-1.10	0.007543005	Down	0.000760953	4632428C04Rik	RIKEN cDNA 4632428C04 gene
76933	361.80	168.46	-1.10	5.68E-18	Down	9.62E-20	Ifi27l2a	interferon, alpha-inducible protein 27 like 2A
13483	24.22	11.26	-1.10	0.027488438	Down	0.003497261	Dpp6	dipeptidylpeptidase 6
53374	23.80	10.96	-1.12	0.024377149	Down	0.003038185	Chst3	carbohydrate (chondroitin 6/keratan) sulfotransferase 3
353211	85.20	39.13	-1.12	6.10E-06	Down	3.02E-07	Prune2	prune homolog 2 (Drosophila)
19227	23.23	10.66	-1.12	0.024284779	Down	0.003025273	Pthlh	parathyroid hormone-like peptide
53886	86.47	39.58	-1.13	1.18E-05	Down	6.06E-07	Cdkl2	cyclin-dependent kinase-like 2 (CDC2-related kinase)
19662	106.60	48.79	-1.13	4.54E-07	Down	1.94E-08	Rbp4	retinol binding protein 4, plasma
243529	19.29	8.80	-1.13	0.045199729	Down	0.006399408	H1fx	H1 histone family, member X
100702	247.50	112.52	-1.14	4.85E-13	Down	1.15E-14	Gbp6	guanylate binding protein 6
74685	25.02	11.35	-1.14	0.020113771	Down	0.002407113	4930451C15Rik	RIKEN cDNA 4930451C15 gene
15483	129.04	58.52	-1.14	7.80E-09	Down	2.77E-10	Hsd11b1	hydroxysteroid 11-beta dehydrogenase 1
244757	174.63	78.89	-1.15	6.12E-10	Down	1.91E-11	Glb1l2	galactosidase, beta 1-like 2
12561	314.34	141.91	-1.15	6.22E-20	Down	9.71E-22	Cdh4	cadherin 4
78255	40.68	18.32	-1.15	0.00229141	Down	0.000195101	Ralgps2	Ral GEF with PH domain and SH3 binding motif 2
17927	150.51	67.66	-1.15	3.50E-10	Down	1.05E-11	Myod1	myogenic differentiation 1
59126	226.69	101.88	-1.15	1.13E-14	Down	2.33E-16	Nek6	NIMA (never in mitosis gene a)-related expressed kinase 6
23880	23.84	10.69	-1.16	0.020113771	Down	0.002406876	Fyb	FYN binding protein

18782	39.57	17.71	-1.16	0.003956381	Down	0.000361267	Pla2g2d	phospholipase A2, group IID
16421	45.72	20.39	-1.17	0.00293865	Down	0.000259016	Itgb7	integrin beta 7
56013	46.11	20.48	-1.17	0.000815832	Down	6.21E-05	Srcin1	SRC kinase signaling inhibitor 1
26878	178.92	79.16	-1.18	2.34E-12	Down	5.85E-14	B3galt2	UDP-Gal:betaGlcNAc beta 1,3-galactosyltransferase, polypeptide 2
20719	2871.75	1264.10	-1.18	3.60E-151	Down	4.15E-154	Serpinb6a	serine (or cysteine) peptidase inhibitor, clade B, member 6a
21743	196.76	86.42	-1.19	9.15E-14	Down	2.03E-15	Inmt	indolethylamine N-methyltransferase
229706	22.22	9.75	-1.19	0.021932476	Down	0.002667754	Slc6a17	solute carrier family 6 (neurotransmitter transporter), member 17
22095	55.00	24.07	-1.19	0.000309408	Down	2.14E-05	Tshr	thyroid stimulating hormone receptor
60510	18.84	8.21	-1.20	0.030759839	Down	0.00400213	Syt9	synaptotagmin IX
22041	1771.80	770.01	-1.20	2.17E-96	Down	5.01E-99	Trf	transferrin
19229	60.69	26.22	-1.21	4.84E-05	Down	2.80E-06	Ptk2b	PTK2 protein tyrosine kinase 2 beta
