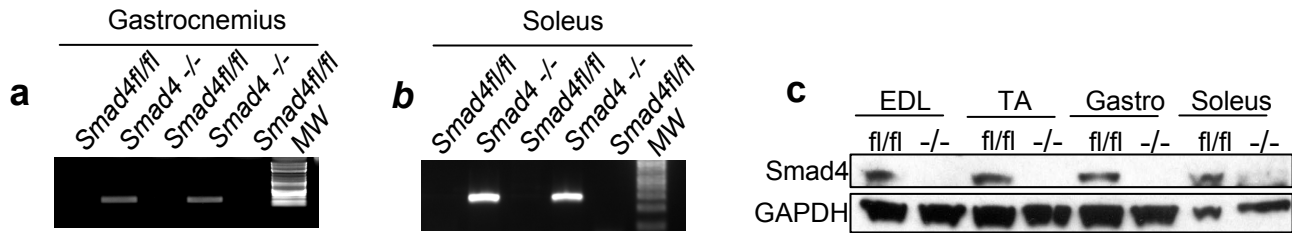
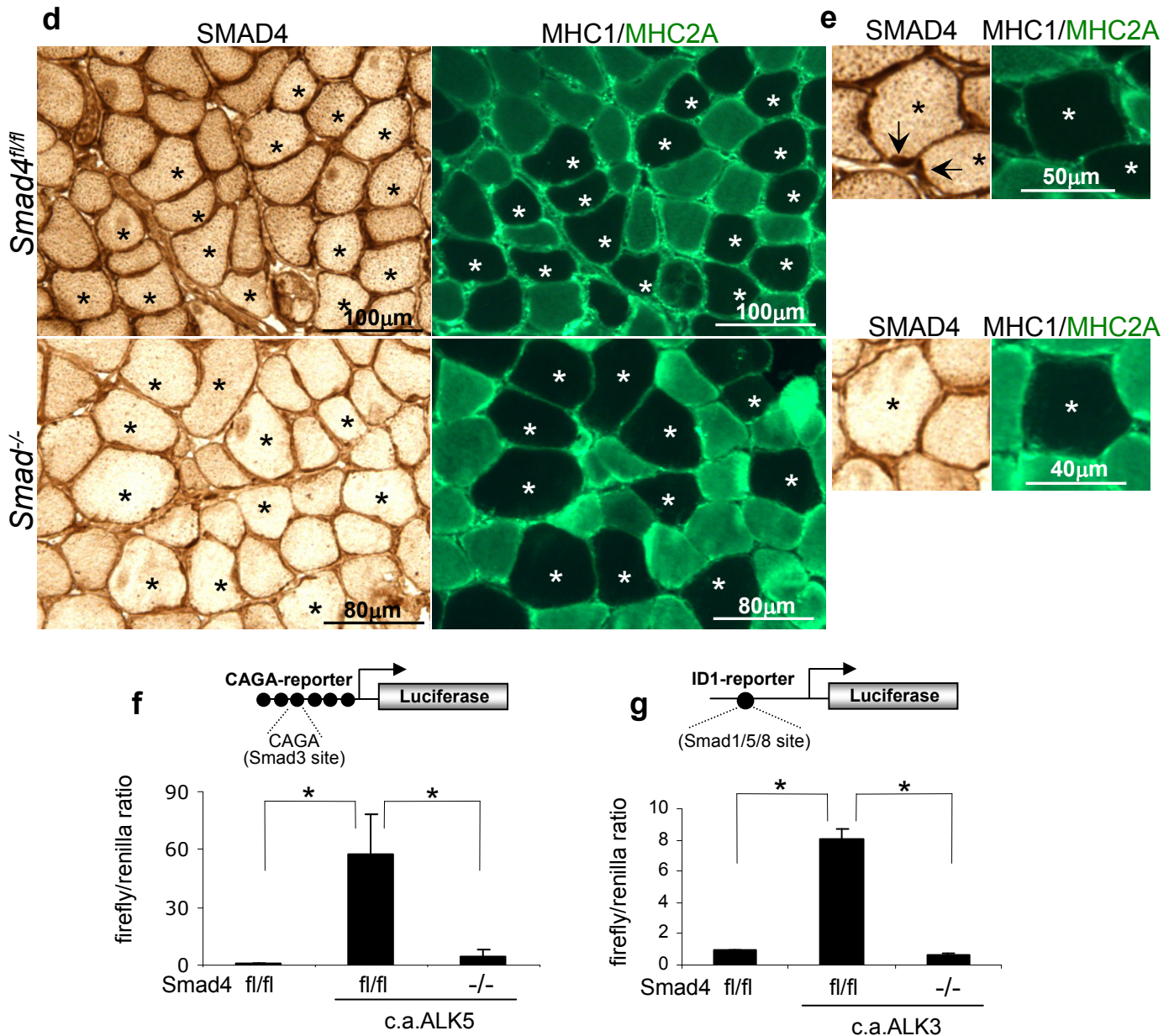


## Supplementary Figure 1



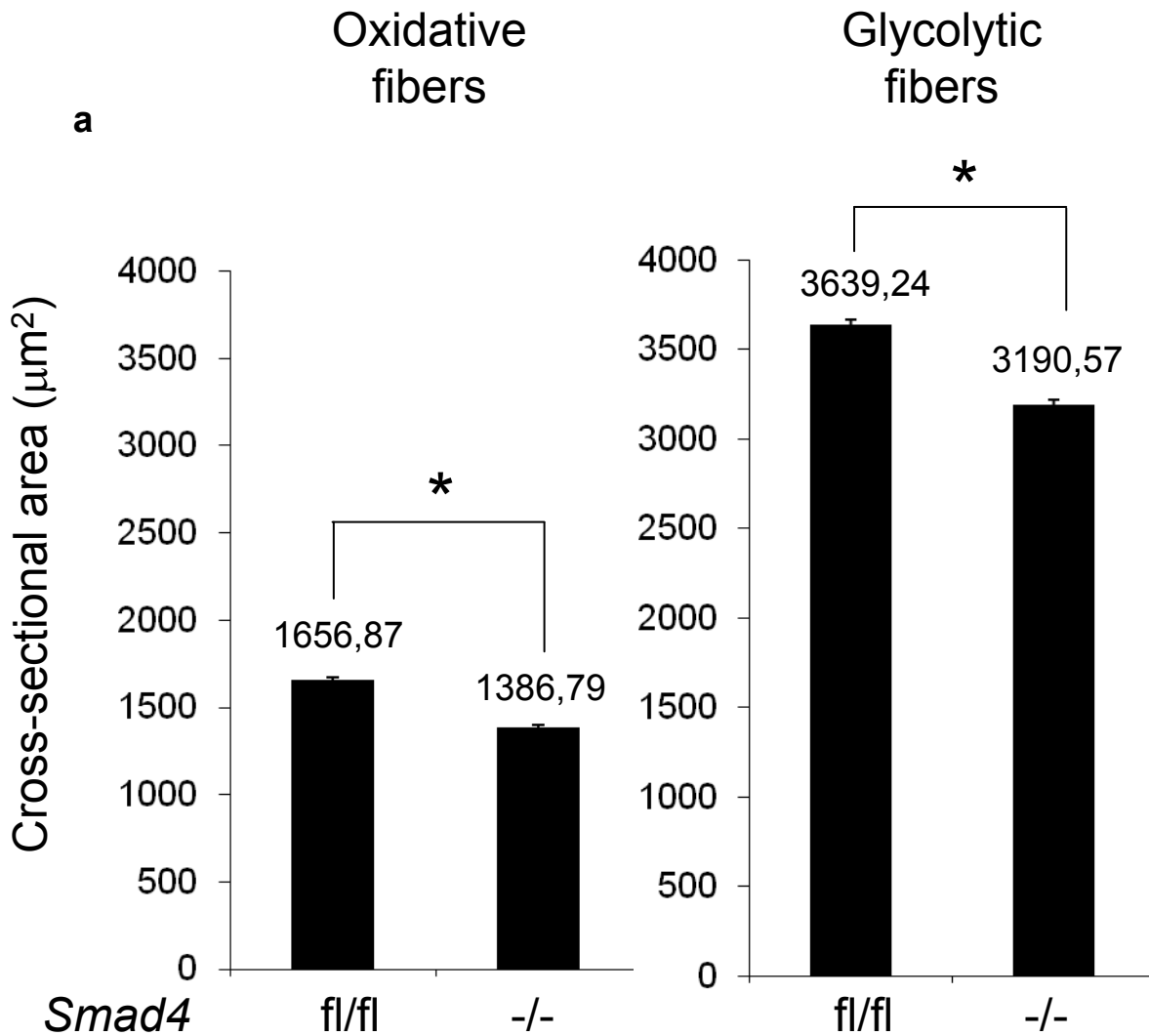
**Smad4 is efficiently deleted and inhibited in *Smad4<sup>-/-</sup>* mice.** (a) Genotyping of the *Smad4<sup>fl/fl</sup>* mice. PCR analysis with genomic DNA from gastrocnemius muscle. The two PCR primers are outside the floxed region. Presence of a PCR product revealed an efficient Cre-mediated recombination of lox-P sites. (b) PCR analysis with genomic DNA from soleus muscle. (c) Immunoblot analysis of Smad4 protein in homogenates from different muscles of *Smad4<sup>fl/fl</sup>* (fl/fl) and *Smad4<sup>-/-</sup>* (-/-) mice.

## Supplementary Figure 1



**(d)** Immunohistochemistry analysis of Smad4 and MHC2A/MHC1 proteins in Soleus muscle of *Smad4<sup>fl/fl</sup>* and *Smad4<sup>-/-</sup>* mice. The green fibers are type 2A while the black fibers are type 1 fibers. Asterisks are labelling type 1 fibers. Note that the immunoreaction for Smad4 show a cytosolic and nuclear staining that is greatly reduced in *Smad4*-deficient muscle. **(e)** Higher magnification of Immunohistochemistry analysis of Smad4 and MHC1. Arrows indicate myonuclei that are positive for Smad4. **(f)** Transcriptional activity of endogenous Smad3 after activation of the Myostatin/TGFβ pathway in adult muscles. A Smad3-dependent reporter, in which the Smad3 binding site (CAGA) is repeated 12 times, was transfected into adult tibialis anterior (TA) muscle in presence or absence of constitutively active mutant for TGFβ type I receptor. A renilla luciferase vector was cotransfected to normalize for transfection efficiency. Seven days later, firefly/renilla luciferase activity was determined. *n*=3 muscles for each condition, \**p*<0.05; data are shown as mean± s.d. **(g)** Transcriptional activity of endogenous Smad1/5/8 after activation of the BMP pathway in adult muscles of wild type and *Smad4* knockout mice. The ID1 promoter containing several Smad1/5/8 binding sites was transfected into adult TA muscle in presence or absence of constitutively active mutant of BMP type I receptor (c.a.ALK3) as described in panel f. \**p*<0.05, *n*=3 muscles for each condition; data are shown as mean± s.d.

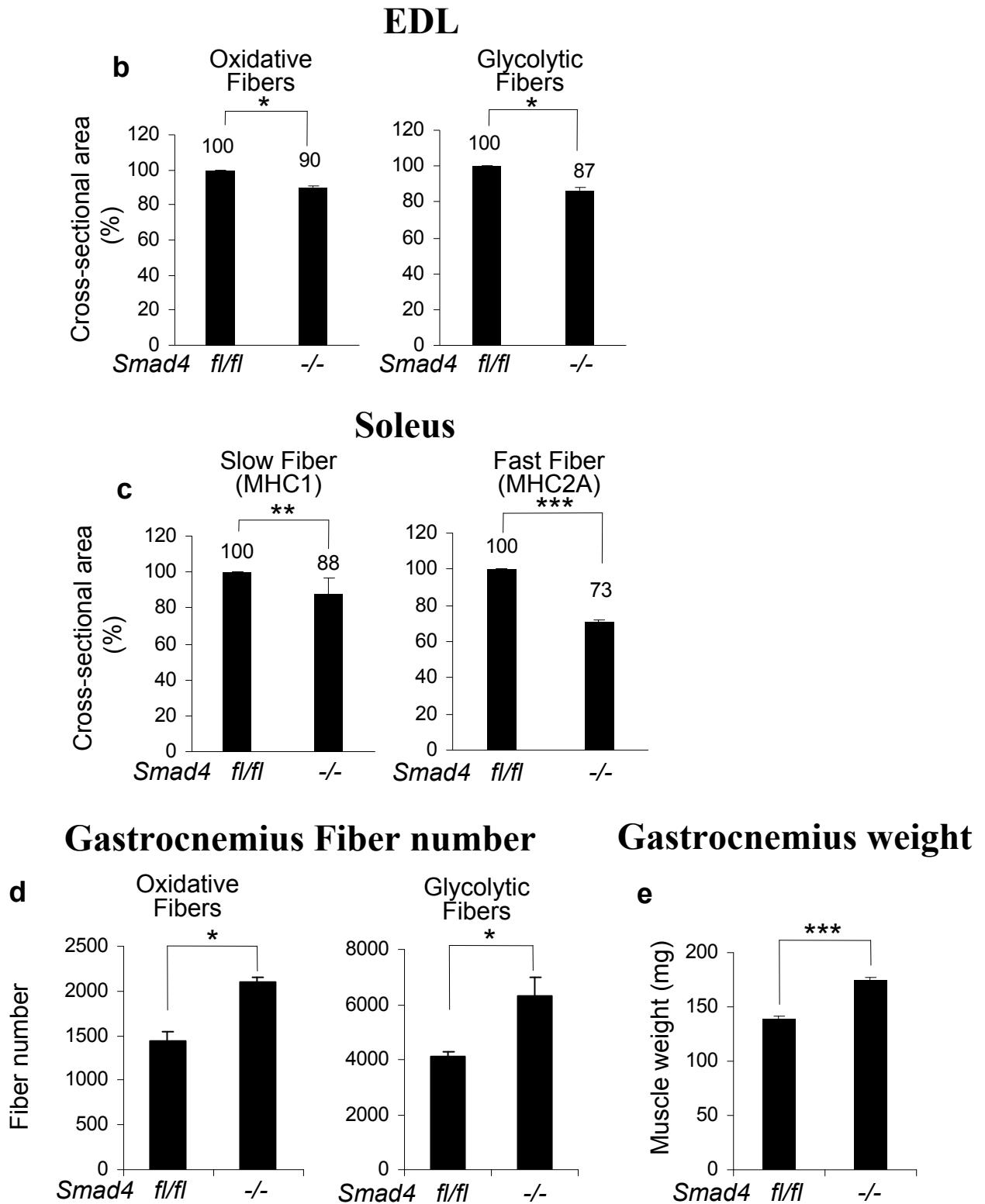
## Supplementary Figure 2



	Oxidative fibers Smad4fl/fl	Oxidative fibers Smad4-/-	Glycolytic fibers Smad4fl/fl	Glycolytic fibers Smad4-/-
<b>n</b>	1467	1484	775	750

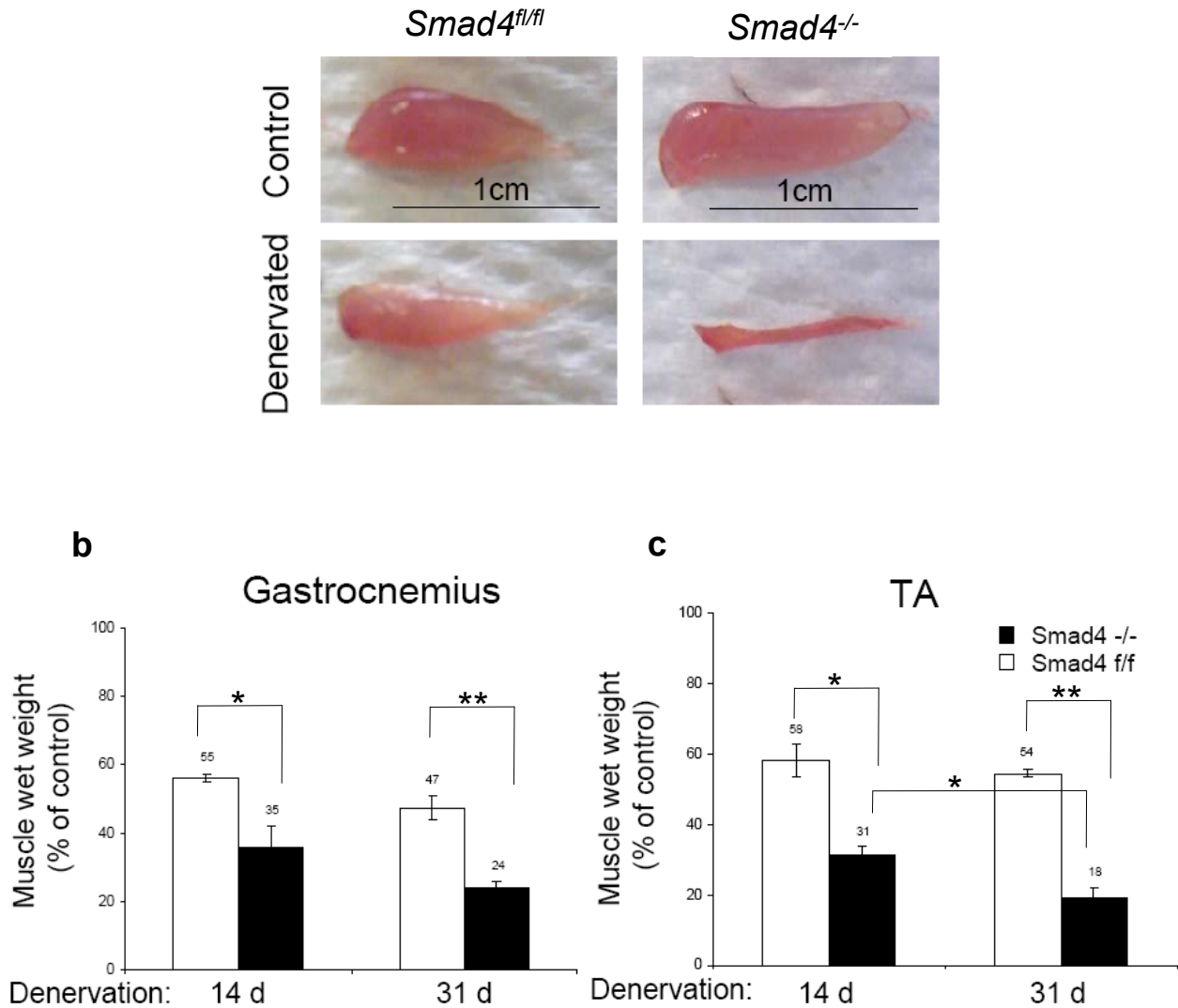
**Smad4 deletion triggers muscle atrophy.** (a) The bar diagram represents the CSA expressed in  $\mu\text{m}^2$  of glycolytic and oxidative fibers depicted in Fig 1c. The table is showing the number of fibers that have been analysed .

## Supplementary Figure 2



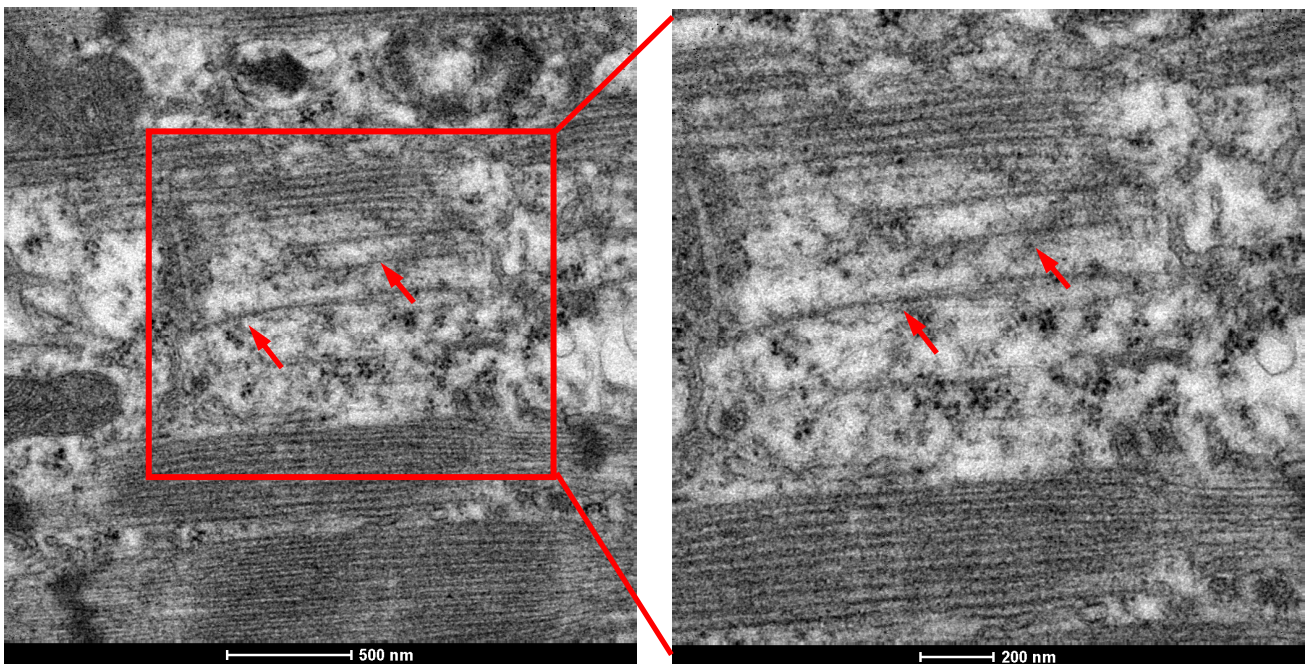
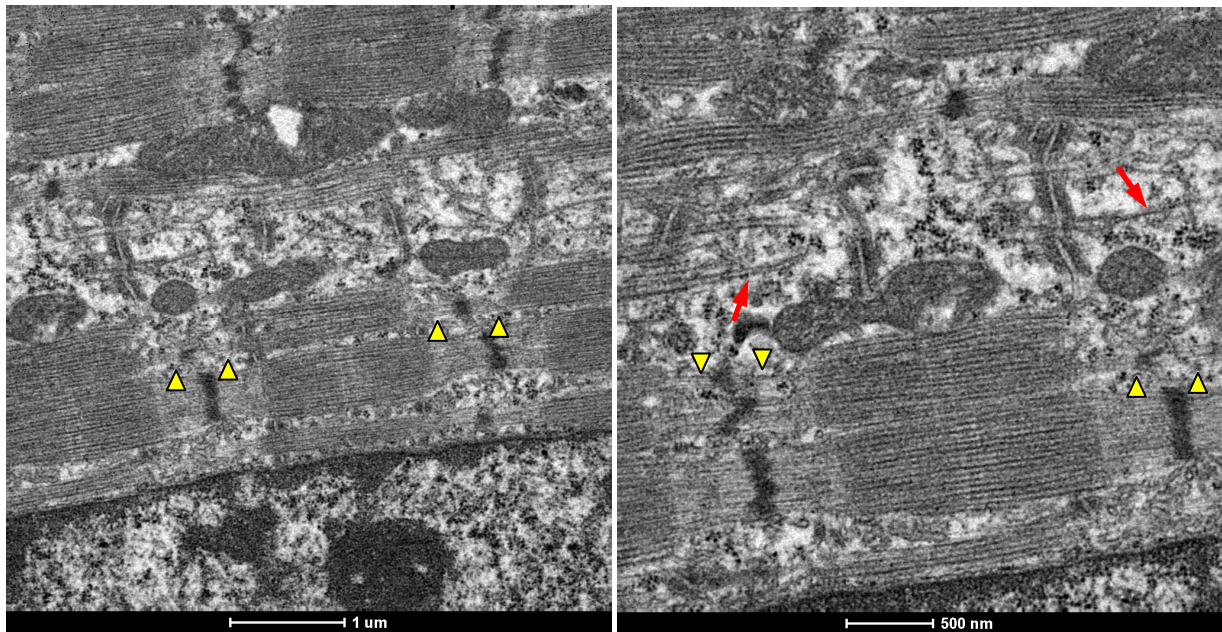
**(b)** The bar diagram represents the CSA of glycolytic and oxidative fibers, revealed by SDH staining, of *Smad4*<sup>fl/fl</sup> and *Smad4*<sup>-/-</sup> EDL muscles. Cryosections of EDL muscles were stained for SDH, oxidative fibers appear dark blue while glycolytic fibers appear pale-white. Values are mean $\pm$  s.e.m. of data from 4 muscles in each group. \* $p$ <0.05. **(c)** Quantification of cross-sectional area (CSA) of myofibers from soleus muscle. Cryosections of soleus muscles were immunostained for dystrophin, for the fast myosin, MHC2A, and for the slow myosin, MHC1. Values are mean $\pm$  s.e.m. of data from 7 muscles in each group, \*\*\* $p$ <0.001. **(d)** Quantification of fiber number in gastrocnemius muscle. Values are mean $\pm$  s.e.m. of data from 4 muscles in each group, \* $p$ <0.05. **(e)** Quantification of gastrocnemius weight. Values are mean $\pm$  s.e.m. of data from 10 muscles in each group, \*\*\* $p$ <0.001

## Supplementary Figure 3



**Deletion of Smad4 enhanced muscle wasting during denervation.** (a) Dissected TA muscles from *Smad4<sup>fl/fl</sup>* (left images) and *Smad4<sup>-/-</sup>* mice (right images) four weeks following neurectomy of sciatic nerve are shown. (b, c) The diagram depicts wet weights of gastrocnemius and TA muscles of wild type and *Smad4* knockout mice at different time points after denervation. n=3 muscles for each condition; data are shown as mean $\pm$  s.d., \* $p$ <0.05, \*\* $p$ <0.01

## Supplementary Figure 4

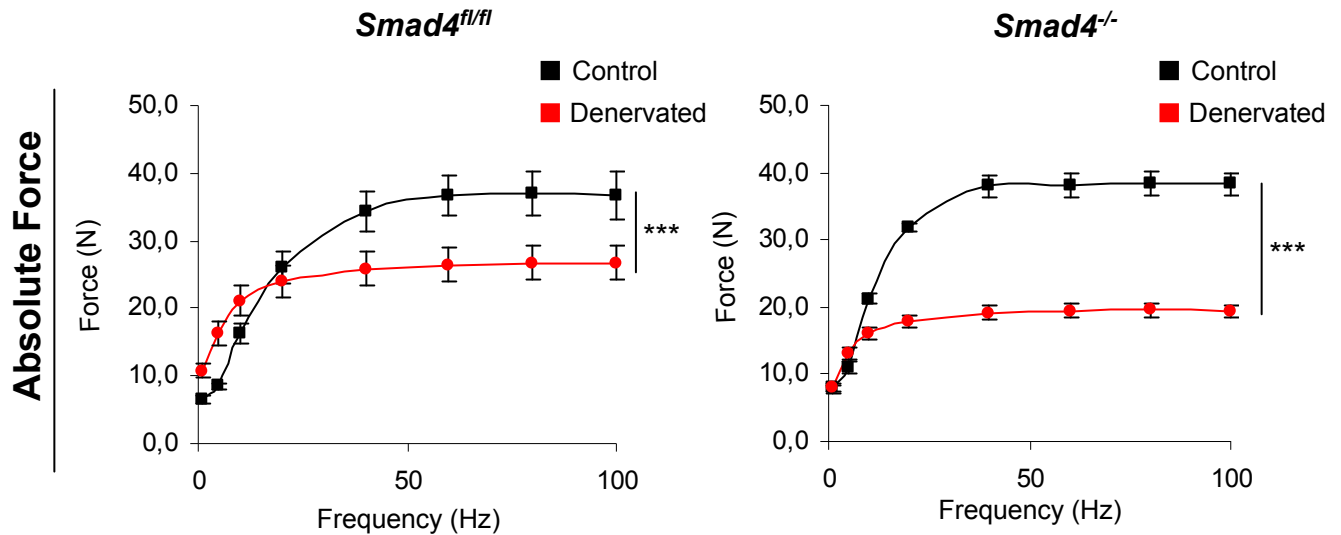


**Electron micrographs of denervated *Smad4*<sup>-/-</sup> EDL muscles.** Several micrographs of *Smad4* deficient EDL muscles which showed loss of contractile elements belonging to thin and thick filaments. Arrowheads displayed regions where actin and troponin proteins has been removed while arrows pointed to single filaments of myosin which have lost the surrounding thick filament proteins.

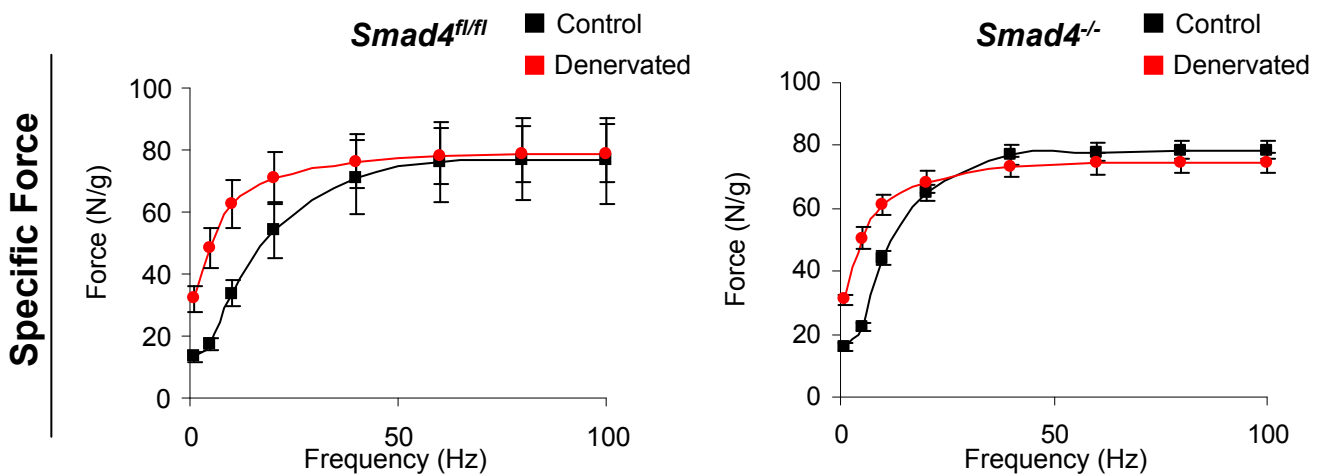
## Supplementary Figure 5

**a**

### Soleus



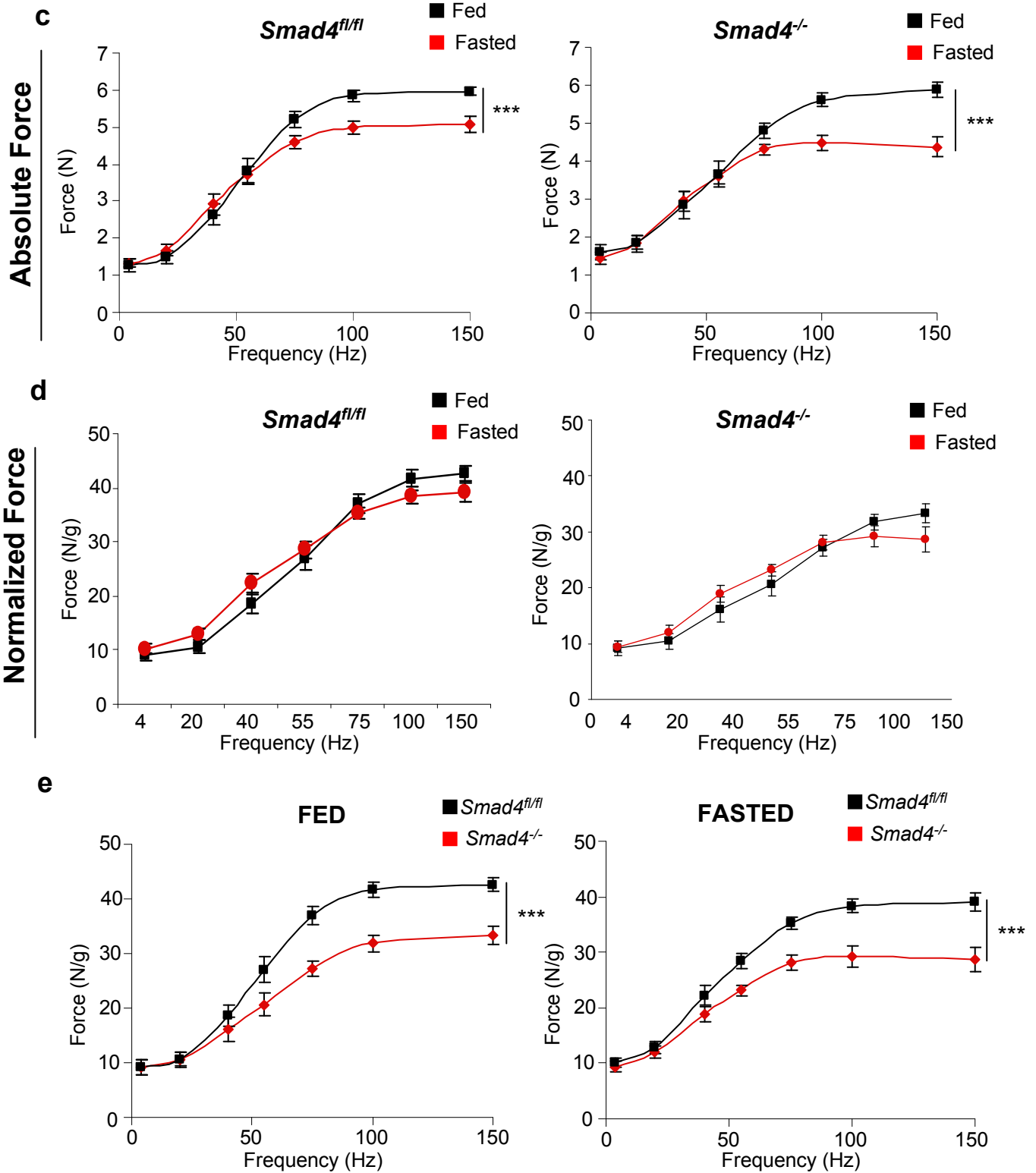
**b**



**Smad 4 deletion induces severe weakness after denervation or fasting. (a)** Force-frequency curves of absolute force of the innervated and denervated soleus of *Smad4<sup>fl/fl</sup>* (left) and *Smad4<sup>-/-</sup>* (right) mice determined *ex vivo* (n=8 muscles, \*\*\*p<0.001). **(b)** Force-frequency curves of the specific force (absolute force normalised to muscle mass) of the innervated and denervated soleus muscle from *Smad4<sup>fl/fl</sup>* (left) and *Smad4<sup>-/-</sup>* (right) mice determined *ex vivo* (n=8 muscles).