15242	21.20	9.16	-1.21	0.022606778	Down	0.002773935	Hhex	hematopoietically expressed homeobox
18619	93.78	40.47	-1.21	5.68E-07	Down	2.46E-08	Penk	preproenkephalin
14680	53.54	23.04	-1.22	0.000133592	Down	8.45E-06	Gnal	guanine nucleotide binding protein, alpha stimulating, olfactory type
18979	27.05	11.63	-1.22	0.008106888	Down	0.00082812	Pon1	paraoxonase 1
433294	875.74	372.46	-1.23	1.07E-57	Down	4.92E-60	Mettl21c	methyltransferase like 21C
12029	310.09	131.22	-1.24	5.28E-22	Down	7.31E-24	Bcl6b	B cell CLL/lymphoma 6, member B
237858	176.75	74.45	-1.25	4.59E-13	Down	1.08E-14	Tusc5	tumor suppressor candidate 5
66487	33.81	14.21	-1.25	0.002143438	Down	0.000180401	Smim4	small itegral membrane protein 4
16918	24.00	10.07	-1.25	0.0093241	Down	0.000984172	Mycl1	v-myc myelocytomatosis viral oncogene homolog 1, lung carcinoma derived (avian)
12481	16.73	6.94	-1.27	0.027710593	Down	0.003533512	Cd2	CD2 antigen
20249	13296.44	5500.11	-1.27	0	Down	0	Scd1	stearoyl-Coenzyme A desaturase 1
12741	165.10	68.06	-1.28	7.32E-13	Down	1.76E-14	Cldn5	claudin 5
665574	34.76	14.31	-1.28	0.001905888	Down	0.00015843	Gm7694	predicted gene 7694
21990	32.53	13.38	-1.28	0.002576136	Down	0.000223353	Tph1	tryptophan hydroxylase 1
83429	78.25	32.03	-1.29	2.74E-06	Down	1.30E-07	Ctns	cystinosis, nephropathic
69894	13.99	5.72	-1.29	0.041420102	Down	0.005747287	2010107G23Rik	RIKEN cDNA 2010107G23 gene
12493	39.56	16.15	-1.29	0.000532027	Down	3.87E-05	Cd37	CD37 antigen
19264	105.65	43.10	-1.29	7.59E-09	Down	2.69E-10	Ptprc	protein tyrosine phosphatase, receptor type, C
109663	52.22	21.26	-1.30	7.02E-05	Down	4.19E-06	Hoxc11	homeobox C11
58178	38.12	15.50	-1.30	0.000793868	Down	6.01E-05	Sorcs1	VPS10 domain receptor protein SORCS 1
320139	14.07	5.69	-1.31	0.033788548	Down	0.004478	Ptpn7	protein tyrosine phosphatase, non-receptor type 7
11752	25.00	10.02	-1.32	0.013113252	Down	0.001454424	Anxa8	annexin A8
224674	18.16	7.26	-1.32	0.015696413	Down	0.001802459	Slc37a1	solute carrier family 37 (glycerol-3-phosphate transporter), member 1
18574	21.07	8.23	-1.36	0.008126717	Down	0.000831083	Pde1b	phosphodiesterase 1B, Ca2+-calmodulin dependent
216892	1525.35	595.23	-1.36	1.13E-107	Down	2.35E-110	Spns2	spinster homolog 2
57890	20.64	8.06	-1.36	0.013385463	Down	0.001486931	Il17re	interleukin 17 receptor E
216148	125.97	49.11	-1.36	1.13E-10	Down	3.21E-12	Shc2	SHC (Src homology 2 domain containing) transforming protein 2
668218	11.70	4.48	-1.38	0.034671907	Down	0.004631049	Bin2	bridging integrator 2
18753	207.42	78.76	-1.40	6.78E-18	Down	1.16E-19	Prkcd	protein kinase C, delta
15117	15.99	6.06	-1.40	0.015804421	Down	0.001817595	Has2	hyaluronan synthase 2