# Supplementary Figure 5

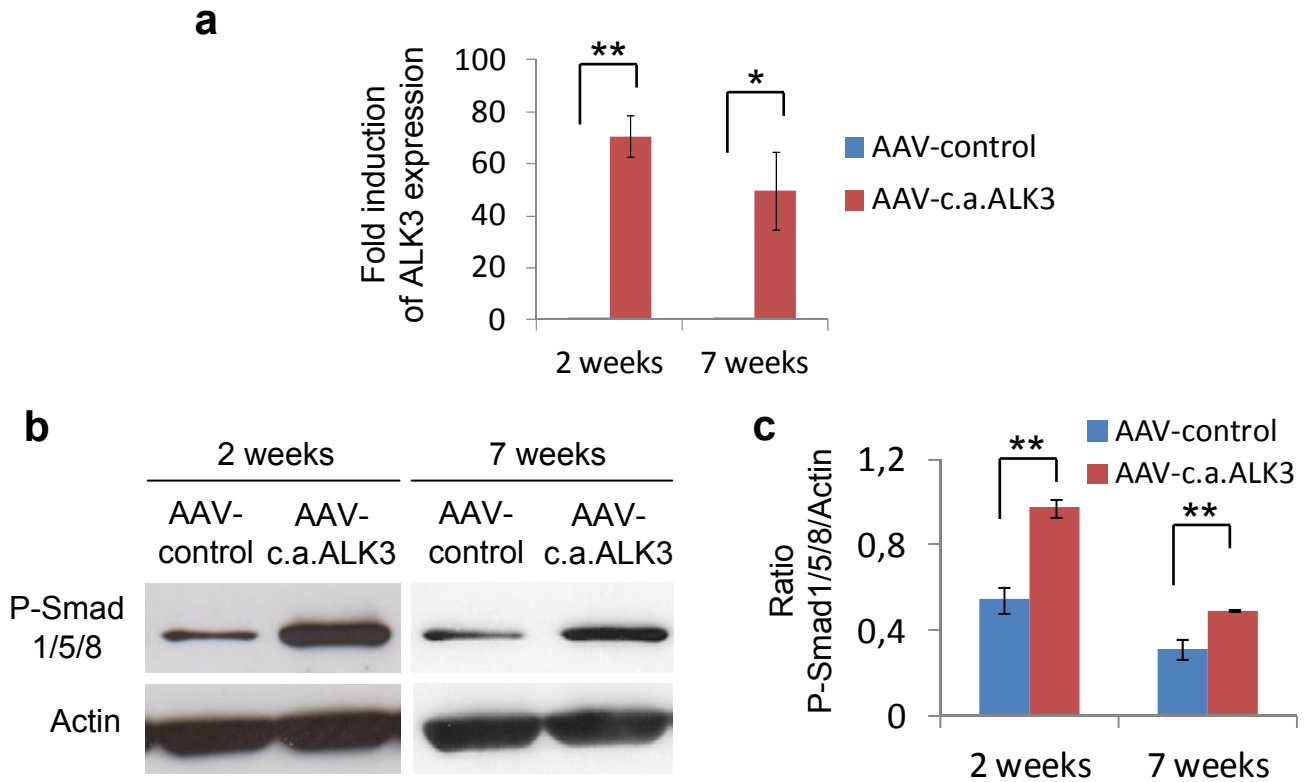
## Gastrocnemius



**(c)** Force-frequency curves of absolute force of the fed and fasted gastrocnemius muscle of *Smad4<sup>fl/fl</sup>* (left) and *Smad4<sup>-/-</sup>* (right) measured *in vivo* (n=10 muscles, \*\*\*p<0.001). **(d)** Force-frequency curves of specific force of the fed and fasted gastrocnemius muscle of *Smad4<sup>fl/fl</sup>* (left) and *Smad4<sup>-/-</sup>* (right) mice measured *in vivo* (n=10 muscles). **(e)** Comparison of specific force between *Smad4<sup>fl/fl</sup>* and *Smad4<sup>-/-</sup>* in fed (left) and 48 hours fasting (right) conditions (n=10 muscles, \*\*\*p<0.001)

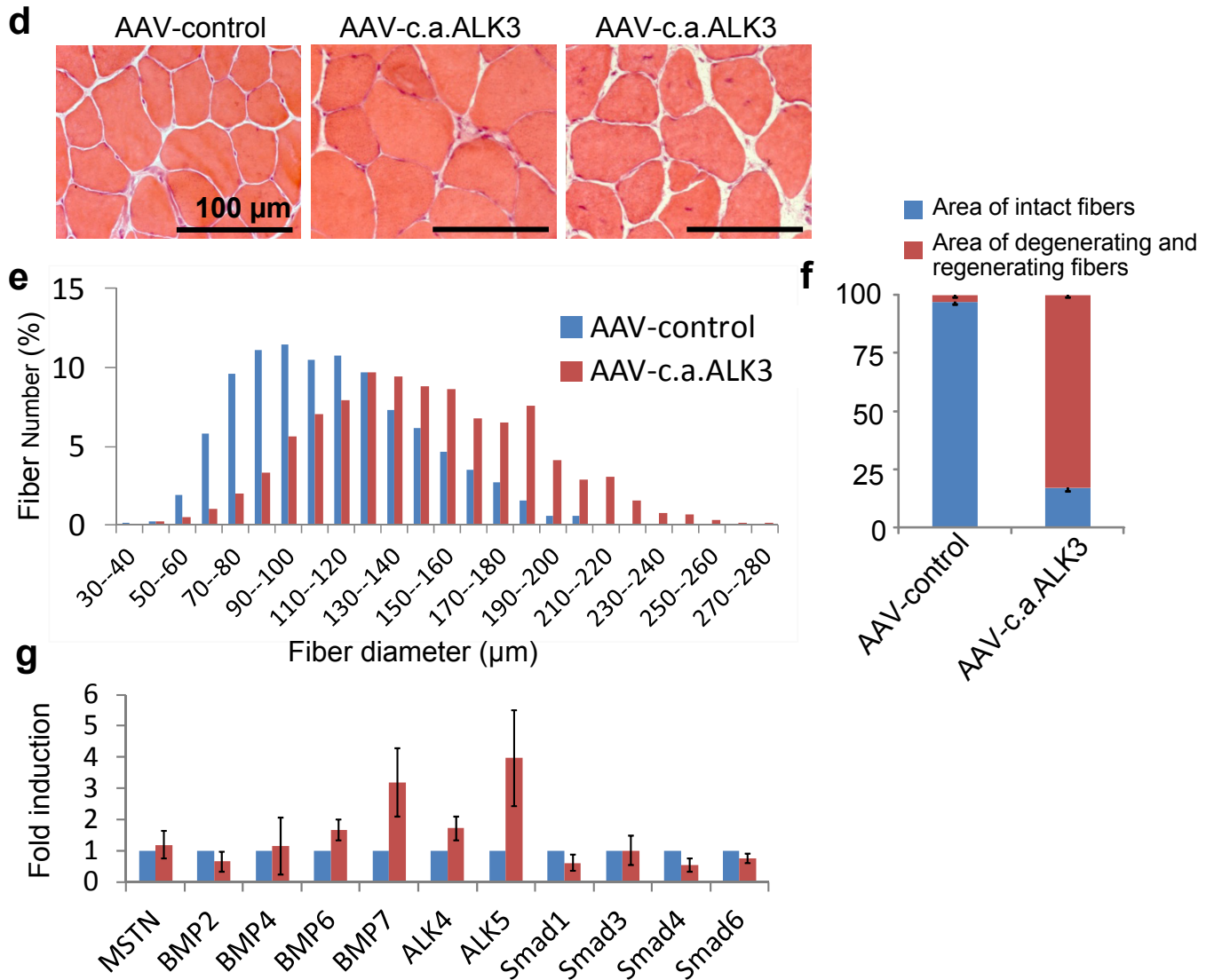


## Supplementary Figure 6



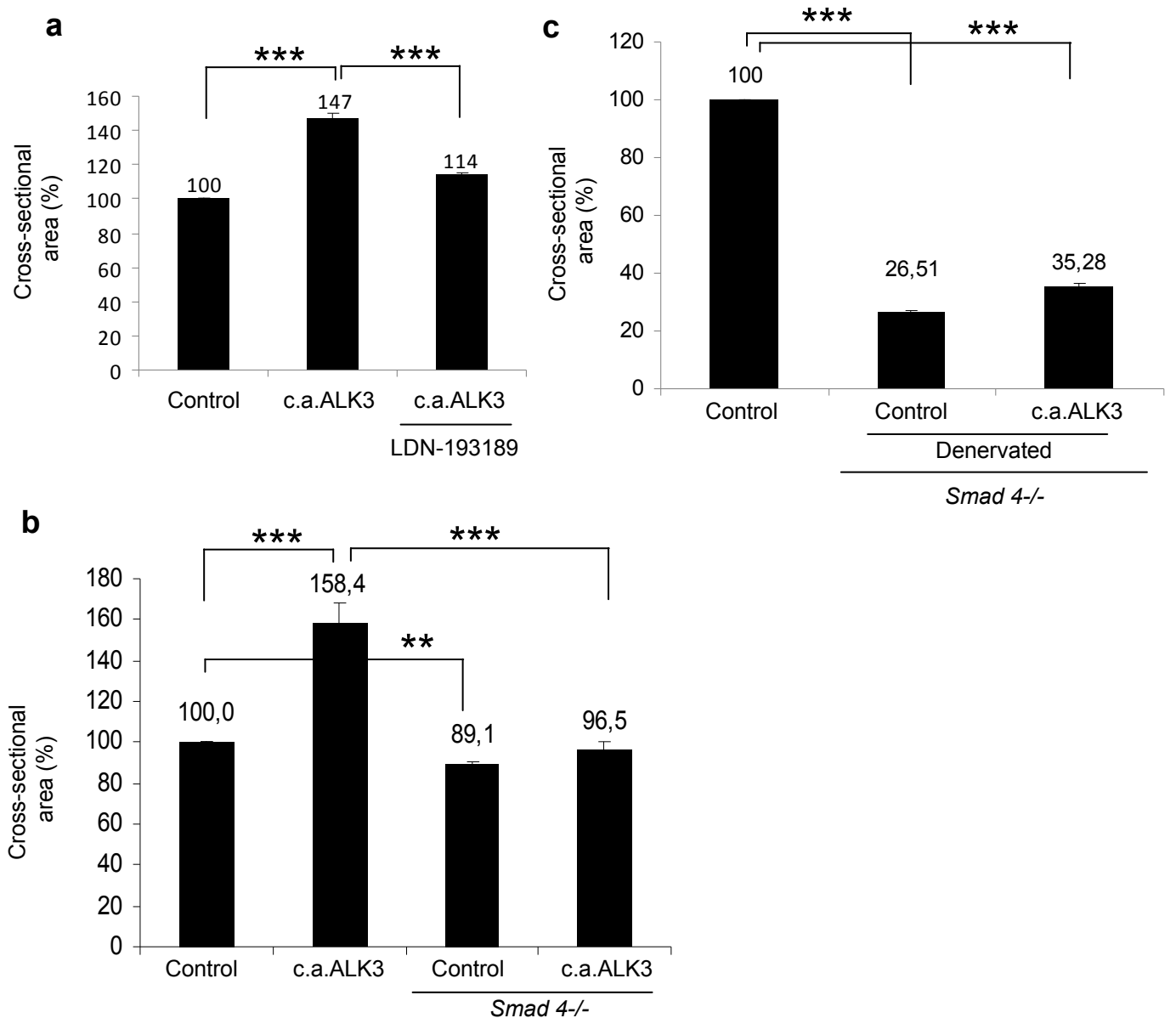
**ALK3 overexpression promotes muscle growth. (a)** Expression level of ALK3 transcript in AAV-c.a.ALK3 and AAV-control transfected TA muscles two and seven weeks after intramuscular injection of AAV.  $n \geq 3$  muscles for each condition; \*  $p < 0.05$ ; \*\*  $p < 0.01$ . Values are mean  $\pm$  s.e.m. **(b)** Western blot of TA muscles showing increase of Smad1/5/8 phosphorylation levels two and seven weeks after transfection with AAV-c.a.ALK3 and control. **(c)** Quantification of P-Smad1/5/8 in AAV-c.a.ALK3 and AAV-control transfected TA muscles two and seven weeks after intramuscular injection of AAV.  $n = 4$  muscles for each condition; \*\*  $p < 0.01$ .

## Supplementary Figure 6



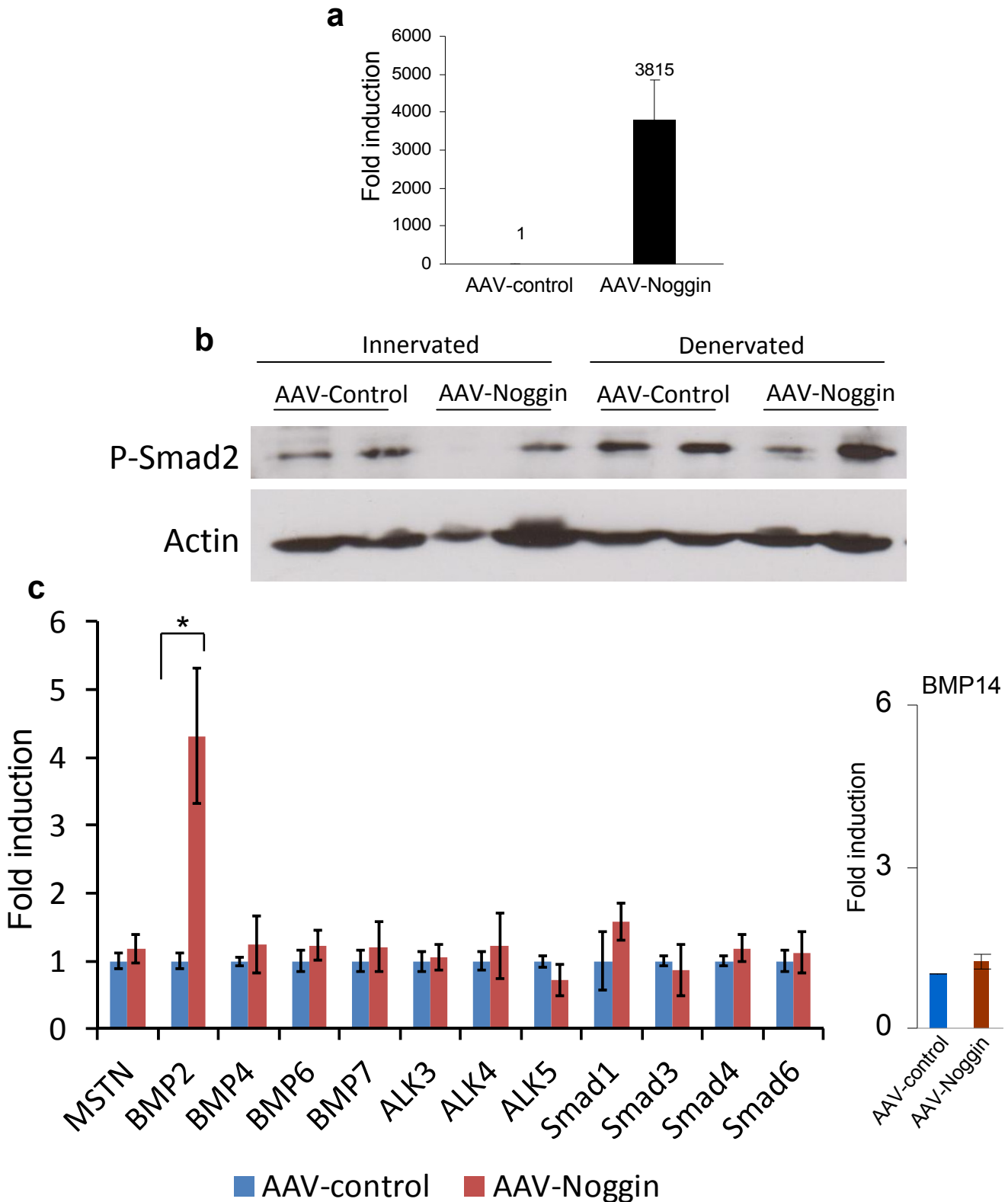
(d) H&E staining of cryosections from TA muscle showing the dramatic hypertrophy that occurred in AAV-c.a.ALK3 transfected muscles (middle image) two weeks after transfection compared to AAV-control treated muscle (left image). Note the presence of some fibers with centrally located nuclei (right image) in AAV-c.a.ALK3 injected muscle as a consequence of fiber regeneration. Representative image from n=4 muscles. (e) Frequency histograms showing the distribution of myofiber diameter in AAV-c.a.ALK3 and AAV-control transfected muscles two weeks after intramuscular AAV injection. Only fibers with peripheral position of nuclei were analyzed and degenerating/regenerating fibers were excluded from the analysis. 2764 fibers from AAV-control injected muscles (n=4) and 1427 from AAV-c.a.ALK3 injected muscles (n=4 muscles) were analyzed. (f) Percentage of TA muscle area that show degenerating/regenerating fibers or intact fibers after AAV-control or AAV-c.a.ALK3 expression; n=4 muscles for each condition. (g) Expression level of different components of Myostatin and BMP pathway and in AAV-c.a.ALK3 and AAV-control transfected TA two weeks after intramuscular AAV injection (n=4 muscles for each condition).

## Supplementary Figure 7



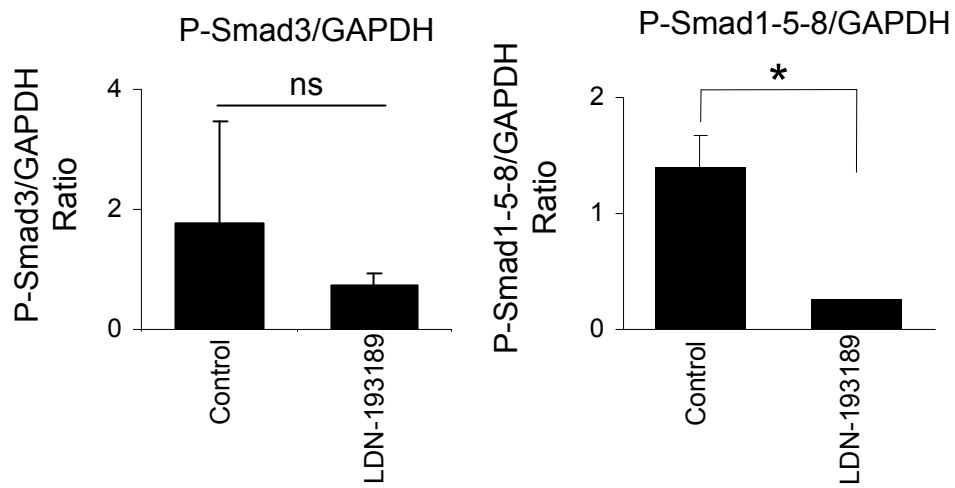
**ALK3-mediated hypertrophy is blunted by LDN-193189 and Smad4 deletion. (a)** LDN-193189 treatment abrogates c.a.ALK3-mediated muscle growth. Cross-sectional area of c.a.ALK3 transfected fibers was measured. TA muscle was electroporated with c.a.ALK3 together with EGFP and treated with LDN-193189. LDN-193189 was i.p. injected twice per day for 9 days at the dose of 3 mg/kg, data are shown as mean $\pm$  s.e.m. (\*\* $p$ <0.001,  $n$ =250 fibers for each condition). **(b).** Smad4 deficiency blocks c.a.ALK3-mediated muscle growth. TA muscles of *Smad4*<sup>-/-</sup> and *Smad4*<sup>fl/fl</sup> mice were electroporated with c.a.ALK3 together with EGFP. Cross-sectional area of transfected fibers was measured. Data are shown as mean $\pm$  s.e.m. (\*\* $p$ <0.001, \*\* $p$ <0.01,  $n$ =250 fibers for each condition). **(c)** Smad4 deficiency blocks c.a.ALK3-mediated muscle growth after denervation. TA muscles of *Smad4*<sup>-/-</sup> and *Smad4*<sup>fl/fl</sup> mice were electroporated with c.a.ALK3 together with EGFP and denervated. 2 weeks later muscles were collected and analysed. Cross-sectional area of transfected fibers was measured, data are shown as mean $\pm$  s.e.m. (\*\* $p$ <0.001,  $n$ =100 fibers for each condition).

## Supplementary Figure 8



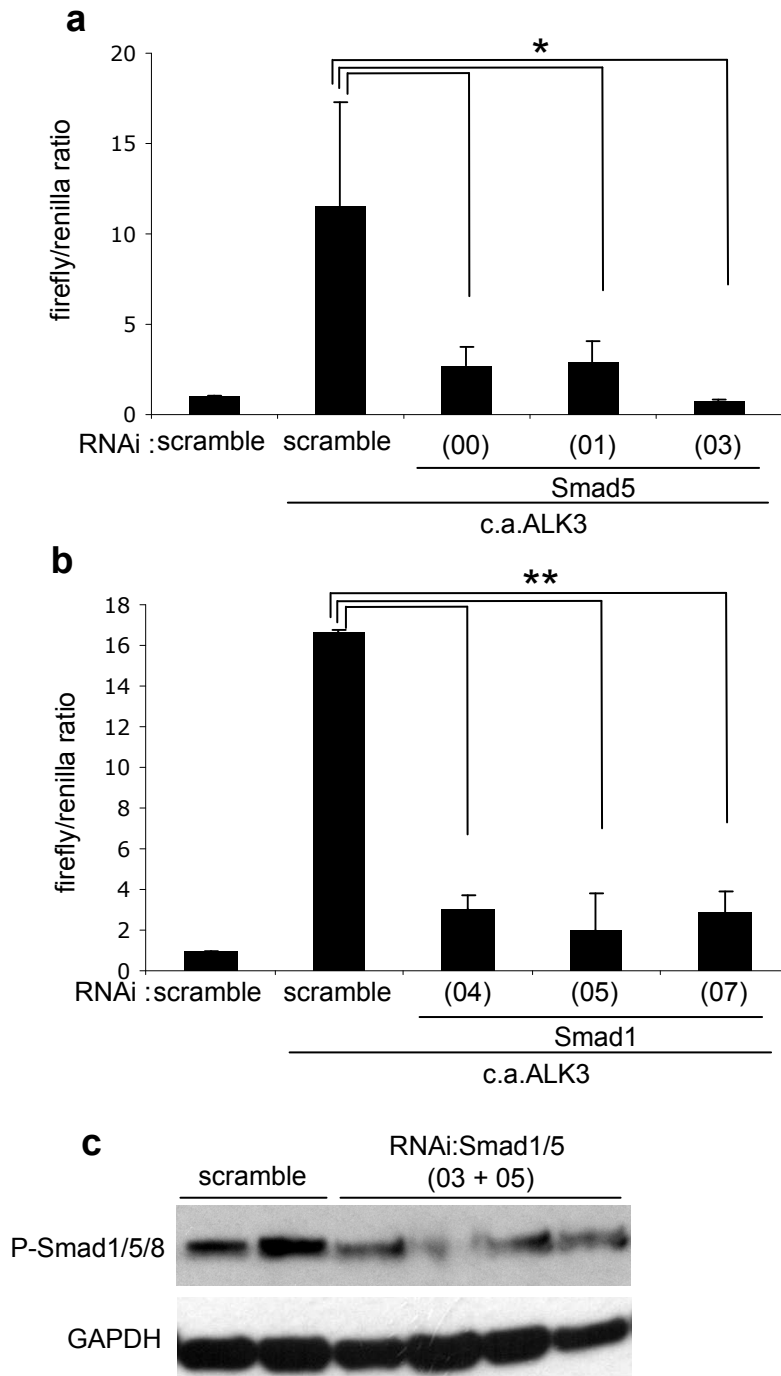
**Noggin overexpression does not trigger compensatory feedback loops.** (a) Expression level of Noggin (*gallus gallus*) normalized for endogenous Noggin (*mus musculus*) in AAV-Noggin and AAV-control transfected TA muscles two weeks after intramuscular AAV injection. Data are shown as mean $\pm$  s.e.m.; n=4 muscles. (b) Western blot showing no significant changes of Smad2 phosphorylation levels two weeks after transfection with AAV-Noggin or AAV-control in innervated and 3 days denervated muscles. (c) Expression level of different components of Myostatin and BMP pathway and in AAV-Noggin and AAV-control transfected TA muscles two weeks after intramuscular transfection with AAV-Noggin. Data are shown as mean $\pm$  s.e.m.; \*p<0.05; n=4 for each condition.

## Supplementary Figure 9



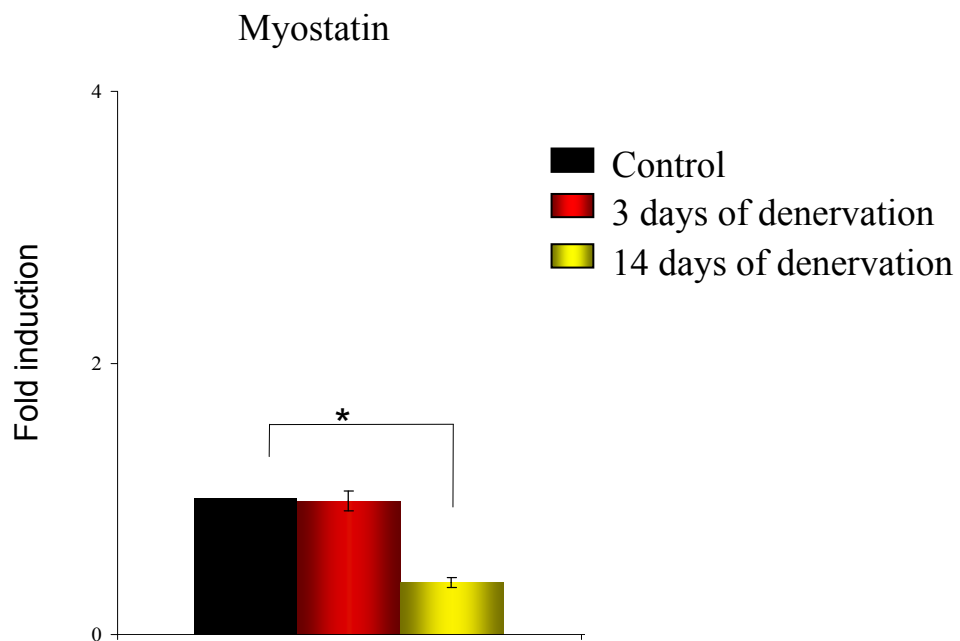
**LDN-193189 inhibits phosphorylation of Smad1/5/8 but not Smad3.** Densitometric quantification and normalization of Western blots showing no significant changes of Smad3 phosphorylation levels 9 days after LDN-193189 treatment (left panel). The treatment significantly reduced Smad1/5/8 phosphorylation (right panel) (n=4 \*p<0.05, data are mean±s.e.m.).

## Supplementary Figure 10



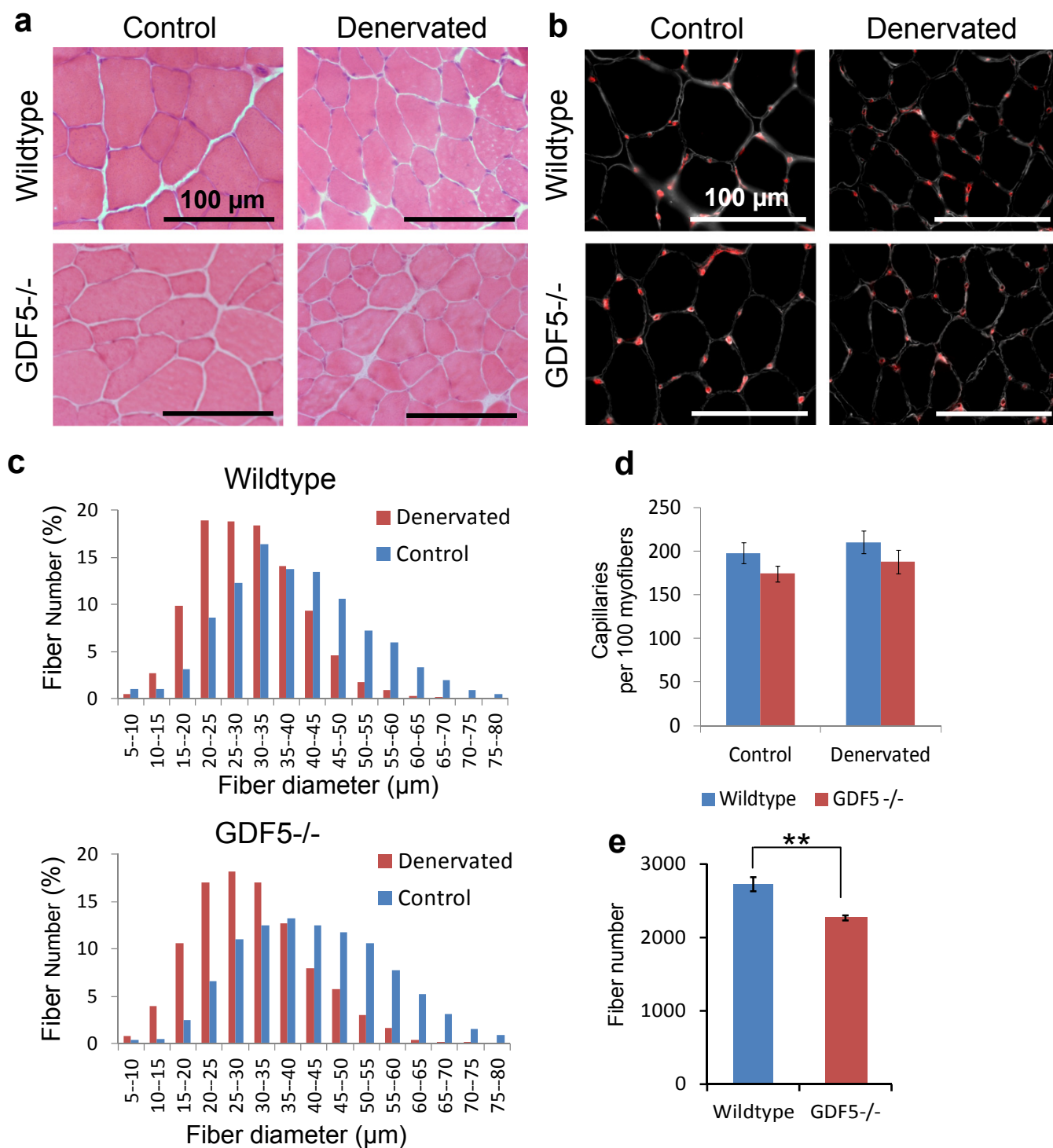
**Oligos 03 and 05 efficiently block Smad1/5.** (a) Smad1/5/8-sensor activity is inhibited by Smad5 knockdown. Id1 reporter was transfected into adult TA muscle with vectors expressing shRNAs against Smad5 or Scramble with or without c.a.ALK3. A renilla luciferase vector was cotransfected to normalize for transfection efficiency. Seven days later, firefly/renilla luciferase activity was determined. \*  $p < 0.05$ ,  $n = 4$  muscles for each condition. Data are mean  $\pm$  s.e.m. (b) Smad1/5/8-sensor activity is inhibited by Smad1 knockdown. Id1 reporter was transfected into adult TA muscle with vectors expressing shRNAs against Smad1 or Scramble with or without c.a.ALK3. A renilla luciferase vector was cotransfected to normalize for transfection efficiency. Seven days later, firefly/renilla luciferase activity was determined. \*\*  $p < 0.01$ ,  $n = 4$  muscles for each condition. Data are mean  $\pm$  s.e.m. (c) RNAi-mediated knockdown of Smad1 and Smad5 revealed by immunoblotting. Adult muscle fibers were co-transfected with bicistronic expressing vectors that encode oligos 03 or 05 and GFP. Two weeks later TA muscles were collected and western blotted against P-Smad 1/5/8.

## Supplementary Figure 11



**Expression level of *Myostatin/GDF8* (*Mstn*) in innervated and denervated TA muscles.** Data are shown as mean $\pm$ s.e.m.; n=4 for each condition, \*p<0.05.

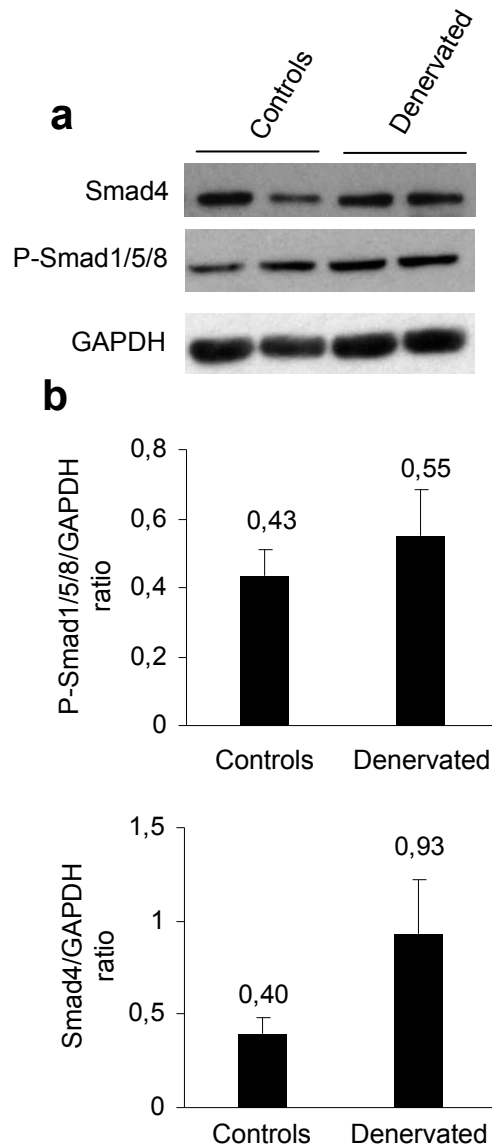
## Supplementary Figure 12



**Absence of GDF5 exacerbates muscle atrophy after denervation.** (a) H&E staining of cryosections from TA muscles showing the normal histology and morphology of innervated and denervated muscles from wild type and *GDF5*<sup>-/-</sup> mice; representative images from n=4 muscles for each condition. (b) Capillary network is not affected by *GDF5* mutation. Immunofluorescence staining against CD31 to depict capillaries (in red) and laminin (white) to depict muscle fibers. (c) Fiber size histograms reveal a general shift to smaller fiber diameters in TA muscles from wild type (upper histogram) and *GDF5*<sup>-/-</sup> mice (lower histogram) two weeks following denervation. Myofibers of the entire muscle cross sections were analyzed, n=4 muscles for each condition. (d) Quantification of capillaries in TA muscles from wild type and *GDF5*<sup>-/-</sup> mice two weeks following denervation compared to the innervated TA muscles (control). Capillaries were visualised following co-immunostaining against CD31 and laminin and counted on random images acquired using x20 objective fluorescence microscopy. Data are shown as mean±s.e.m.; n=4 muscles for each condition. (e) Quantification of fibers number in wild type and *GDF5* knockout mice; n=4 muscles for each condition, \*\*p<0.01.



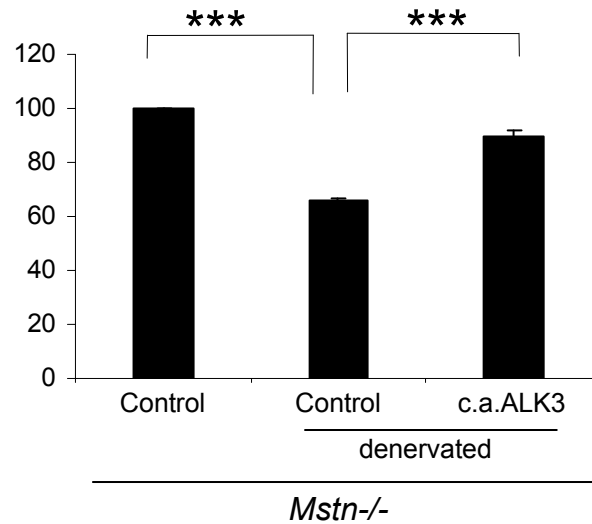
## Supplementary Figure 13



**Denervation does not trigger BMP signaling in Myostatin-deficient muscles. (a)**

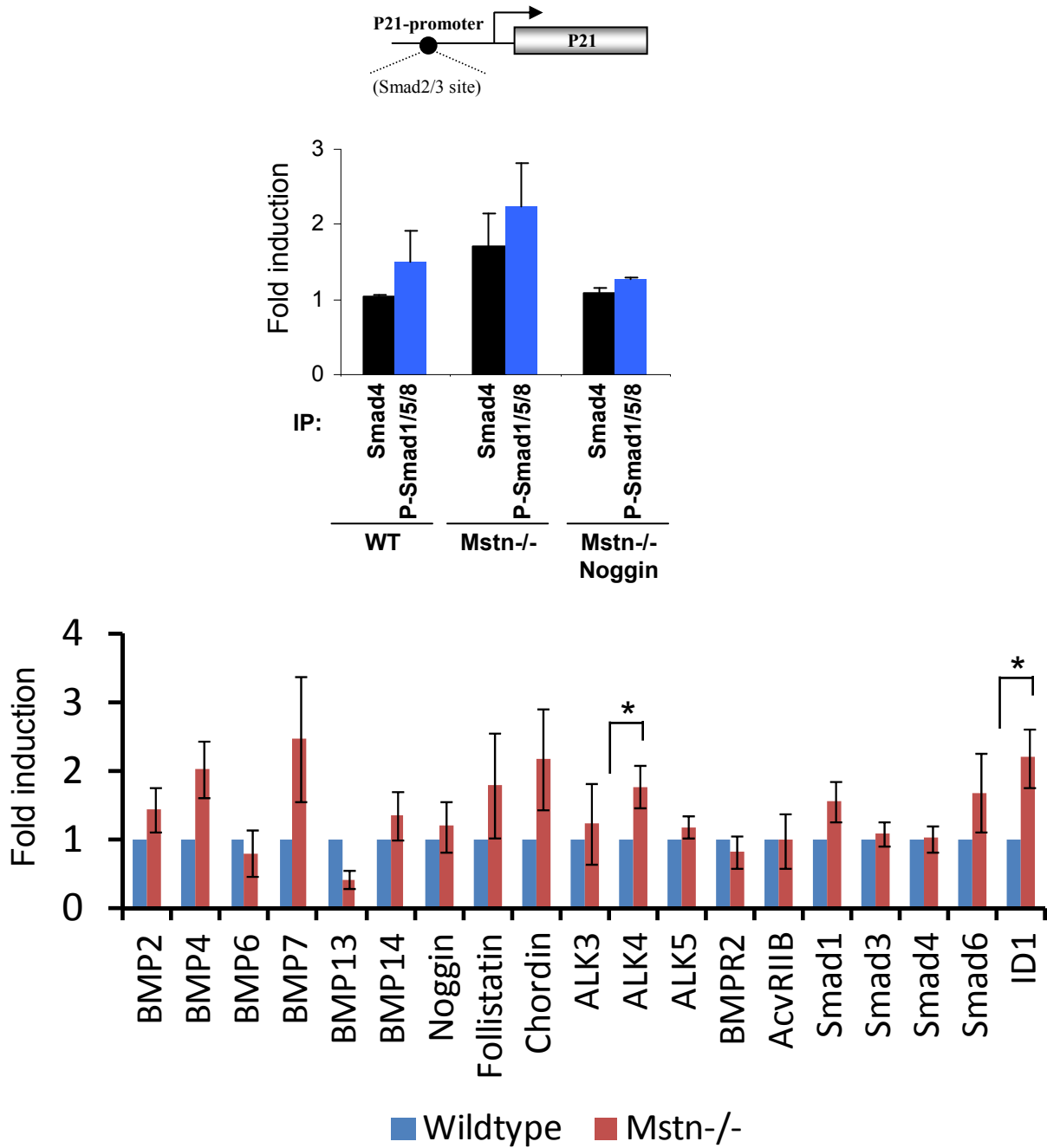
Western blot for Smad4 and P-Smad1/5/8 in innervated and denervated TA muscle of Myostatin knockout mice one week after neurectomy of the sciatic nerve. **(b)** Quantification of the bands revealed no significant difference. Data are shown as mean $\pm$  s.e.m.; n=4 muscles for each condition.

## Supplementary Figure 14



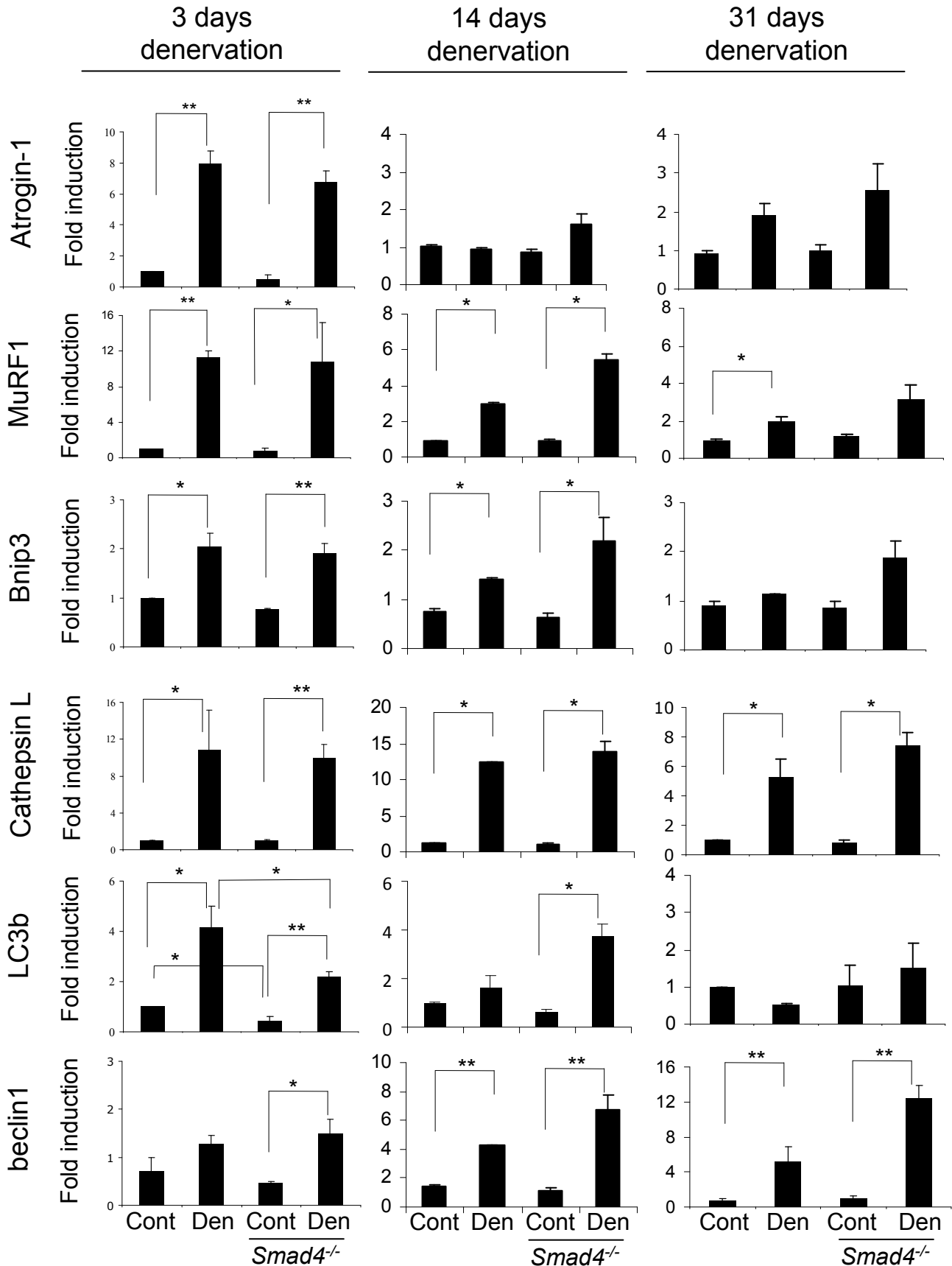
**Activation of the BMP pathway protects from muscle atrophy in Myostatin knockout mice.** Adult muscle fibers were co-transfected with c.a.ALK3 and EGFP, denervated and examined 12 days later. Cross-sectional area of transfected fibers, identified by GFP fluorescence, was measured. \*\*\* $p < 0.001$ ,  $n = 200$  fibers for each condition, data are shown as mean  $\pm$  s.e.m.