433426	15.32	5.79	-1.40	0.01944444	Down	0.002305714	Gm13490	predicted gene 13490
272428	11.98	4.51	-1.41	0.032349798	Down	0.00425562	Acsm5	acyl-CoA synthetase medium-chain family member 5
15000	11.32	4.21	-1.43	0.032287586	Down	0.004243843	H2-DMb2	histocompatibility 2, class II, locus Mb2
234564	135.73	50.45	-1.43	1.94E-12	Down	4.84E-14	Ces1f	carboxylesterase 1F
69206	12.50	4.57	-1.45	0.025141047	Down	0.003153682	2010016I18Rik	RIKEN cDNA 2010016I18 gene
110168	7.28	2.63	-1.47	0.048678784	Down	0.007032284	Gpr18	G protein-coupled receptor 18
72203	269.30	96.80	-1.48	7.76E-22	Down	1.10E-23	2610507I01Rik	RIKEN cDNA 2610507I01 gene
74843	842.46	299.51	-1.49	9.31E-77	Down	3.27E-79	Mss51	MSS51 mitochondrial translational activator
23833	62.25	22.02	-1.50	1.18E-06	Down	5.35E-08	Cd52	CD52 antigen
69564	937.10	330.85	-1.50	5.50E-85	Down	1.49E-87	Nmrk2	nicotinamide riboside kinase 2
171207	38.04	13.42	-1.50	8.76E-05	Down	5.37E-06	Arhgap4	Rho GTPase activating protein 4
74521	6.49	2.29	-1.50	0.045743073	Down	0.006492157	Ppp4r4	protein phosphatase 4, regulatory subunit 4
14573	9.43	3.32	-1.51	0.031822428	Down	0.004169734	Gdnf	glial cell line derived neurotrophic factor
94229	16.02	5.62	-1.51	0.011638142	Down	0.001264651	Slc4a10	solute carrier family 4, sodium bicarbonate cotransporter-like, member 10
16875	4.84	1.68	-1.52	0.049209586	Down	0.007117476	Lhx8	LIM homeobox protein 8
100041546	7.61	2.64	-1.53	0.036367839	Down	0.00491208	Ly6c2	lymphocyte antigen 6 complex, locus C2
18419	10.36	3.59	-1.53	0.022465179	Down	0.002749385	Otog	otogelin
74734	9.56	3.31	-1.53	0.027635113	Down	0.003522294	Rhoh	ras homolog gene family, member H
114654	3.92	1.36	-1.53	0.047498951	Down	0.006809817	Ly6g6d	lymphocyte antigen 6 complex, locus G6D
16373	82.41	28.40	-1.54	7.15E-09	Down	2.51E-10	Irx3	Iroquois related homeobox 3 (Drosophila)
98256	8.56	2.95	-1.54	0.029608673	Down	0.003816114	Kmo	kynurenine 3-monooxygenase (kynurenine 3-hydroxylase)
16470	5.92	2.03	-1.55	0.041391666	Down	0.005740955	Ush1g	Usher syndrome 1G

71233	4.24	1.45	-1.55	0.044102685	Down	0.006211037	Enkur	enkurin, TRPC channel interacting protein
21897	10.70	3.65	-1.55	0.020487669	Down	0.002466032	Tlr1	toll-like receptor 1
20715	7.98	2.71	-1.56	0.031614503	Down	0.004129229	Serpina3g	serine (or cysteine) peptidase inhibitor, clade A, member 3G
13419	10.89	3.69	-1.56	0.019861489	Down	0.002367762	Dnase1	deoxyribonuclease I
19428	9.74	3.29	-1.56	0.021323095	Down	0.00258134	Rasl2-9	RAS-like, family 2, locus 9
108811	31.53	10.63	-1.57	0.000224143	Down	1.50E-05	Ccdc122	coiled-coil domain containing 122
14545	305.41	102.81	-1.57	5.94E-31	Down	5.79E-33	Gdap1	ganglioside-induced differentiation-associated-protein 1
239845	4.23	1.42	-1.57	0.04014227	Down	0.005542211	Gpr156	G protein-coupled receptor 156
18263	2798.56	938.61	-1.58	9.18E-238	Down	7.94E-241	Odc1	ornithine decarboxylase, structural 1
16842	10.15	3.38	-1.58	0.021194442	Down	0.0025621	Lef1	lymphoid enhancer binding factor 1
320469	14.64	4.87	-1.59	0.007438752	Down	0.000748292	9930014A18Rik	RIKEN cDNA 9930014A18 gene
84112	18.67	6.21	-1.59	0.004034632	Down	0.000370506	Sucnr1	succinate receptor 1
226123	56.68	18.83	-1.59	7.95E-07	Down	3.48E-08	Morn4	MORN repeat containing 4
78473	5.20	1.73	-1.59	0.036507358	Down	0.004937238	Skap1	src family associated phosphoprotein 1
19354	89.28	29.62	-1.59	2.60E-10	Down	7.76E-12	Rac2	RAS-related C3 botulinum substrate 2
12501	5.18	1.69	-1.61	0.032287586	Down	0.004245575	Cd3e	CD3 antigen, epsilon polypeptide
170706	135.45	44.21	-1.62	3.95E-15	Down	7.94E-17	Tmem37	transmembrane protein 37
15001	6.30	2.05	-1.62	0.02907217	Down	0.003730596	H2-Oa	histocompatibility 2, O region alpha locus
18111	228.50	74.11	-1.62	6.40E-24	Down	8.26E-26	Nnat	neuronatin
320174	4.36	1.41	-1.63	0.030902724	Down	0.004022503	A830082K12Rik	RIKEN cDNA A830082K12 gene
108670	29.40	9.47	-1.63	0.00030237	Down	2.09E-05	Epsti1	epithelial stromal interaction 1 (breast)
215632	15.31	4.92	-1.64	0.005056659	Down	0.000482142	Psd4	pleckstrin and Sec7 domain containing 4
16516	31.23	9.98	-1.65	0.000115755	Down	7.23E-06	Kcnj15	potassium inwardly-rectifying channel, subfamily J, member 15
81600	16.71	5.29	-1.66	0.003683463	Down	0.000335073	Chia	chitinase, acidic
242248	23.96	7.50	-1.68	0.000531968	Down	3.87E-05	Bank1	B cell scaffold protein with ankyrin repeats 1
12504	23.93	7.45	-1.68	0.000404424	Down	2.87E-05	Cd4	CD4 antigen
71206	15.90	4.94	-1.68	0.003215829	Down	0.000285489	Katnal2	katanin p60 subunit A-like 2
70192	16.17	4.99	-1.70	0.003404782	Down	0.000306359	Cd209g	CD209g antigen
72891	3.76	1.16	-1.70	0.020672101	Down	0.002491806	Xlr4c	X-linked lymphocyte-regulated 4C
16408	39.89	12.27	-1.70	1.16E-05	Down	5.98E-07	Itgal	integrin alpha L
232941	6.88	2.08	-1.72	0.016326117	Down	0.001885122	Ppm1n	protein phosphatase, Mg2+/Mn2+ dependent, 1N (putative)
238988	4.73	1.43	-1.73	0.01978356	Down	0.002357331	Erc2	ELKS/RAB6-interacting/CAST family member 2
20849	10.19	3.07	-1.73	0.009203705	Down	0.000966306	Stat4	signal transducer and activator of transcription 4
74131	30.31	9.13	-1.73	7.82E-05	Down	4.70E-06	Sash3	SAM and SH3 domain containing 3
13107	188.66	56.37	-1.74	7.06E-23	Down	9.52E-25	Cyp2f2	cytochrome P450, family 2, subfamily f, polypeptide 2
192188	303.72	90.17	-1.75	3.91E-37	Down	3.02E-39	Stab2	stabilin 2