## Supplementary Figure 15



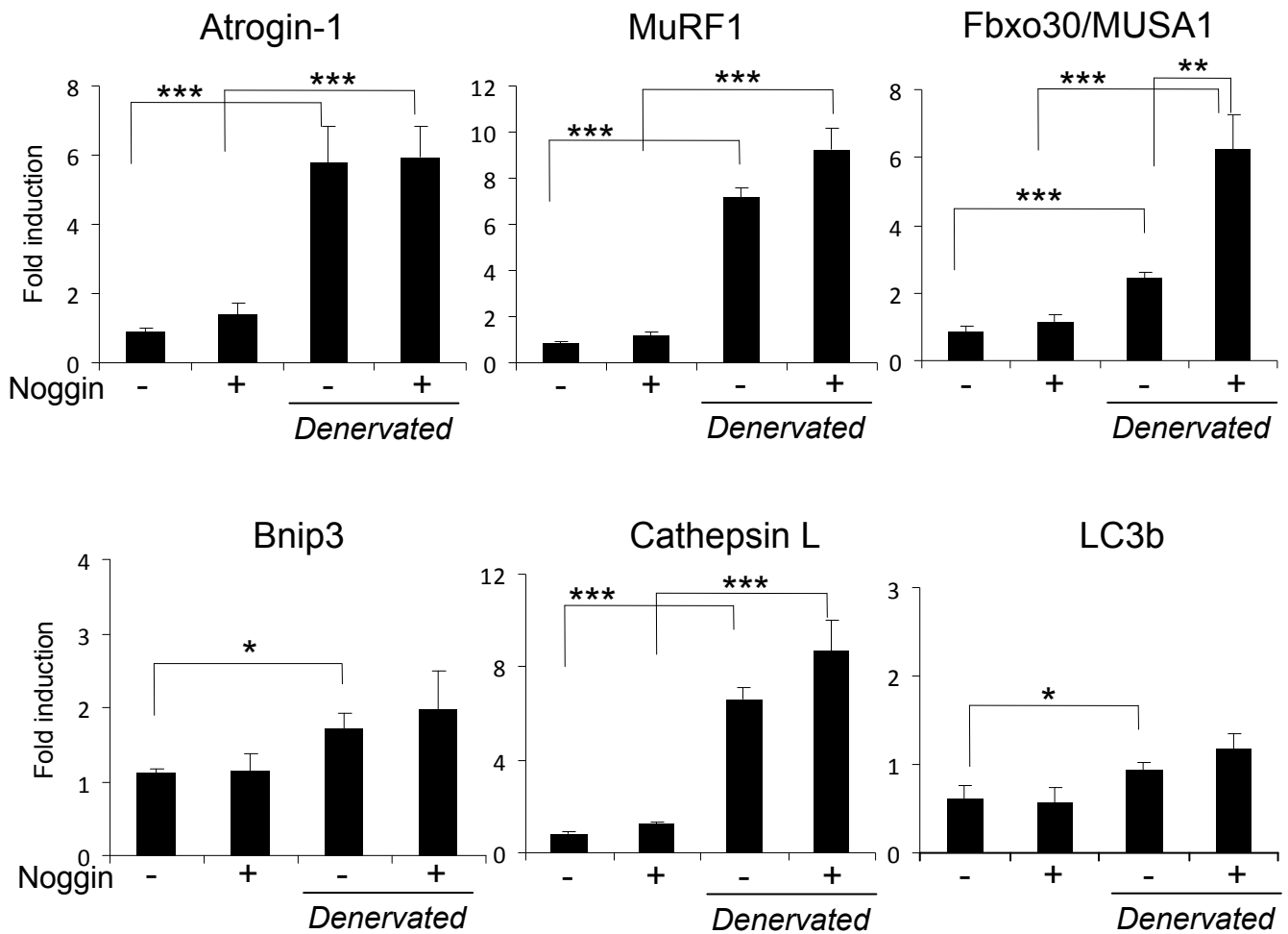
**Expression of BMPs, BMP receptors and Smads do not change in *Mstn*<sup>-/-</sup>.** **Upper panel:** ChIP quantitative RT-PCR showing that Smad4 and P-Smad1/5/8 are not significantly recruited to a Smad2/3 response element in the P21 promoter of *Myostatin* null TA muscles when compared to wild type muscle and that there is no further effect in binding by Noggin expression. The ChIP that used IgG was settled as reference (1) to determine the Smads recruitment on P21 promoter. **Lower panel:** Expression level of different components of BMP and myostatin pathways in wild type and *Myostatin* null TA; n≥3 muscles for each condition; independent-samples t-test (two-tailed).

## Supplementary Figure 16



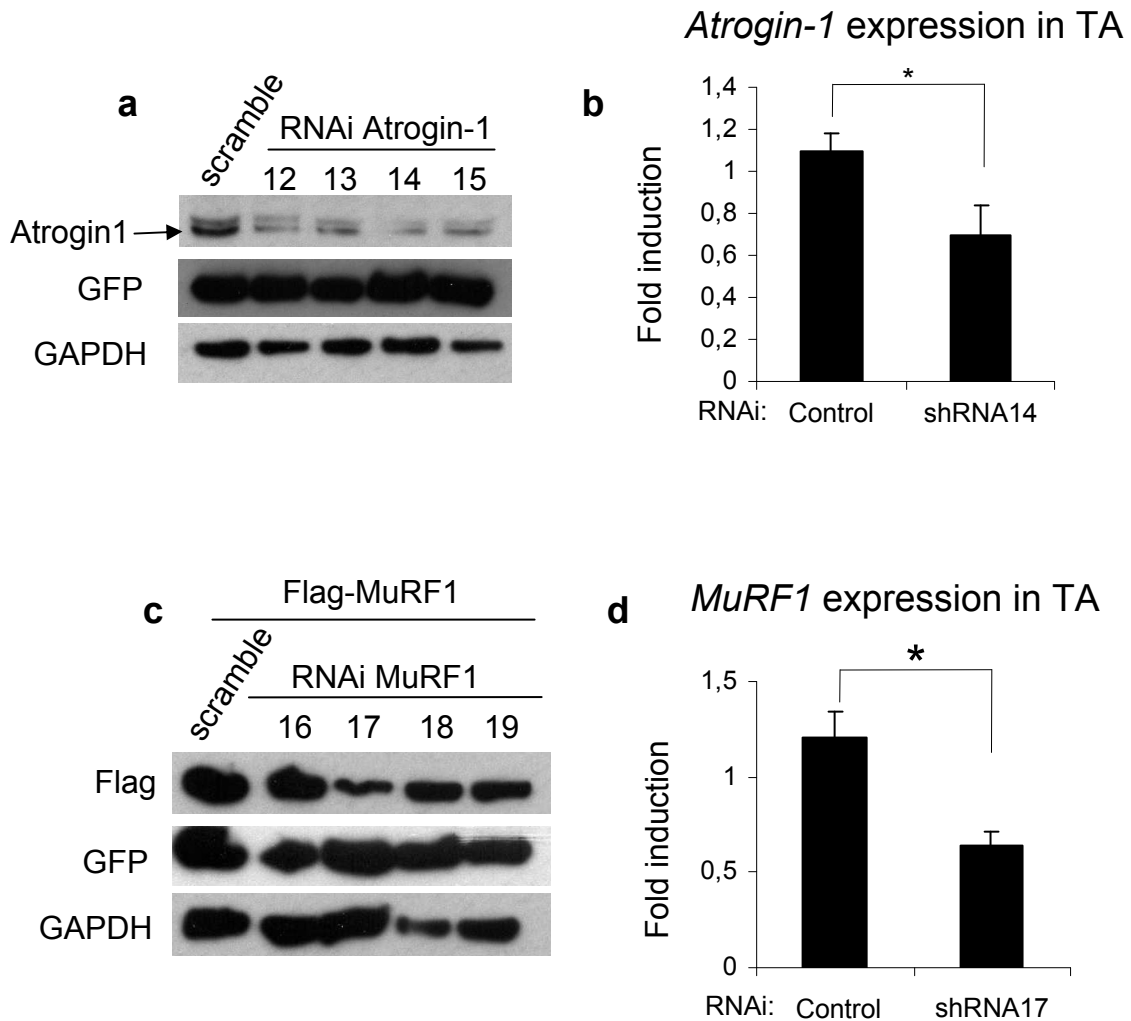
**Expression levels of the critical atrophy-related genes in *Smad4<sup>fl/fl</sup>* and *Smad4<sup>-/-</sup>* muscles at 3, 14 and 31 days after denervation.** RNA was extracted from gastrocnemius muscles and quantitative PCR analysis was performed in triplicates using specific oligonucleotides. Data were normalized to the GAPDH content and expressed as fold increase over levels of innervated *Smad4<sup>fl/fl</sup>* muscles, data are mean +/-s.e.m. (\*p<0.05, \*\*p<0.01, n=4 muscles).

## Supplementary Figure 17



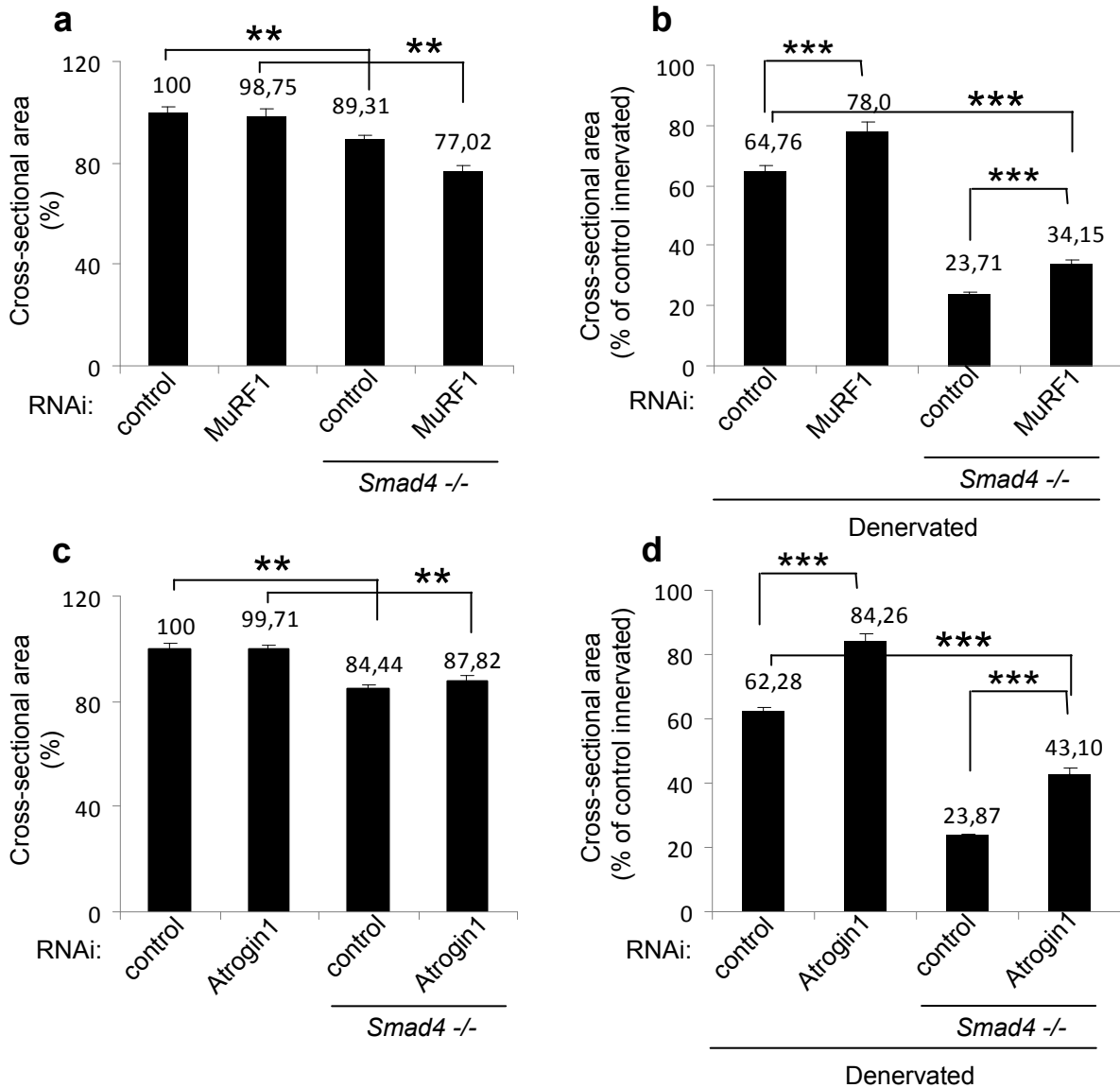
**Noggin exacerbates the expression of *Fbxo30/MUSA1* but not of *atrogin-1* and *MuRF1* in denervated muscles.** RNA was extracted from innervated and 3 days denervated TA muscles that were transfected by AAV-Noggin and AAV-control virus 14 days before denervation. Quantitative PCR analysis was performed in triplicates using specific oligonucleotides. Data were normalized to the GAPDH content, data are mean  $\pm$  s.e.m. (\*\* $p < 0.01$ , \*\*\* $p < 0.001$ ,  $n = 4$  muscles).

## Supplementary Figure 18



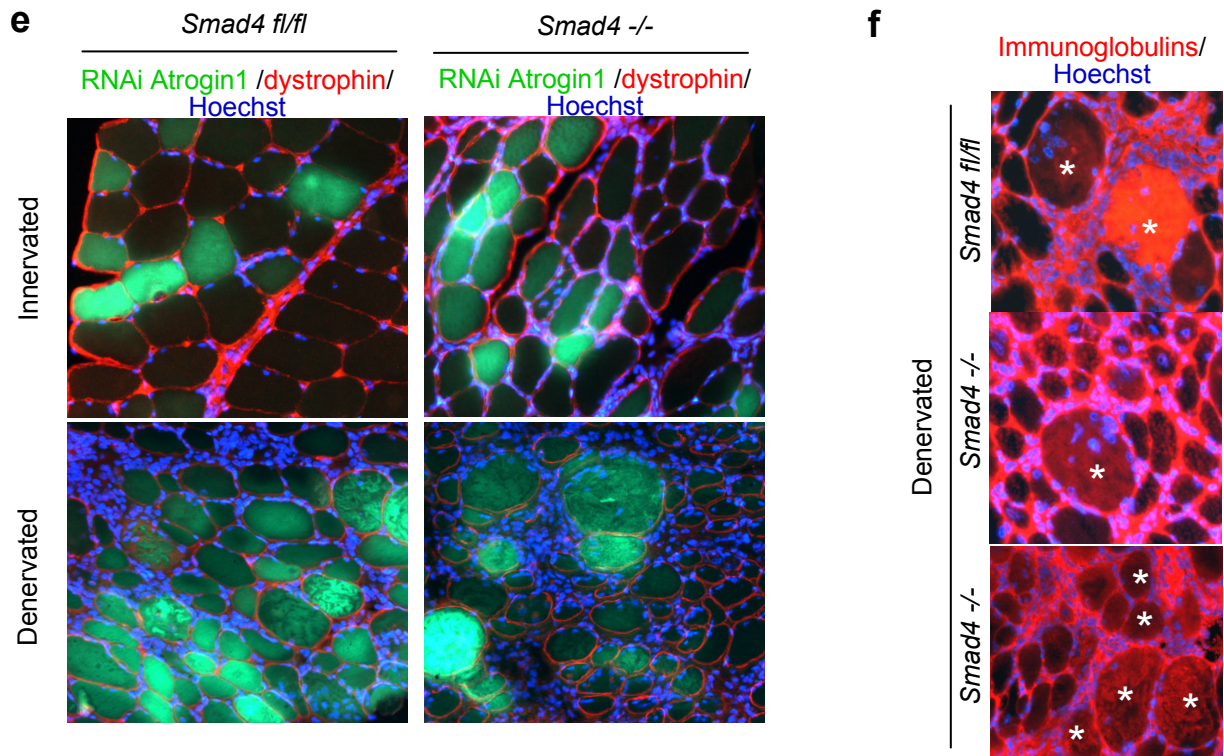
**ShRNAs against atrogin1 and MuRF1.** **(a)** RNAi-mediated knockdown of atrogin-1 revealed by immunoblotting. C2C12 cells were transfected with vectors expressing different shRNAs against atrogin-1. Oligos 14 were the most effective in knocking down endogenous atrogin-1 protein. **(b)** RNAi-mediated knockdown of *atrogin-1* revealed by quantitative RT-PCR (qRT-PCR). Adult TA muscles were transfected with bicistronic expressing vectors that encode either oligo 14 or scramble and GFP. Two weeks later TA muscles were collected, RNA extracted and endogenous atrogin1 expression was analysed by qRT-PCR, (\* $p < 0.05$ ,  $n = 4$  muscles). **(c)** RNAi-mediated knockdown of MuRF1 revealed by immunoblotting. C2C12 cells were transfected with vectors expressing different shRNAs against MuRF1 together with vectors encoding murine Flag-MuRF1. Oligos 17 were the most effective in knocking down MuRF1 protein. **(d)** RNAi-mediated knockdown of endogenous MuRF1 revealed by quantitative RT-PCR (qRT-PCR). Adult TA muscles were transfected with bicistronic expressing vectors that encode oligos 17 or scramble and GFP. Two weeks later TA muscles were collected, RNA extracted and endogenous *MuRF1* expression was analysed by qRT-PCR (\* $p < 0.05$ ,  $n = 4$  muscles).

## Supplementary Figure 19



**Atrogin-1 and MuRF1 knockdown in *Smad4*<sup>-/-</sup> mice.** (a) Graph shows that inhibition of MuRF1 did not revert muscle atrophy of *Smad4*<sup>-/-</sup>. Adult TA muscle fibers of *Smad4*<sup>fl/fl</sup> and *Smad4*<sup>-/-</sup> mice were transfected with bicistronic expressing vectors that encode shRNAs specific for MuRF1 or scramble and GFP. Two weeks later cross-sectional area of transfected fibers, identified by GFP fluorescence, was measured. (\*\**p*<0.01, *n*=250 fibers for each condition, data are shown as mean± s.e.m.). (b) Graph shows that inhibition of MuRF1 did not prevent the excessive muscle atrophy of denervated *Smad4*<sup>-/-</sup>. Note that denervated *Smad4*-deficient fibers in which *MuRF1* was knocked down are still more atrophic (34,15%) than denervated *Smad4*<sup>fl/fl</sup> (64,76%). Adult TA muscle fibers of *Smad4*<sup>fl/fl</sup> and *Smad4*<sup>-/-</sup> mice were transfected with vectors that encode shRNAs specific for MuRF1 or scramble and GFP and denervated. Two weeks later cross-sectional area of transfected fibers, identified by GFP fluorescence, was measured. (\*\**p*<0.001, *n*>200 fibers for each condition, data are shown as mean± s.e.m.). (c) Graph shows that inhibition of atrogin-1 did not revert muscle atrophy of *Smad4*<sup>-/-</sup>. Adult TA muscle fibers of *Smad4*<sup>fl/fl</sup> and *Smad4*<sup>-/-</sup> mice were transfected with shRNAs specific for atrogin1 or scramble and GFP. Two weeks later cross-sectional area of transfected fibers, identified by GFP fluorescence, was measured. (\*\**p*<0.01, *n*=500 fibers for each condition, data are shown as mean± s.e.m.). (d) Graph shows that inhibition of atrogin-1 did not prevent excessive muscle atrophy of denervated *Smad4*<sup>-/-</sup>. Note that denervated *Smad4*-deficient fibers in which atrogin-1 was knocked down are still more atrophic (43,10%) than denervated *Smad4*<sup>fl/fl</sup> (62,28%). Adult TA muscle fibers of *Smad4*<sup>fl/fl</sup> and *Smad4*<sup>-/-</sup> mice were transfected with shRNAs specific for atrogin-1 or scramble and denervated. Two weeks later cross-sectional area of transfected fibers, identified by GFP fluorescence, was measured. (\*\**p*<0.001, *n*=450 fibers for each condition, data are shown as mean± s.e.m.).

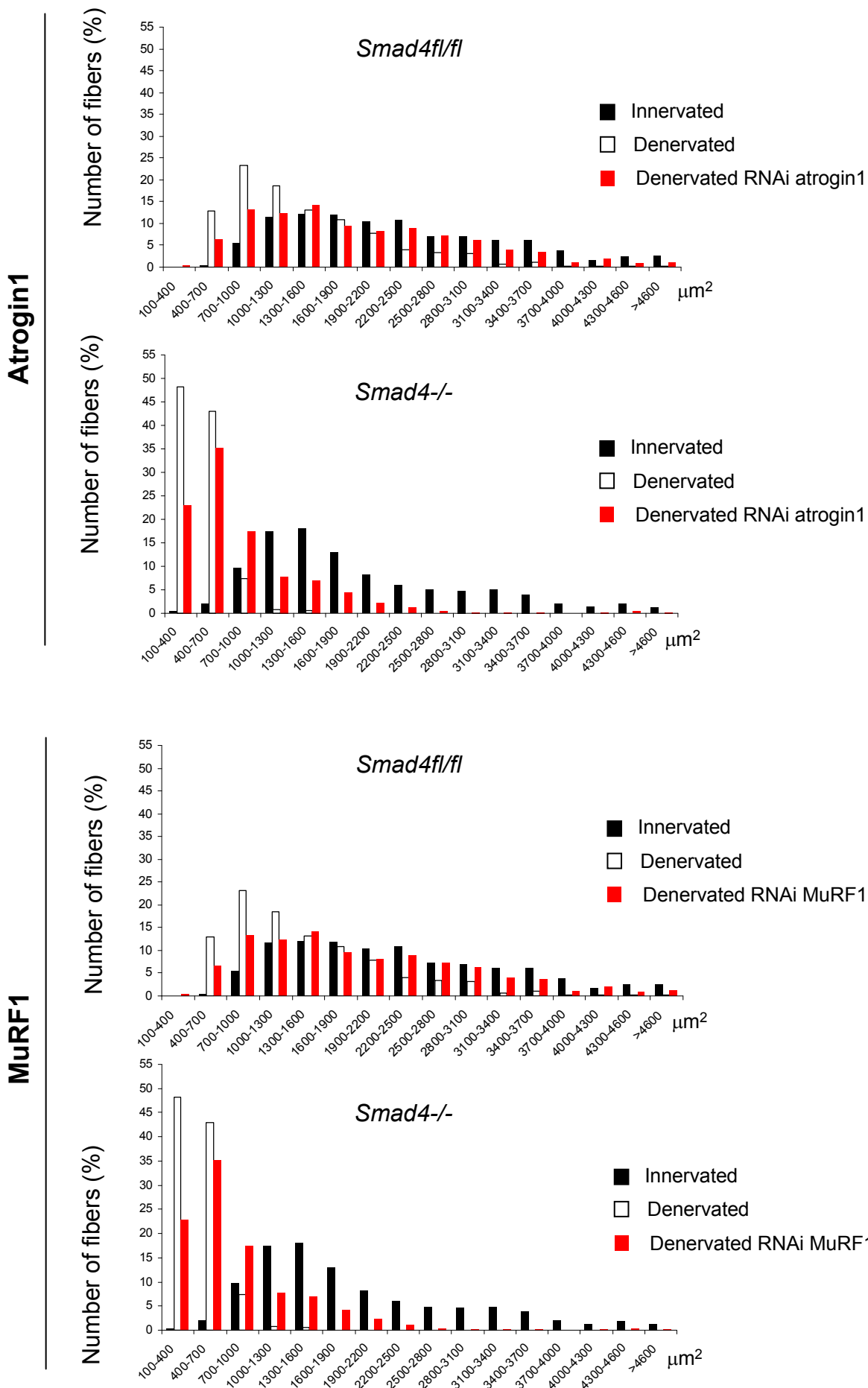
## Supplementary Figure 19



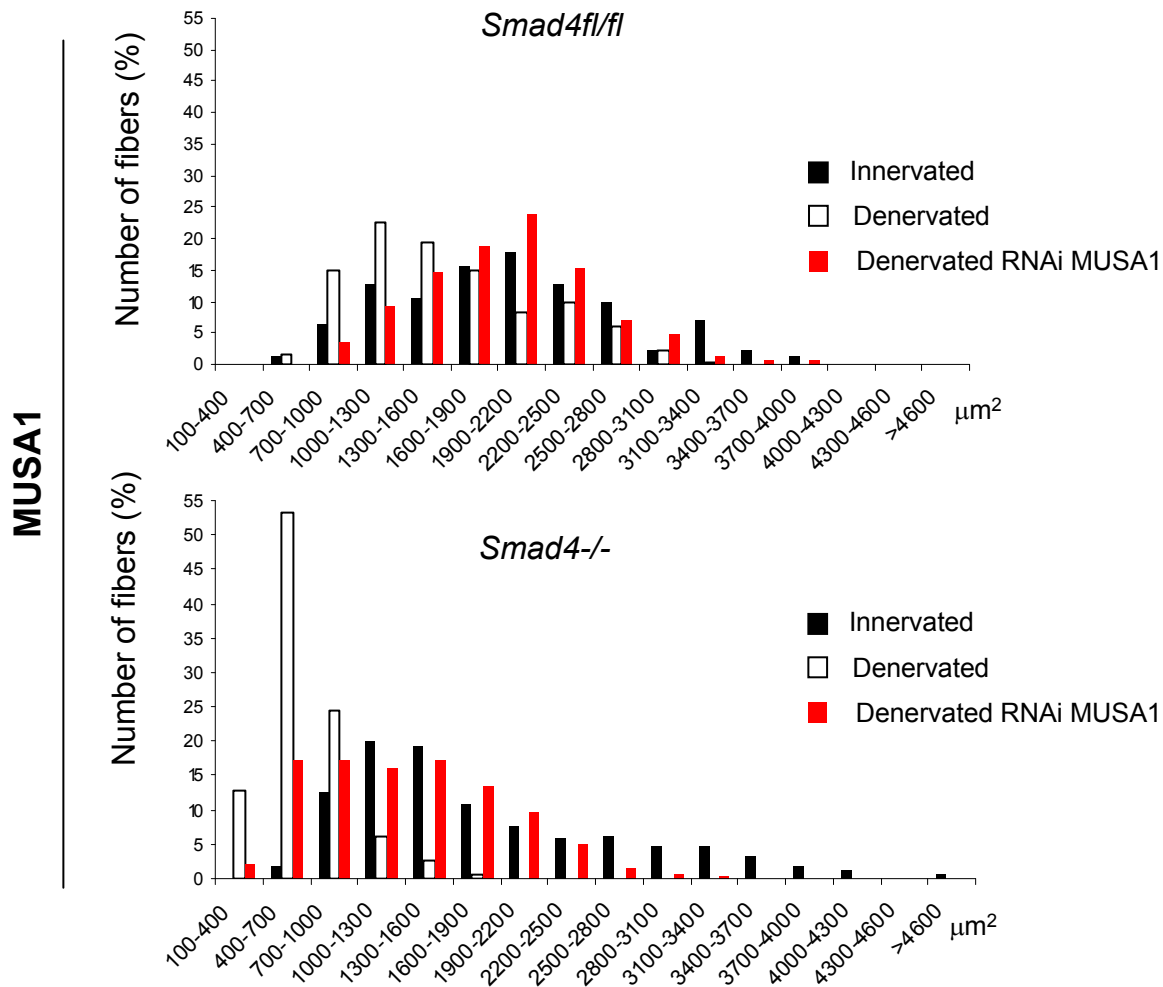
**(e)** Immunofluorescence images showing muscle degeneration in denervated TA muscles that have been transfected with shRNAs against atrogin1. Adult TA muscle fibers of *Smad4*<sup>fl/fl</sup> and *Smad4*<sup>-/-</sup> mice were electroporated with expressing vectors that encode shRNAs specific for atrogin-1 and GFP. Immediately after transfection the right leg was denervated while left leg was maintained as control. Two weeks later, muscles were collected and cryosections were performed and stained for dystrophin. Transfected fibers, identified by GFP, show normal morphology in innervated *Smad4*<sup>fl/fl</sup> and *Smad4*<sup>-/-</sup> mice (upper panels) but undergo to vacuolization, swelling and ultimately to necrosis in denervated muscles of both *Smad4*<sup>fl/fl</sup> and *Smad4*<sup>-/-</sup> mice (lower panels). Inflammation and regenerating fibers are present in denervated muscles in which atrogin1 was knocked down. **(f)** Immunofluorescence staining for Immunoglobulins (Ig) (red) shows necrotic fibers in denervated TA muscles that have been transfected with shRNAs against atrogin-1. Asterisks underline the big fibers that are positive for Ig and are surrounded and infiltrated by inflammatory cells as evidenced by the Hoechst staining.



# Supplementary Figure 20

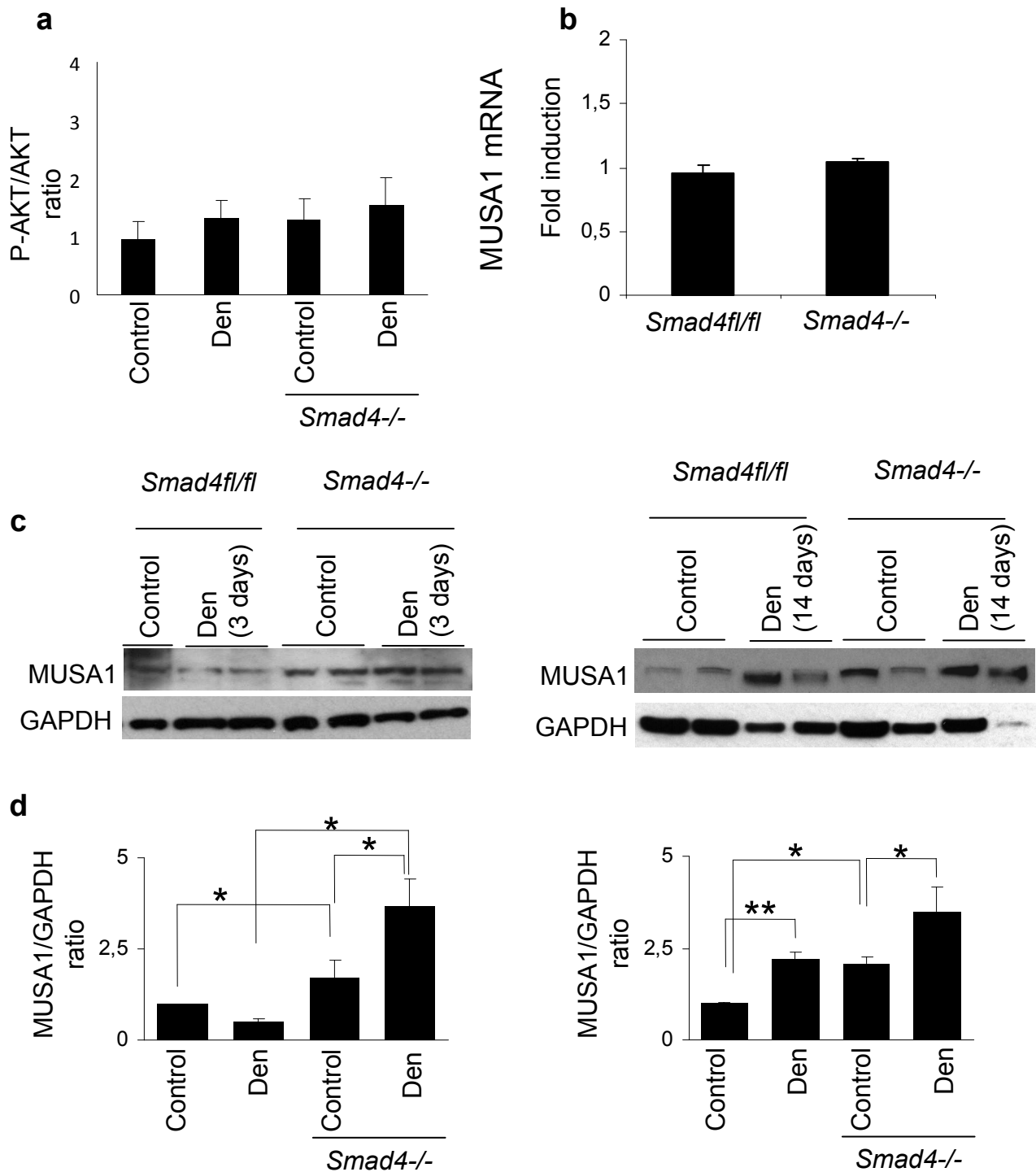


## Supplementary Figure 20



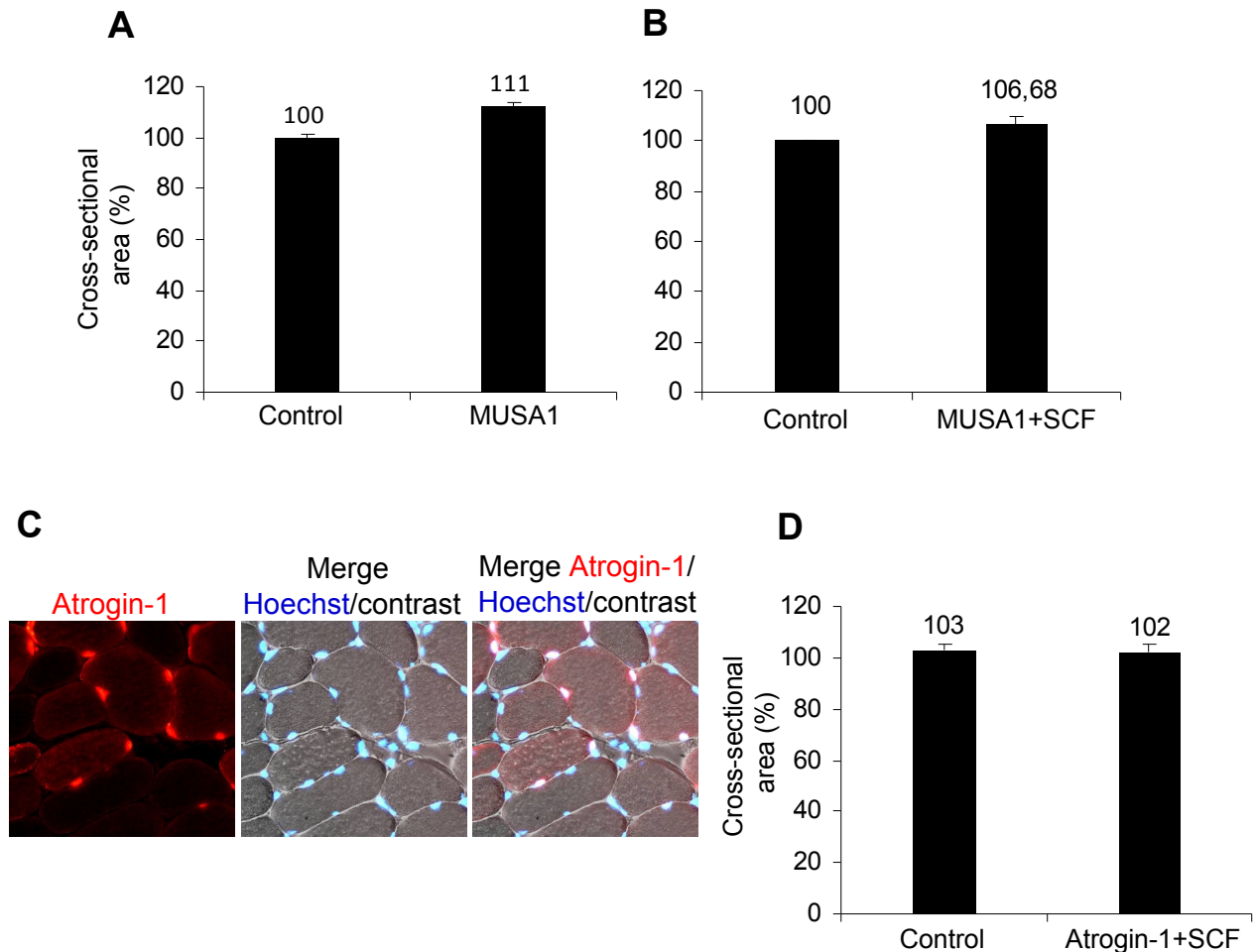
**CSA distribution in *Smad4<sup>fl/fl</sup>* and *Smad4<sup>-/-</sup>* after inhibition of atrogin-1, MuRF1 and MUSA1.** Frequency histograms showing the distribution of myofiber diameter in innervated and denervated TA muscle of *Smad4<sup>fl/fl</sup>* and of *Smad4<sup>-/-</sup>* mice that were transfected with shRNA against atrogin-1, MuRF1 and MUSA1.

## Supplementary Figure 21



**MUSA1 expression is higher in *Smad4<sup>-/-</sup>* than *Smad4<sup>fl/fl</sup>* muscles.** (a) Quantification of P-AKT in innervated and two weeks denervated gastrocnemius muscles of *Smad4<sup>fl/fl</sup>* and *Smad4<sup>-/-</sup>* mice. No significant changes has been found between the different conditions (n=4, data are shown as mean+/- s.e.m). (b) Expression of MUSA1 transcript in TA muscles from *Smad4<sup>fl/fl</sup>* and *Smad4<sup>-/-</sup>* mice (n=4, data are shown as mean+/- s.e.m). (c) Western blots for MUSA1 protein in innervated and denervated TA muscles of *Smad4<sup>fl/fl</sup>* and *Smad4<sup>-/-</sup>* mice. (d) Densitometric quantification and normalization of Western blots for MUSA1 showing a significant increase of MUSA1 in *Smad4*-deficient muscles when compared to controls. Denervation triggers a significant increase of MUSA1 protein both at 3 and 14 days after denervation in *Smad4<sup>-/-</sup>* mice (n=6 muscles, \*p<0.05; \*\*p<0.01). Data are mean+/- s.e.m.

## Supplementary Figure 22



**Overexpression of MUSA1 or Atrogin1 does not induce muscle atrophy.** (a) Graph shows that MUSA1 expression did not induce muscle atrophy in normal physiological conditions. Adult TA muscle fibers were co-transfected with MUSA1 and GFP. Two weeks later cross-sectional area of transfected fibers, identified by GFP fluorescence, was measured (n=4 muscles, data are shown as mean $\pm$  s.e.m.). (b) The expression of the SCF complex containing MUSA1 did not induce muscle atrophy in normal physiological conditions. Adult TA muscle fibers were co-transfected with MUSA1, Skip1, Cul1, Roc1 and GFP. Two weeks later cross-sectional area of transfected fibers, identified by GFP fluorescence, was measured (n=4, data are shown as mean $\pm$  s.e.m.). (c) Overexpression of atrogin1 does not change fiber size in normal muscle. Adult TA muscle fibers were transfected with myc-atrogin1 and were collected two weeks later. Fibers expressing atrogin-1, revealed by anti-Myc immunostaining, do not become atrophic. The nuclear localization of atrogin1 is expected because atrogin-1 protein contains two nuclear localization sequence (NLS). (d) The expression of the SCF complex containing atrogin-1 did not induce muscle atrophy in normal physiological conditions. Adult TA muscle fibers were co-transfected with atrogin-1, Skip1, Cul1, Roc1 and GFP. Two weeks later cross-sectional area of transfected fibers, identified by GFP fluorescence, was measured (n=4, data are mean $\pm$  s.e.m.).