14025	8.17	2.42	-1.76	0.011338822	Down	0.00122485	Bcl11a	B cell CLL/lymphoma 11A (zinc finger protein)
100502636	16.20	4.75	-1.77	0.002467516	Down	0.000212656	Gm19299	predicted gene, 19299
12409	456.11	132.19	-1.79	2.42E-47	Down	1.37E-49	Cbr2	carbonyl reductase 2
16069	24.83	7.19	-1.79	0.000155872	Down	1.00E-05	Igj	immunoglobulin joining chain
64380	6.42	1.84	-1.81	0.011924168	Down	0.00130398	Ms4a4c	membrane-spanning 4-domains, subfamily A, member 4C
20304	13.29	3.78	-1.82	0.003148062	Down	0.000278747	Ccl5	chemokine (C-C motif) ligand 5
228608	4305.40	1218.21	-1.82	0	Down	0	Smox	spermine oxidase
236312	22.10	6.25	-1.82	0.000233876	Down	1.57E-05	Pyhin1	pyrin and HIN domain family, member 1
229011	82.00	23.07	-1.83	8.44E-12	Down	2.18E-13	Samd10	sterile alpha motif domain containing 10
320495	6.68	1.84	-1.86	0.008787487	Down	0.000914361	Ipcef1	interaction protein for cytohesin exchange factors 1
12526	5.49	1.51	-1.86	0.009520983	Down	0.001008795	Cd8b1	CD8 antigen, beta chain 1
73748	178.68	49.06	-1.86	2.21E-24	Down	2.78E-26	Gadl1	glutamate decarboxylase-like 1
233079	40.45	11.06	-1.87	9.92E-07	Down	4.42E-08	Ffar2	free fatty acid receptor 2
18197	5.49	1.50	-1.87	0.00902714	Down	0.000944753	Nsg2	neuron specific gene family member 2
54204	24.45	6.66	-1.88	0.000114569	Down	7.15E-06	1-Sep	septin 1
22778	40.93	11.08	-1.89	7.88E-07	Down	3.44E-08	Ikzf1	IKAROS family zinc finger 1
16565	44.52	11.99	-1.89	1.99E-07	Down	8.16E-09	Kif21b	kinesin family member 21B
12502	6.95	1.86	-1.90	0.006634121	Down	0.000657025	Cd3g	CD3 antigen, gamma polypeptide
69165	51.15	13.62	-1.91	2.24E-08	Down	8.41E-10	Cd209b	CD209b antigen
98752	8.38	2.21	-1.92	0.005037231	Down	0.000479999	Fcrla	Fc receptor-like A
66755	30.40	7.99	-1.93	1.79E-05	Down	9.51E-07	4933415F23Rik	RIKEN cDNA 4933415F23 gene
666661	5.89	1.55	-1.93	0.006519785	Down	0.000644199	Gm8221	apolipoprotein L 7c pseudogene
78334	624.32	162.70	-1.94	5.87E-77	Down	2.03E-79	Cdk19	cyclin-dependent kinase 19
13421	9.19	2.39	-1.94	0.004760495	Down	0.000449787	Dnase1l3	deoxyribonuclease 1-like 3
54352	81.82	21.24	-1.95	9.17E-13	Down	2.22E-14	Irx5	Iroquois related homeobox 5 (Drosophila)
12721	112.88	29.12	-1.95	1.35E-16	Down	2.49E-18	Coro1a	coronin, actin binding protein 1A
276891	23.55	6.05	-1.96	7.02E-05	Down	4.19E-06	Timd4	T cell immunoglobulin and mucin domain containing 4

80901	4.71	1.20	-1.98	0.005098634	Down	0.000487026	Cxcr6	chemokine (C-X-C motif) receptor 6
24047	27.59	6.99	-1.98	1.68E-05	Down	8.84E-07	Ccl19	chemokine (C-C motif) ligand 19
328833	7.61	1.89	-2.01	0.00337569	Down	0.000303184	Treml2	triggering receptor expressed on myeloid cells-like 2