# Supplementary Table 1

## Primers used for PCR amplification

	Forward primer	Reverse primer
<b>Smad4 <sup>-/-</sup> allele</b>	CAGCATGCTCTGAGCTCACAATTCTCC	CATAACAGACTATGTATCAGGGTTAGTGT GG
<b>chick Noggin cloning</b>	ATGGATCATTCCCAGTGCCTTGTGAC	CTAGCAGGAGCACTTGCACTCCGCGAT
<b>mouse Smad1 cloning</b>	GCCACCATGAATGTGACCAGC	AGACACGGATGAAATAGGATTG
<b>mouse Fbxo30 cloning</b>	GCCACCATGGAGGAAGAGGTACAGCAG	AAGCACAGGCTTTAAACTGAGCGCAG

## Supplementary Table 2

### Primers used for Quantitative PCR Analyses

	Forward Primer	Reverse Primer
mBMP1	GGAGTCCTTGGGAGAGACCTAT	ACCTCATACTTGGGAACAATGG
mBMP2	GCAGCTTCCATCACGAAGA	GATGTGAGAACTCGTCACTGG
mBMP3	CGAATGGATTATCTCTCCAAG	AACAAGATGCTGAGTGAGGACA
mBMP4	GACTTCGAGGCGACACTTCTAC	CAGATGTTCTTCGTGATGGAAA
mBMP5	AGGAATACACAAACAGGGATGC	CCAGCAGATTTTACATTGATGC
mBMP6	TCTTCAGACTACAACGGCAGTG	ATCACAGTAGTTGGCAGCGTAG
mBMP7	AGCTTCGTCAACCTAGTGGAAC	CTGGAGCACCTGATAGACTGTG
mBMP8a	CCTATTACTGTGAGGGGGAGTG	TGACATTGTTGCTGCTGCATA
mBMP8b	TCCACTTTGACCTAACCCAGAT	GTCAGACTCCCTGTTGGAGTG
mBMP9	CAGATACACAACGGACAAATCG	CATCATTTTGGCAGGAGACATA
mBMP10	CTCTACAACAAATTCGCCACAG	TTCATGGTGAGGGATAGACACA
mBMP11/GDF11	CTTGGAAGAGGACGAGTACCAC	CTGAAGTGGAAATGACAGCAGA
mBMP12/GDF7	CATGATGTCGCTTTACAGGAG	GATACGTCGAACAGGAAGCTCT
mBMP13/GDF6	AAGACTTACTCCATTGCCGAGA	TCGTCCAGTCCTCTGTCTACAA
mBMP14/GDF5	ATGCTGACAGAAAGGGAGGTAA	GCACTGATGTCAAACACGTACC
mBMP15	GAAAATGGTGAGGCTGGTAAAG	TCGTATGCTACCTGGTTTGATG
mBMPR1A/ALK3	GAAAGACCTGATTGACCAGTCC	CCCATCCATACTTCTCCATAGC
mBMPR1B/ALK6	GAATACCAGCTTCCCTATCACG	TCTGCCTGAGACACTCATCACT
mBMPR2	TTGGACTCATCTACTGGGAGGT	TGGACACAAGAACCTGCATATC
mActR2A	GTTACACCGAAGCCACCCTA	AACCAAATCTTCCCCTTGCT
mActR2B	TTAAGGATCACTGGCTGAAACA	GGATACCCGCTCTTCTACACAG
mMUSA1	TCGTGGAATGGTAATCTTGC	CCTCCCGTTTCTCTATCACG
mAtrogin-1	GCAAACACTGCCACATTCTCTC	CTTGAGGGGAAAGTGAGACG
mMuRF1	ACCTGCTGGTGAAAACATC	CTTCGTGTTCCCTGCACATC
mBnip3	TTCCACTAGCACCTTCTGATGA	GAACACCGCATTTACAGAACAA
mLC3b	CACTGCTCTGTCTTGTGTAGGTTG	TCGTTGTGCCTTTATTAGTGCATC
mCathepsinL	GTGGACTGTTCTCACGCTCAAG	TCCGTCCTTCGCTTCATAGG
mMyostatin	AGTAAAAGCCCAACTGTGGATA	TCATGTCAAGTTTCAGAGATCG
mNoggin	GAAGTTACAGATGTGGCTGTGG	CACAGACTTGGATGGCTTACAC
GAPDH	CACCATCTTCCAGGAGCGAG	CCTTCTCCATGGTGGTGAAGAC
actin	CTGGCTCCTAGCACCATGAAGAT	GGTGGACAGTGAGGCCAGGAT

## Supplementary Table 2

	<b>Forward Primer</b>	<b>Reverse Primer</b>
<b>mBMP2</b>	AGATCTGTACCGCAGGCACT	CCGTTTTCCCACTCATCTCT
<b>mBMP4</b>	TGAGGAGTTTCCATCACGAA	CACCTCATTCTCTGGGATGC
<b>mBMP6</b>	GTCTCCAGCAGCCTCAGCC	CTGCTGCTGCTGCTGCTG
<b>mBMP7</b>	CACAGCCACCAGCAACCAC	GTAAGCCCAGGTTGTGCCG
<b>mMyostatin</b>	GAAGTCAAGGTGACAGACACAC	GTGCACAAGATGAGTATGCGG
<b>mNoggin</b>	ATGGATCATTCCCAGTGCCTTG	AGCTGCCCCACTTTGACGTACCG
<b>mALK3</b>	CTGGGAGTGGATCTGGATTG	CTGTTTGGCAATAGTTCGCTG
<b>mALK4</b>	CTGCCTACACAAAGAACCTGG	GGGCAGAAACAAGAGGTAGGC
<b>mALK5</b>	TTATGAGAGAATGCTGGTATGCC	AAGAGAGCAGAGTTCCCACGG
<b>mSmad1</b>	TACAATCCTCAGCACAGCCTTC	GCTGTTGGGCTGCTGGAAAG
<b>mSmad3</b>	CAGGAGACAGACAGTGACCAGC	GCAAGGGTCCATTCAGGTGTAG
<b>mSmad4</b>	GATGGACGACTTCAGGTGGC	CCACCTCCACAGACGGGC
<b>mSmad6</b>	CCTACTCTCGGCTGTCTCCTC	CCAGTGGCTCGGCTTGGTGGC
<b>mID1</b>	AGTGAGCAAGGTGGAGATCC	GATCGTCCGCTGGAACAC
<b>mGAPDH</b>	GTGAAGGTCGGTGTGAACGG	AATCTCCACTTTGCCACTGC
<b>mActB</b>	GCCAACCGTGAAAAGATGACC	CCAGAGGCATACAGGGACAGC

## Supplementary Table 3

Oligos Used for siRNA Production (Invitrogen BLOCK-iTTM Pol II miR RNAi Select)

TARGET GENE	TARGET SEQUENCE
mSmad5 (00)	CCAGTCTTACCTCCAGTATTA
mSmad5 (01)	ACACTGGTGTTCGATTGTCTA
mSmad5 (02)	AAGCGATTGTTGGGCTGGAAA
mSmad5 (03)	GTCTTAGTGACAGCAGCATCT
mSmad1 (04)	CTGGATTGAGATCCATCTGCA
mSmad1 (05)	TCCCATTTGGTTCCAAGCAGA
mSmad1 (07)	CCTATTTTCATCCGTGTCTTAA
mMUSA1 (08)	CAAGTGTGGTGTGCTGTACTA
mMUSA1 (09)	TTATGCCAGCTTGCATGTGTA
mMUSA1 (10)	CCTAAGCAGCGTTCAATGTTT
mMUSA1 (11)	TTCAGCTTGTGATCATGCCAA
mAtrogin1 (12)	ATCAGCAGGCCTGCCTTCAAA
mAtrogin1 (13)	TGATAGCAAAGTCACAGCTCA
mAtrogin1 (14)	GCCTGTGTGCTTACAACGTAA
mAtrogin1 (15)	TACGAAGGAGCGCCATGGATA
mMURF1(16)	TGATTCCTGATGGAAACGCTA
mMURF1(17)	GGAGAATAGCCACCAGGTGAA
mMURF1(18)	GACCACAGAGGGACACCAATA
mMURF1(19)	CGAGTGCAGACGATCATCTCT
miR-scrambled	GTCTCCACGCGCAGTACATTT



## Supplementary Table 4

### Oligos for CHIP-qPCR

Promoter	Forward Primer	Reverse Primer
<b>CDKN1A (P21)</b>	AGACACCATGTCCAAGGCTACT	CTCAAGGTTGTGACTCGCATAG
<b>PAI-1</b>	CTAGAAGCATGTCACCAATCCA	GGCTTATGTTATTTCCCACAGC
<b>ID1</b>	GAGCGGAGAATGCTCCAGCC	AGATCACCCCCTCCCTTTC

# Supplementary Table 5

## Gene expression profile

### Smad4fl/fl

Gene Name	SystematicName	Description	Log2 Den/Contr	Fold Change Den/Contr
Chrmd	NM_021600	Mus musculus cholinergic receptor, nicotinic, delta polypeptide (Chrmd), mRNA [NM_021600]	4,0	16,1
Col19a1	NM_007733	Mus musculus procollagen, type XIX, alpha 1 (Col19a1), mRNA [NM_007733]	4,2	18,6
Plekhh1	AK052692	Mus musculus 0 day neonate kidney cDNA, RIKEN full-length enriched library, clone:D630024D12 product:hypothetical Band 4.1 family/Core domain in kinesin and myosin motors/Pleckstrin homology (PH) domain containing protein, full insert sequence....	4,5	22,1
Ces2	NM_145603	Mus musculus carboxylesterase 2 (Ces2), mRNA [NM_145603]	4,7	25,6
Runx1	NM_009821	Mus musculus runt related transcription factor 1 (Runx1), mRNA [NM_009821]	4,5	23,0
Emb	NM_010330	Mus musculus embigin (Emb), mRNA [NM_010330]	3,5	11,1
Krt18	NM_010664	Mus musculus keratin 18 (Krt18), mRNA [NM_010664]	6,2	71,3
Emb	NM_010330	Mus musculus embigin (Emb), mRNA [NM_010330]	3,6	11,9
Chrg	NM_009604	Mus musculus cholinergic receptor, nicotinic, gamma polypeptide (Chrg), mRNA [NM_009604]	6,7	106,8
9830123M21Rik	BC107027	Mus musculus RIKEN cDNA 9830123M21 gene, mRNA (cDNA clone MGC:129490 IMAGE:40050318), complete cds. [BC107027]	4,5	22,0
Ankrd1	NM_013468	Mus musculus ankyrin repeat domain 1 (cardiac muscle) (Ankrd1), mRNA [NM_013468]	4,3	20,1
Krt8	NM_031170	Mus musculus keratin 8 (Krt8), mRNA [NM_031170]	6,6	94,5
Chrna1	NM_007389	Mus musculus cholinergic receptor, nicotinic, alpha polypeptide 1 (muscle) (Chrna1), mRNA [NM_007389]	3,0	8,1
Cpne2	NM_153507	Mus musculus copine II (Cpne2), mRNA [NM_153507]	3,3	10,1
Col19a1	NM_007733	Mus musculus procollagen, type XIX, alpha 1 (Col19a1), mRNA [NM_007733]	3,8	13,9
Rrad	NM_019662	Mus musculus Ras-related associated with diabetes (Rrad), mRNA [NM_019662]	4,3	19,1
Nrcam	NM_176930	Mus musculus neuron-glia-CAM-related cell adhesion molecule (Nrcam), mRNA [NM_176930]	4,3	20,2
Krt8	NM_031170	Mus musculus keratin 8 (Krt8), mRNA [NM_031170]	6,4	82,8
BC015286	NM_198171	Mus musculus cDNA sequence BC015286 (BC015286), mRNA [NM_198171]	4,7	26,4
Gsta1	NM_008181	Mus musculus glutathione S-transferase, alpha 1 (Ya) (Gsta1), mRNA [NM_008181]	4,2	18,2
Plekhh1	AK052692	Mus musculus 0 day neonate kidney cDNA, RIKEN full-length enriched library, clone:D630024D12 product:hypothetical Band 4.1 family/Core domain in kinesin and myosin motors/Pleckstrin homology (PH) domain containing protein, full insert sequence....	3,9	14,9
2810003C17Rik	NM_145144	Mus musculus RIKEN cDNA 2810003C17 gene (2810003C17Rik), mRNA [NM_145144]	3,0	8,0
Eda2r	AK029268	Mus musculus 0 day neonate head cDNA, RIKEN full-length enriched library, clone:4832407L12 product:inferred: X-linked ectodysplasin-A2 receptor (Homo sapiens), full insert sequence [AK029268]	3,1	8,7
Gdf5	NM_008109	Mus musculus growth differentiation factor 5 (Gdf5), mRNA [NM_008109]	3,8	14,0
Gadd45a	NM_007836	Mus musculus growth arrest and DNA-damage-inducible 45 alpha (Gadd45a), mRNA [NM_007836]	2,6	6,3
NAP109359-1	NAP109359-1	Unknown	3,2	9,1
Sh3d19	D89677	Mus musculus SH3d19 mRNA for SH3 domain protein D19, complete cds. [D89677]	3,0	8,2
Tiam2	NM_011878	Mus musculus T-cell lymphoma invasion and metastasis 2 (Tiam2), mRNA [NM_011878]	3,4	10,5
2900073G15Rik	NM_026064	Mus musculus RIKEN cDNA 2900073G15 gene (2900073G15Rik), mRNA [NM_026064]	2,5	5,7

## Smad4f1/fl

Scn5a	NM_021544	Mus musculus sodium channel, voltage-gated, type V, alpha (Scn5a), mRNA [NM_021544]	5,0	31,0
Myog	NM_031189	Mus musculus myogenin (Myog), mRNA [NM_031189]	3,0	7,8
Ugcg	NM_011673	Mus musculus UDP-glucose ceramide glucosyltransferase (Ugcg), mRNA [NM_011673]	2,6	5,9
Atp13a3	XM_994902	PREDICTED: Mus musculus ATPase type 13A3, transcript variant 6 (Atp13a3), mRNA [XM_994902]	3,0	7,8
A_52_P1004880	A_52_P1004880	Unknown	4,0	16,2
Sln	NM_025540	Mus musculus sarcolipin (Sln), mRNA [NM_025540]	2,6	6,2
Ttc9	NM_001033149	Mus musculus tetratricopeptide repeat domain 9 (Ttc9), mRNA [NM_001033149]	3,1	8,4
Sh3rf1	NM_021506	Mus musculus SH3 domain containing ring finger 1 (Sh3rf1), mRNA [NM_021506]	2,7	6,3
Arhgdig	NM_008113	Mus musculus Rho GDP dissociation inhibitor (GDI) gamma (Arhgdig), mRNA [NM_008113]	3,3	9,8
Cgref1	BC023116	Mus musculus cell growth regulator with EF hand domain 1, mRNA (cDNA clone MGC:28551 IMAGE:4206019), complete cds. [BC023116]	3,1	8,6
Tmem158	NM_001002267	Mus musculus transmembrane protein 158 (Tmem158), mRNA [NM_001002267]	2,4	5,5
Tekt1	NM_011569	Mus musculus tektin 1 (Tekt1), mRNA [NM_011569]	3,3	9,5
Traf3ip3	NM_153137	Mus musculus TRAF3 interacting protein 3 (Traf3ip3), mRNA [NM_153137]	2,3	5,0
Timp1	NM_011593	Mus musculus tissue inhibitor of metalloproteinase 1 (Timp1), transcript variant 2, mRNA [NM_011593]	2,6	5,9
Ugcg	BC050828	Mus musculus UDP-glucose ceramide glucosyltransferase, mRNA (cDNA clone MGC:59317 IMAGE:6512920), complete cds [BC050828]	2,5	5,6
Igfbp2	NM_008342	Mus musculus insulin-like growth factor binding protein 2 (Igfbp2), mRNA [NM_008342]	2,6	5,9
Serpib1a	NM_025429	Mus musculus serine (or cysteine) peptidase inhibitor, clade B, member 1a (Serpib1a), mRNA [NM_025429]	2,3	5,0
Spsb2	NM_013539	Mus musculus splA/ryanodine receptor domain and SOCS box containing 2 (Spsb2), mRNA [NM_013539]	2,6	6,2
Serinc5	NM_172588	Mus musculus serine incorporator 5 (Serinc5), mRNA [NM_172588]	2,4	5,3
Samd8	NM_026283	Mus musculus sterile alpha motif domain containing 8 (Samd8), mRNA [NM_026283]	2,2	4,6
5730419F03Rik	AK017575	Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730419F03 product:unclassifiable, full insert sequence. [AK017575]	3,0	8,1
Ropn1l	NM_145852	Mus musculus ropporin 1-like (Ropn1l), mRNA [NM_145852]	3,6	12,5
Lpin2	AK012110	Mus musculus 10 days embryo whole body cDNA, RIKEN full-length enriched library, clone:2610511G02 product:unclassifiable, full insert sequence [AK012110]	2,9	7,4
6330442E10Rik	NM_178745	Mus musculus RIKEN cDNA 6330442E10 gene (6330442E10Rik), mRNA [NM_178745]	2,1	4,4
Chrg	NM_009604	Mus musculus cholinergic receptor, nicotinic, gamma polypeptide (Chrg), mRNA [NM_009604]	2,7	6,6
NAP022485-001	NAP022485-001	Unknown	2,3	5,0
Ttyh1	NM_021324	Mus musculus tweety homolog 1 (Drosophila) (Ttyh1), transcript variant 2, mRNA [NM_021324]	2,9	7,3
Arhgdig	NM_008113	Mus musculus Rho GDP dissociation inhibitor (GDI) gamma (Arhgdig), mRNA [NM_008113]	2,8	7,0
Epgn	NM_053087	Mus musculus epithelial mitogen (Epgn), mRNA [NM_053087]	3,0	8,0
Agpr	NM_007427	Mus musculus agouti related protein (Agpr), mRNA [NM_007427]	2,3	5,1

## Smad4f1/f1

Camk2n2	AK013788	Mus musculus adult male hippocampus cDNA, RIKEN full-length enriched library, clone:2900075A18 product:CAM-KII INHIBITORY PROTEIN homolog [Homo sapiens], full insert sequence. [AK013788]	2,0	4,1
Galnt7	NM_144731	Mus musculus UDP-N-acetyl-alpha-D-galactosamine: polypeptide N-acetylgalactosaminyltransferase 7 (Galnt7), mRNA [NM_144731]	2,2	4,5
Ugcg	NM_011673	Mus musculus UDP-glucose ceramide glucosyltransferase (Ugcg), mRNA [NM_011673]	2,7	6,3
Timp1	NM_011593	Mus musculus tissue inhibitor of metalloproteinase 1 (Timp1), transcript variant 2, mRNA [NM_011593]	3,1	8,5
4921511K06Rik	BC006583	Mus musculus RIKEN cDNA 4921511K06 gene, mRNA (cDNA clone IMAGE:3587121), complete cds. [BC006583]	2,0	3,9
Ankrd10	NM_133971	Mus musculus ankyrin repeat domain 10 (Ankrd10), mRNA [NM_133971]	2,4	5,1
Rtn4	NM_194054	Mus musculus reticulon 4 (Rtn4), transcript variant 1, mRNA [NM_194054]	3,0	8,3
Tnnt2	NM_011619	Mus musculus troponin T2, cardiac (Tnnt2), mRNA [NM_011619]	2,9	7,6
ENSMUST0000032357	ENSMUST0000032357	pleckstrin homology domain containing, family A member 5 [Source:MarkerSymbol;Acc:MGI:1923802] [ENSMUST0000032357]	2,2	4,7
Chrna1	NM_007389	Mus musculus cholinergic receptor, nicotinic, alpha polypeptide 1 (muscle) (Chrna1), mRNA [NM_007389]	2,8	6,9
Ces2	NM_145603	Mus musculus carboxylesterase 2 (Ces2), mRNA [NM_145603]	3,4	10,5
Id2	NM_010496	Mus musculus inhibitor of DNA binding 2 (Id2), mRNA [NM_010496]	2,4	5,4
Cdkn1a	NM_007669	Mus musculus cyclin-dependent kinase inhibitor 1A (P21) (Cdkn1a), mRNA [NM_007669]	3,3	9,8
Eda2r	NM_175540	Mus musculus ectodysplasin A2 isoform receptor (Eda2r), mRNA [NM_175540]	3,0	8,1
Tekt1	NM_011569	Mus musculus tektin 1 (Tekt1), mRNA [NM_011569]	3,5	11,1
TC1658525	TC1658525	Unknown	2,1	4,2
Ropn1l	NM_145852	Mus musculus ropporin 1-like (Ropn1l), mRNA [NM_145852]	3,3	9,8
Scx	NM_198885	Mus musculus scleraxis (Scx), mRNA [NM_198885]	2,7	6,7
TC1663452	TC1663452	Q46T80_RALEJ (Q46T80) Twin-arginine translocation pathway signal, partial (5%) [TC1663452]	2,3	5,0
Sema6a	NM_018744	Mus musculus sema domain, transmembrane domain (TM), and cytoplasmic domain, (semaphorin) 6A (Sema6a), mRNA [NM_018744]	2,1	4,2
Garnl4	NM_001015046	Mus musculus GTPase activating RANGAP domain-like 4 (Garnl4), mRNA [NM_001015046]	2,7	6,4
Uchl1	NM_011670	Mus musculus ubiquitin carboxy-terminal hydrolase L1 (Uchl1), mRNA [NM_011670]	2,8	6,8
Tead4	NM_011567	Mus musculus TEA domain family member 4 (Tead4), transcript variant 1, mRNA [NM_011567]	2,2	4,6
Gsdm1	NM_021347	Mus musculus gasdermin 1 (Gsdm1), mRNA [NM_021347]	1,9	3,8
AK144717	AK144717	Mus musculus lung RCB-0558 LLC cDNA, RIKEN full-length enriched library, clone:G730026111 product:unclassifiable, full insert sequence [AK144717]	2,9	7,4
Fez1	NM_183171	Mus musculus fasciculation and elongation protein zeta 1 (zygin I) (Fez1), mRNA [NM_183171]	3,0	7,7
Dusp4	AK012530	Mus musculus 11 days embryo whole body cDNA, RIKEN full-length enriched library, clone:2700078F24 product:unclassifiable, full insert sequence [AK012530]	2,8	6,9
Tro	NM_019548	Mus musculus trophinin (Tro), transcript variant 3, mRNA [NM_019548]	2,0	4,1
Kcne1l	NM_021487	Mus musculus potassium voltage-gated channel, Isk-related family, member 1-like (Kcne1l), mRNA [NM_021487]	3,3	9,6
Mfsd7	NM_172883	Mus musculus major facilitator superfamily domain containing 7 (Mfsd7), mRNA [NM_172883]	2,8	6,8

## Smad4f1/f1

Serp1b1c	NM_173051	Mus musculus serine (or cysteine) peptidase inhibitor, clade B, member 1c (Serp1b1c), mRNA [NM_173051]	2,4	5,2
Csrp3	NM_013808	Mus musculus cysteine and glycine-rich protein 3 (Csrp3), mRNA [NM_013808]	1,9	3,7
1600002O04Rik	AK166269	Mus musculus mammary gland RCB-0526 Jyg-MC(A) cDNA, RIKEN full-length enriched library, clone:G830027E16 product:hypothetical protein, full insert sequence [AK166269]	2,9	7,7
Whrn	NM_001008791	Mus musculus whirlin (Whrn), transcript variant 2, mRNA [NM_001008791]	2,4	5,1
Spag1	NM_012031	Mus musculus sperm associated antigen 1 (Spag1), mRNA [NM_012031]	2,0	3,9
Ass1	M31690	Mouse argininosuccinate synthetase (Ass) mRNA, complete cds. [M31690]	2,5	5,8
Hpgd	NM_008278	Mus musculus hydroxyprostaglandin dehydrogenase 15 (NAD) (Hpgd), mRNA [NM_008278]	3,0	8,2
Cd82	NM_007656	Mus musculus CD82 antigen (Cd82), mRNA [NM_007656]	1,7	3,4
2810439F02Rik	NM_028341	Mus musculus RIKEN cDNA 2810439F02 gene (2810439F02Rik), mRNA [NM_028341]	2,5	5,7
Tubb2a	NM_009450	Mus musculus tubulin, beta 2a (Tubb2a), mRNA [NM_009450]	1,8	3,5
Mical2	NM_174850	Mus musculus MICAL-like 2 (Mical2), mRNA [NM_174850]	3,1	8,8
Hdac4	NM_207225	Mus musculus histone deacetylase 4 (Hdac4), mRNA [NM_207225]	2,0	4,0
Myl4	NM_010858	Mus musculus myosin, light polypeptide 4 (Myl4), mRNA [NM_010858]	2,5	5,5
Hpgd	NM_008278	Mus musculus hydroxyprostaglandin dehydrogenase 15 (NAD) (Hpgd), mRNA [NM_008278]	2,8	7,0
Zap70	NM_009539	Mus musculus zeta-chain (TCR) associated protein kinase (Zap70), mRNA [NM_009539]	2,2	4,8
Arpp21	NM_028755	Mus musculus cyclic AMP-regulated phosphoprotein, 21 (Arpp21), transcript variant 1, mRNA [NM_028755]	2,0	4,1
Acsl3	NM_028817	Mus musculus acyl-CoA synthetase long-chain family member 3 (Acsl3), transcript variant 1, mRNA [NM_028817]	2,0	3,9
Tec	NM_013689	Mus musculus cytoplasmic tyrosine kinase, Dscr28C related (Drosophila) (Tec), mRNA [NM_013689]	2,2	4,7
Tec	NM_013689	Mus musculus cytoplasmic tyrosine kinase, Dscr28C related (Drosophila) (Tec), mRNA [NM_013689]	1,7	3,3
2310009E04Rik	AK082737	Mus musculus 0 day neonate cerebellum cDNA, RIKEN full-length enriched library, clone:C230098P19 product:WEAKLY SIMILAR TO L-RIBULOKINASE homolog [Homo sapiens], full insert sequence. [AK082737]	2,2	4,6
Rin1	NM_145495	Mus musculus Ras and Rab interactor 1 (Rin1), mRNA [NM_145495]	2,7	6,7
Zdhc24	NM_027476	Mus musculus zinc finger, DHHC domain containing 24 (Zdhc24), mRNA [NM_027476]	2,2	4,5
Hes6	NM_019479	Mus musculus hairy and enhancer of split 6 (Drosophila) (Hes6), mRNA [NM_019479]	1,6	3,1
Arfgap3	NM_025445	Mus musculus ADP-ribosylation factor GTPase activating protein 3 (Arfgap3), mRNA [NM_025445]	2,0	3,9
Peg3	NM_008817	Mus musculus paternally expressed 3 (Peg3), mRNA [NM_008817]	1,8	3,5
LOC676330	XR_004911	PREDICTED: Mus musculus hypothetical protein LOC676330 (LOC676330), mRNA [XR_004911]	1,6	2,9
Tmem181	NM_001033178	Mus musculus transmembrane protein 181 (Tmem181), mRNA [NM_001033178]	1,7	3,2
Panx1	NM_019482	Mus musculus pannexin 1 (Panx1), mRNA [NM_019482]	2,1	4,2
Uchl1	NM_011670	Mus musculus ubiquitin carboxy-terminal hydrolase L1 (Uchl1), mRNA [NM_011670]	2,8	6,7
Gng12	NM_025278	Mus musculus guanine nucleotide binding protein (G protein), gamma 12 (Gng12), mRNA [NM_025278]	1,9	3,8

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Stx11	AK017897	Mus musculus adult male thymus cDNA, RIKEN full-length enriched library, clone:5830405C08 product:SYNTAXIN 11 homolog [Homo sapiens], full insert sequence. [AK017897]	2,2	4,5
ENSMUST00000103416	ENSMUST0000103416	Immunoglobulin heavy chain C gene segment [Source:IMG/GENE_DB;Acc:IGHG2C] [ENSMUST00000103416]	2,3	4,8
NAP058332-1	NAP058332-1	Unknown	1,5	2,9
Eef1a1	NM_010106	Mus musculus eukaryotic translation elongation factor 1 alpha 1 (Eef1a1), mRNA [NM_010106]	1,6	3,1
Ass1	NM_007494	Mus musculus argininosuccinate synthetase 1 (Ass1), mRNA [NM_007494]	2,5	5,7
Dll1	NM_007865	Mus musculus delta-like 1 (Drosophila) (Dll1), mRNA [NM_007865]	1,8	3,4
Plekho1	NM_023320	Mus musculus pleckstrin homology domain containing, family O member 1 (Plekho1), mRNA [NM_023320]	2,0	3,9
Ncam1	NM_010875	Mus musculus neural cell adhesion molecule 1 (Ncam1), transcript variant 2, mRNA [NM_010875]	2,9	7,6
Insl6	NM_013754	Mus musculus insulin-like 6 (Insl6), mRNA [NM_013754]	2,4	5,2
Lrrc8b	AK054249	Mus musculus 2 days pregnant adult female ovary cDNA, RIKEN full-length enriched library, clone:E330003H12 product:unclassifiable, full insert sequence. [AK054249]	1,8	3,6
Col7a1	NM_007738	Mus musculus procollagen, type VII, alpha 1 (Col7a1), mRNA [NM_007738]	1,8	3,4
Myl4	NM_010858	Mus musculus myosin, light polypeptide 4 (Myl4), mRNA [NM_010858]	2,5	5,8
Garnl4	NM_001015046	Mus musculus GTPase activating RANGAP domain-like 4 (Garnl4), mRNA [NM_001015046]	2,6	5,9
5033421B08Rik	AK050516	Mus musculus adult pancreas islet cells cDNA, RIKEN full-length enriched library, clone:C820006M04 product:unclassifiable, full insert sequence [AK050516]	1,9	3,8
Serpinb6a	NM_009254	Mus musculus serine (or cysteine) peptidase inhibitor, clade B, member 6a (Serpinb6a), mRNA [NM_009254]	1,6	3,0
Rhoc	NM_007484	Mus musculus ras homolog gene family, member C (Rhoc), mRNA [NM_007484]	1,8	3,5
Pvr	NM_027514	Mus musculus poliovirus receptor (Pvr), mRNA [NM_027514]	1,7	3,2
Lmna	NM_019390	Mus musculus lamin A (Lmna), transcript variant 2, mRNA [NM_019390]	1,5	2,8
2610030H06Rik	NM_001081356	Mus musculus RIKEN cDNA 2610030H06 gene (2610030H06Rik), mRNA [NM_001081356]	1,4	2,7
Scn2a1	XM_909341	PREDICTED: Mus musculus sodium channel, voltage-gated, type II, alpha 1 (Scn2a1), mRNA [XM_909341]	2,2	4,6
Arhgef2	NM_008487	Mus musculus rho/rac guanine nucleotide exchange factor (GEF) 2 (Arhgef2), mRNA [NM_008487]	2,4	5,4
Agmat	NM_001081408	Mus musculus agmatine ureohydrolase (agmatinase) (Agmat), mRNA [NM_001081408]	3,0	7,8
Galnt7	NM_144731	Mus musculus UDP-N-acetyl-alpha-D-galactosamine: polypeptide N-acetylgalactosaminyltransferase 7 (Galnt7), mRNA [NM_144731]	2,1	4,4
1700011103Rik	AK005868	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:1700011103 product:hypothetical protein, full insert sequence. [AK005868]	2,9	7,6
Arhgef2	NM_008487	Mus musculus rho/rac guanine nucleotide exchange factor (GEF) 2 (Arhgef2), mRNA [NM_008487]	1,7	3,3
Osbpl10	NM_148958	Mus musculus oxysterol binding protein-like 10 (Osbpl10), mRNA [NM_148958]	1,6	3,0
Pvr	NM_027514	Mus musculus poliovirus receptor (Pvr), mRNA [NM_027514]	1,7	3,2
Maged1	NM_019791	Mus musculus melanoma antigen, family D, 1 (Maged1), mRNA [NM_019791]	1,6	3,0
Chrdl2	NM_133709	Mus musculus chordin-like 2 (Chrdl2), mRNA [NM_133709]	2,2	4,7
Zfp593	NM_024215	Mus musculus zinc finger protein 593 (Zfp593), mRNA [NM_024215]	1,4	2,6

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Ncam1	NM_010875	Mus musculus neural cell adhesion molecule 1 (Ncam1), transcript variant 2, mRNA [NM_010875]	2,4	5,2
Ophn1	NM_052976	Mus musculus oligophrenin 1 (Ophn1), mRNA [NM_052976]	1,7	3,2
Arpp21	NM_033264	Mus musculus cyclic AMP-regulated phosphoprotein, 21 (Arpp21), transcript variant 2, mRNA [NM_033264]	2,0	4,0
Gprc5c	NM_147217	Mus musculus G protein-coupled receptor, family C, group 5, member C (Gprc5c), mRNA [NM_147217]	1,5	2,8
Abhd2	NM_018811	Mus musculus abhydrolase domain containing 2 (Abhd2), mRNA [NM_018811]	2,1	4,3
Elmo3	NM_172760	Mus musculus engulfment and cell motility 3, ced-12 homolog (C. elegans) (Elmo3), mRNA [NM_172760]	1,6	3,0
Gramd1a	NM_027898	Mus musculus GRAM domain containing 1A (Gramd1a), mRNA [NM_027898]	2,0	3,9
Lmna	NM_019390	Mus musculus lamin A (Lmna), transcript variant 2, mRNA [NM_019390]	1,5	2,7
Rgs11	NM_001081069	Mus musculus regulator of G-protein signaling 11 (Rgs11), mRNA [NM_001081069]	1,7	3,2
Fhl2	NM_010212	Mus musculus four and a half LIM domains 2 (Fhl2), mRNA [NM_010212]	1,8	3,4
Tuft1	NM_011656	Mus musculus tuftelin 1 (Tuft1), mRNA [NM_011656]	2,2	4,7
Kremen1	NM_032396	Mus musculus kringle containing transmembrane protein 1 (Kremen1), mRNA [NM_032396]	1,7	3,2
Hip1r	NM_145070	Mus musculus huntingtin interacting protein 1 related (Hip1r), mRNA [NM_145070]	1,6	3,0
TC1665419	TC1665419	RRRPL3 ribosomal protein L3 (Rattus rattus) (exp=-1; wgp=0; cg=0), partial (30%) [TC1665419]	1,9	3,6
Arfgap3	NM_025445	Mus musculus ADP-ribosylation factor GTPase activating protein 3 (Arfgap3), mRNA [NM_025445]	1,8	3,6
Lrrm1	NM_008516	Mus musculus leucine rich repeat protein 1, neuronal (Lrrm1), mRNA [NM_008516]	2,2	4,4
Myom3	XM_144099	PREDICTED: Mus musculus myomesin family, member 3 (Myom3), mRNA [XM_144099]	2,0	4,0
Plekha5	NM_144920	Mus musculus pleckstrin homology domain containing, family A member 5 (Plekha5), mRNA [NM_144920]	1,7	3,1
AK048349	AK048349	Mus musculus 16 days embryo head cDNA, RIKEN full-length enriched library, clone:C130051M16 product:SNF1-like kinase, full insert sequence. [AK048349]	1,8	3,6
Mtap1b	AK141735	Mus musculus 9 days embryo whole body cDNA, RIKEN full-length enriched library, clone:D030047N09 product:unclassifiable, full insert sequence [AK141735]	2,5	5,8
Sh3d19	NM_001082414	Mus musculus SH3 domain protein D19 (Sh3d19), mRNA [NM_001082414]	2,9	7,6
Myf6	NM_008657	Mus musculus myogenic factor 6 (Myf6), mRNA [NM_008657]	1,8	3,5
Slc7a5	NM_011404	Mus musculus solute carrier family 7 (cationic amino acid transporter, y+ system), member 5 (Slc7a5), mRNA [NM_011404]	1,6	3,0
Musk	NM_010944	Mus musculus muscle, skeletal, receptor tyrosine kinase (Musk), transcript variant 4, mRNA [NM_010944]	2,3	4,8
5830474E16Rik	AK018053	Mus musculus adult male thymus cDNA, RIKEN full-length enriched library, clone:5830474E16 product:unclassifiable, full insert sequence. [AK018053]	2,6	6,1
Tgfb1	NM_011577	Mus musculus transforming growth factor, beta 1 (Tgfb1), mRNA [NM_011577]	2,1	4,3
Gsdm1	NM_021347	Mus musculus gasdermin 1 (Gsdm1), mRNA [NM_021347]	1,9	3,9
Tnfrsf22	NM_023680	Mus musculus tumor necrosis factor receptor superfamily, member 22 (Tnfrsf22), mRNA [NM_023680]	2,2	4,5
Shroom3	NM_015756	Mus musculus shroom family member 3 (Shroom3), transcript variant 1, mRNA [NM_015756]	2,4	5,2
Panx1	NM_019482	Mus musculus pannexin 1 (Panx1), mRNA [NM_019482]	2,0	4,1

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Chrna9	NM_001081104	Mus musculus cholinergic receptor, nicotinic, alpha polypeptide 9 (Chrna9), mRNA [NM_001081104]	1,8	3,5
Jun	NM_010591	Mus musculus Jun oncogene (Jun), mRNA [NM_010591]	1,7	3,2
Zdhhc24	BC071194	Mus musculus zinc finger, DHHC domain containing 24, mRNA (cDNA clone IMAGE:3496514). [BC071194]	1,6	3,1
Camk2d	AK086018	Mus musculus 16 days neonate heart cDNA, RIKEN full-length enriched library, clone:D830045E03 product:calcium/calmodulin-dependent protein kinase II, delta, full insert sequence. [AK086018]	1,3	2,5
Ncam1	NM_010875	Mus musculus neural cell adhesion molecule 1 (Ncam1), transcript variant 2, mRNA [NM_010875]	2,2	4,5
Micall1	AK031386	Mus musculus 13 days embryo male testis cDNA, RIKEN full-length enriched library, clone:6030419L17 product:DNA Segment, Chr 15 Massachusetts Institute of Technology 260, full insert sequence. [AK031386]	1,9	3,6
Eda2r	AK049134	Mus musculus ES cells cDNA, RIKEN full-length enriched library, clone:C330006C18 product:Similar to X-LINKED ECTODYSPLASIN-A RECEPTOR [Homo sapiens], full insert sequence. [AK049134]	3,0	8,0
Lmna	NM_019390	Mus musculus lamin A (Lmna), transcript variant 2, mRNA [NM_019390]	1,5	2,9
BC015286	NM_198171	Mus musculus cDNA sequence BC015286 (BC015286), mRNA [NM_198171]	2,3	4,8
Snx7	NM_029655	Mus musculus sorting nexin 7 (Snx7), mRNA [NM_029655]	1,5	2,9
Serpinc6	AF425084	Mus musculus SPI3C (Serpinc6) mRNA, complete cds. [AF425084]	1,7	3,2
Rapgef1	NM_001080925	Mus musculus Rap guanine nucleotide exchange factor (GEF)-like 1 (Rapgef1), mRNA [NM_001080925]	1,7	3,3
ENSMUSG0000069372	AK042789	Mus musculus 7 days neonate cerebellum cDNA, RIKEN full-length enriched library, clone:A730024G14 product:weakly similar to CORTEXIN [Rattus norvegicus], full insert sequence. [AK042789]	2,0	3,9
EG625054	NR_003363	Mus musculus predicted gene, EG625054 (EG625054) on chromosome 17 [NR_003363]	1,5	2,9
Epor	NM_010149	Mus musculus erythropoietin receptor (Epor), mRNA [NM_010149]	2,0	4,0
Srebfp2	BC069989	Mus musculus sterol regulatory element binding factor 2, mRNA (cDNA clone IMAGE:6508725), complete cds. [BC069989]	1,4	2,6
Wdr78	NM_146254	Mus musculus WD repeat domain 78 (Wdr78), mRNA [NM_146254]	1,9	3,9
Snf1lk	NM_010831	Mus musculus SNF1-like kinase (Snf1lk), mRNA [NM_010831]	2,2	4,7
Enpp3	AK132256	Mus musculus 18 days pregnant adult female placenta and extra embryonic tissue cDNA, RIKEN full-length enriched library, clone:3830403C08 product:ectonucleotide pyrophosphatase/phosphodiesterase 3, full insert sequence. [AK132256]	1,9	3,8
AK047604	AK047604	Mus musculus 10 days neonate cerebellum cDNA, RIKEN full-length enriched library, clone:B930097J01 product:hypothetical protein, full insert sequence. [AK047604]	1,6	3,1
Osbpl5	NM_024289	Mus musculus oxysterol binding protein-like 5 (Osbpl5), mRNA [NM_024289]	1,5	2,9
Acot6	ENSMUST0000056822	acyl-CoA thioesterase 6 [Source:MarkerSymbol;Acc:MGI:1921287] [ENSMUST0000056822]	1,6	2,9
9130430E04	AK078975	Mus musculus adult male cecum cDNA, RIKEN full-length enriched library, clone:9130430E04 product:unclassifiable, full insert sequence [AK078975]	1,8	3,5
Tro	NM_019548	Mus musculus trophinin (Tro), transcript variant 3, mRNA [NM_019548]	2,3	4,8
Myo1a	NM_001081219	Mus musculus myosin IA (Myo1a), mRNA [NM_001081219]	1,4	2,6
Sh2d4a	AK008803	Mus musculus adult male stomach cDNA, RIKEN full-length enriched library, clone:2210402M20 product:hypothetical Src homology 2 (SH2) domain containing protein, full insert sequence. [AK008803]	1,5	2,8
Fads3	NM_021890	Mus musculus fatty acid desaturase 3 (Fads3), mRNA [NM_021890]	1,7	3,3
Rpl3	NM_013762	Mus musculus ribosomal protein L3 (Rpl3), mRNA [NM_013762]	1,4	2,7
Lgals3	NM_010705	Mus musculus lectin, galactose binding, soluble 3 (Lgals3), mRNA [NM_010705]	2,1	4,3
Trit1	NM_025873	Mus musculus tRNA isopentenyltransferase 1 (Trit1), mRNA [NM_025873]	1,6	3,0



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Abhd2	NM_018811	Mus musculus abhydrolase domain containing 2 (Abhd2), mRNA [NM_018811]	2,1	4,3
Spc25	NM_025565	Mus musculus SPC25, NDC80 kinetochore complex component, homolog (S. cerevisiae) (Spc25), mRNA [NM_025565]	1,6	3,1
5031425E22 Rik	AK017143	Mus musculus 11 days pregnant adult female ovary and uterus cDNA, RIKEN full-length enriched library, clone:5031425E22 product:unclassifiable, full insert sequence [AK017143]	1,8	3,5
Ccdc93	NM_001025156	Mus musculus coiled-coil domain containing 93 (Ccdc93), transcript variant 1, mRNA [NM_001025156]	2,4	5,2
Myh3	XM_354614	PREDICTED: Mus musculus myosin, heavy polypeptide 3, skeletal muscle, embryonic (Myh3), mRNA [XM_354614]	3,2	9,4
Rufy3	NM_027530	Mus musculus RUN and FYVE domain containing 3 (Rufy3), mRNA [NM_027530]	1,8	3,6
Slpi	NM_011414	Mus musculus secretory leukocyte peptidase inhibitor (Slpi), mRNA [NM_011414]	2,2	4,5
A930003A15 Rik	AK153879	Mus musculus 2 days neonate thymus thymic cells cDNA, RIKEN full-length enriched library, clone:E430002B13 product:hypothetical protein, full insert sequence. [AK153879]	2,8	6,8
Peg3	NM_008817	Mus musculus paternally expressed 3 (Peg3), mRNA [NM_008817]	2,2	4,5
Cst6	NM_028623	Mus musculus cystatin E/M (Cst6), mRNA [NM_028623]	1,5	2,8
Serf1	NM_011353	Mus musculus small EDRK-rich factor 1 (Serf1), mRNA [NM_011353]	1,6	3,0
Ptprd	NM_001014288	Mus musculus protein tyrosine phosphatase, receptor type, D (Ptprd), transcript variant a, mRNA [NM_001014288]	1,6	3,0
Camk2d	NM_023813	Mus musculus calcium/calmodulin-dependent protein kinase II, delta (Camk2d), transcript variant 3, mRNA [NM_023813]	1,6	3,0
Cdk5r1	NM_009871	Mus musculus cyclin-dependent kinase 5, regulatory subunit (p35) 1 (Cdk5r1), mRNA [NM_009871]	2,0	4,0
Anxa4	NM_013471	Mus musculus annexin A4 (Anxa4), mRNA [NM_013471]	1,3	2,4
Tnfrsf23	NM_024290	Mus musculus tumor necrosis factor receptor superfamily, member 23 (Tnfrsf23), mRNA [NM_024290]	2,4	5,2
2010002N04 Rik	NM_134133	Mus musculus RIKEN cDNA 2010002N04 gene (2010002N04Rik), mRNA [NM_134133]	1,8	3,4
Ubx2	NM_026390	Mus musculus UBX domain containing 2 (Ubx2), mRNA [NM_026390]	1,4	2,6
Dlgap4	NM_146128	Mus musculus discs, large homolog-associated protein 4 (Drosophila) (Dlgap4), transcript variant 1, mRNA [NM_146128]	1,7	3,2
Mcm6	NM_008567	Mus musculus minichromosome maintenance deficient 6 (MIS5 homolog, S. pombe) (S. cerevisiae) (Mcm6), mRNA [NM_008567]	1,3	2,5
D630042F21 Rik	NM_001081186	Mus musculus RIKEN cDNA D630042F21 gene (D630042F21Rik), mRNA [NM_001081186]	2,4	5,2
Ampd3	NM_009667	Mus musculus AMP deaminase 3 (Ampd3), mRNA [NM_009667]	1,8	3,5
Erb2ip	NM_001005868	Mus musculus ErbB2 interacting protein (Erb2ip), transcript variant 1, mRNA [NM_001005868]	1,3	2,5
Ptprd	D13903	Mus musculus mRNA for MPTPdelta, complete cds. [D13903]	1,6	3,1
2310040A07 Rik	BC021944	Mus musculus RIKEN cDNA 2310040A07 gene, mRNA (cDNA clone IMAGE:5097248), complete cds. [BC021944]	1,6	3,1
NAP108473-1	NAP108473-1	Unknown	1,4	2,6
Sdad1	NM_172713	Mus musculus SDA1 domain containing 1 (Sdad1), mRNA [NM_172713]	1,5	2,9
Ramp2	EF177380	Mus musculus nuclear enriched abundant transcript 2 (Neat2) mRNA, complete sequence [EF177380]	1,3	2,5
Rasl11a	NM_026864	Mus musculus RAS-like, family 11, member A (Rasl11a), mRNA [NM_026864]	1,9	3,6
Myh3	XM_354614	PREDICTED: Mus musculus myosin, heavy polypeptide 3, skeletal muscle, embryonic (Myh3), mRNA [XM_354614]	3,1	8,4

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Enah	NM_010135	Mus musculus enabled homolog (Drosophila) (Enah), transcript variant 1, mRNA [NM_010135]	1,4	2,7
Qscn6	NM_023268	Mus musculus quiescin Q6 (Qscn6), transcript variant 2, mRNA [NM_023268]	1,6	3,0
Kif13b	NM_001081177	Mus musculus kinesin family member 13B (Kif13b), mRNA [NM_001081177]	1,8	3,5
Lox	NM_010728	Mus musculus lysyl oxidase (Lox), mRNA [NM_010728]	1,5	2,9
Rb1	NM_009029	Mus musculus retinoblastoma 1 (Rb1), mRNA [NM_009029]	1,5	2,8
Fst	NM_008046	Mus musculus follistatin (Fst), mRNA [NM_008046]	1,8	3,5
Hspb8	NM_030704	Mus musculus heat shock protein 8 (Hspb8), mRNA [NM_030704]	1,4	2,6
Ptprd	NM_011211	Mus musculus protein tyrosine phosphatase, receptor type, D (Ptprd), transcript variant b, mRNA [NM_011211]	1,6	3,0
Sh3d19	NM_001082414	Mus musculus SH3 domain protein D19 (Sh3d19), mRNA [NM_001082414]	2,6	6,2
Tnfrsf12a	NM_013749	Mus musculus tumor necrosis factor receptor superfamily, member 12a (Tnfrsf12a), mRNA [NM_013749]	1,6	3,1
Ap2b1	NM_027915	Mus musculus adaptor-related protein complex 2, beta 1 subunit (Ap2b1), transcript variant 2, mRNA [NM_027915]	1,3	2,4
Wdr67	NM_001081396	Mus musculus WD repeat domain 67 (Wdr67), mRNA [NM_001081396]	1,7	3,2
E2f8	NM_001013368	Mus musculus E2F transcription factor 8 (E2f8), mRNA [NM_001013368]	2,1	4,2
Fyb	NM_011815	Mus musculus FYN binding protein (Fyb), mRNA [NM_011815]	1,6	3,1
Sh3rf1	NM_021506	Mus musculus SH3 domain containing ring finger 1 (Sh3rf1), mRNA [NM_021506]	1,6	3,0
Tgif1	NM_009372	Mus musculus TG interacting factor 1 (Tgif1), mRNA [NM_009372]	1,7	3,2
Cyr61	NM_010516	Mus musculus cysteine rich protein 61 (Cyr61), mRNA [NM_010516]	1,6	3,0
Kremen1	AK081707	Mus musculus 16 days embryo head cDNA, RIKEN full-length enriched library, clone:C130070D21 product:unclassifiable, full insert sequence. [AK081707]	1,5	2,8
Otos	NM_153114	Mus musculus otospiralin (Otos), mRNA [NM_153114]	1,3	2,5
Ptgfrn	NM_011197	Mus musculus prostaglandin F2 receptor negative regulator (Ptgfrn), mRNA [NM_011197]	1,5	2,8
LOC675507	XR_005114	PREDICTED: Mus musculus hypothetical protein LOC675507 (LOC675507), mRNA [XR_005114]	1,4	2,6
Erb2ip	AK046880	Mus musculus 10 days neonate medulla oblongata cDNA, RIKEN full-length enriched library, clone:B830047G01 product:Erb2 interacting protein, full insert sequence. [AK046880]	1,5	2,8
Trp63	NM_011641	Mus musculus transformation related protein 63 (Trp63), mRNA [NM_011641]	1,7	3,2
Ubx2	NM_026390	Mus musculus UBX domain containing 2 (Ubx2), mRNA [NM_026390]	1,3	2,5
Erb2ip	NM_001005868	Mus musculus Erb2 interacting protein (Erb2ip), transcript variant 1, mRNA [NM_001005868]	1,2	2,2
Tmeff1	NM_021436	Mus musculus transmembrane protein with EGF-like and two follistatin-like domains 1 (Tmeff1), mRNA [NM_021436]	1,5	2,8
Npr3	NM_008728	Mus musculus natriuretic peptide receptor 3 (Npr3), transcript variant 1, mRNA [NM_008728]	1,8	3,4
Chrna9	NM_001081104	Mus musculus cholinergic receptor, nicotinic, alpha polypeptide 9 (Chrna9), mRNA [NM_001081104]	2,0	4,1
4930431J08Rik	XM_991644	PREDICTED: Mus musculus RIKEN cDNA 4930431J08 gene (4930431J08Rik), mRNA [XM_991644]	1,9	3,6
Rras2	NM_025846	Mus musculus related RAS viral (r-ras) oncogene homolog 2 (Rras2), mRNA [NM_025846]	1,3	2,4

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Odc1	NM_013614	Mus musculus ornithine decarboxylase, structural 1 (Odc1), mRNA [NM_013614]	1,3	2,5
Rab13	NM_026677	Mus musculus RAB13, member RAS oncogene family (Rab13), mRNA [NM_026677]	1,6	3,1
Evi2a	NM_010161	Mus musculus ecotropic viral integration site 2a (Evi2a), transcript variant 2, mRNA [NM_010161]	1,4	2,6
Ribc1	NM_025660	Mus musculus RIB43A domain with coiled-coils 1 (Ribc1), mRNA [NM_025660]	1,3	2,4
Kctd7	NM_172509	Mus musculus potassium channel tetramerisation domain containing 7 (Kctd7), mRNA [NM_172509]	1,3	2,5
Arrdc3	NM_001042591	Mus musculus arrestin domain containing 3 (Arrdc3), mRNA [NM_001042591]	1,2	2,3
4930579G22Rik	BC100444	Mus musculus RIKEN cDNA 4930579G22 gene, mRNA (cDNA clone MGC:118256 IMAGE:30919544), complete cds. [BC100444]	1,4	2,6
Bbc3	NM_133234	Mus musculus Bcl-2 binding component 3 (Bbc3), mRNA [NM_133234]	1,6	3,0
1110046J04Rik	AK004186	Mus musculus 18-day embryo whole body cDNA, RIKEN full-length enriched library, clone:1110046J04 product:unclassifiable, full insert sequence [AK004186]	1,6	2,9
BC022687	NM_145450	Mus musculus cDNA sequence BC022687 (BC022687), mRNA [NM_145450]	1,3	2,5
Arhgef2	NM_008487	Mus musculus rho/rac guanine nucleotide exchange factor (GEF) 2 (Arhgef2), mRNA [NM_008487]	2,1	4,4
AK040334	AK040334	Mus musculus 0 day neonate thymus cDNA, RIKEN full-length enriched library, clone:A430087L06 product:SIMILAR TO TUMOR-ASSOCIATED ANTIGEN 1, full insert sequence. [AK040334]	1,2	2,4
Dnajb3	NM_008299	Mus musculus DnaJ (Hsp40) homolog, subfamily B, member 3 (Dnajb3), mRNA [NM_008299]	2,3	4,8
Fhl4	NM_010214	Mus musculus four and a half LIM domains 4 (Fhl4), mRNA [NM_010214]	2,0	3,9
AK047235	AK047235	Mus musculus 10 days neonate cerebellum cDNA, RIKEN full-length enriched library, clone:B930041B10 product:leukocyte receptor cluster (LRC) member 4, full insert sequence. [AK047235]	1,5	2,8
Serpib8	NM_011459	Mus musculus serine (or cysteine) peptidase inhibitor, clade B, member 8 (Serpib8), mRNA [NM_011459]	1,5	2,9
Spg21	NM_138584	Mus musculus spastic paraplegia 21 homolog (human) (Spg21), mRNA [NM_138584]	1,4	2,7
EG232875	BC094341	Mus musculus similar to hypothetical protein FLJ12895, mRNA (cDNA clone IMAGE:5687425), complete cds [BC094341]	1,6	3,0
5730521K06Rik	AK017782	Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730521K06 product:unclassifiable, full insert sequence. [AK017782]	1,4	2,6
1810059H22Rik	AK079377	Mus musculus 16 days neonate cerebellum cDNA, RIKEN full-length enriched library, clone:9630050A10 product:unclassifiable, full insert sequence. [AK079377]	1,7	3,3
Tubb6	NM_026473	Mus musculus tubulin, beta 6 (Tubb6), mRNA [NM_026473]	1,7	3,2
Tlr4	NM_021297	Mus musculus toll-like receptor 4 (Tlr4), mRNA [NM_021297]	1,5	2,9
Npr3	NM_008728	Mus musculus natriuretic peptide receptor 3 (Npr3), transcript variant 1, mRNA [NM_008728]	1,7	3,3
AK147274	AK147274	Mus musculus 14 days pregnant adult female placenta cDNA, RIKEN full-length enriched library, clone:M5C1005109 product:Warning: possibly chimeric clone, full insert sequence. [AK147274]	1,3	2,5
Enpp3	BC005527	Mus musculus ectonucleotide pyrophosphatase/phosphodiesterase 3, mRNA (cDNA clone IMAGE:3495326), partial cds. [BC005527]	1,8	3,4
Irak2	NM_172161	Mus musculus interleukin-1 receptor-associated kinase 2 (Irak2), mRNA [NM_172161]	1,8	3,5
Trem2	NM_031254	Mus musculus triggering receptor expressed on myeloid cells 2 (Trem2), mRNA [NM_031254]	1,4	2,7
Gpnmb	NM_053110	Mus musculus glycoprotein (transmembrane) nmb (Gpnmb), mRNA [NM_053110]	1,5	2,9
Paqr8	NM_028829	Mus musculus progesterone and adiponectin receptor family member VIII (Paqr8), mRNA [NM_028829]	1,5	2,9
Mtap4	AK046825	Mus musculus 10 days neonate medulla oblongata cDNA, RIKEN full-length enriched library, clone:B830016E23 product:microtubule-associated protein 4, full insert sequence. [AK046825]	1,3	2,5

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Clmn	AB059646	Mus musculus calmin isoform e mRNA for calmin delta, complete cds. [AB059646]	2,2	4,6
Cxcl10	NM_021274	Mus musculus chemokine (C-X-C motif) ligand 10 (Cxcl10), mRNA [NM_021274]	1,5	2,9
Aebp2	NM_001005605	Mus musculus AE binding protein 2 (Aebp2), transcript variant 1, mRNA [NM_001005605]	1,2	2,2
Kcnq5	AK147264	Mus musculus cDNA, RIKEN full-length enriched library, clone:M5C1004G17 product:potassium voltage-gated channel, subfamily Q, member 5, full insert sequence. [AK147264]	2,2	4,5
Txn1	NM_011660	Mus musculus thioredoxin 1 (Txn1), mRNA [NM_011660]	1,3	2,5
Rras2	NM_025846	Mus musculus related RAS viral (r-ras) oncogene homolog 2 (Rras2), mRNA [NM_025846]	1,2	2,4
1700021C14Rik	NM_029801	Mus musculus RIKEN cDNA 1700021C14 gene (1700021C14Rik), mRNA [NM_029801]	1,2	2,4
Arl4c	NM_177305	Mus musculus ADP-ribosylation factor-like 4C (Arl4c), mRNA [NM_177305]	1,2	2,2
Tmf1	NM_001081111	Mus musculus TATA element modulatory factor 1 (Tmf1), mRNA [NM_001081111]	1,1	2,1
Btg1	NM_007569	Mus musculus B-cell translocation gene 1, anti-proliferative (Btg1), mRNA [NM_007569]	1,2	2,4
Scml4	NM_172938	Mus musculus sex comb on midleg-like 4 (Drosophila) (Scml4), mRNA [NM_172938]	1,7	3,2
Cbx5	NM_007626	Mus musculus chromobox homolog 5 (Drosophila HP1a) (Cbx5), transcript variant 1, mRNA [NM_007626]	1,3	2,5
Itpkc	NM_181593	Mus musculus inositol 1,4,5-trisphosphate 3-kinase C (Itpkc), mRNA [NM_181593]	1,3	2,4
AK079732	AK079732	Mus musculus 0 day neonate thymus cDNA, RIKEN full-length enriched library, clone:A430048E13 product:unclassifiable, full insert sequence. [AK079732]	1,3	2,5
4930558C23Rik	AK006075	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:1700017P17 product:unclassifiable, full insert sequence. [AK006075]	1,6	2,9
Ccdc111	NM_001001184	Mus musculus coiled-coil domain containing 111 (Ccdc111), mRNA [NM_001001184]	1,4	2,7
9130404D14Rik	NM_146119	Mus musculus RIKEN cDNA 9130404D14 gene (9130404D14Rik), mRNA [NM_146119]	1,2	2,2
Reep2	NM_144865	Mus musculus receptor accessory protein 2 (Reep2), mRNA [NM_144865]	1,5	2,9
Ric8	NM_053194	Mus musculus resistance to inhibitors of cholinesterase 8 homolog (C. elegans) (Ric8), mRNA [NM_053194]	1,1	2,1
Tdrd9	ENSMUST0000079009	tudor domain containing 9 [Source:MarkerSymbol;Acc:MGI:1921941] [ENSMUST0000079009]	1,8	3,4
Anxa4	NM_013471	Mus musculus annexin A4 (Anxa4), mRNA [NM_013471]	1,3	2,5
Lrrc51	AK005758	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:1700008D07 product:hypothetical Leucine-rich repeat containing protein, full insert sequence. [AK005758]	1,2	2,3
Lrch1	AK076431	Mus musculus 0 day neonate head cDNA, RIKEN full-length enriched library, clone:4832412D13 product:similar to NEURONAL PROTEIN [Felis silvestris catus], full insert sequence. [AK076431]	1,5	2,8
Fbxl2	NM_178624	Mus musculus F-box and leucine-rich repeat protein 2 (Fbxl2), mRNA [NM_178624]	1,8	3,4
Rnf12	NM_011276	Mus musculus ring finger protein 12 (Rnf12), mRNA [NM_011276]	1,5	2,7
Irf3	AK050570	Mus musculus 2 days neonate thymus thymic cells cDNA, RIKEN full-length enriched library, clone:C920001K05 product:interferon regulatory factor 3, full insert sequence. [AK050570]	1,1	2,1
Mid2	NM_011845	Mus musculus midline 2 (Mid2), mRNA [NM_011845]	1,1	2,2
Id2	NM_010496	Mus musculus inhibitor of DNA binding 2 (Id2), mRNA [NM_010496]	2,1	4,2
BC031426	BC031426	Mus musculus, clone IMAGE:4010479, mRNA, partial cds. [BC031426]	1,6	3,1
Fads3	NM_021890	Mus musculus fatty acid desaturase 3 (Fads3), mRNA [NM_021890]	1,5	2,9

## Smad4fl/fl

Cxcr6	NM_030712	Mus musculus chemokine (C-X-C motif) receptor 6 (Cxcr6), mRNA [NM_030712]	1,6	3,0
Abca5	NM_147219	Mus musculus ATP-binding cassette, sub-family A (ABC1), member 5 (Abca5), mRNA [NM_147219]	1,2	2,2
Mylc2b	NM_023402	Mus musculus myosin light chain, regulatory B (Mylc2b), mRNA [NM_023402]	1,0	2,1
2510048L02Rik	NM_025977	Mus musculus RIKEN cDNA 2510048L02 gene (2510048L02Rik), mRNA [NM_025977]	1,2	2,3
Otud1	XM_622877	PREDICTED: Mus musculus OTU domain containing 1 (Otud1), mRNA [XM_622877]	1,0	2,0
Lrba	NM_030695	Mus musculus LPS-responsive beige-like anchor (Lrba), transcript variant 1, mRNA [NM_030695]	1,3	2,4
Galns	NM_016722	Mus musculus galactosamine (N-acetyl)-6-sulfate sulfatase (Galns), mRNA [NM_016722]	1,3	2,5
Btg1	NM_007569	Mus musculus B-cell translocation gene 1, anti-proliferative (Btg1), mRNA [NM_007569]	1,3	2,5
Ptpn14	NM_008976	Mus musculus protein tyrosine phosphatase, non-receptor type 14 (Ptpn14), mRNA [NM_008976]	1,5	2,8
Zfp593	NM_024215	Mus musculus zinc finger protein 593 (Zfp593), mRNA [NM_024215]	1,3	2,4
AK082805	AK082805	Mus musculus ES cells cDNA, RIKEN full-length enriched library, clone:C330023J09 product:weakly similar to GAG POLYPROTEIN [Mus musculus], full insert sequence [AK082805]	1,9	3,7
A930037G23Rik	NM_178787	Mus musculus RIKEN cDNA A930037G23 gene (A930037G23Rik), transcript variant 2, mRNA [NM_178787]	1,1	2,2
Dars	AK077820	Mus musculus 13 days embryo forelimb cDNA, RIKEN full-length enriched library, clone:5930400O16 product:SIMILAR TO ASPARTYL-TRNA SYNTHETASE homolog [Mus musculus], full insert sequence. [AK077820]	1,8	3,4
Tmem116	NM_029912	Mus musculus transmembrane protein 116 (Tmem116), mRNA [NM_029912]	1,4	2,6
Aebp2	NM_009637	Mus musculus AE binding protein 2 (Aebp2), transcript variant 3, mRNA [NM_009637]	1,3	2,5
Ccdc131	NM_001033261	Mus musculus coiled-coil domain containing 131 (Ccdc131), mRNA [NM_001033261]	1,0	2,0
OTTMUSG00000000712	NM_001076790	Mus musculus predicted gene, OTTMUSG00000000712 (OTTMUSG00000000712), mRNA [NM_001076790]	1,9	3,8
2310061J03Rik	AK010004	Mus musculus adult male tongue cDNA, RIKEN full-length enriched library, clone:2310061J03 product:unclassifiable, full insert sequence. [AK010004]	1,2	2,2
Ephb3	NM_010143	Mus musculus Eph receptor B3 (Ephb3), mRNA [NM_010143]	1,3	2,4
Trp63	NM_011641	Mus musculus transformation related protein 63 (Trp63), mRNA [NM_011641]	1,5	2,9
Serinc2	NM_172702	Mus musculus serine incorporator 2 (Serinc2), mRNA [NM_172702]	1,2	2,3
Ttll12	NM_183017	Mus musculus tubulin tyrosine ligase-like family, member 12 (Ttll12), mRNA [NM_183017]	1,1	2,2
Ptgfrn	NM_011197	Mus musculus prostaglandin F2 receptor negative regulator (Ptgfrn), mRNA [NM_011197]	1,1	2,2
Obfc2a	NM_028696	Mus musculus oligonucleotide/oligosaccharide-binding fold containing 2A (Obfc2a), mRNA [NM_028696]	1,5	2,8
Slc38a2	AK164568	Mus musculus 13 days embryo heart cDNA, RIKEN full-length enriched library, clone:D330050A21 product:solute carrier family 38, member 2, full insert sequence [AK164568]	1,2	2,2
Qscn6	NM_023268	Mus musculus quiescinc Q6 (Qscn6), transcript variant 2, mRNA [NM_023268]	1,6	3,0
Anxa7	AK032013	Mus musculus adult male medulla oblongata cDNA, RIKEN full-length enriched library, clone:6330545A10 product:annexin A7, full insert sequence. [AK032013]	1,0	2,0
AK035808	AK035808	Mus musculus 16 days neonate cerebellum cDNA, RIKEN full-length enriched library, clone:9630006A19 product:unclassifiable, full insert sequence. [AK035808]	1,1	2,2
lbrdc1	XM_193558	PREDICTED: Mus musculus IBR domain containing 1 (lbrdc1), mRNA [XM_193558]	1,1	2,2
3110080O07Rik	AK014267	Mus musculus 13 days embryo head cDNA, RIKEN full-length enriched library, clone:3110080O07 product:unclassifiable, full insert sequence. [AK014267]	2,0	3,9

## Smad4fl/fl

Ncam1	X14526	Mouse ncam mRNA for neural cell adhesion molecule (NCAM) ex7 (part.)/ex(pi)/ex8 (part.). [X14526]	2,4	5,3
Irgm	NM_008326	Mus musculus immunity-related GTPase family, M (Irgm), mRNA [NM_008326]	1,2	2,3
AK027992	AK027992	Mus musculus 18-day embryo whole body cDNA, RIKEN full-length enriched library, clone:1110064113 product:unclassifiable, full insert sequence. [AK027992]	2,0	3,9
Sox9	NM_011448	Mus musculus SRY-box containing gene 9 (Sox9), mRNA [NM_011448]	1,5	2,8
Hspa4l	NM_011020	Mus musculus heat shock protein 4 like (Hspa4l), mRNA [NM_011020]	1,3	2,4
Wdr47	NM_181400	Mus musculus WD repeat domain 47 (Wdr47), mRNA [NM_181400]	1,3	2,5
Eef1a1	NM_010106	Mus musculus eukaryotic translation elongation factor 1 alpha 1 (Eef1a1), mRNA [NM_010106]	1,3	2,4
AK016729	AK016729	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:4933407L07 product:6-phosphofructo-2-kinase/ fructose-2,6-biphosphatase 2, full insert sequence. [AK016729]	1,9	3,7
Klhdc8a	NM_144810	Mus musculus kelch domain containing 8A (Klhdc8a), mRNA [NM_144810]	2,9	7,7
Fbxw17	NM_175401	Mus musculus F-box and WD-40 domain protein 17 (Fbxw17), mRNA [NM_175401]	1,8	3,5
Cxcr4	NM_009911	Mus musculus chemokine (C-X-C motif) receptor 4 (Cxcr4), mRNA [NM_009911]	1,7	3,1
Aox1	NM_009676	Mus musculus aldehyde oxidase 1 (Aox1), mRNA [NM_009676]	1,2	2,2
Klh5	BC057606	Mus musculus kelch-like 5 (Drosophila), mRNA (cDNA clone MGC:67318 IMAGE:6402367), complete cds. [BC057606]	1,5	2,7
Scn2a1	XM_909341	PREDICTED: Mus musculus sodium channel, voltage-gated, type II, alpha 1 (Scn2a1), mRNA [XM_909341]	2,1	4,2
A230083H2 2Rik	AK018172	Mus musculus adult male medulla oblongata cDNA, RIKEN full-length enriched library, clone:6330414G02 product:unclassifiable, full insert sequence [AK018172]	2,6	6,1
Der1l	NM_024207	Mus musculus Der1-like domain family, member 1 (Der1l), mRNA [NM_024207]	1,2	2,3
Sema3f	NM_011349	Mus musculus sema domain, immunoglobulin domain (Ig), short basic domain, secreted, (semaphorin) 3 F (Sema3f), mRNA [NM_011349]	1,3	2,4
Dip2c	NM_0010814 26	Mus musculus DIP2 disco-interacting protein 2 homolog C (Drosophila) (Dip2c), mRNA [NM_001081426]	1,2	2,3
1700021C1 4Rik	NM_029801	Mus musculus RIKEN cDNA 1700021C14 gene (1700021C14Rik), mRNA [NM_029801]	1,0	2,1
Dnajc5	NM_016775	Mus musculus DnaJ (Hsp40) homolog, subfamily C, member 5 (Dnajc5), mRNA [NM_016775]	1,0	2,0
Lrtm2	NM_172492	Mus musculus leucine-rich repeats and transmembrane domains 2 (Lrtm2), mRNA [NM_172492]	1,7	3,1
LOC670279	XR_002901	PREDICTED: Mus musculus similar to Ornithine decarboxylase (ODC) (LOC670279), mRNA [XR_002901]	1,4	2,7
Hspb1	NM_013560	Mus musculus heat shock protein 1 (Hspb1), mRNA [NM_013560]	1,1	2,2
A830041P2 2Rik	NM_177102	Mus musculus RIKEN cDNA A830041P22 gene (A830041P22Rik), mRNA [NM_177102]	1,4	2,6
Nol3	NM_030152	Mus musculus nucleolar protein 3 (apoptosis repressor with CARD domain) (Nol3), mRNA [NM_030152]	1,0	2,0
Vamp2	NM_009497	Mus musculus vesicle-associated membrane protein 2 (Vamp2), mRNA [NM_009497]	1,3	2,5
Mdm4	NM_008575	Mus musculus transformed mouse 3T3 cell double minute 4 (Mdm4), mRNA [NM_008575]	1,9	3,8
Megf10	NM_0010019 79	Mus musculus multiple EGF-like-domains 10 (Megf10), mRNA [NM_001001979]	1,8	3,5
Camk2d	NM_0010254 39	Mus musculus calcium/calmodulin-dependent protein kinase II, delta (Camk2d), transcript variant 1, mRNA [NM_001025439]	1,1	2,2
Junb	NM_008416	Mus musculus Jun-B oncogene (Junb), mRNA [NM_008416]	1,4	2,7

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9530091C08Rik	NM_177159	Mus musculus RIKEN cDNA 9530091C08 gene (9530091C08Rik), mRNA [NM_177159]	1,2	2,3
Ces7	AK020360	Mus musculus adult male epididymis cDNA, RIKEN full-length enriched library, clone:9230119C02 product:unclassifiable, full insert sequence. [AK020360]	2,2	4,5
TC1614884	TC1614884	Q33559_LEITA (Q33559) MURF1 protein (Fragment), partial (5%) [TC1614884]	1,2	2,2
Impdh1	NM_011829	Mus musculus inosine 5'-phosphate dehydrogenase 1 (Impdh1), mRNA [NM_011829]	1,3	2,4
Car13	NM_024495	Mus musculus carbonic anhydrase 13 (Car13), mRNA [NM_024495]	1,3	2,5
Pvr	NM_027514	Mus musculus poliovirus receptor (Pvr), mRNA [NM_027514]	1,4	2,6
Dio3	NM_172119	Mus musculus deiodinase, iodothyronine type III (Dio3), mRNA [NM_172119]	1,4	2,7
Opn3	NM_010098	Mus musculus opsin (encephalopsin) (Opn3), mRNA [NM_010098]	2,1	4,2
Odc1	NM_013614	Mus musculus ornithine decarboxylase, structural 1 (Odc1), mRNA [NM_013614]	1,5	2,9
Dclre1c	NM_175683	Mus musculus DNA cross-link repair 1C, PSO2 homolog (S. cerevisiae) (Dclre1c), transcript variant 2, mRNA [NM_175683]	1,5	2,8
Katnal2	AK014074	Mus musculus 13 days embryo head cDNA, RIKEN full-length enriched library, clone:3110023G01 product:hypothetical AAA ATPase superfamily containing protein, full insert sequence [AK014074]	1,4	2,7
Gprc5b	NM_022420	Mus musculus G protein-coupled receptor, family C, group 5, member B (Gprc5b), mRNA [NM_022420]	1,1	2,2
Tnfrsf1b	NM_011610	Mus musculus tumor necrosis factor receptor superfamily, member 1b (Tnfrsf1b), mRNA [NM_011610]	1,2	2,3
AK140790	AK140790	Mus musculus 16 days embryo head cDNA, RIKEN full-length enriched library, clone:C130019G10 product:hypothetical protein, full insert sequence. [AK140790]	1,2	2,3
Ltbp3	NM_008520	Mus musculus latent transforming growth factor beta binding protein 3 (Ltbp3), mRNA [NM_008520]	1,1	2,2
Olfir313	NM_146536	Mus musculus olfactory receptor 313 (Olfir313), mRNA [NM_146536]	1,3	2,5
Spred1	AK017680	Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730461F13 product:hypothetical protein, full insert sequence [AK017680]	1,0	2,0
2700083E18Rik	NM_001029890	Mus musculus RIKEN cDNA 2700083E18 gene (2700083E18Rik), mRNA [NM_001029890]	1,4	2,7
Nxn	NM_008750	Mus musculus nucleoredoxin (Nxn), mRNA [NM_008750]	1,2	2,2
Mdm4	AK046448	Mus musculus adult male corpora quadrigemina cDNA, RIKEN full-length enriched library, clone:B230385P13 product:inferred: transformed mouse 3T3 cell double minute 4, full insert sequence [AK046448]	1,2	2,3
Rras	NM_009101	Mus musculus Harvey rat sarcoma oncogene, subgroup R (Rras), mRNA [NM_009101]	1,1	2,2
Gsto2	NM_026619	Mus musculus glutathione S-transferase omega 2 (Gsto2), mRNA [NM_026619]	1,2	2,2
Htatip2	NM_016865	Mus musculus HIV-1 tat interactive protein 2, homolog (human) (Htatip2), mRNA [NM_016865]	1,2	2,3
Acsl6	NM_144823	Mus musculus acyl-CoA synthetase long-chain family member 6 (Acsl6), transcript variant 1, mRNA [NM_144823]	1,9	3,8
Atf3	NM_007498	Mus musculus activating transcription factor 3 (Atf3), mRNA [NM_007498]	1,4	2,7
Mt2	NM_008630	Mus musculus metallothionein 2 (Mt2), mRNA [NM_008630]	1,5	2,9
Plod2	NM_011961	Mus musculus procollagen lysine, 2-oxoglutarate 5-dioxygenase 2 (Plod2), mRNA [NM_011961]	1,2	2,3
Mknk2	NM_021462	Mus musculus MAP kinase-interacting serine/threonine kinase 2 (Mknk2), mRNA [NM_021462]	1,1	2,2
Snx13	NM_001014973	Mus musculus sorting nexin 13 (Snx13), mRNA [NM_001014973]	1,1	2,2
Ero1l	NM_015774	Mus musculus ERO1-like (S. cerevisiae) (Ero1l), mRNA [NM_015774]	1,3	2,5

## Smad4fl/fl

AA409316	NM_134087	Mus musculus expressed sequence AA409316 (AA409316), mRNA [NM_134087]	1,4	2,6
Tulp4	NM_054040	Mus musculus tubby like protein 4 (Tulp4), mRNA [NM_054040]	1,3	2,5
D930016D06Rik	BC082597	Mus musculus RIKEN cDNA D930016D06 gene, mRNA (cDNA clone IMAGE:30636965) [BC082597]	1,1	2,1
Fosl2	NM_008037	Mus musculus fos-like antigen 2 (Fosl2), mRNA [NM_008037]	1,1	2,2
D930014E17Rik	NM_020616	Mus musculus RIKEN cDNA D930014E17 gene (D930014E17Rik), mRNA [NM_020616]	1,0	2,0
Erb2ip	AK045806	Mus musculus adult male corpora quadrigemina cDNA, RIKEN full-length enriched library, clone:B230311M15 product:unclassifiable, full insert sequence. [AK045806]	1,3	2,4
Tubg2	NM_134028	Mus musculus tubulin, gamma 2 (Tubg2), mRNA [NM_134028]	1,2	2,2
D5Erd593e	AK021293	Mus musculus 13 days embryo stomach cDNA, RIKEN full-length enriched library, clone:D530019K15 product:unclassifiable, full insert sequence. [AK021293]	1,3	2,4
Sap30	NM_021788	Mus musculus sin3 associated polypeptide (Sap30), mRNA [NM_021788]	1,1	2,2
1200015N20Rik	NM_024244	Mus musculus RIKEN cDNA 1200015N20 gene (1200015N20Rik), mRNA [NM_024244]	1,0	2,1
Mustn1	NM_181390	Mus musculus musculoskeletal, embryonic nuclear protein 1 (Mustn1), mRNA [NM_181390]	1,4	2,7
BC025833	NM_145987	Mus musculus cDNA sequence BC025833 (BC025833), mRNA [NM_145987]	1,5	2,9
Frap1	BC043920	Mus musculus FK506 binding protein 12-rapamycin associated protein 1, mRNA (cDNA clone IMAGE:5064192), complete cds. [BC043920]	1,4	2,6
Map1lc3a	NM_025735	Mus musculus microtubule-associated protein 1 light chain 3 alpha (Map1lc3a), mRNA [NM_025735]	1,3	2,4
Traf4	NM_009423	Mus musculus Tnf receptor associated factor 4 (Traf4), mRNA [NM_009423]	1,2	2,2
Adprh1	NM_172750	Mus musculus ADP-ribosylhydrolase like 1 (Adprh1), mRNA [NM_172750]	1,1	2,1
Tulp4	NM_054040	Mus musculus tubby like protein 4 (Tulp4), mRNA [NM_054040]	0,9	1,9
Ncam1	NM_001081445	Mus musculus neural cell adhesion molecule 1 (Ncam1), transcript variant 1, mRNA [NM_001081445]	1,4	2,6
A_52_P949155	A_52_P949155	Unknown	1,1	2,1
Lbh	NM_029999	Mus musculus limb-bud and heart (Lbh), mRNA [NM_029999]	1,7	3,3
Nxn	NM_008750	Mus musculus nucleoredoxin (Nxn), mRNA [NM_008750]	1,1	2,2
EG433225	ENSMUST0000072982	Unknown	1,1	2,1
Plxn2	NM_008882	Mus musculus plexin A2 (Plxn2), mRNA [NM_008882]	1,0	2,0
B230369F24Rik	AK046316	Mus musculus adult male corpora quadrigemina cDNA, RIKEN full-length enriched library, clone:B230369F24 product:similar to RIBOSOMAL PROTEIN L27A (RIBOSOMAL PROTEIN L27A) [Mus musculus], full insert sequence [AK046316]	1,0	2,0
Cdh13	NM_019707	Mus musculus cadherin 13 (Cdh13), mRNA [NM_019707]	1,1	2,1
Scnn1a	NM_011324	Mus musculus sodium channel, nonvoltage-gated, type I, alpha (Scnn1a), mRNA [NM_011324]	1,5	2,8
Ivns1abp	NM_001039511	Mus musculus influenza virus NS1A binding protein (Ivns1abp), transcript variant 1, mRNA [NM_001039511]	2,5	5,7
2610301F02Rik	AK053175	Mus musculus 0 day neonate lung cDNA, RIKEN full-length enriched library, clone:E030025K17 product:hypothetical protein, full insert sequence [AK053175]	1,7	3,3
Sox9	NM_011448	Mus musculus SRY-box containing gene 9 (Sox9), mRNA [NM_011448]	1,6	3,0
Dclre1c	NM_146114	Mus musculus DNA cross-link repair 1C, PSO2 homolog (S. cerevisiae) (Dclre1c), transcript variant 1, mRNA [NM_146114]	1,1	2,1



## Smad4<sup>fl/fl</sup>

Atp6v1a	NM_007508	Mus musculus ATPase, H <sup>+</sup> transporting, lysosomal V1 subunit A (Atp6v1a), mRNA [NM_007508]	1,1	2,2
Rrm2	NM_009104	Mus musculus ribonucleotide reductase M2 (Rrm2), mRNA [NM_009104]	1,4	2,7
H19	BC025150	Mus musculus H19 fetal liver mRNA, mRNA (cDNA clone MGC:35822 IMAGE:3592592), complete cds. [BC025150]	1,3	2,4
Agbl3	BC087897	Mus musculus ATP/GTP binding protein-like 3, mRNA (cDNA clone IMAGE:6595330), complete cds. [BC087897]	1,2	2,3
Der1	NM_024207	Mus musculus Der1-like domain family, member 1 (Der1), mRNA [NM_024207]	1,0	2,1
2510048L02Rik	NM_025977	Mus musculus RIKEN cDNA 2510048L02 gene (2510048L02Rik), mRNA [NM_025977]	1,1	2,2
Ctsl	NM_009984	Mus musculus cathepsin L (Ctsl), mRNA [NM_009984]	1,1	2,2
Tgm5	NM_028799	Mus musculus transglutaminase 5 (Tgm5), mRNA [NM_028799]	2,1	4,2
Rabep2	NM_030566	Mus musculus rabaptin, RAB GTPase binding effector protein 2 (Rabep2), mRNA [NM_030566]	1,2	2,3
Zhx3	NM_177263	Mus musculus zinc fingers and homeoboxes 3 (Zhx3), mRNA [NM_177263]	1,0	2,0
Cd68	NM_009853	Mus musculus CD68 antigen (Cd68), mRNA [NM_009853]	1,3	2,5
Lrp4	NM_172668	Mus musculus low density lipoprotein receptor-related protein 4 (Lrp4), mRNA [NM_172668]	1,4	2,6
Cstf2	NM_133196	Mus musculus cleavage stimulation factor, 3' pre-RNA subunit 2 (Cstf2), mRNA [NM_133196]	1,1	2,2
A430081F14Rik	AK084623	Mus musculus 13 days embryo heart cDNA, RIKEN full-length enriched library, clone:D330022F04 product:unclassifiable, full insert sequence. [AK084623]	1,9	3,8
Hspa4l	NM_011020	Mus musculus heat shock protein 4 like (Hspa4l), mRNA [NM_011020]	1,2	2,3
Obfc2a	NM_028696	Mus musculus oligonucleotide/oligosaccharide-binding fold containing 2A (Obfc2a), mRNA [NM_028696]	1,5	2,8
Tmem9	NM_025439	Mus musculus transmembrane protein 9 (Tmem9), mRNA [NM_025439]	1,1	2,2
Dak	NM_145496	Mus musculus dihydroxyacetone kinase 2 homolog (yeast) (Dak), mRNA [NM_145496]	1,1	2,2
Igfbp5	NM_010518	Mus musculus insulin-like growth factor binding protein 5 (Igfbp5), mRNA [NM_010518]	1,4	2,6
1200016E24Rik	AK035396	Mus musculus adult male urinary bladder cDNA, RIKEN full-length enriched library, clone:9530030H05 product:unclassifiable, full insert sequence [AK035396]	1,4	2,7
AK039509	AK039509	Mus musculus adult male spinal cord cDNA, RIKEN full-length enriched library, clone:A330052N07 product:unclassifiable, full insert sequence. [AK039509]	1,4	2,7
1300007F04Rik	NM_026185	Mus musculus RIKEN cDNA 1300007F04 gene (1300007F04Rik), mRNA [NM_026185]	2,1	4,3
Apitd1	NM_027263	Mus musculus apoptosis-inducing, TAF9-like domain 1 (Apitd1), mRNA [NM_027263]	0,9	1,9
Esd	NM_016903	Mus musculus esterase D/formylglutathione hydrolase (Esd), mRNA [NM_016903]	1,1	2,2
Fbxo36	NM_025386	Mus musculus F-box protein 36 (Fbxo36), mRNA [NM_025386]	0,9	1,9
AV030849	AV030849	AV030849 AV030849 Mus musculus adult C57BL/6J cerebellum Mus musculus cDNA clone 1500015P16, mRNA sequence [AV030849]	1,2	2,3
D930016D06Rik	BC082597	Mus musculus RIKEN cDNA D930016D06 gene, mRNA (cDNA clone IMAGE:30636965) [BC082597]	1,1	2,1
Dapk2	NM_010019	Mus musculus death-associated kinase 2 (Dapk2), mRNA [NM_010019]	1,1	2,2
Ankrd2	NM_020033	Mus musculus ankyrin repeat domain 2 (stretch responsive muscle) (Ankrd2), mRNA [NM_020033]	1,1	2,2
Tmem9	NM_025439	Mus musculus transmembrane protein 9 (Tmem9), mRNA [NM_025439]	1,2	2,4