666348	5.02	1.22	-2.04	0.003661804	Down	0.000332666	Apol7e	apolipoprotein L 7e
78826	13.07	3.19	-2.04	0.000781145	Down	5.90E-05	P2ry10	purinergic receptor P2Y, G-protein coupled 10
16797	9.33	2.26	-2.04	0.002136502	Down	0.000179571	Lat	linker for activation of T cells
14663	5.16	1.25	-2.05	0.003407462	Down	0.000306823	Glycam1	glycosylation dependent cell adhesion molecule 1
243958	17.29	4.18	-2.05	0.000254453	Down	1.72E-05	Siglecg	sialic acid binding Ig-like lectin G
84544	5.07	1.22	-2.05	0.003370323	Down	0.000302507	Cd96	CD96 antigen
276950	19.99	4.79	-2.06	8.74E-05	Down	5.35E-06	Slfn8	schlafen 8
232174	100.74	23.88	-2.08	1.31E-15	Down	2.58E-17	Cyp26b1	cytochrome P450, family 26, subfamily b, polypeptide 1
381836	740.60	174.22	-2.09	1.31E-102	Down	2.94E-105	Sbk2	SH3-binding domain kinase family, member 2
19419	15.77	3.69	-2.10	0.000400989	Down	2.84E-05	Rasgrp1	RAS guanyl releasing protein 1
626578	94.30	21.69	-2.12	3.42E-15	Down	6.84E-17	Gbp10	guanylate-binding protein 10
67888	321.46	73.84	-2.12	4.18E-49	Down	2.29E-51	Tmem100	transmembrane protein 100
14859	48.92	11.21	-2.13	5.97E-09	Down	2.08E-10	Gsta3	glutathione S-transferase, alpha 3
12775	18.80	4.22	-2.15	8.23E-05	Down	4.99E-06	Ccr7	chemokine (C-C motif) receptor 7
21940	16.07	3.54	-2.18	0.000119159	Down	7.45E-06	Cd27	CD27 antigen
234695	12.32	2.64	-2.22	0.000321268	Down	2.23E-05	Rltpr	RGD motif, leucine rich repeats, tropomodulin domain and proline-rich containing
330723	187.38	39.78	-2.24	1.17E-29	Down	1.20E-31	Htra4	HtrA serine peptidase 4
27371	7.85	1.66	-2.24	0.000854573	Down	6.54E-05	Sh2d2a	SH2 domain protein 2A
217682	13.89	2.93	-2.24	0.000163673	Down	1.06E-05	Plekhd1	pleckstrin homology domain containing, family D (with coiled-coil domains) member 1
81879	152.75	31.69	-2.27	8.95E-23	Down	1.21E-24	Tfcp2l1	transcription factor CP2-like 1
21414	37.68	7.79	-2.27	4.47E-08	Down	1.72E-09	Tcf7	transcription factor 7, T cell specific
320484	28.35	5.82	-2.28	8.04E-07	Down	3.52E-08	Rasal3	RAS protein activator like 3
60361	14.50	2.97	-2.29	0.000108489	Down	6.75E-06	Ms4a4b	membrane-spanning 4-domains, subfamily A, member 4B
114249	198.06	40.11	-2.30	7.02E-35	Down	5.99E-37	Npnt	nephronectin
213439	6.94	1.34	-2.37	0.000403289	Down	2.85E-05	Gpr174	G protein-coupled receptor 174
13507	7.49	1.41	-2.41	0.000285642	Down	1.95E-05	Dsc3	desmocollin 3
16428	12.85	2.40	-2.42	8.06E-05	Down	4.86E-06	Itk	IL2 inducible T cell kinase
18507	7.55	1.40	-2.43	0.000256998	Down	1.75E-05	Pax5	paired box gene 5
381091	7.36	1.36	-2.43	0.000249739	Down	1.69E-05	H2-Eb2	histocompatibility 2, class II antigen E beta2
100041585	118.70	21.62	-2.46	4.67E-10	Down	1.44E-11	Amd2	S-adenosylmethionine decarboxylase 2