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Lmod2	NM_053098	Mus musculus leiomodoin 2 (cardiac) (Lmod2), mRNA [NM_053098]	1,0	2,0
Tmem55a	NM_028264	Mus musculus transmembrane protein 55A (Tmem55a), mRNA [NM_028264]	1,0	2,0
Eml5	NM_001081191	Mus musculus echinoderm microtubule associated protein like 5 (Eml5), mRNA [NM_001081191]	1,0	2,0
NAP023694-001	NAP023694-001	Unknown	1,3	2,5
Pik3r3	NM_181585	Mus musculus phosphatidylinositol 3 kinase, regulatory subunit, polypeptide 3 (p55) (Pik3r3), mRNA [NM_181585]	1,1	2,2
BG296545	BG296545	602394450F1 NIH_MGC_94 Mus musculus cDNA clone IMAGE:4506180 5', mRNA sequence [BG296545]	1,4	2,6
Eps15	NM_007943	Mus musculus epidermal growth factor receptor pathway substrate 15 (Eps15), mRNA [NM_007943]	0,9	1,9
BB199080	BB199080	BB199080 RIKEN full-length enriched, 0 day neonate thymus Mus musculus cDNA clone A430010P05 3'. [BB199080]	1,2	2,3
Slc4a3	AK161240	Mus musculus 0 day neonate head cDNA, RIKEN full-length enriched library, clone:4833445E16 product:hypothetical protein, full insert sequence. [AK161240]	2,1	4,3
Clcn5	AK017285	Mus musculus 6 days neonate head cDNA, RIKEN full-length enriched library, clone:5430408K11 product:unclassifiable, full insert sequence. [AK017285]	1,3	2,4
Tmem38b	NM_028053	Mus musculus transmembrane protein 38B (Tmem38b), mRNA [NM_028053]	0,9	1,9
Myod1	NM_010866	Mus musculus myogenic differentiation 1 (Myod1), mRNA [NM_010866]	1,5	2,8
Tcf7	NM_009331	Mus musculus transcription factor 7, T-cell specific (Tcf7), mRNA [NM_009331]	1,3	2,4
Trafd1	NM_172275	Mus musculus TRAF type zinc finger domain containing 1 (Trafd1), mRNA [NM_172275]	1,0	2,0
Sytl2	NM_001040087	Mus musculus synaptotagmin-like 2 (Sytl2), transcript variant 4, mRNA [NM_001040087]	1,3	2,5
Klhdc5	NM_001081237	Mus musculus kelch domain containing 5 (Klhdc5), mRNA [NM_001081237]	1,3	2,5
1110002H13Rik	NM_025376	Mus musculus RIKEN cDNA 1110002H13 gene (1110002H13Rik), mRNA [NM_025376]	2,0	3,9
Ccl8	NM_021443	Mus musculus chemokine (C-C motif) ligand 8 (Ccl8), mRNA [NM_021443]	1,4	2,6
Riok3	NM_024182	Mus musculus RIO kinase 3 (yeast) (Riok3), mRNA [NM_024182]	1,1	2,1
Dars	NM_177445	Mus musculus aspartyl-tRNA synthetase (Dars), mRNA [NM_177445]	1,0	1,9
Met	NM_008591	Mus musculus met proto-oncogene (Met), mRNA [NM_008591]	1,2	2,3
Sirpa	NM_007547	Mus musculus signal-regulatory protein alpha (Sirpa), mRNA [NM_007547]	1,6	3,0
F2	NM_010168	Mus musculus coagulation factor II (F2), mRNA [NM_010168]	1,7	3,3
Rab8b	NM_173413	Mus musculus RAB8B, member RAS oncogene family (Rab8b), mRNA [NM_173413]	1,1	2,2
Ptpnf	NM_011213	Mus musculus protein tyrosine phosphatase, receptor type, F (Ptpnf), mRNA [NM_011213]	1,3	2,4
Ibrdc1	XM_193558	PREDICTED: Mus musculus IBR domain containing 1 (Ibrdc1), mRNA [XM_193558]	1,0	2,1
Usp28	NM_175482	Mus musculus ubiquitin specific peptidase 28 (Usp28), mRNA [NM_175482]	1,1	2,1
2310022B05Rik	NM_175149	Mus musculus RIKEN cDNA 2310022B05 gene (2310022B05Rik), mRNA [NM_175149]	1,2	2,3
Lmnb2	NM_010722	Mus musculus lamin B2 (Lmnb2), mRNA [NM_010722]	1,3	2,4
H3f3b	NM_008211	Mus musculus H3 histone, family 3B (H3f3b), mRNA [NM_008211]	1,1	2,2

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Hspb7	NM_013868	Mus musculus heat shock protein family, member 7 (cardiovascular) (Hspb7), mRNA [NM_013868]	1,2	2,2
D5ErtD593e	AK021293	Mus musculus 13 days embryo stomach cDNA, RIKEN full-length enriched library, clone:D530019K15 product:unclassifiable, full insert sequence. [AK021293]	1,3	2,4
Serpinb1c	NM_173051	Mus musculus serine (or cysteine) peptidase inhibitor, clade B, member 1c (Serpinb1c), mRNA [NM_173051]	2,8	7,1
Samd8	NM_026283	Mus musculus sterile alpha motif domain containing 8 (Samd8), mRNA [NM_026283]	1,5	2,9
Zfp52	NM_144515	Mus musculus zinc finger protein 52 (Zfp52), mRNA [NM_144515]	1,0	2,0
2900069M18Rik	AK013759	Mus musculus adult male hippocampus cDNA, RIKEN full-length enriched library, clone:2900069M18 product:unclassifiable, full insert sequence. [AK013759]	1,5	2,8
Cdyl	NM_009881	Mus musculus chromodomain protein, Y chromosome-like (Cdyl), mRNA [NM_009881]	0,9	1,9
Odf2	NM_013615	Mus musculus outer dense fiber of sperm tails 2 (Odf2), mRNA [NM_013615]	1,2	2,3
NAP102845-1	NAP102845-1	Unknown	1,6	3,1
Lhfp12	NM_172589	Mus musculus lipoma HMGIC fusion partner-like 2 (Lhfp12), mRNA [NM_172589]	1,4	2,6
E2f2	NM_177733	Mus musculus E2F transcription factor 2 (E2f2), mRNA [NM_177733]	1,3	2,4
TC1695895	TC1695895	Unknown	1,1	2,2
Tubb2a	NM_009450	Mus musculus tubulin, beta 2a (Tubb2a), mRNA [NM_009450]	1,2	2,2
Snrp70	BC049128	Mus musculus U1 small nuclear ribonucleoprotein polypeptide A, mRNA (cDNA clone IMAGE:6822178), complete cds. [BC049128]	1,0	2,0
Tnrc15	NM_146112	Mus musculus trinucleotide repeat containing 15 (Tnrc15), mRNA [NM_146112]	1,2	2,2
Ifitm6	NM_001033632	Mus musculus interferon induced transmembrane protein 6 (Ifitm6), mRNA [NM_001033632]	1,2	2,3
Smc5	NM_153808	Mus musculus structural maintenance of chromosomes 5 (Smc5), mRNA [NM_153808]	0,9	1,9
E430024C06Rik	AK088706	Mus musculus 2 days neonate thymus thymic cells cDNA, RIKEN full-length enriched library, clone:E430024C06 product:unclassifiable, full insert sequence [AK088706]	1,9	3,6
Mfsd4	NM_172510	Mus musculus major facilitator superfamily domain containing 4 (Mfsd4), mRNA [NM_172510]	1,1	2,1
Iqsec3	NM_001033354	Mus musculus IQ motif and Sec7 domain 3 (Iqsec3), mRNA [NM_001033354]	1,2	2,4
Src	NM_009271	Mus musculus Rous sarcoma oncogene (Src), transcript variant 1, mRNA [NM_009271]	1,0	2,0
Gramd1b	NM_172768	Mus musculus GRAM domain containing 1B (Gramd1b), mRNA [NM_172768]	1,0	2,0
Pam	NM_013626	Mus musculus peptidylglycine alpha-amidating monooxygenase (Pam), mRNA [NM_013626]	1,0	2,0
Ppp1r12a	NM_027892	Mus musculus protein phosphatase 1, regulatory (inhibitor) subunit 12A (Ppp1r12a), mRNA [NM_027892]	1,2	2,4
Mid1	NM_183151	Mus musculus midline 1 (Mid1), transcript variant 2, mRNA [NM_183151]	1,4	2,7
Irgm	NM_008326	Mus musculus immunity-related GTPase family, M (Irgm), mRNA [NM_008326]	1,2	2,2
ENSMUST0000091560	ENSMUST0000091560	RIKEN cDNA 201011101 gene [Source:MarkerSymbol;Acc:MGI:1919311] [ENSMUST0000091560]	0,9	1,9
2810055G22Rik	NM_080561	Mus musculus RIKEN cDNA 2810055G22 gene (2810055G22Rik), mRNA [NM_080561]	1,3	2,4
Pomp	NM_025624	Mus musculus proteasome maturation protein (Pomp), mRNA [NM_025624]	0,8	1,8
Pgd	NM_001081274	Mus musculus phosphogluconate dehydrogenase (Pgd), mRNA [NM_001081274]	1,1	2,1

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Hspb7	NM_013868	Mus musculus heat shock protein family, member 7 (cardiovascular) (Hspb7), mRNA [NM_013868]	1,1	2,2
Morc4	NM_029413	Mus musculus microrchidia 4 (Morc4), mRNA [NM_029413]	1,1	2,1
Agbl3	BC087897	Mus musculus ATP/GTP binding protein-like 3, mRNA (cDNA clone IMAGE:6595330), complete cds. [BC087897]	1,1	2,2
D830012I 24Rik	AK052864	Mus musculus 16 days neonate heart cDNA, RIKEN full-length enriched library, clone:D830012I24 product:unclassifiable, full insert sequence [AK052864]	1,1	2,1
Htati2	NM_016865	Mus musculus HIV-1 tat interactive protein 2, homolog (human) (Htati2), mRNA [NM_016865]	1,2	2,3
Tmem100	NM_026433	Mus musculus transmembrane protein 100 (Tmem100), mRNA [NM_026433]	1,8	3,5
Stam2	NM_019667	Mus musculus signal transducing adaptor molecule (SH3 domain and ITAM motif) 2 (Stam2), mRNA [NM_019667]	1,3	2,5
6030419C 18Rik	NM_176921	Mus musculus RIKEN cDNA 6030419C18 gene (6030419C18Rik), mRNA [NM_176921]	1,1	2,1
Cds2	NM_138651	Mus musculus CDP-diacylglycerol synthase (phosphatidate cytidyltransferase) 2 (Cds2), mRNA [NM_138651]	1,1	2,1
Sirpa	NM_007547	Mus musculus signal-regulatory protein alpha (Sirpa), mRNA [NM_007547]	1,1	2,2
Vamp2	NM_009497	Mus musculus vesicle-associated membrane protein 2 (Vamp2), mRNA [NM_009497]	1,3	2,5
Junb	NM_008416	Mus musculus Jun-B oncogene (Junb), mRNA [NM_008416]	1,3	2,4
Snx10	NM_028035	Mus musculus sorting nexin 10 (Snx10), mRNA [NM_028035]	1,3	2,5
Srxn1	NM_029688	Mus musculus sulfiredoxin 1 homolog (S. cerevisiae) (Srxn1), mRNA [NM_029688]	1,0	2,0
FlnC	NM_0010811 85	Mus musculus filamin C, gamma (actin binding protein 280) (FlnC), mRNA [NM_001081185]	1,0	2,0
6330512 M04Rik	BC049666	Mus musculus RIKEN cDNA 6330512M04 gene, mRNA (cDNA clone MGC:58491 IMAGE:6534368), complete cds. [BC049666]	1,0	2,0
Ncam1	NM_0010814 45	Mus musculus neural cell adhesion molecule 1 (Ncam1), transcript variant 1, mRNA [NM_001081445]	1,4	2,7
Net1	NM_019671	Mus musculus neuroepithelial cell transforming gene 1 (Net1), transcript variant 1, mRNA [NM_019671]	1,4	2,5
Bin1	AK077987	Mus musculus 13 days embryo male testis cDNA, RIKEN full-length enriched library, clone:6030496J08 product:myc box dependent interacting protein 1, full insert sequence. [AK077987]	1,6	2,9
H19	AK003142	Mus musculus 18-day embryo whole body cDNA, RIKEN full-length enriched library, clone:1100001A04 product:Mus musculus H19 fetal liver mRNA (H19), mRNA, full insert sequence. [AK003142]	1,2	2,3
Utrn	AK041435	Mus musculus 3 days neonate thymus cDNA, RIKEN full-length enriched library, clone:A630008N19 product:utrophin, full insert sequence. [AK041435]	1,2	2,2
Abi1	NM_007380	Mus musculus abl-interactor 1 (Abi1), transcript variant 3, mRNA [NM_007380]	1,1	2,1
D16Bwg1 494e	AB041601	Mus musculus brain cDNA, clone MNCb-4137. [AB041601]	1,4	2,7
Slc38a2	NM_175121	Mus musculus solute carrier family 38, member 2 (Slc38a2), mRNA [NM_175121]	1,0	2,0
Elk4	ENSMUST00 000086556	ELK4, member of ETS oncogene family [Source:MarkerSymbol;Acc:MGI:102853] [ENSMUST00000086556]	1,2	2,3
EG23287 5	BC094341	Mus musculus similar to hypothetical protein FLJ12895, mRNA (cDNA clone IMAGE:5687425), complete cds [BC094341]	0,9	1,9
Ppfia4	XM_129443	PREDICTED: Mus musculus protein tyrosine phosphatase, receptor type, f polypeptide (PTPRF), interacting protein (liprin), alpha 4, transcript variant 1 (Ppfia4), mRNA [XM_129443]	1,1	2,2
Gramd1b	BC070451	Mus musculus GRAM domain containing 1B, mRNA (cDNA clone MGC:99432 IMAGE:30616509), complete cds. [BC070451]	1,0	2,0
Errf1	NM_133753	Mus musculus ERBB receptor feedback inhibitor 1 (Errf1), mRNA [NM_133753]	1,2	2,4
1110012J 17Rik	AK051750	Mus musculus 12 days embryo spinal ganglion cDNA, RIKEN full-length enriched library, clone:D130071O13 product:hypothetical protein, full insert sequence. [AK051750]	1,1	2,2

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Wwtr1	NM_133784	Mus musculus WW domain containing transcription regulator 1 (Wwtr1), mRNA [NM_133784]	1,2	2,3
2010209O12Rik	BC047275	Mus musculus RIKEN cDNA 2010209O12 gene, mRNA (cDNA clone MGC:54971 IMAGE:6441739), complete cds. [BC047275]	1,0	2,0
Fblim1	NM_133754	Mus musculus filamin binding LIM protein 1 (Fblim1), mRNA [NM_133754]	1,5	2,8
Osbp10	NM_148958	Mus musculus oxysterol binding protein-like 10 (Osbp10), mRNA [NM_148958]	1,3	2,4
Cetn4	NM_145825	Mus musculus centrin 4 (Cetn4), mRNA [NM_145825]	1,5	2,9
Nol3	NM_030152	Mus musculus nucleolar protein 3 (apoptosis repressor with CARD domain) (Nol3), mRNA [NM_030152]	1,2	2,2
Ubx2	NM_026390	Mus musculus UBX domain containing 2 (Ubx2), mRNA [NM_026390]	1,3	2,4
Chrb1	NM_009601	Mus musculus cholinergic receptor, nicotinic, beta polypeptide 1 (muscle) (Chrb1), mRNA [NM_009601]	1,5	2,8
2310039E09Rik	NM_026509	Mus musculus RIKEN cDNA 2310039E09 gene (2310039E09Rik), mRNA [NM_026509]	1,0	2,0
Pvr	NM_027514	Mus musculus poliovirus receptor (Pvr), mRNA [NM_027514]	1,2	2,3
Cul7	NM_025611	Mus musculus cullin 7 (Cul7), mRNA [NM_025611]	1,1	2,1
Dfna5h	NM_018769	Mus musculus deafness, autosomal dominant 5 homolog (human) (Dfna5h), mRNA [NM_018769]	1,3	2,4
Dusp2	NM_010090	Mus musculus dual specificity phosphatase 2 (Dusp2), mRNA [NM_010090]	1,5	2,7
Slc16a3	NM_030696	Mus musculus solute carrier family 16 (monocarboxylic acid transporters), member 3 (Slc16a3), mRNA [NM_030696]	-2,6	0,2
2310042D19Rik	NM_172417	Mus musculus RIKEN cDNA 2310042D19 gene (2310042D19Rik), mRNA [NM_172417]	-2,6	0,2
AK084656	AK084656	Mus musculus 13 days embryo heart cDNA, RIKEN full-length enriched library, clone:D330025O06 product:unclassifiable, full insert sequence [AK084656]	-3,8	0,1
Gpd1	NM_010271	Mus musculus glycerol-3-phosphate dehydrogenase 1 (soluble) (Gpd1), mRNA [NM_010271]	-2,7	0,1
Cntnap2	NM_025771	Mus musculus contactin associated protein-like 2 (Cntnap2), transcript variant 2, mRNA [NM_025771]	-3,3	0,1
Ostn	NM_198112	Mus musculus osteocrin (Ostn), mRNA [NM_198112]	-3,3	0,1
4933417O08Rik	NM_027694	Mus musculus RIKEN cDNA 4933417O08 gene (4933417O08Rik), mRNA [NM_027694]	-2,8	0,1
Egflam	NM_178748	Mus musculus EGF-like, fibronectin type III and laminin G domains (Egflam), mRNA [NM_178748]	-2,3	0,2
Slc41a3	NM_027868	Mus musculus solute carrier family 41, member 3 (Slc41a3), transcript variant 1, mRNA [NM_027868]	-2,1	0,2
1110006G14Rik	XM_001001687	PREDICTED: Mus musculus RIKEN cDNA 1110006G14 gene (1110006G14Rik), mRNA [XM_001001687]	-2,2	0,2
Dhrs7c	NM_001013013	Mus musculus dehydrogenase/reductase (SDR family) member 7C (Dhrs7c), mRNA [NM_001013013]	-3,4	0,1
Emid1	NM_080595	Mus musculus EMI domain containing 1 (Emid1), mRNA [NM_080595]	-2,4	0,2
9630033F20Rik	NM_177003	Mus musculus RIKEN cDNA 9630033F20 gene (9630033F20Rik), mRNA [NM_177003]	-2,3	0,2
9630033F20Rik	NM_177003	Mus musculus RIKEN cDNA 9630033F20 gene (9630033F20Rik), mRNA [NM_177003]	-2,2	0,2
Plcd4	NM_148937	Mus musculus phospholipase C, delta 4 (Plcd4), transcript variant 2, mRNA [NM_148937]	-2,5	0,2
Maf	AK132165	Mus musculus 17 days embryo head cDNA, RIKEN full-length enriched library, clone:3321401C13 product:avian musculoaponeurotic fibrosarcoma (v-maf) AS42 oncogene homolog, full insert sequence. [AK132165]	-2,1	0,2
Fbp2	NM_007994	Mus musculus fructose bisphosphatase 2 (Fbp2), mRNA [NM_007994]	-2,5	0,2

## Smad4<sup>fl/fl</sup>

Mif1	NM_010801	Mus musculus myeloid leukemia factor 1 (Mif1), transcript variant 2, mRNA [NM_010801]	-2,3	0,2
2310042D19Rik	NM_172417	Mus musculus RIKEN cDNA 2310042D19 gene (2310042D19Rik), mRNA [NM_172417]	-2,5	0,2
Asb11	NM_026853	Mus musculus ankyrin repeat and SOCS box-containing protein 11 (Asb11), mRNA [NM_026853]	-2,3	0,2
LOC672731	XR_004464	PREDICTED: Mus musculus similar to triosephosphate isomerase 1 (LOC672731), mRNA [XR_004464]	-1,9	0,3
Wfdc1	NM_023395	Mus musculus WAP four-disulfide core domain 1 (Wfdc1), mRNA [NM_023395]	-2,0	0,2
Aqp4	NM_009700	Mus musculus aquaporin 4 (Aqp4), mRNA [NM_009700]	-2,6	0,2
Gpd1	NM_010271	Mus musculus glycerol-3-phosphate dehydrogenase 1 (soluble) (Gpd1), mRNA [NM_010271]	-1,7	0,3
AK047066	AK047066	Mus musculus 10 days neonate cerebellum cDNA, RIKEN full-length enriched library, clone:B930015L22 product:unclassifiable, full insert sequence [AK047066]	-2,5	0,2
TC1589973	TC1589973	O70259_MOUSE (O70259) Voltage-gated potassium channel Kv1.7, complete [TC1589973]	-1,8	0,3
1500016O10Rik	BC093505	Mus musculus RIKEN cDNA 1500016O10 gene, mRNA (cDNA clone MGC:103222 IMAGE:4503230), complete cds. [BC093505]	-2,6	0,2
Hhah1	NM_029095	Mus musculus hedgehog acyltransferase-like (Hhah1), mRNA [NM_029095]	-1,9	0,3
Camk2a	NM_177407	Mus musculus calcium/calmodulin-dependent protein kinase II alpha (Camk2a), transcript variant 2, mRNA [NM_177407]	-2,0	0,2
1810005K13Rik	AK141935	Mus musculus 12 days embryo spinal ganglion cDNA, RIKEN full-length enriched library, clone:D130067O22 product:unclassifiable, full insert sequence [AK141935]	-2,0	0,3
EG245190	XM_486328	PREDICTED: Mus musculus hypothetical protein 6430704N06 (6430704N06), mRNA [XM_486328]	-2,0	0,2
4921511C04Rik	NM_027580	Mus musculus RIKEN cDNA 4921511C04 gene (4921511C04Rik), mRNA [NM_027580]	-2,4	0,2
Ptx3	AK162281	Mus musculus 15 days embryo embryonic body below diaphragm cDNA, RIKEN full-length enriched library, clone:8230402K13 product:unclassifiable, full insert sequence [AK162281]	-1,9	0,3
Amd1	NM_009665	Mus musculus S-adenosylmethionine decarboxylase 1 (Amd1), mRNA [NM_009665]	-1,7	0,3
Pfkfb3	NM_133232	Mus musculus 6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 3 (Pfkfb3), mRNA [NM_133232]	-2,5	0,2
Lrrc38	XM_144076	PREDICTED: Mus musculus leucine rich repeat containing 38 (Lrrc38), mRNA [XM_144076]	-2,4	0,2
St8sia5	X98014	M.musculus mRNA for alpha-2,8-sialyltransferase. [X98014]	-1,9	0,3
Tmem16e	NM_177694	Mus musculus transmembrane protein 16E (Tmem16e), mRNA [NM_177694]	-2,3	0,2
Adhfe1	NM_175236	Mus musculus alcohol dehydrogenase, iron containing, 1 (Adhfe1), mRNA [NM_175236]	-1,8	0,3
A130092J06Rik	NM_175511	Mus musculus RIKEN cDNA A130092J06 gene (A130092J06Rik), mRNA [NM_175511]	-1,7	0,3
Pfkfb1	NM_008824	Mus musculus 6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 1 (Pfkfb1), mRNA [NM_008824]	-2,2	0,2
Dhrs7c	AK003267	Mus musculus 18-day embryo whole body cDNA, RIKEN full-length enriched library, clone:1110001P11 product:unclassifiable, full insert sequence. [AK003267]	-2,5	0,2
LOC627563	XR_004049	PREDICTED: Mus musculus similar to L-lactate dehydrogenase A chain (LDH-A) (LDH muscle subunit) (LDH-M) (LOC627563), mRNA [XR_004049]	-1,6	0,3
Aqp4	NM_009700	Mus musculus aquaporin 4 (Aqp4), mRNA [NM_009700]	-2,5	0,2
Rxrg	NM_009107	Mus musculus retinoid X receptor gamma (Rxrg), mRNA [NM_009107]	-2,0	0,3
St8sia5	NM_153124	Mus musculus ST8 alpha-N-acetyl-neuraminidase alpha-2,8-sialyltransferase 5 (St8sia5), transcript variant 2, mRNA [NM_153124]	-1,8	0,3
Ntf5	NM_198190	Mus musculus neurotrophin 5 (Ntf5), mRNA [NM_198190]	-2,1	0,2

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pPtp4a3	NM_008975	Mus musculus protein tyrosine phosphatase 4a3 (pPtp4a3), mRNA [NM_008975]	-1,8	0,3
Hs3st5	NM_001081208	Mus musculus heparan sulfate (glucosamine) 3-O-sulfotransferase 5 (Hs3st5), mRNA [NM_001081208]	-1,9	0,3
1110067D22Rik	NM_173752	Mus musculus RIKEN cDNA 1110067D22 gene (1110067D22Rik), mRNA [NM_173752]	-1,8	0,3
Kcnc1	NM_008421	Mus musculus potassium voltage gated channel, Shaw-related subfamily, member 1 (Kcnc1), mRNA [NM_008421]	-2,0	0,2
C030044C12Rik	AK030860	Mus musculus adult male thymus cDNA, RIKEN full-length enriched library, clone:5830432P16 product:unclassifiable, full insert sequence [AK030860]	-1,8	0,3
2310005P05Rik	NM_026189	Mus musculus RIKEN cDNA 2310005P05 gene (2310005P05Rik), mRNA [NM_026189]	-1,7	0,3
4930535116Rik	AK015982	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:4930535116 product:hypothetical protein, full insert sequence. [AK015982]	-2,1	0,2
Smox	NM_145533	Mus musculus spermine oxidase (Smox), mRNA [NM_145533]	-1,5	0,3
Bpgm	NM_007563	Mus musculus 2,3-bisphosphoglycerate mutase (Bpgm), mRNA [NM_007563]	-1,5	0,3
6430571L13Rik	NM_175486	Mus musculus RIKEN cDNA 6430571L13 gene (6430571L13Rik), mRNA [NM_175486]	-1,8	0,3
Pitpnc1	NM_145823	Mus musculus phosphatidylinositol transfer protein, cytoplasmic 1 (Pitpnc1), mRNA [NM_145823]	-1,5	0,4
Ramp1	NM_016894	Mus musculus receptor (calcitonin) activity modifying protein 1 (Ramp1), mRNA [NM_016894]	-2,8	0,1
D0H4S114	NM_053078	Mus musculus DNA segment, human D4S114 (D0H4S114), mRNA [NM_053078]	-2,3	0,2
Il15	NM_008357	Mus musculus interleukin 15 (Il15), mRNA [NM_008357]	-2,3	0,2
Ppapdc3	NM_145521	Mus musculus phosphatidic acid phosphatase type 2 domain containing 3 (Ppapdc3), mRNA [NM_145521]	-1,7	0,3
ENSMUST0000063037	ENSMUST0000063037	similar to L-lactate dehydrogenase A chain (LDH-A) (LDH muscle subunit) (LDH-M) (LOC383509), mRNA [Source:RefSeq_dna;Acc:XR_003372] [ENSMUST0000063037]	-1,5	0,3
5430433E21Rik	AK048611	Mus musculus 16 days embryo head cDNA, RIKEN full-length enriched library, clone:C130087F03 product:hypothetical Kelch repeat containing protein, full insert sequence. [AK048611]	-2,1	0,2
Grb14	NM_016719	Mus musculus growth factor receptor bound protein 14 (Grb14), mRNA [NM_016719]	-1,7	0,3
Pitpnc1	NM_145823	Mus musculus phosphatidylinositol transfer protein, cytoplasmic 1 (Pitpnc1), mRNA [NM_145823]	-1,6	0,3
Kazald1	NM_178929	Mus musculus Kazal-type serine peptidase inhibitor domain 1 (Kazald1), mRNA [NM_178929]	-2,1	0,2
Prss23	NM_029614	Mus musculus protease, serine, 23 (Prss23), mRNA [NM_029614]	-1,6	0,3
Klhl31	NM_172925	Mus musculus kelch-like 31 (Drosophila) (Klhl31), mRNA [NM_172925]	-1,5	0,3
A530098C11Rik	NM_001013799	Mus musculus RIKEN cDNA A530098C11 gene (A530098C11Rik), mRNA [NM_001013799]	-1,6	0,3
Igh-6	AK088666	Mus musculus 2 days neonate thymus thymic cells cDNA, RIKEN full-length enriched library, clone:E430023B15 product:immunoglobulin heavy chain 6 (heavy chain of IgM), full insert sequence. [AK088666]	-2,1	0,2
NAP061200-1	NAP061200-1	Unknown	-1,6	0,3
EG272350	BC052838	Mus musculus predicted gene, EG272350, mRNA (cDNA clone MGC:60745 IMAGE:30049363), complete cds [BC052838]	-1,5	0,3
Asb14	NM_080856	Mus musculus ankyrin repeat and SOCS box-containing protein 14 (Asb14), mRNA [NM_080856]	-1,5	0,4
Kcnc1	NM_008421	Mus musculus potassium voltage gated channel, Shaw-related subfamily, member 1 (Kcnc1), mRNA [NM_008421]	-1,9	0,3
2900046G09Rik	NM_133778	Mus musculus RIKEN cDNA 2900046G09 gene (2900046G09Rik), mRNA [NM_133778]	-1,6	0,3
D0H4S114	NM_053078	Mus musculus DNA segment, human D4S114 (D0H4S114), mRNA [NM_053078]	-2,3	0,2

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Fgfbp1	NM_008009	Mus musculus fibroblast growth factor binding protein 1 (Fgfbp1), mRNA [NM_008009]	-2,6	0,2
ENSMUST0000023427	ENSMUST0000023427	ST3 beta-galactoside alpha-2,3-sialyltransferase 6 [Source:MarkerSymbol;Acc:MGI:1888707] [ENSMUST0000023427]	-1,6	0,3
Ppara	NM_011144	Mus musculus peroxisome proliferator activated receptor alpha (Ppara), mRNA [NM_011144]	-1,5	0,3
Tk1	NM_009387	Mus musculus thymidine kinase 1 (Tk1), mRNA [NM_009387]	-1,9	0,3
Slc16a10	NM_028247	Mus musculus solute carrier family 16 (monocarboxylic acid transporters), member 10 (Slc16a10), mRNA [NM_028247]	-1,6	0,3
Asb15	NM_080847	Mus musculus ankyrin repeat and SOCS box-containing protein 15 (Asb15), mRNA [NM_080847]	-1,8	0,3
Mgst3	NM_025569	Mus musculus microsomal glutathione S-transferase 3 (Mgst3), mRNA [NM_025569]	-1,7	0,3
Frat2	NM_177603	Mus musculus frequently rearranged in advanced T-cell lymphomas 2 (Frat2), mRNA [NM_177603]	-1,4	0,4
Gdf1	NM_008107	Mus musculus growth differentiation factor 1 (Gdf1), mRNA [NM_008107]	-1,6	0,3
Asb15	AK079418	Mus musculus adult male bone cDNA, RIKEN full-length enriched library, clone:9830163L08 product:ankyrin repeat domain-containing SOCS box protein Asb-15 mRNA, full insert sequence. [AK079418]	-1,7	0,3
Pla2g5	NM_011110	Mus musculus phospholipase A2, group V (Pla2g5), mRNA [NM_011110]	-2,9	0,1
Lypd6	NM_177139	Mus musculus LY6/PLAUR domain containing 6 (Lypd6), mRNA [NM_177139]	-1,8	0,3
Asb15	AK079418	Mus musculus adult male bone cDNA, RIKEN full-length enriched library, clone:9830163L08 product:ankyrin repeat domain-containing SOCS box protein Asb-15 mRNA, full insert sequence. [AK079418]	-1,7	0,3
Maf	NM_001025577	Mus musculus avian musculoaponeurotic fibrosarcoma (v-maf) AS42 oncogene homolog (Maf), mRNA [NM_001025577]	-1,7	0,3
Cmb1	NM_181588	Mus musculus carboxymethylenebutenolidase-like (Pseudomonas) (Cmb1), mRNA [NM_181588]	-1,9	0,3
Idh2	NM_173011	Mus musculus isocitrate dehydrogenase 2 (NADP+), mitochondrial (Idh2), mRNA [NM_173011]	-1,6	0,3
Aqp4	NM_009700	Mus musculus aquaporin 4 (Aqp4), mRNA [NM_009700]	-2,8	0,1
AK035485	AK035485	Mus musculus adult male urinary bladder cDNA, RIKEN full-length enriched library, clone:9530055M18 product:unclassifiable, full insert sequence [AK035485]	-1,4	0,4
ENSMUST0000065731	ENSMUST0000065731	RIKEN cDNA 2310001K24 gene [Source:MarkerSymbol;Acc:MGI:1916767] [ENSMUST0000065731]	-1,8	0,3
Sh3kbp1	NM_021389	Mus musculus SH3-domain kinase binding protein 1 (Sh3kbp1), mRNA [NM_021389]	-1,6	0,3
Slc34a2	NM_011402	Mus musculus solute carrier family 34 (sodium phosphate), member 2 (Slc34a2), mRNA [NM_011402]	-2,4	0,2
Slc7a2	NM_007514	Mus musculus solute carrier family 7 (cationic amino acid transporter, y+ system), member 2 (Slc7a2), transcript variant 1, mRNA [NM_007514]	-1,6	0,3
LOC385319	XR_002509	PREDICTED: Mus musculus similar to L-lactate dehydrogenase A chain (LDH-A) (LDH muscle subunit) (LDH-M) (LOC385319), mRNA [XR_002509]	-1,4	0,4
Pitpnc1	NM_145823	Mus musculus phosphatidylinositol transfer protein, cytoplasmic 1 (Pitpnc1), mRNA [NM_145823]	-2,0	0,3
TC1620610	TC1620610	AF052147 cul-3 {Homo sapiens} (exp=-1; wgp=0; cg=0), partial (27%) [TC1620610]	-1,3	0,4
Slc25a25	NM_146118	Mus musculus solute carrier family 25 (mitochondrial carrier, phosphate carrier), member 25 (Slc25a25), mRNA [NM_146118]	-2,5	0,2
Tuba8	NM_017379	Mus musculus tubulin, alpha 8 (Tuba8), mRNA [NM_017379]	-1,7	0,3
9430010O03Rik	AK038412	Mus musculus adult male hypothalamus cDNA, RIKEN full-length enriched library, clone:A230005G21 product:unclassifiable, full insert sequence. [AK038412]	-1,4	0,4
Golph2	NM_027307	Mus musculus golgi phosphoprotein 2 (Golph2), transcript variant 1, mRNA [NM_027307]	-1,5	0,4
Fsd2	NM_172904	Mus musculus fibronectin type III and SPRY domain containing 2 (Fsd2), mRNA [NM_172904]	-1,9	0,3



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2310007A19Rik	NM_025506	Mus musculus RIKEN cDNA 2310007A19 gene (2310007A19Rik), mRNA [NM_025506]	-2,2	0,2
Bfsp2	NM_001002896	Mus musculus beaded filament structural protein 2, phakinin (Bfsp2), mRNA [NM_001002896]	-2,0	0,2
Amd1	Z14986	M.musculus mRNA encoding adenosylmethionine decarboxylase. [Z14986]	-1,5	0,4
Gdap1	NM_010267	Mus musculus ganglioside-induced differentiation-associated-protein 1 (Gdap1), mRNA [NM_010267]	-1,8	0,3
Rps6ka2	NM_011299	Mus musculus ribosomal protein S6 kinase, polypeptide 2 (Rps6ka2), mRNA [NM_011299]	-1,6	0,3
Abcb4	NM_008830	Mus musculus ATP-binding cassette, sub-family B (MDR/TAP), member 4 (Abcb4), mRNA [NM_008830]	-1,5	0,4
Slc25a25	NM_146118	Mus musculus solute carrier family 25 (mitochondrial carrier, phosphate carrier), member 25 (Slc25a25), mRNA [NM_146118]	-1,6	0,3
Mylk2	NM_001081044	Mus musculus myosin, light polypeptide kinase 2, skeletal muscle (Mylk2), mRNA [NM_001081044]	-1,5	0,3
Map2k6	NM_011943	Mus musculus mitogen activated protein kinase kinase 6 (Map2k6), mRNA [NM_011943]	-2,0	0,3
ENSMUST0000065731	ENSMUST0000065731	RIKEN cDNA 2310001K24 gene [Source:MarkerSymbol;Acc:MGI:1916767] [ENSMUST0000065731]	-1,6	0,3
Mbp	NM_010777	Mus musculus myelin basic protein (Mbp), transcript variant 7, mRNA [NM_010777]	-2,0	0,3
Gdf8	NM_010834	Mus musculus growth differentiation factor 8 (Gdf8), mRNA [NM_010834]	-1,5	0,4
Pde4a	NM_019798	Mus musculus phosphodiesterase 4A, cAMP specific (Pde4a), transcript variant 1, mRNA [NM_019798]	-1,6	0,3
Rhbd1	NM_144816	Mus musculus rhomboid, veinlet-like 1 (Drosophila) (Rhbd1), mRNA [NM_144816]	-1,7	0,3
Arc	NM_018790	Mus musculus activity regulated cytoskeletal-associated protein (Arc), mRNA [NM_018790]	-1,5	0,4
D16Bwg1543e	AK149652	Mus musculus bone marrow macrophage cDNA, RIKEN full-length enriched library, clone:G530007L06 product:unclassifiable, full insert sequence [AK149652]	-1,5	0,4
2900011G08Rik	AK013526	Mus musculus adult male hippocampus cDNA, RIKEN full-length enriched library, clone:2900011G08 product:unclassifiable, full insert sequence. [AK013526]	-1,6	0,3
Slc8a3	BC052435	Mus musculus solute carrier family 8 (sodium/calcium exchanger), member 3, mRNA (cDNA clone MGC:63358 IMAGE:6837128), complete cds. [BC052435]	-1,4	0,4
9430079G20Rik	AK020497	Mus musculus 12 days embryo embryonic body between diaphragm region and neck cDNA, RIKEN full-length enriched library, clone:9430079G20 product:unclassifiable, full insert sequence. [AK020497]	-1,4	0,4
Sall4	NM_175303	Mus musculus sal-like 4 (Drosophila) (Sall4), transcript variant a, mRNA [NM_175303]	-1,4	0,4
Slc25a25	NM_146118	Mus musculus solute carrier family 25 (mitochondrial carrier, phosphate carrier), member 25 (Slc25a25), mRNA [NM_146118]	-1,8	0,3
Pcp41	AK002772	Mus musculus adult male kidney cDNA, RIKEN full-length enriched library, clone:0610037I05 product:hypothetical protein, full insert sequence. [AK002772]	-1,4	0,4
NAP063937-1	NAP063937-1	Unknown	-1,2	0,4
Vgll4	NM_177683	Mus musculus vestigial like 4 (Drosophila) (Vgll4), mRNA [NM_177683]	-1,4	0,4
Pdzx	NM_018832	Mus musculus PDZ domain containing, X chromosome (Pdzx), mRNA [NM_018832]	-1,6	0,3
Lynx1	NM_011838	Mus musculus Ly6/neurotoxin 1 (Lynx1), mRNA [NM_011838]	-1,5	0,4
Nr4a1	NM_010444	Mus musculus nuclear receptor subfamily 4, group A, member 1 (Nr4a1), mRNA [NM_010444]	-2,2	0,2
OTTMUSG00000002191	AK017437	Mus musculus 10 days neonate head cDNA, RIKEN full-length enriched library, clone:5530401L02 product:homologue to ultra-high-sulfur keratin - mouse, complete, full insert sequence. [AK017437]	-1,6	0,3
2900041A09Rik	NM_182839	Mus musculus RIKEN cDNA 2900041A09 gene (2900041A09Rik), mRNA [NM_182839]	-1,5	0,3
Pfkfb3	NM_133232	Mus musculus 6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 3 (Pfkfb3), mRNA [NM_133232]	-1,7	0,3