12507	7.86	1.42	-2.46	0.000195507	Down	1.29E-05	Cd5	CD5 antigen
229499	7.61	1.38	-2.47	0.000191429	Down	1.26E-05	Fcrl1	Fc receptor-like 1
55985	36.81	6.54	-2.49	4.91E-09	Down	1.67E-10	Cxcl13	chemokine (C-X-C motif) ligand 13
74513	139.81	24.39	-2.52	2.26E-26	Down	2.62E-28	Neto2	neuropilin (NRP) and tolloid (TLL)-like 2
83408	46.78	8.13	-2.52	6.27E-11	Down	1.76E-12	Gimap3	GTPase, IMAP family member 3
18985	12.54	2.13	-2.56	3.65E-05	Down	2.07E-06	Pou2af1	POU domain, class 2, associating factor 1
22780	21.83	3.49	-2.65	9.34E-07	Down	4.14E-08	Ikzf3	IKAROS family zinc finger 3
72049	11.60	1.80	-2.69	1.77E-05	Down	9.37E-07	Tnfrsf13c	tumor necrosis factor receptor superfamily, member 13c
208154	21.91	3.39	-2.69	3.41E-07	Down	1.44E-08	Btla	B and T lymphocyte associated
114570	24.06	3.72	-2.69	1.36E-07	Down	5.47E-09	Crip3	cysteine-rich protein 3
12143	11.72	1.78	-2.71	1.29E-05	Down	6.70E-07	Blk	B lymphoid kinase
19265	16.00	2.44	-2.72	2.89E-06	Down	1.38E-07	Ptprcap	protein tyrosine phosphatase, receptor type, C polypeptide-associated protein
216859	25.38	3.80	-2.74	8.98E-08	Down	3.57E-09	Acap1	ArfGAP with coiled-coil, ankyrin repeat and PH domains 1
15002	29.56	4.41	-2.74	1.47E-08	Down	5.43E-10	H2-Ob	histocompatibility 2, O region beta locus
20860	9.95	1.47	-2.76	1.55E-05	Down	8.12E-07	Sult1e1	sulfotransferase family 1E, member 1
50781	258.15	37.99	-2.76	1.52E-52	Down	7.71E-55	Dkk3	dickkopf homolog 3 (Xenopus laevis)
78102	32.25	4.71	-2.78	2.18E-09	Down	7.21E-11	8430426J06Rik	RIKEN cDNA 8430426J06 gene
16197	22.24	3.17	-2.81	1.85E-07	Down	7.58E-09	Il7r	interleukin 7 receptor
67425	22.32	3.15	-2.83	1.38E-07	Down	5.59E-09	Eps8l1	EPS8-like 1
319734	76.19	10.13	-2.91	7.24E-19	Down	1.19E-20	Cacna2d4	calcium channel, voltage-dependent, alpha 2/delta subunit 4
60504	14.29	1.87	-2.93	1.17E-06	Down	5.29E-08	Il21r	interleukin 21 receptor
20527	178.37	22.53	-2.99	4.58E-40	Down	3.11E-42	Slc2a3	solute carrier family 2 (facilitated glucose transporter), member 3
12525	18.87	2.29	-3.05	1.21E-07	Down	4.86E-09	Cd8a	CD8 antigen, alpha chain
11702	21196.13	2474.73	-3.10	0	Down	0	Amd1	S-adenosylmethionine decarboxylase 1
16818	22.36	2.61	-3.10	1.74E-08	Down	6.48E-10	Lck	lymphocyte protein tyrosine kinase
230810	208.92	22.99	-3.18	4.06E-47	Down	2.32E-49	Slc30a2	solute carrier family 30 (zinc transporter), member 2
15985	35.78	3.59	-3.32	5.54E-12	Down	1.42E-13	Cd79b	CD79B antigen
20299	26.70	2.62	-3.35	2.57E-10	Down	7.65E-12	Ccl22	chemokine (C-C motif) ligand 22
12145	17.27	1.68	-3.36	1.52E-08	Down	5.63E-10	Cxcr5	chemokine (C-X-C motif) receptor 5
242894	158.47	15.01	-3.40	1.07E-39	Down	7.65E-42	Actr3b	ARP3 actin-related protein 3B

16994	38.11	3.57	-3.42	5.07E-13	Down	1.21E-14	Ltb	lymphotoxin B
272382	25.78	2.32	-3.47	1.63E-10	Down	4.70E-12	Spib	Spi-B transcription factor (Spi-1/PU.1 related)
69169	30.99	2.67	-3.53	9.66E-12	Down	2.53E-13	Faim3	Fas apoptotic inhibitory molecule 3
108956	21.83	1.73	-3.65	2.19E-10	Down	6.46E-12	Apol7c	apolipoprotein L 7c
12902	21.64	1.71	-3.66	1.88E-10	Down	5.46E-12	Cr2	complement receptor 2
12478	30.99	2.37	-3.71	1.82E-12	Down	4.51E-14	Cd19	CD19 antigen
20343	41.94	3.05	-3.78	6.72E-15	Down	1.37E-16	Sell	selectin, lymphocyte
12483	43.56	3.11	-3.81	4.80E-15	Down	9.74E-17	Cd22	CD22 antigen
208151	95.79	6.28	-3.93	1.87E-27	Down	2.10E-29	Tmem132b	transmembrane protein 132B
12482	32.37	2.11	-3.94	1.95E-13	Down	4.48E-15	Ms4a1	membrane-spanning 4-domains, subfamily A, member 1
73598	270.48	14.59	-4.21	1.29E-67	Down	5.12E-70	1700001O22Rik	RIKEN cDNA 1700001O22 gene
109828	266.60	14.25	-4.23	1.29E-67	Down	5.15E-70	C7	complement component 7
17167	41.78	2.18	-4.26	1.76E-16	Down	3.28E-18	Marco	macrophage receptor with collagenous structure
14128	36.38	1.87	-4.28	2.42E-15	Down	4.79E-17	Fcer2a	Fc receptor, IgE, low affinity II, alpha polypeptide
12518	66.90	3.20	-4.39	6.44E-22	Down	8.99E-24	Cd79a	CD79A antigen (immunoglobulin-associated alpha)
277898	82.89	3.53	-4.55	7.46E-26	Down	8.82E-28	Slc15a5	solute carrier family 15, member 5
20592	114.69	2.21	-5.69	1.50E-32	Down	1.38E-34	Kdm5d	lysine (K)-specific demethylase 5D
22290	141.16	2.28	-5.95	1.29E-36	Down	1.02E-38	Uty	ubiquitously transcribed tetratricopeptide repeat gene, Y chromosome
26908	398.11	2.67	-7.22	6.46E-62	Down	2.83E-64	Eif2s3y	eukaryotic translation initiation factor 2, subunit 3, structural gene Y-linked
26900	711.30	2.89	-7.94	1.60E-80	Down	5.08E-83	Ddx3y	DEAD (Asp-Glu-Ala-Asp) box polypeptide 3, Y-linked

Supplemental figure legend

Figure S1: *Ad libitum* food intake and weight gain in Ctns$^{-/-}$ mice.

WT and Ctns$^{-/-}$ mice were treated with 25(OH)D_3 and 1,25$(OH)_2D_3$ (75 µg/kg per day and 60 ng/kg per day, respectively) or ethylene glycol as vehicle for 6 weeks. Four groups of mice were included: WT+Vehicle (n=12), WT+25(OH)D_3+1,25$(OH)_2D_3$ (n=12), Ctns$^{-/-}$+Vehicle (n=12) and Ctns$^{-/-}$+ 25(OH)D_3+1,25$(OH)_2D_3$ (n=12). Mice were fed *ad libitum* and weight gain was recorded. Data are expressed as mean ± SEM. $^{\#}p<0.05$, significantly different in Ctns$^{-/-}$+Vehicle and Ctns$^{-/-}$ +25(OH)D_3+1,25$(OH)_2D_3$ mice versus WT+Vehicle and WT+25(OH)D_3+1,25$(OH)_2D_3$ mice, respectively. Results of Ctns$^{-/-}$+Vehicle mice were also compared to Ctns$^{-/-}$+25(OH)D_3+1,25$(OH)_2D_3$ mice.

Supplemental Figure S1