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Gpt2	NM_173866	Mus musculus glutamic pyruvate transaminase (alanine aminotransferase) 2 (Gpt2), mRNA [NM_173866]	-1,5	0,4
Npm2	NM_181345	Mus musculus nucleophosmin/nucleoplasmin 2 (Npm2), mRNA [NM_181345]	-2,0	0,2
Cdk3	NM_027165	Mus musculus cyclin-dependent kinase 3 (Cdk3), mRNA [NM_027165]	-1,9	0,3
Aurka	NM_011497	Mus musculus aurora kinase A (Aurka), mRNA [NM_011497]	-1,7	0,3
A530058 N18Rik	AK081828	Mus musculus 16 days embryo head cDNA, RIKEN full-length enriched library, clone:C130080G10 product:unclassifiable, full insert sequence. [AK081828]	-2,1	0,2
Pfkfb3	NM_133232	Mus musculus 6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 3 (Pfkfb3), mRNA [NM_133232]	-1,8	0,3
Mdga1	NM_001081160	Mus musculus MAM domain containing glycosylphosphatidylinositol anchor 1 (Mdga1), mRNA [NM_001081160]	-1,4	0,4
Kcnj12	NM_010603	Mus musculus potassium inwardly-rectifying channel, subfamily J, member 12 (Kcnj12), mRNA [NM_010603]	-1,3	0,4
Prkaa2	NM_178143	Mus musculus protein kinase, AMP-activated, alpha 2 catalytic subunit (Prkaa2), mRNA [NM_178143]	-1,3	0,4
Tbc1d10c	NM_178650	Mus musculus TBC1 domain family, member 10c (Tbc1d10c), mRNA [NM_178650]	-1,7	0,3
Kif1a	AK220487	Mus musculus mRNA for mKIAA4102 protein [AK220487]	-1,7	0,3
Fndc5	NM_027402	Mus musculus fibronectin type III domain containing 5 (Fndc5), mRNA [NM_027402]	-1,3	0,4
2610528E 23Rik	NM_025599	Mus musculus RIKEN cDNA 2610528E23 gene (2610528E23Rik), mRNA [NM_025599]	-1,5	0,3
Bpgm	NM_007563	Mus musculus 2,3-bisphosphoglycerate mutase (Bpgm), mRNA [NM_007563]	-1,2	0,4
Ppp1r1a	NM_021391	Mus musculus protein phosphatase 1, regulatory (inhibitor) subunit 1A (Ppp1r1a), mRNA [NM_021391]	-1,3	0,4
3110057 O12Rik	NM_026622	Mus musculus RIKEN cDNA 3110057O12 gene (3110057O12Rik), mRNA [NM_026622]	-1,5	0,4
Tmem65	NM_175212	Mus musculus transmembrane protein 65 (Tmem65), mRNA [NM_175212]	-1,3	0,4
Maf	NM_001025577	Mus musculus avian musculoaponeurotic fibrosarcoma (v-maf) AS42 oncogene homolog (Maf), mRNA [NM_001025577]	-1,4	0,4
Tspan8	NM_146010	Mus musculus tetraspanin 8 (Tspan8), mRNA [NM_146010]	-1,5	0,4
0610010D 24Rik	BC043115	Mus musculus RIKEN cDNA 0610010D24 gene, mRNA (cDNA clone MGC:58041 IMAGE:6408630), complete cds [BC043115]	-1,4	0,4
Zfp467	NM_020589	Mus musculus zinc finger protein 467 (Zfp467), transcript variant 1, mRNA [NM_020589]	-1,4	0,4
Prei4	NM_001042672	Mus musculus preimplantation protein 4 (Prei4), transcript variant 4, mRNA [NM_001042672]	-1,3	0,4
Me3	NM_181407	Mus musculus malic enzyme 3, NADP(+)-dependent, mitochondrial (Me3), mRNA [NM_181407]	-1,8	0,3
pPtp4a3	NM_008975	Mus musculus protein tyrosine phosphatase 4a3 (pPtp4a3), mRNA [NM_008975]	-1,4	0,4
Cited4	NM_019563	Mus musculus Cbp/p300-interacting transactivator, with Glu/Asp-rich carboxy-terminal domain, 4 (Cited4), mRNA [NM_019563]	-1,8	0,3
Chac1	NM_026929	Mus musculus ChaC, cation transport regulator-like 1 (E. coli) (Chac1), mRNA [NM_026929]	-1,6	0,3
ENSMUS T0000002 5033	ENSMUST00 000025033	RIKEN cDNA 0610031G08 gene [Source:MarkerSymbol;Acc:MGI:1922643] [ENSMUST00000025033]	-1,7	0,3
Rasgrp3	NM_207246	Mus musculus RAS, guanyl releasing protein 3 (Rasgrp3), mRNA [NM_207246]	-1,5	0,4
Ing2	NM_023503	Mus musculus inhibitor of growth family, member 2 (Ing2), mRNA [NM_023503]	-1,4	0,4
6430571L 13Rik	NM_175486	Mus musculus RIKEN cDNA 6430571L13 gene (6430571L13Rik), mRNA [NM_175486]	-1,7	0,3

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Cryab	NM_009964	Mus musculus crystallin, alpha B (Cryab), mRNA [NM_009964]	-1,3	0,4
Ptx3	NM_008987	Mus musculus pentraxin related gene (Ptx3), mRNA [NM_008987]	-1,5	0,3
Prei4	NM_028802	Mus musculus preimplantation protein 4 (Prei4), transcript variant 2, mRNA [NM_028802]	-1,2	0,4
0610010D24Rik	BC043115	Mus musculus RIKEN cDNA 0610010D24 gene, mRNA (cDNA clone MGC:58041 IMAGE:6408630), complete cds [BC043115]	-1,6	0,3
Ppp1r1a	NM_021391	Mus musculus protein phosphatase 1, regulatory (inhibitor) subunit 1A (Ppp1r1a), mRNA [NM_021391]	-1,4	0,4
Aldh1l2	NM_153543	Mus musculus aldehyde dehydrogenase 1 family, member L2 (Aldh1l2), mRNA [NM_153543]	-1,4	0,4
4930544O15Rik	AK016041	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:4930544O15 product:hypothetical protein, full insert sequence. [AK016041]	-1,7	0,3
Agt	NM_007428	Mus musculus angiotensinogen (serpin peptidase inhibitor, clade A, member 8) (Agt), mRNA [NM_007428]	-1,8	0,3
Dlat	NM_145614	Mus musculus dihydrolipoamide S-acetyltransferase (E2 component of pyruvate dehydrogenase complex) (Dlat), mRNA [NM_145614]	-1,3	0,4
ENSMUSG00000055440	AK046642	Mus musculus 4 days neonate male adipose cDNA, RIKEN full-length enriched library, clone:B430216N15 product:hypothetical protein, full insert sequence. [AK046642]	-1,4	0,4
3110057O12Rik	NM_026622	Mus musculus RIKEN cDNA 3110057O12 gene (3110057O12Rik), mRNA [NM_026622]	-1,5	0,4
Cited4	NM_019563	Mus musculus Cbp/p300-interacting transactivator, with Glu/Asp-rich carboxy-terminal domain, 4 (Cited4), mRNA [NM_019563]	-1,7	0,3
Abcd2	NM_011994	Mus musculus ATP-binding cassette, sub-family D (ALD), member 2 (Abcd2), mRNA [NM_011994]	-1,3	0,4
Syne1	NM_153399	Mus musculus synaptic nuclear envelope 1 (Syne1), transcript variant 1, mRNA [NM_153399]	-2,8	0,1
Cntnap2	NM_001004357	Mus musculus contactin associated protein-like 2 (Cntnap2), transcript variant 1, mRNA [NM_001004357]	-1,8	0,3
Mgst3	AK008211	Mus musculus adult male small intestine cDNA, RIKEN full-length enriched library, clone:2010012L10 product:RIKEN cDNA 2010012L10 gene, full insert sequence. [AK008211]	-1,5	0,4
Ppm1l	NM_178726	Mus musculus protein phosphatase 1 (formerly 2C)-like (Ppm1l), mRNA [NM_178726]	-1,3	0,4
Map2k6	NM_011943	Mus musculus mitogen activated protein kinase kinase 6 (Map2k6), mRNA [NM_011943]	-1,8	0,3
AI790298	BC023699	Mus musculus expressed sequence AI790298, mRNA (cDNA clone MGC:38381 IMAGE:5345551), complete cds. [BC023699]	-1,5	0,4
TC1620610	TC1620610	AF052147 cul-3 {Homo sapiens} (exp=-1; wgp=0; cg=0), partial (27%) [TC1620610]	-1,4	0,4
Adipor1	AK143680	Mus musculus 6 days neonate spleen cDNA, RIKEN full-length enriched library, clone:F430009C20 product:Adiponectin receptor protein 1, full insert sequence [AK143680]	-1,3	0,4
Tbc1d4	NM_001081278	Mus musculus TBC1 domain family, member 4 (Tbc1d4), mRNA [NM_001081278]	-1,9	0,3
Lmbr1	NM_020295	Mus musculus limb region 1 (Lmbr1), mRNA [NM_020295]	-1,1	0,5
Abcb4	NM_008830	Mus musculus ATP-binding cassette, sub-family B (MDR/TAP), member 4 (Abcb4), mRNA [NM_008830]	-1,3	0,4
2010109I03Rik	NM_025929	Mus musculus RIKEN cDNA 2010109I03 gene (2010109I03Rik), mRNA [NM_025929]	-1,7	0,3
Padi2	NM_008812	Mus musculus peptidyl arginine deiminase, type II (Padi2), mRNA [NM_008812]	-1,1	0,5
Hils1	NM_018792	Mus musculus histone H1-like protein in spermatids 1 (Hils1), mRNA [NM_018792]	-1,9	0,3
Six2	NM_011380	Mus musculus sine oculis-related homeobox 2 homolog (Drosophila) (Six2), mRNA [NM_011380]	-1,6	0,3
Ccrn4l	NM_009834	Mus musculus CCR4 carbon catabolite repression 4-like (S. cerevisiae) (Ccrn4l), mRNA [NM_009834]	-1,2	0,4
Amd2	NM_007444	Mus musculus S-adenosylmethionine decarboxylase 2 (Amd2), mRNA [NM_007444]	-1,2	0,4

## Smad4fl/fl

Hpn	NM_008281	Mus musculus hepsin (Hpn), mRNA [NM_008281]	-1,6	0,3
Tcea3	NM_011542	Mus musculus transcription elongation factor A (SII), 3 (Tcea3), mRNA [NM_011542]	-1,3	0,4
Gadd45b	NM_008655	Mus musculus growth arrest and DNA-damage-inducible 45 beta (Gadd45b), mRNA [NM_008655]	-1,3	0,4
Ampd1	NM_001033303	Mus musculus adenosine monophosphate deaminase 1 (isoform M) (Ampd1), mRNA [NM_001033303]	-1,2	0,4
Tirap	AK081514	Mus musculus 16 days embryo head cDNA, RIKEN full-length enriched library, clone:C130027E04 product:toll-interleukin 1 receptor (TIR) domain-containing adaptor protein, full insert sequence [AK081514]	-1,7	0,3
NAP028877-1	NAP028877-1	Unknown	-1,3	0,4
Ptx3	NM_008987	Mus musculus pentraxin related gene (Ptx3), mRNA [NM_008987]	-1,5	0,4
Mrgprh	NM_030726	Mus musculus MAS-related GPR, member H (Mrgprh), mRNA [NM_030726]	-1,7	0,3
Cd59b	NM_181858	Mus musculus CD59b antigen (Cd59b), mRNA [NM_181858]	-1,6	0,3
AK028520	AK028520	Mus musculus 0 day neonate skin cDNA, RIKEN full-length enriched library, clone:4632417G23 product:unclassifiable, full insert sequence. [AK028520]	-1,2	0,4
Lrig1	NM_008377	Mus musculus leucine-rich repeats and immunoglobulin-like domains 1 (Lrig1), mRNA [NM_008377]	-1,4	0,4
Tcea3	NM_011542	Mus musculus transcription elongation factor A (SII), 3 (Tcea3), mRNA [NM_011542]	-1,4	0,4
1110032E23Rik	NM_133187	Mus musculus RIKEN cDNA 1110032E23 gene (1110032E23Rik), mRNA [NM_133187]	-1,2	0,4
Acvr2b	NM_007397	Mus musculus activin receptor IIB (Acvr2b), mRNA [NM_007397]	-1,6	0,3
Maob	NM_172778	Mus musculus monoamine oxidase B (Maob), mRNA [NM_172778]	-1,2	0,4
Cdh4	AK038529	Mus musculus adult male hypothalamus cDNA, RIKEN full-length enriched library, clone:A230026A20 product:unclassifiable, full insert sequence [AK038529]	-1,6	0,3
Snph	NM_198214	Mus musculus syntrophin (Snph), mRNA [NM_198214]	-1,9	0,3
ENSMUSG0000052976	BB609792	BB609792 RIKEN full-length enriched, 18 days embryo Mus musculus cDNA clone 1190008K20 5', mRNA sequence [BB609792]	-1,2	0,4
Sh3kbp1	NM_021389	Mus musculus SH3-domain kinase binding protein 1 (Sh3kbp1), mRNA [NM_021389]	-1,4	0,4
Rab11fip2	NM_001033172	Mus musculus RAB11 family interacting protein 2 (class I) (Rab11fip2), mRNA [NM_001033172]	-1,7	0,3
Znrf1	AK078819	Mus musculus 16 days embryo lung cDNA, RIKEN full-length enriched library, clone:8430426C06 product:hypothetical RING finger containing protein, full insert sequence [AK078819]	-1,2	0,4
Prx	NM_019412	Mus musculus periaxin (Prx), transcript variant 2, mRNA [NM_019412]	-2,2	0,2
Rcsd1	NM_178593	Mus musculus RCSD domain containing 1 (Rcsd1), transcript variant 1, mRNA [NM_178593]	-1,3	0,4
Nek5	NM_177898	Mus musculus NIMA (never in mitosis gene a)-related expressed kinase 5 (Nek5), mRNA [NM_177898]	-1,7	0,3
St3gal6	NM_018784	Mus musculus ST3 beta-galactoside alpha-2,3-sialyltransferase 6 (St3gal6), mRNA [NM_018784]	-1,2	0,4
Pdzx	NM_018832	Mus musculus PDZ domain containing, X chromosome (Pdzx), mRNA [NM_018832]	-1,6	0,3
BC048679	NM_183143	Mus musculus cDNA sequence BC048679 (BC048679), mRNA [NM_183143]	-2,8	0,1
Trim45	NM_194343	Mus musculus tripartite motif-containing 45 (Trim45), mRNA [NM_194343]	-1,6	0,3
G0s2	NM_008059	Mus musculus G0/G1 switch gene 2 (G0s2), mRNA [NM_008059]	-1,4	0,4
AK046172	AK046172	Mus musculus adult male corpora quadrigemina cDNA, RIKEN full-length enriched library, clone:B230346L21 product:unclassifiable, full insert sequence [AK046172]	-1,7	0,3

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Slc2a12	NM_178934	Mus musculus solute carrier family 2 (facilitated glucose transporter), member 12 (Slc2a12), mRNA [NM_178934]	-1,2	0,4
Fzd9	AK021164	Mus musculus 16 days embryo head cDNA, RIKEN full-length enriched library, clone:C130077B15 product:frizzled homolog 9 (Drosophila), full insert sequence. [AK021164]	-1,2	0,4
ENSMUST000000050697	ENSMUST0000050697	RIKEN cDNA 0610009L18 gene [Source:MarkerSymbol;Acc:MGI:1914088] [ENSMUST000000050697]	-1,2	0,4
Trim66	NM_181853	Mus musculus tripartite motif-containing 66 (Trim66), mRNA [NM_181853]	-1,9	0,3
Zic4	AK028305	Mus musculus 17 days embryo head cDNA, RIKEN full-length enriched library, clone:3322402I10 product:zinc finger protein of the cerebellum 4, full insert sequence. [AK028305]	-1,5	0,3
Gpd2	AK080240	Mus musculus adult male aorta and vein cDNA, RIKEN full-length enriched library, clone:A530087K12 product:unclassifiable, full insert sequence [AK080240]	-1,2	0,4
Ces3	NM_053200	Mus musculus carboxylesterase 3 (Ces3), mRNA [NM_053200]	-2,0	0,3
BI100969	BI100969	BI100969 602886295F1 NCI_CGAP_Kid14 Mus musculus cDNA clone IMAGE:5041727 5', mRNA sequence [BI100969]	-1,6	0,3
Metrn	NM_133719	Mus musculus meteorin, glial cell differentiation regulator (Metrn), mRNA [NM_133719]	-1,4	0,4
Tmpo	NM_001080129	Mus musculus thymopoietin (Tmpo), transcript variant 3, mRNA [NM_001080129]	-1,2	0,4
Mmp9	NM_013599	Mus musculus matrix metalloproteinase 9 (Mmp9), mRNA [NM_013599]	-1,2	0,4
NAP094000-00-001	NAP094000-001	Unknown	-1,3	0,4
Tbc1d4	XM_619279	PREDICTED: Mus musculus TBC1 domain family, member 4, transcript variant 2 (Tbc1d4), mRNA [XM_619279]	-1,6	0,3
TC1638459	TC1638459	Q9JIF1_RAT (Q9JIF1) Kalirin-12a, partial (6%) [TC1638459]	-1,6	0,3
Ankrd9	NM_175207	Mus musculus ankyrin repeat domain 9 (Ankrd9), mRNA [NM_175207]	-1,4	0,4
Pick1	AK090155	Mus musculus 15 days embryo brain cDNA, RIKEN full-length enriched library, clone:G630007M13 product:protein that interacts with C kinase 1, full insert sequence. [AK090155]	-1,2	0,4
Tirap	NM_054096	Mus musculus toll-interleukin 1 receptor (TIR) domain-containing adaptor protein (Tirap), mRNA [NM_054096]	-1,7	0,3
Vegfa	NM_009505	Mus musculus vascular endothelial growth factor A (Vegfa), transcript variant 2, mRNA [NM_009505]	-1,1	0,5
6820401H01Rik	AK039998	Mus musculus 0 day neonate thymus cDNA, RIKEN full-length enriched library, clone:A430041H23 product:unclassifiable, full insert sequence. [AK039998]	-1,1	0,5
TC1709027	TC1709027	AMPO_MOUSE (Q8BXQ6) Aminopeptidase O (AP-O) , partial (10%) [TC1626248]	-1,4	0,4
Gmpr	NM_025508	Mus musculus guanosine monophosphate reductase (Gmpr), mRNA [NM_025508]	-1,1	0,5
Igh-6	AK088666	Mus musculus 2 days neonate thymus thymic cells cDNA, RIKEN full-length enriched library, clone:E430023B15 product:immunoglobulin heavy chain 6 (heavy chain of IgM), full insert sequence. [AK088666]	-2,0	0,2
Acsbg1	NM_053178	Mus musculus acyl-CoA synthetase bubblegum family member 1 (Acsbg1), mRNA [NM_053178]	-1,1	0,5
Phkg1	NM_011079	Mus musculus phosphorylase kinase gamma 1 (Phkg1), mRNA [NM_011079]	-1,1	0,5
Gm967	BC099492	Mus musculus gene model 967, (NCBI), mRNA (cDNA clone IMAGE:30843089), partial cds. [BC099492]	-1,4	0,4
Sema6c	NM_011351	Mus musculus sema domain, transmembrane domain (TM), and cytoplasmic domain, (semaphorin) 6C (Sema6c), mRNA [NM_011351]	-1,5	0,4
Sh3kbp1	NM_021389	Mus musculus SH3-domain kinase binding protein 1 (Sh3kbp1), mRNA [NM_021389]	-1,4	0,4
Metrn	NM_133719	Mus musculus meteorin, glial cell differentiation regulator (Metrn), mRNA [NM_133719]	-1,2	0,4
D1Ert622e	NM_133825	Mus musculus DNA segment, Chr 1, ERATO Doi 622, expressed (D1Ert622e), mRNA [NM_133825]	-1,4	0,4
Snrpn	NM_013670	Mus musculus small nuclear ribonucleoprotein N (Snrpn), transcript variant 1, mRNA [NM_013670]	-1,2	0,4

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Cabc1	NM_023341	Mus musculus chaperone, ABC1 activity of bc1 complex like (S. pombe) (Cabc1), mRNA [NM_023341]	-1,1	0,5
Klhl31	NM_172925	Mus musculus kelch-like 31 (Drosophila) (Klhl31), mRNA [NM_172925]	-1,2	0,4
1700020C11Rik	NM_026443	Mus musculus RIKEN cDNA 1700020C11 gene (1700020C11Rik), mRNA [NM_026443]	-1,1	0,5
Asb12	NM_080858	Mus musculus ankyrin repeat and SOCS box-containing protein 12 (Asb12), mRNA [NM_080858]	-1,5	0,4
AK038230	AK038230	Mus musculus 16 days neonate thymus cDNA, RIKEN full-length enriched library, clone:A130088J11 product:unclassifiable, full insert sequence [AK038230]	-1,3	0,4
LOC672434	XR_003860	PREDICTED: Mus musculus similar to S-adenosylmethionine decarboxylase 1 (LOC672434), mRNA [XR_003860]	-1,3	0,4
Nudt6	AK031663	Mus musculus 13 days embryo male testis cDNA, RIKEN full-length enriched library, clone:6030474N20 product:unclassifiable, full insert sequence [AK031663]	-1,1	0,5
Rhobtb2	NM_153514	Mus musculus Rho-related BTB domain containing 2 (Rhobtb2), mRNA [NM_153514]	-1,3	0,4
Apobec2	NM_009694	Mus musculus apolipoprotein B editing complex 2 (Apobec2), mRNA [NM_009694]	-1,1	0,5
Cox10	NM_178379	Mus musculus COX10 homolog, cytochrome c oxidase assembly protein, heme A: farnesyltransferase (yeast) (Cox10), mRNA [NM_178379]	-1,1	0,5
2310076L09Rik	NM_025874	Mus musculus RIKEN cDNA 2310076L09 gene (2310076L09Rik), transcript variant 1, mRNA [NM_025874]	-1,5	0,4
Itn2a	NM_008409	Mus musculus integral membrane protein 2A (Itn2a), mRNA [NM_008409]	-1,1	0,5
Slc37a4	NM_008063	Mus musculus solute carrier family 37 (glucose-6-phosphate transporter), member 4 (Slc37a4), mRNA [NM_008063]	-1,2	0,4
Hpn	NM_008281	Mus musculus hepsin (Hpn), mRNA [NM_008281]	-1,2	0,4
Atp8a1	NM_00103899	Mus musculus ATPase, aminophospholipid transporter (APLT), class I, type 8A, member 1 (Atp8a1), transcript variant 1, mRNA [NM_001038999]	-1,1	0,5
Dmn	NM_201639	Mus musculus desmuslin (Dmn), transcript variant 1, mRNA [NM_201639]	-1,2	0,4
Asb4	NM_023048	Mus musculus ankyrin repeat and SOCS box-containing protein 4 (Asb4), mRNA [NM_023048]	-1,2	0,5
Abcb1b	NM_011075	Mus musculus ATP-binding cassette, sub-family B (MDR/TAP), member 1B (Abcb1b), mRNA [NM_011075]	-1,3	0,4
Ldha	NM_010699	Mus musculus lactate dehydrogenase A (Ldha), mRNA [NM_010699]	-1,1	0,5
2610524H06Rik	NM_181075	Mus musculus RIKEN cDNA 2610524H06 gene (2610524H06Rik), mRNA [NM_181075]	-1,4	0,4
Cmtm5	NM_026066	Mus musculus CKLF-like MARVEL transmembrane domain containing 5 (Cmtm5), mRNA [NM_026066]	-1,3	0,4
AI118078	NM_172923	Mus musculus expressed sequence AI118078 (AI118078), mRNA [NM_172923]	-1,5	0,4
Serpine2	NM_009255	Mus musculus serine (or cysteine) peptidase inhibitor, clade E, member 2 (Serpine2), mRNA [NM_009255]	-1,0	0,5
S100b	NM_009115	Mus musculus S100 protein, beta polypeptide, neural (S100b), mRNA [NM_009115]	-1,7	0,3
Stxbp4	AK031650	Mus musculus 13 days embryo male testis cDNA, RIKEN full-length enriched library, clone:6030470M02 product:unclassifiable, full insert sequence. [AK031650]	-1,2	0,4
Pdlim7	AK033091	Mus musculus 15 days embryo male testis cDNA, RIKEN full-length enriched library, clone:8030406F08 product:LIM-DOMAIN PROTEIN LMP-1 homolog [Rattus norvegicus], full insert sequence. [AK033091]	-1,1	0,5
Spr2g	NM_011473	Mus musculus small proline-rich protein 2G (Spr2g), mRNA [NM_011473]	-1,7	0,3
Txlnb	NM_138628	Mus musculus taxilin beta (Txlnb), mRNA [NM_138628]	-1,2	0,4
2310002L09Rik	AK009124	Mus musculus adult male tongue cDNA, RIKEN full-length enriched library, clone:2310003M01 product:hypothetical protein, full insert sequence. [AK009124]	-1,2	0,4
Ebna1bp2	NM_026932	Mus musculus EBNA1 binding protein 2 (Ebna1bp2), mRNA [NM_026932]	-1,0	0,5

## Smad4<sup>fl/fl</sup>

Pmp22	NM_008885	Mus musculus peripheral myelin protein (Pmp22), mRNA [NM_008885]	-1,3	0,4
Slc9a2	NM_001033289	Mus musculus solute carrier family 9 (sodium/hydrogen exchanger), member 2 (Slc9a2), mRNA [NM_001033289]	-1,2	0,4
Asf1a	NM_025541	Mus musculus ASF1 anti-silencing function 1 homolog A (S. cerevisiae) (Asf1a), mRNA [NM_025541]	-1,1	0,5
Cyp39a1	NM_018887	Mus musculus cytochrome P450, family 39, subfamily a, polypeptide 1 (Cyp39a1), mRNA [NM_018887]	-1,0	0,5
2310014F07Rik	AK009336	Mus musculus adult male tongue cDNA, RIKEN full-length enriched library, clone:2310014F07 product:inferred: RIKEN cDNA 2310014F07 gene, full insert sequence. [AK009336]	-1,7	0,3
Serpina10	AK050552	Mus musculus adult pancreas islet cells cDNA, RIKEN full-length enriched library, clone:C820015H15 product:serine (or cysteine) proteinase inhibitor, clade A (alpha-1 antiproteinase, antitrypsin), member 10, full insert sequence [AK050552]	-1,2	0,4
Homer1	NM_152134	Mus musculus homer homolog 1 (Drosophila) (Homer1), transcript variant d, mRNA [NM_152134]	-1,2	0,4
Ank1	NM_031158	Mus musculus ankyrin 1, erythroid (Ank1), mRNA [NM_031158]	-1,0	0,5
Phtf2	NM_172992	Mus musculus putative homeodomain transcription factor 2 (Phtf2), mRNA [NM_172992]	-1,2	0,4
A230075M04Rik	AK084787	Mus musculus 13 days embryo heart cDNA, RIKEN full-length enriched library, clone:D330042I16 product:unclassifiable, full insert sequence [AK084787]	-1,3	0,4
Vamp5	NM_016872	Mus musculus vesicle-associated membrane protein 5 (Vamp5), transcript variant 1, mRNA [NM_016872]	-1,1	0,5
B230311B06Rik	BB643606	BB643606 RIKEN full-length enriched, adult male corpora quadrigemina Mus musculus cDNA clone B230311B06 5', mRNA sequence [BB643606]	-1,2	0,4
Gdap1	NM_010267	Mus musculus ganglioside-induced differentiation-associated-protein 1 (Gdap1), mRNA [NM_010267]	-2,0	0,2
Eml1	NM_001043335	Mus musculus echinoderm microtubule associated protein like 1 (Eml1), transcript variant 1, mRNA [NM_001043335]	-1,2	0,4
Lpl	NM_008509	Mus musculus lipoprotein lipase (Lpl), mRNA [NM_008509]	-1,1	0,5
Cldn19	NM_153105	Mus musculus claudin 19 (Cldn19), transcript variant 2, mRNA [NM_153105]	-1,3	0,4
Grtp1	NM_025768	Mus musculus GH regulated TBC protein 1 (Grtp1), mRNA [NM_025768]	-1,9	0,3
Nudt4	NM_027722	Mus musculus nudix (nucleoside diphosphate linked moiety X)-type motif 4 (Nudt4), mRNA [NM_027722]	-1,0	0,5
Cib2	NM_019686	Mus musculus calcium and integrin binding family member 2 (Cib2), mRNA [NM_019686]	-1,5	0,3
Aldh1a7	NM_011921	Mus musculus aldehyde dehydrogenase family 1, subfamily A7 (Aldh1a7), mRNA [NM_011921]	-1,8	0,3
C330006P03Rik	AK049142	Mus musculus ES cells cDNA, RIKEN full-length enriched library, clone:C330006P03 product:unclassifiable, full insert sequence [AK049142]	-1,2	0,4
Nepn	NM_025684	Mus musculus neprocan (Nepn), mRNA [NM_025684]	-2,0	0,3
EG621324	XM_885734	PREDICTED: Mus musculus similar to Signal transducer CD24 precursor (M1/69-J11D heat stable antigen) (HSA) (Nectadrin) (Lymphocyte antigen Ly-52) (X62 heat stable antigen) (R13-Ag) (LOC621324), mRNA [XM_885734]	-1,6	0,3
Asb18	NM_139152	Mus musculus ankyrin repeat and SOCS box-containing 18 (Asb18), mRNA [NM_139152]	-1,9	0,3
Bdh1	NM_175177	Mus musculus 3-hydroxybutyrate dehydrogenase, type 1 (Bdh1), mRNA [NM_175177]	-1,4	0,4
Rpp40	NM_145938	Mus musculus ribonuclease P 40 subunit (human) (Rpp40), mRNA [NM_145938]	-1,2	0,4
2310005C01Rik	AK009163	Mus musculus adult male tongue cDNA, RIKEN full-length enriched library, clone:2310005C01 product:unclassifiable, full insert sequence [AK009163]	-1,7	0,3
Cd24a	NM_009846	Mus musculus CD24a antigen (Cd24a), mRNA [NM_009846]	-1,5	0,3
S3-12	NM_020568	Mus musculus plasma membrane associated protein, S3-12 (S3-12), mRNA [NM_020568]	-1,6	0,3
Ube2r2	NM_026275	Mus musculus ubiquitin-conjugating enzyme E2R 2 (Ube2r2), mRNA [NM_026275]	-1,1	0,5

## Smad4f1/f1

AK077350	AK077350	Mus musculus adult male pituitary gland cDNA, RIKEN full-length enriched library, clone:5330434I02 product:unclassifiable, full insert sequence [AK077350]	-1,6	0,3
E330017A01Rik	NM_175011	Mus musculus RIKEN cDNA E330017A01 gene (E330017A01Rik), mRNA [NM_175011]	-1,1	0,5
Sh3bgr	NM_015825	Mus musculus SH3-binding domain glutamic acid-rich protein (Sh3bgr), mRNA [NM_015825]	-1,4	0,4
A_52_P764117	A_52_P764117	Unknown	-2,3	0,2
Aldh1a1	NM_013467	Mus musculus aldehyde dehydrogenase family 1, subfamily A1 (Aldh1a1), mRNA [NM_013467]	-1,4	0,4
Ndufb8	AK028070	Mus musculus adult female placenta cDNA, RIKEN full-length enriched library, clone:1620401I19 product:similar to NADH-UBIQUINONE OXIDOREDUCTASE ASHI SUBUNIT, MITOCHONDRIAL PRECURSOR (EC 1.6.5.3) (EC 1.6.99.3) (COMPLEX I-ASHI) (CI-ASHI) [Bos taurus],...	-1,2	0,4
1700001E04Rik	NM_029288	Mus musculus RIKEN cDNA 1700001E04 gene (1700001E04Rik), mRNA [NM_029288]	-1,2	0,4
Pitpna	NM_008850	Mus musculus phosphatidylinositol transfer protein, alpha (Pitpna), mRNA [NM_008850]	-1,1	0,5
Cycc	NM_007808	Mus musculus cytochrome c, somatic (Cycc), mRNA [NM_007808]	-1,1	0,5
Aqp7	NM_007473	Mus musculus aquaporin 7 (Aqp7), mRNA [NM_007473]	-1,4	0,4
Atp8a2	NM_015803	Mus musculus ATPase, aminophospholipid transporter-like, class I, type 8A, member 2 (Atp8a2), mRNA [NM_015803]	-1,3	0,4
Inhbc	NM_010565	Mus musculus inhibin beta-C (Inhbc), mRNA [NM_010565]	-1,3	0,4
Lpl	NM_008509	Mus musculus lipoprotein lipase (Lpl), mRNA [NM_008509]	-1,1	0,5
Lrrc39	NM_175413	Mus musculus leucine rich repeat containing 39 (Lrrc39), transcript variant 2, mRNA [NM_175413]	-1,5	0,3
NAP000003-006	NAP000003-006	Unknown	-1,1	0,5
Lrp2bp	NM_026278	Mus musculus Lrp2 binding protein (Lrp2bp), mRNA [NM_026278]	-2,0	0,2
Fbxo2	NM_176848	Mus musculus F-box protein 2 (Fbxo2), mRNA [NM_176848]	-1,1	0,5
Khdrbs3	NM_010158	Mus musculus KH domain containing, RNA binding, signal transduction associated 3 (Khdrbs3), mRNA [NM_010158]	-1,0	0,5
Mgst3	AK019197	Mus musculus 11 days embryo whole body cDNA, RIKEN full-length enriched library, clone:2700004G04 product:unclassifiable, full insert sequence. [AK019197]	-1,7	0,3
C2300821Rik	AK082675	Mus musculus 0 day neonate cerebellum cDNA, RIKEN full-length enriched library, clone:C230082121 product:hypothetical protein, full insert sequence. [AK082675]	-1,1	0,5
Slc26a6	NM_134420	Mus musculus solute carrier family 26, member 6 (Slc26a6), mRNA [NM_134420]	-1,1	0,5
AK009488	AK009488	Mus musculus adult male tongue cDNA, RIKEN full-length enriched library, clone:2310024A14 product:unclassifiable, full insert sequence. [AK009488]	-2,0	0,3
Cyp39a1	NM_018887	Mus musculus cytochrome P450, family 39, subfamily a, polypeptide 1 (Cyp39a1), mRNA [NM_018887]	-1,0	0,5
Mtus1	NM_001005863	Mus musculus mitochondrial tumor suppressor 1 (Mtus1), transcript variant 1, mRNA [NM_001005863]	-1,3	0,4
1810014B01Rik	AK090016	Mus musculus brain CRL-1443 BC3H1 cDNA, RIKEN full-length enriched library, clone:G430060N02 product:unclassifiable, full insert sequence [AK090016]	-1,2	0,4
ENSMUSG0000074106	AK155400	Mus musculus NOD-derived CD11c +ve dendritic cells cDNA, RIKEN full-length enriched library, clone:F630224F23 product:hypothetical protein, full insert sequence. [AK155400]	-1,1	0,5
NAP026179-1	NAP026179-1	Unknown	-1,4	0,4
Ric8b	NM_183172	Mus musculus resistance to inhibitors of cholinesterase 8 homolog B (C. elegans) (Ric8b), transcript variant 2, mRNA [NM_183172]	-1,1	0,5
BC034069	BC034069	Mus musculus RIKEN cDNA A830073O21 gene, mRNA (cDNA clone MGC:31276 IMAGE:4217593), complete cds. [BC034069]	-1,2	0,4
Egln1	NM_053207	Mus musculus EGL nine homolog 1 (C. elegans) (Egln1), mRNA [NM_053207]	-1,1	0,5



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Asb10	NM_080444	Mus musculus ankyrin repeat and SOCS box-containing protein 10 (Asb10), mRNA [NM_080444]	-1,4	0,4
BC019731	NM_144914	Mus musculus cDNA sequence BC019731 (BC019731), mRNA [NM_144914]	-1,1	0,5
Igfals	NM_008340	Mus musculus insulin-like growth factor binding protein, acid labile subunit (Igfals), mRNA [NM_008340]	-1,8	0,3
4930544O15Rik	AK016041	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:4930544O15 product:hypothetical protein, full insert sequence. [AK016041]	-1,4	0,4
Zfp41	NM_011759	Mus musculus zinc finger protein 41 (Zfp41), transcript variant 1, mRNA [NM_011759]	-1,3	0,4
Ppm2c	NM_001033453	Mus musculus protein phosphatase 2C, magnesium dependent, catalytic subunit (Ppm2c), mRNA [NM_001033453]	-0,9	0,5
Eif4e	NM_007917	Mus musculus eukaryotic translation initiation factor 4E (Eif4e), mRNA [NM_007917]	-1,1	0,5
Jph2	AK157145	Mus musculus activated spleen cDNA, RIKEN full-length enriched library, clone:F830204M13 product:junctophilin 2, full insert sequence [AK157145]	-1,2	0,4
Narf	NM_026272	Mus musculus nuclear prelamin A recognition factor (Narf), mRNA [NM_026272]	-0,9	0,5
A_52_P2659	A_52_P2659	Unknown	-1,3	0,4
Tceb1	NM_026456	Mus musculus transcription elongation factor B (SIII), polypeptide 1 (Tceb1), mRNA [NM_026456]	-1,0	0,5
Arhgef6	NM_152801	Mus musculus Rac/Cdc42 guanine nucleotide exchange factor (GEF) 6 (Arhgef6), mRNA [NM_152801]	-1,0	0,5
Actr3b	BC053106	Mus musculus ARP3 actin-related protein 3 homolog B (yeast), mRNA (cDNA clone IMAGE:5685374), partial cds [BC053106]	-1,2	0,4
Slc25a12	AK140681	Mus musculus 10 days neonate cerebellum cDNA, RIKEN full-length enriched library, clone:B930088H17 product:unclassifiable, full insert sequence [AK140681]	-1,2	0,4
Prei4	NM_028802	Mus musculus preimplantation protein 4 (Prei4), transcript variant 2, mRNA [NM_028802]	-1,1	0,5
Dennd4b	NM_201407	Mus musculus DENN/MADD domain containing 4B (Dennd4b), mRNA [NM_201407]	-1,0	0,5
Krba1	NM_133922	Mus musculus KRAB-A domain containing 1 (Krba1), mRNA [NM_133922]	-0,9	0,5
Gcat	NM_013847	Mus musculus glycine C-acetyltransferase (2-amino-3-ketobutyrate-coenzyme A ligase) (Gcat), mRNA [NM_013847]	-1,1	0,5
Arrdc2	NM_027560	Mus musculus arrestin domain containing 2 (Arrdc2), mRNA [NM_027560]	-2,5	0,2
Ube2r2	NM_026275	Mus musculus ubiquitin-conjugating enzyme E2R 2 (Ube2r2), mRNA [NM_026275]	-0,9	0,5
Car14	NM_011797	Mus musculus carbonic anhydrase 14 (Car14), mRNA [NM_011797]	-1,2	0,4
Amigo3	NM_177275	Mus musculus adhesion molecule with Ig like domain 3 (Amigo3), mRNA [NM_177275]	-1,2	0,4
A_52_P190357	A_52_P190357	Unknown	-1,4	0,4
Fndc5	NM_027402	Mus musculus fibronectin type III domain containing 5 (Fndc5), mRNA [NM_027402]	-1,1	0,5
Atp8a1	NM_009727	Mus musculus ATPase, aminophospholipid transporter (APLT), class I, type 8A, member 1 (Atp8a1), transcript variant 2, mRNA [NM_009727]	-1,4	0,4
Rhot2	NM_145999	Mus musculus ras homolog gene family, member T2 (Rhot2), mRNA [NM_145999]	-1,0	0,5
Ldhd	NM_027570	Mus musculus lactate dehydrogenase D (Ldhd), mRNA [NM_027570]	-1,3	0,4
Homer1	NM_011982	Mus musculus homer homolog 1 (Drosophila) (Homer1), transcript variant S, mRNA [NM_011982]	-1,2	0,4
Flt3l	NM_013520	Mus musculus FMS-like tyrosine kinase 3 ligand (Flt3l), mRNA [NM_013520]	-2,0	0,2
Art3	NM_181728	Mus musculus ADP-ribosyltransferase 3 (Art3), mRNA [NM_181728]	-1,1	0,5

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Cdc42ep3	NM_026514	Mus musculus CDC42 effector protein (Rho GTPase binding) 3 (Cdc42ep3), mRNA [NM_026514]	-1,2	0,4
Vegfa	NM_009505	Mus musculus vascular endothelial growth factor A (Vegfa), transcript variant 2, mRNA [NM_009505]	-0,9	0,5
1110013L07Rik	NM_001014995	Mus musculus RIKEN cDNA 1110013L07 gene (1110013L07Rik), mRNA [NM_001014995]	-1,1	0,5
Stxbp4	NM_011505	Mus musculus syntaxin binding protein 4 (Stxbp4), mRNA [NM_011505]	-1,1	0,5
Qser1	XM_130565	PREDICTED: Mus musculus glutamine and serine rich 1, transcript variant 1 (Qser1), mRNA [XM_130565]	-1,0	0,5
LOC631366	XM_905147	PREDICTED: Mus musculus similar to Glyceraldehyde-3-phosphate dehydrogenase (GAPDH) (LOC631366), mRNA [XM_905147]	-1,2	0,4
Strbp	NM_009261	Mus musculus spermatid perinuclear RNA binding protein (Strbp), mRNA [NM_009261]	-1,1	0,5
Fn3k	NM_022014	Mus musculus fructosamine 3 kinase (Fn3k), transcript variant 1, mRNA [NM_022014]	-1,6	0,3
Rbm38	NM_019547	Mus musculus RNA binding motif protein 38 (Rbm38), mRNA [NM_019547]	-1,4	0,4
8230402K04Rik	NM_177755	Mus musculus RIKEN cDNA 8230402K04 gene (8230402K04Rik), mRNA [NM_177755]	-1,5	0,4
Fancc	NM_175027	Mus musculus Fanconi anemia, complementation group B (Fancc), mRNA [NM_175027]	-1,1	0,5
AK132852	AK132852	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:4930442F11 product:unclassifiable, full insert sequence. [AK132852]	-1,3	0,4
Rnf157	BC053070	Mus musculus ring finger protein 157, mRNA (cDNA clone IMAGE:6401088) [BC053070]	-1,5	0,4
Snurf	NM_033174	Mus musculus SNRPN upstream reading frame (Snurf), mRNA [NM_033174]	-1,1	0,5
Jph2	NM_021566	Mus musculus junctophilin 2 (Jph2), mRNA [NM_021566]	-1,4	0,4
Pxmp2	NM_008993	Mus musculus peroxisomal membrane protein 2 (Pxmp2), mRNA [NM_008993]	-0,9	0,5
BB667085	BB667085	BB667085 RIKEN full-length enriched, 10, 11 days embryo Mus musculus cDNA clone 2810416G20 3', mRNA sequence [BB667085]	-1,4	0,4
Syne2	NM_00100510	Mus musculus synaptic nuclear envelope 2 (Syne2), mRNA [NM_00100510]	-0,9	0,5
Cpt1b	NM_009948	Mus musculus carnitine palmitoyltransferase 1b, muscle (Cpt1b), mRNA [NM_009948]	-1,1	0,5
Actc1	NM_009608	Mus musculus actin, alpha, cardiac (Actc1), mRNA [NM_009608]	-1,5	0,3
Tpi1	NM_009415	Mus musculus triosephosphate isomerase 1 (Tpi1), mRNA [NM_009415]	-1,0	0,5
Dnm3	NM_001038619	Mus musculus dynamin 3 (Dnm3), mRNA [NM_001038619]	-1,3	0,4
Kctd15	NM_146188	Mus musculus potassium channel tetramerisation domain containing 15 (Kctd15), mRNA [NM_146188]	-1,0	0,5
Ppm2c	AK133542	Mus musculus adult male xiphoid cartilage cDNA, RIKEN full-length enriched library, clone:523040L03 product:[Pyruvate dehydrogenase [Lipoamide]]-phosphatase 1, mitochondrial precursor (EC 3.1.3.43) (PDP 1) (Pyruvate dehydrogenase phosphatase,....	-1,0	0,5
Acaa2	NM_177470	Mus musculus acetyl-Coenzyme A acyltransferase 2 (mitochondrial 3-oxoacyl-Coenzyme A thiolase) (Acaa2), mRNA [NM_177470]	-1,2	0,4
Tuba3a	NM_009446	Mus musculus tubulin, alpha 3A (Tuba3a), mRNA [NM_009446]	-1,4	0,4
Hrasls	NM_013751	Mus musculus HRAS-like suppressor (Hrasls), mRNA [NM_013751]	-1,0	0,5
NAP112590-1	NAP112590-1	Unknown	-1,2	0,4
Ldhb	NM_008492	Mus musculus lactate dehydrogenase B (Ldhb), mRNA [NM_008492]	-1,0	0,5
Retsat	NM_026159	Mus musculus retinol saturase (all trans retinol 13,14 reductase) (Retsat), mRNA [NM_026159]	-1,2	0,4

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Mapk10	NM_009158	Mus musculus mitogen activated protein kinase 10 (Mapk10), transcript variant 1, mRNA [NM_009158]	-1,4	0,4
Phex	NM_011077	Mus musculus phosphate regulating gene with homologies to endopeptidases on the X chromosome (hypophosphatemia, vitamin D resistant rickets) (Phex), mRNA [NM_011077]	-1,2	0,4
Atp8a1	NM_001038999	Mus musculus ATPase, aminophospholipid transporter (APLT), class I, type 8A, member 1 (Atp8a1), transcript variant 1, mRNA [NM_001038999]	-1,3	0,4
Aebp1	NM_009636	Mus musculus AE binding protein 1 (Aebp1), mRNA [NM_009636]	-1,5	0,4
A_51_P383950	A_51_P383950	Unknown	-1,0	0,5
ENSMUSG0000073540	BC022177	Mus musculus cDNA clone MGC:14005 IMAGE:3660311, complete cds. [BC022177]	-0,9	0,5
Snai3	NM_013914	Mus musculus snail homolog 3 (Drosophila) (Snai3), mRNA [NM_013914]	-1,3	0,4
Acss1	NM_080575	Mus musculus acyl-CoA synthetase short-chain family member 1 (Acss1), mRNA [NM_080575]	-1,1	0,5
Ankrd9	NM_175207	Mus musculus ankyrin repeat domain 9 (Ankrd9), mRNA [NM_175207]	-1,2	0,4
Dennd4b	NM_201407	Mus musculus DENN/MADD domain containing 4B (Dennd4b), mRNA [NM_201407]	-1,2	0,4
1810014F10Rik	NM_026928	Mus musculus RIKEN cDNA 1810014F10 gene (1810014F10Rik), mRNA [NM_026928]	-1,1	0,5
Fdft1	NM_010191	Mus musculus farnesyl diphosphate farnesyl transferase 1 (Fdft1), mRNA [NM_010191]	-1,0	0,5
AK052354	AK052354	Mus musculus 13 days embryo heart cDNA, RIKEN full-length enriched library, clone:D330037B11 product:unclassifiable, full insert sequence. [AK052354]	-1,1	0,5
Fundc2	NM_026126	Mus musculus FUN14 domain containing 2 (Fundc2), mRNA [NM_026126]	-0,9	0,5
Gpt1	NM_182805	Mus musculus glutamic pyruvic transaminase 1, soluble (Gpt1), mRNA [NM_182805]	-0,9	0,5

# Supplementary Table 6

## Gene expression profile

### Smad4-/-

Gene Name	Systematic Name	Description	Log2 den/contr	FoldChange den/contr
Col19a1	NM_007733	Mus musculus procollagen, type XIX, alpha 1 (Col19a1), mRNA [NM_007733]	7,6	198,09
Mfsd7	NM_172883	Mus musculus major facilitator superfamily domain containing 7 (Mfsd7), mRNA [NM_172883]	5,5	46,60
2810003 C17Rik	NM_145144	Mus musculus RIKEN cDNA 2810003C17 gene (2810003C17Rik), mRNA [NM_145144]	5,3	40,66
Plekhh1	AK052692	Mus musculus 0 day neonate kidney cDNA, RIKEN full-length enriched library, clone:D630024D12 product:hypothetical Band 4.1 family/Core domain in kinesin and myosin motors/Pleckstrin homology (PH) domain containing protein, full insert sequence....	5,9	58,34
Cdkn1a	NM_007669	Mus musculus cyclin-dependent kinase inhibitor 1A (P21) (Cdkn1a), mRNA [NM_007669]	5,0	32,55
Emb	NM_010330	Mus musculus embigin (Emb), mRNA [NM_010330]	5,8	56,60
Chrnd	NM_021600	Mus musculus cholinergic receptor, nicotinic, delta polypeptide (Chrnd), mRNA [NM_021600]	5,4	41,88
Chrna1	NM_007389	Mus musculus cholinergic receptor, nicotinic, alpha polypeptide 1 (muscle) (Chrna1), mRNA [NM_007389]	4,7	25,77
Tekt1	NM_011569	Mus musculus tektin 1 (Tekt1), mRNA [NM_011569]	5,0	31,70
Col19a1	NM_007733	Mus musculus procollagen, type XIX, alpha 1 (Col19a1), mRNA [NM_007733]	6,9	118,65
Sh3d19	D89677	Mus musculus SH3d19 mRNA for SH3 domain protein D19, complete cds. [D89677]	4,8	27,44
Nrcam	NM_176930	Mus musculus neuron-glia-CAM-related cell adhesion molecule (Nrcam), mRNA [NM_176930]	7,1	141,57
Lpin2	AK012110	Mus musculus 10 days embryo whole body cDNA, RIKEN full-length enriched library, clone:2610511G02 product:unclassifiable, full insert sequence [AK012110]	4,4	21,78
Micall2	NM_174850	Mus musculus MICAL-like 2 (Micall2), mRNA [NM_174850]	5,4	42,17
Agmat	NM_001081408	Mus musculus agmatine ureohydrolase (agmatinase) (Agmat), mRNA [NM_001081408]	6,1	67,40
2810439 F02Rik	NM_028341	Mus musculus RIKEN cDNA 2810439F02 gene (2810439F02Rik), mRNA [NM_028341]	4,3	19,07
Emb	NM_010330	Mus musculus embigin (Emb), mRNA [NM_010330]	5,8	56,43
Uchl1	NM_011670	Mus musculus ubiquitin carboxy-terminal hydrolase L1 (Uchl1), mRNA [NM_011670]	4,0	16,18
Tnfrsf22	NM_023680	Mus musculus tumor necrosis factor receptor superfamily, member 22 (Tnfrsf22), mRNA [NM_023680]	3,7	12,73
Atp13a3	XM_994902	PREDICTED: Mus musculus ATPase type 13A3, transcript variant 6 (Atp13a3), mRNA [XM_994902]	4,8	27,48
Fez1	NM_183171	Mus musculus fasciculation and elongation protein zeta 1 (zygin I) (Fez1), mRNA [NM_183171]	4,3	19,46
Gadd45a	NM_007836	Mus musculus growth arrest and DNA-damage-inducible 45 alpha (Gadd45a), mRNA [NM_007836]	4,5	22,75
Tnnt2	NM_011619	Mus musculus troponin T2, cardiac (Tnnt2), mRNA [NM_011619]	4,2	17,84
Serinc5	NM_172588	Mus musculus serine incorporator 5 (Serinc5), mRNA [NM_172588]	4,4	21,16
Gdf5	NM_008109	Mus musculus growth differentiation factor 5 (Gdf5), mRNA [NM_008109]	5,8	54,85
Garnl4	NM_001015046	Mus musculus GTPase activating RANGAP domain-like 4 (Garnl4), mRNA [NM_001015046]	3,8	14,19
Ttc9	NM_001033149	Mus musculus tetratricopeptide repeat domain 9 (Ttc9), mRNA [NM_001033149]	4,4	21,30
Chrna1	NM_007389	Mus musculus cholinergic receptor, nicotinic, alpha polypeptide 1 (muscle) (Chrna1), mRNA [NM_007389]	4,4	20,69
Arpp21	NM_028755	Mus musculus cyclic AMP-regulated phosphoprotein, 21 (Arpp21), transcript variant 1, mRNA [NM_028755]	4,5	23,18

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Ropn1l	NM_145852	Mus musculus ropporin 1-like (Ropn1l), mRNA [NM_145852]	4,3	19,51
Tekt1	NM_011569	Mus musculus tektin 1 (Tekt1), mRNA [NM_011569]	4,7	26,30
Tro	NM_019548	Mus musculus trophinin (Tro), transcript variant 3, mRNA [NM_019548]	3,6	12,47
Ugcg	NM_011673	Mus musculus UDP-glucose ceramide glucosyltransferase (Ugcg), mRNA [NM_011673]	4,3	19,19
Tro	NM_019548	Mus musculus trophinin (Tro), transcript variant 3, mRNA [NM_019548]	4,1	17,60
Chrng	NM_009604	Mus musculus cholinergic receptor, nicotinic, gamma polypeptide (Chrng), mRNA [NM_009604]	8,1	279,47
Cgref1	BC023116	Mus musculus cell growth regulator with EF hand domain 1, mRNA (cDNA clone MGC:28551 IMAGE:4206019), complete cds. [BC023116]	4,7	25,93
Scn5a	NM_021544	Mus musculus sodium channel, voltage-gated, type V, alpha (Scn5a), mRNA [NM_021544]	6,9	121,11
Rrad	NM_019662	Mus musculus Ras-related associated with diabetes (Rrad), mRNA [NM_019662]	6,0	62,95
Arpp21	NM_033264	Mus musculus cyclic AMP-regulated phosphoprotein, 21 (Arpp21), transcript variant 2, mRNA [NM_033264]	3,2	9,49
9830123M21Rik	BC107027	Mus musculus RIKEN cDNA 9830123M21 gene, mRNA (cDNA clone MGC:129490 IMAGE:40050318), complete cds. [BC107027]	7,5	180,07
ENSMUST0000103416	ENSMUST0000103416	Immunoglobulin heavy chain C gene segment [Source:IMG/GENE_DB;Acc:IGHG2C] [ENSMUST00000103416]	5,1	35,27
6330442E10Rik	NM_178745	Mus musculus RIKEN cDNA 6330442E10 gene (6330442E10Rik), mRNA [NM_178745]	4,3	19,09
Myl4	NM_010858	Mus musculus myosin, light polypeptide 4 (Myl4), mRNA [NM_010858]	4,4	21,55
Myl4	NM_010858	Mus musculus myosin, light polypeptide 4 (Myl4), mRNA [NM_010858]	4,6	24,00
Eda2r	AK029268	Mus musculus 0 day neonate head cDNA, RIKEN full-length enriched library, clone:4832407L12 product:inferred: X-linked ectodysplasin-A2 receptor (Homo sapiens), full insert sequence [AK029268]	4,1	17,08
Ugcg	NM_011673	Mus musculus UDP-glucose ceramide glucosyltransferase (Ugcg), mRNA [NM_011673]	3,7	13,05
Osbpl5	NM_024289	Mus musculus oxysterol binding protein-like 5 (Osbpl5), mRNA [NM_024289]	2,8	7,08
Ropn1l	NM_145852	Mus musculus ropporin 1-like (Ropn1l), mRNA [NM_145852]	4,4	21,26
Mt2	NM_008630	Mus musculus metallothionein 2 (Mt2), mRNA [NM_008630]	3,2	9,21
Tmem100	NM_026433	Mus musculus transmembrane protein 100 (Tmem100), mRNA [NM_026433]	3,6	12,16
Ankrd1	NM_013468	Mus musculus ankyrin repeat domain 1 (cardiac muscle) (Ankrd1), mRNA [NM_013468]	4,9	30,00
Ugcg	BC050828	Mus musculus UDP-glucose ceramide glucosyltransferase, mRNA (cDNA clone MGC:59317 IMAGE:6512920), complete cds [BC050828]	3,9	14,65
Hes6	NM_019479	Mus musculus hairy and enhancer of split 6 (Drosophila) (Hes6), mRNA [NM_019479]	2,8	6,81
ENSMUST0000032357	ENSMUST0000032357	pleckstrin homology domain containing, family A member 5 [Source:MarkerSymbol;Acc:MGI:1923802] [ENSMUST0000032357]	3,6	11,98
A_52_P1004880	A_52_P1004880	Unknown	7,5	175,91
Arhgdig	NM_008113	Mus musculus Rho GDP dissociation inhibitor (GDI) gamma (Arhgdig), mRNA [NM_008113]	4,0	15,54
Krt8	NM_031170	Mus musculus keratin 8 (Krt8), mRNA [NM_031170]	8,5	366,05
Tmem100	AK033406	Mus musculus 16 days embryo lung cDNA, RIKEN full-length enriched library, clone:8430438E03 product:hypothetical protein, full insert sequence. [AK033406]	3,4	10,43
Myom3	XM_144099	PREDICTED: Mus musculus myomesin family, member 3 (Myom3), mRNA [XM_144099]	3,1	8,46

## Smad4-/-

Ankrd10	NM_133971	Mus musculus ankyrin repeat domain 10 (Ankrd10), mRNA [NM_133971]	3,8	13,59
Myh3	XM_354614	PREDICTED: Mus musculus myosin, heavy polypeptide 3, skeletal muscle, embryonic (Myh3), mRNA [XM_354614]	4,7	25,70
Snf1lk	NM_010831	Mus musculus SNF1-like kinase (Snf1lk), mRNA [NM_010831]	3,5	11,52
Myh3	XM_354614	PREDICTED: Mus musculus myosin, heavy polypeptide 3, skeletal muscle, embryonic (Myh3), mRNA [XM_354614]	4,5	21,98
Fads3	NM_021890	Mus musculus fatty acid desaturase 3 (Fads3), mRNA [NM_021890]	3,1	8,33
Sh3rf1	NM_021506	Mus musculus SH3 domain containing ring finger 1 (Sh3rf1), mRNA [NM_021506]	3,5	11,34
Stx11	AK017897	Mus musculus adult male thymus cDNA, RIKEN full-length enriched library, clone:5830405C08 product:SYNTAXIN 11 homolog [Homo sapiens], full insert sequence. [AK017897]	4,4	21,44
Igfbp2	NM_008342	Mus musculus insulin-like growth factor binding protein 2 (Igfbp2), mRNA [NM_008342]	6,9	117,42
Tmem158	NM_001002267	Mus musculus transmembrane protein 158 (Tmem158), mRNA [NM_001002267]	4,0	15,81
Tubb6	NM_026473	Mus musculus tubulin, beta 6 (Tubb6), mRNA [NM_026473]	3,4	10,34
Tiam2	NM_011878	Mus musculus T-cell lymphoma invasion and metastasis 2 (Tiam2), mRNA [NM_011878]	3,6	11,81
4930524J08Rik	ENSMUST0000046721	RIKEN cDNA 4930524J08 gene [Source:MarkerSymbol;Acc:MGI:1922379] [ENSMUST0000046721]	3,4	10,79
Runx1	NM_009821	Mus musculus runt related transcription factor 1 (Runx1), mRNA [NM_009821]	6,4	81,81
Dnajb3	NM_008299	Mus musculus DnaJ (Hsp40) homolog, subfamily B, member 3 (Dnajb3), mRNA [NM_008299]	3,0	8,13
Gsdm1	NM_021347	Mus musculus gasdermin 1 (Gsdm1), mRNA [NM_021347]	3,4	10,75
Chrg	NM_009604	Mus musculus cholinergic receptor, nicotinic, gamma polypeptide (Chrg), mRNA [NM_009604]	4,1	17,31
TC1663452	TC1663452	Q46T80_RALEJ (Q46T80) Twin-arginine translocation pathway signal, partial (5%) [TC1663452]	3,9	15,17
Ptgfrn	NM_011197	Mus musculus prostaglandin F2 receptor negative regulator (Ptgfrn), mRNA [NM_011197]	3,2	9,51
Micall1	AK031386	Mus musculus 13 days embryo male testis cDNA, RIKEN full-length enriched library, clone:6030419L17 product:DNA Segment, Chr 15 Massachusetts Institute of Technology 260, full insert sequence. [AK031386]	3,6	12,41
Samd8	NM_026283	Mus musculus sterile alpha motif domain containing 8 (Samd8), mRNA [NM_026283]	2,7	6,57
Olfml2a	AK030069	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:4932431K08 product:weakly similar to HYPOTHETICAL 48.4 KDA PROTEIN (FRAGMENT) [Homo sapiens], full insert sequence [AK030069]	3,0	7,98
4921511K06Rik	BC006583	Mus musculus RIKEN cDNA 4921511K06 gene, mRNA (cDNA clone IMAGE:3587121), complete cds. [BC006583]	2,8	7,16
Eda2r	NM_175540	Mus musculus ectodysplasin A2 isoform receptor (Eda2r), mRNA [NM_175540]	3,5	11,68
Hdac4	NM_207225	Mus musculus histone deacetylase 4 (Hdac4), mRNA [NM_207225]	2,9	7,48
Eda2r	AK049134	Mus musculus ES cells cDNA, RIKEN full-length enriched library, clone:C330006C18 product:Similar to X-LINKED ECTODYSPLASIN-A RECEPTOR [Homo sapiens], full insert sequence. [AK049134]	3,4	10,30
Arhgdig	NM_008113	Mus musculus Rho GDP dissociation inhibitor (GDI) gamma (Arhgdig), mRNA [NM_008113]	3,8	14,11
Gpr115	AK019508	Mus musculus 0 day neonate skin cDNA, RIKEN full-length enriched library, clone:4632435A09 product:hypothetical GPS domain/G-protein coupled receptors family 2 (secretin-like) containing protein, full insert sequence. [AK019508]	4,5	21,98
AK048349	AK048349	Mus musculus 16 days embryo head cDNA, RIKEN full-length enriched library, clone:C130051M16 product:SNF1-like kinase, full insert sequence. [AK048349]	3,9	14,82
Rb1	NM_009029	Mus musculus retinoblastoma 1 (Rb1), mRNA [NM_009029]	2,6	6,25
Rtn4	NM_194054	Mus musculus reticulon 4 (Rtn4), transcript variant 1, mRNA [NM_194054]	3,5	11,45

## Smad4-/-

Spag1	NM_012031	Mus musculus sperm associated antigen 1 (Spag1), mRNA [NM_012031]	3,5	11,24
5730419 F03Rik	AK017575	Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730419F03 product:unclassifiable, full insert sequence. [AK017575]	5,5	45,87
Krt8	NM_031170	Mus musculus keratin 8 (Krt8), mRNA [NM_031170]	8,8	451,57
Il20rb	NM_0010335 43	Mus musculus interleukin 20 receptor beta (Il20rb), transcript variant 2, mRNA [NM_001033543]	4,2	18,33
Scml4	NM_172938	Mus musculus sex comb on midleg-like 4 (Drosophila) (Scml4), mRNA [NM_172938]	4,2	18,49
TC16654 19	TC1665419	RRRPL3 ribosomal protein L3 {Rattus rattus} (exp=-1; wgp=0; cg=0), partial (30%) [TC1665419]	3,0	8,07
Galnt7	NM_144731	Mus musculus UDP-N-acetyl-alpha-D-galactosamine: polypeptide N-acetylgalactosaminyltransferase 7 (Galnt7), mRNA [NM_144731]	3,2	9,45
Cd82	NM_007656	Mus musculus CD82 antigen (Cd82), mRNA [NM_007656]	2,8	6,91
Slc4a3	AK161240	Mus musculus 0 day neonate head cDNA, RIKEN full-length enriched library, clone:4833445E16 product:hypothetical protein, full insert sequence. [AK161240]	3,7	12,96
Krt18	NM_010664	Mus musculus keratin 18 (Krt18), mRNA [NM_010664]	7,7	214,23
Cpne2	NM_153507	Mus musculus copine II (Cpne2), mRNA [NM_153507]	4,2	19,02
2900073 G15Rik	NM_026064	Mus musculus RIKEN cDNA 2900073G15 gene (2900073G15Rik), mRNA [NM_026064]	2,7	6,53
Sh3d19	NM_0010824 14	Mus musculus SH3 domain protein D19 (Sh3d19), mRNA [NM_001082414]	4,0	16,17
Lrrn1	NM_008516	Mus musculus leucine rich repeat protein 1, neuronal (Lrrn1), mRNA [NM_008516]	3,8	13,62
Tnfrsf23	NM_024290	Mus musculus tumor necrosis factor receptor superfamily, member 23 (Tnfrsf23), mRNA [NM_024290]	3,5	11,15
Dlgap4	NM_146128	Mus musculus discs, large homolog-associated protein 4 (Drosophila) (Dlgap4), transcript variant 1, mRNA [NM_146128]	2,8	6,73
Efs	NM_010112	Mus musculus embryonal Fyn-associated substrate (Efs), mRNA [NM_010112]	3,5	11,17
Trp63	NM_011641	Mus musculus transformation related protein 63 (Trp63), mRNA [NM_011641]	3,7	12,78
1600002 O04Rik	AK166269	Mus musculus mammary gland RCB-0526 Jyg-MC(A) cDNA, RIKEN full-length enriched library, clone:G830027E16 product:hypothetical protein, full insert sequence [AK166269]	3,9	14,67
Mdm4	AK046448	Mus musculus adult male corpora quadrigemina cDNA, RIKEN full-length enriched library, clone:B230385P13 product:inferred: transformed mouse 3T3 cell double minute 4, full insert sequence [AK046448]	3,5	11,70
Pvr	NM_027514	Mus musculus poliovirus receptor (Pvr), mRNA [NM_027514]	3,0	8,15
Itpkc	NM_181593	Mus musculus inositol 1,4,5-trisphosphate 3-kinase C (Itpkc), mRNA [NM_181593]	2,9	7,44
Ces2	NM_145603	Mus musculus carboxylesterase 2 (Ces2), mRNA [NM_145603]	5,2	37,32
Ptprd	NM_0010142 88	Mus musculus protein tyrosine phosphatase, receptor type, D (Ptprd), transcript variant a, mRNA [NM_001014288]	3,1	8,40
Tmem18 1	NM_0010331 78	Mus musculus transmembrane protein 181 (Tmem181), mRNA [NM_001033178]	2,5	5,70
Hpgd	NM_008278	Mus musculus hydroxyprostaglandin dehydrogenase 15 (NAD) (Hpgd), mRNA [NM_008278]	4,6	24,32
E430014 L09Rik	AK033357	Mus musculus 16 days embryo lung cDNA, RIKEN full-length enriched library, clone:8430403D15 product:unclassifiable, full insert sequence [AK033357]	3,3	9,83
Camk2n2	AK013788	Mus musculus adult male hippocampus cDNA, RIKEN full-length enriched library, clone:2900075A18 product:CAM-KII INHIBITORY PROTEIN homolog [Homo sapiens], full insert sequence. [AK013788]	2,8	6,83
Rrm2	NM_009104	Mus musculus ribonucleotide reductase M2 (Rrm2), mRNA [NM_009104]	2,9	7,46
Mdm4	AK046448	Mus musculus adult male corpora quadrigemina cDNA, RIKEN full-length enriched library, clone:B230385P13 product:inferred: transformed mouse 3T3 cell double minute 4, full insert sequence [AK046448]	3,4	10,63

## Smad4-/-

E2f8	NM_001013368	Mus musculus E2F transcription factor 8 (E2f8), mRNA [NM_001013368]	3,6	11,73
Uchl1	NM_011670	Mus musculus ubiquitin carboxy-terminal hydrolase L1 (Uchl1), mRNA [NM_011670]	4,1	17,58
BC015286	NM_198171	Mus musculus cDNA sequence BC015286 (BC015286), mRNA [NM_198171]	5,1	34,82
Napb	NM_019632	Mus musculus N-ethylmaleimide sensitive fusion protein attachment protein beta (Napb), mRNA [NM_019632]	2,3	5,00
Gpnmb	NM_053110	Mus musculus glycoprotein (transmembrane) nmb (Gpnmb), mRNA [NM_053110]	3,1	8,76
Fads3	NM_021890	Mus musculus fatty acid desaturase 3 (Fads3), mRNA [NM_021890]	2,9	7,23
Klhl5	BC057606	Mus musculus kelch-like 5 (Drosophila), mRNA (cDNA clone MGC:67318 IMAGE:6402367), complete cds. [BC057606]	2,5	5,70
2610301F02Rik	AK053175	Mus musculus 0 day neonate lung cDNA, RIKEN full-length enriched library, clone:E030025K17 product:hypothetical protein, full insert sequence [AK053175]	3,4	10,87
Ifitm6	NM_001033632	Mus musculus interferon induced transmembrane protein 6 (Ifitm6), mRNA [NM_001033632]	3,2	8,97
Sln	NM_025540	Mus musculus sarcolipin (Sln), mRNA [NM_025540]	4,7	26,48
Scx	NM_198885	Mus musculus scleraxis (Scx), mRNA [NM_198885]	3,2	9,33
Tuft1	NM_011656	Mus musculus tuftelin 1 (Tuft1), mRNA [NM_011656]	3,3	10,03
Ptprd	NM_011211	Mus musculus protein tyrosine phosphatase, receptor type, D (Ptprd), transcript variant b, mRNA [NM_011211]	3,2	9,28
Garl4	NM_001015046	Mus musculus GTPase activating RANGAP domain-like 4 (Garl4), mRNA [NM_001015046]	3,3	9,60
Rhoc	NM_007484	Mus musculus ras homolog gene family, member C (Rhoc), mRNA [NM_007484]	2,7	6,72
Pvr	NM_027514	Mus musculus poliovirus receptor (Pvr), mRNA [NM_027514]	2,7	6,43
Cdkn1c	NM_009876	Mus musculus cyclin-dependent kinase inhibitor 1C (P57) (Cdkn1c), mRNA [NM_009876]	3,6	12,20
AK040334	AK040334	Mus musculus 0 day neonate thymus cDNA, RIKEN full-length enriched library, clone:A430087L06 product:SIMILAR TO TUMOR-ASSOCIATED ANTIGEN 1, full insert sequence. [AK040334]	2,8	7,20
Pcbd1	NM_025273	Mus musculus pterin 4 alpha carbinolamine dehydratase/dimerization cofactor of hepatocyte nuclear factor 1 alpha (TCF1) 1 (Pcbd1), mRNA [NM_025273]	2,6	6,18
AK039509	AK039509	Mus musculus adult male spinal cord cDNA, RIKEN full-length enriched library, clone:A330052N07 product:unclassifiable, full insert sequence. [AK039509]	2,2	4,58
Myf6	NM_008657	Mus musculus myogenic factor 6 (Myf6), mRNA [NM_008657]	2,7	6,45
Gsdm1	NM_021347	Mus musculus gasdermin 1 (Gsdm1), mRNA [NM_021347]	3,2	9,41
Lmna	NM_019390	Mus musculus lamin A (Lmna), transcript variant 2, mRNA [NM_019390]	2,2	4,59
Ccdc93	NM_001025156	Mus musculus coiled-coil domain containing 93 (Ccdc93), transcript variant 1, mRNA [NM_001025156]	2,4	5,31
Rufy3	NM_027530	Mus musculus RUN and FYVE domain containing 3 (Rufy3), mRNA [NM_027530]	3,3	10,18
Trit1	NM_025873	Mus musculus tRNA isopentenyltransferase 1 (Trit1), mRNA [NM_025873]	2,3	4,84
Camk2d	NM_023813	Mus musculus calcium/calmodulin-dependent protein kinase II, delta (Camk2d), transcript variant 3, mRNA [NM_023813]	2,4	5,22
Sema6a	NM_018744	Mus musculus sema domain, transmembrane domain (TM), and cytoplasmic domain, (semaphorin) 6A (Sema6a), mRNA [NM_018744]	3,3	9,91
Gramd1a	NM_027898	Mus musculus GRAM domain containing 1A (Gramd1a), mRNA [NM_027898]	2,8	7,11
Acsl6	NM_144823	Mus musculus acyl-CoA synthetase long-chain family member 6 (Acsl6), transcript variant 1, mRNA [NM_144823]	3,1	8,67



## Smad4-/-

Spg21	NM_138584	Mus musculus spastic paraplegia 21 homolog (human) (Spg21), mRNA [NM_138584]	2,6	5,88
Irak2	NM_172161	Mus musculus interleukin-1 receptor-associated kinase 2 (Irak2), mRNA [NM_172161]	2,3	4,76
Traf3ip3	NM_153137	Mus musculus TRAF3 interacting protein 3 (Traf3ip3), mRNA [NM_153137]	3,6	12,28
Galnt7	NM_144731	Mus musculus UDP-N-acetyl-alpha-D-galactosamine: polypeptide N-acetylgalactosaminyltransferase 7 (Galnt7), mRNA [NM_144731]	3,4	10,43
Sox9	NM_011448	Mus musculus SRY-box containing gene 9 (Sox9), mRNA [NM_011448]	2,8	6,87
Hpgd	NM_008278	Mus musculus hydroxyprostaglandin dehydrogenase 15 (NAD) (Hpgd), mRNA [NM_008278]	4,6	23,67
Plekha5	NM_144920	Mus musculus pleckstrin homology domain containing, family A member 5 (Plekha5), mRNA [NM_144920]	3,1	8,66
Kcnq5	AK147264	Mus musculus cDNA, RIKEN full-length enriched library, clone:M5C1004G17 product:potassium voltage-gated channel, subfamily Q, member 5, full insert sequence. [AK147264]	2,8	7,00
AK147274	AK147274	Mus musculus 14 days pregnant adult female placenta cDNA, RIKEN full-length enriched library, clone:M5C1005I09 product:Warning: possibly chimeric clone, full insert sequence. [AK147274]	2,7	6,52
Btg1	NM_007569	Mus musculus B-cell translocation gene 1, anti-proliferative (Btg1), mRNA [NM_007569]	2,4	5,45
Ifitm7	NM_028968	Mus musculus interferon induced transmembrane protein 7 (Ifitm7), mRNA [NM_028968]	2,7	6,28
3110050N2 2Rik	NM_173181	Mus musculus RIKEN cDNA 3110050N22 gene (3110050N22Rik), mRNA [NM_173181]	2,3	4,94
Fhl4	NM_010214	Mus musculus four and a half LIM domains 4 (Fhl4), mRNA [NM_010214]	2,8	6,93
Pgm5	NM_175013	Mus musculus phosphoglucomutase 5 (Pgm5), mRNA [NM_175013]	3,2	9,10
Kctd7	NM_172509	Mus musculus potassium channel tetramerisation domain containing 7 (Kctd7), mRNA [NM_172509]	2,3	5,08
Sh3d19	NM_0010824 14	Mus musculus SH3 domain protein D19 (Sh3d19), mRNA [NM_001082414]	3,6	11,76
Ptprd	D13903	Mus musculus mRNA for MPTPdelta, complete cds. [D13903]	2,9	7,39
Tec	NM_013689	Mus musculus cytoplasmic tyrosine kinase, Dscr28C related (Drosophila) (Tec), mRNA [NM_013689]	2,6	5,86
Ifitm3	NM_025378	Mus musculus interferon induced transmembrane protein 3 (Ifitm3), mRNA [NM_025378]	2,7	6,58
Wibg	NM_030100	Mus musculus within bgcn homolog (Drosophila) (Wibg), mRNA [NM_030100]	3,2	9,19
Sreb2	BC069989	Mus musculus sterol regulatory element binding factor 2, mRNA (cDNA clone IMAGE:6508725), complete cds. [BC069989]	2,4	5,12
Acot6	ENSMUST00 000056822	acyl-CoA thioesterase 6 [Source:MarkerSymbol;Acc:MGI:1921287] [ENSMUST00000056822]	2,4	5,14
Ivns1abp	NM_0010395 11	Mus musculus influenza virus NS1A binding protein (Ivns1abp), transcript variant 1, mRNA [NM_001039511]	3,0	8,01
Dll1	NM_007865	Mus musculus delta-like 1 (Drosophila) (Dll1), mRNA [NM_007865]	3,1	8,51
Maged1	NM_019791	Mus musculus melanoma antigen, family D, 1 (Maged1), mRNA [NM_019791]	2,5	5,74
Col7a1	NM_007738	Mus musculus procollagen, type VII, alpha 1 (Col7a1), mRNA [NM_007738]	3,3	9,95
Ampd3	NM_009667	Mus musculus AMP deaminase 3 (Ampd3), mRNA [NM_009667]	2,7	6,45
Rufy3	NM_027530	Mus musculus RUN and FYVE domain containing 3 (Rufy3), mRNA [NM_027530]	2,6	5,89
ENSMUSG 000000693 72	AK042789	Mus musculus 7 days neonate cerebellum cDNA, RIKEN full-length enriched library, clone:A730024G14 product:weakly similar to CORTEXIN [Rattus norvegicus], full insert sequence. [AK042789]	3,2	9,37
Mmel1	NM_013783	Mus musculus membrane metallo-endopeptidase-like 1 (Mmel1), mRNA [NM_013783]	5,2	35,87

## Smad4-/-

Cxcr6	NM_030712	Mus musculus chemokine (C-X-C motif) receptor 6 (Cxcr6), mRNA [NM_030712]	2,9	7,69
Epgn	NM_053087	Mus musculus epithelial mitogen (Epgn), mRNA [NM_053087]	3,6	12,16
Tubb2a	NM_009450	Mus musculus tubulin, beta 2a (Tubb2a), mRNA [NM_009450]	3,1	8,40
Cetn4	NM_145825	Mus musculus centrin 4 (Cetn4), mRNA [NM_145825]	2,4	5,24
Eef1a1	NM_010106	Mus musculus eukaryotic translation elongation factor 1 alpha 1 (Eef1a1), mRNA [NM_010106]	2,2	4,71
AK027992	AK027992	Mus musculus 18-day embryo whole body cDNA, RIKEN full-length enriched library, clone:1110064113 product:unclassifiable, full insert sequence. [AK027992]	3,6	11,89
Pik3r3	NM_181585	Mus musculus phosphatidylinositol 3 kinase, regulatory subunit, polypeptide 3 (p5) (Pik3r3), mRNA [NM_181585]	2,5	5,81
Pvr	NM_027514	Mus musculus poliovirus receptor (Pvr), mRNA [NM_027514]	2,4	5,36
Sdad1	NM_172713	Mus musculus SDA1 domain containing 1 (Sdad1), mRNA [NM_172713]	2,0	4,08
AK144717	AK144717	Mus musculus lung RCB-0558 LLC cDNA, RIKEN full-length enriched library, clone:G730026111 product:unclassifiable, full insert sequence [AK144717]	4,6	24,32
Bid	NM_007544	Mus musculus BH3 interacting domain death agonist (Bid), mRNA [NM_007544]	2,4	5,43
ENSMUST00000100796	ENSMUST000100796	two pore channel 1 [Source:MarkerSymbol;Acc:MGI:2182472] [ENSMUST00000100796]	2,4	5,31
BQ444971	BQ444971	UI-M-ER0-bxp-c-17-0-UI.r1 NIH_BMAP_ER0 Mus musculus cDNA clone IMAGE:5711176 5', mRNA sequence [BQ444971]	2,4	5,18
Ttyh1	NM_021324	Mus musculus tweety homolog 1 (Drosophila) (Ttyh1), transcript variant 2, mRNA [NM_021324]	3,6	11,89
Slc37a2	NM_020258	Mus musculus solute carrier family 37 (glycerol-3-phosphate transporter), member 2 (Slc37a2), mRNA [NM_020258]	2,2	4,45
Myog	NM_031189	Mus musculus myogenin (Myog), mRNA [NM_031189]	4,0	15,87
Megf10	NM_001001979	Mus musculus multiple EGF-like-domains 10 (Megf10), mRNA [NM_001001979]	3,0	8,04
Panx1	NM_019482	Mus musculus pannexin 1 (Panx1), mRNA [NM_019482]	2,8	7,11
1700011103Rik	AK005868	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:1700011103 product:hypothetical protein, full insert sequence. [AK005868]	3,8	14,32
1300007F04Rik	NM_026185	Mus musculus RIKEN cDNA 1300007F04 gene (1300007F04Rik), mRNA [NM_026185]	2,9	7,58
1110002H13Rik	NM_025376	Mus musculus RIKEN cDNA 1110002H13 gene (1110002H13Rik), mRNA [NM_025376]	3,3	9,82
Dmxl2	XM_358382	PREDICTED: Mus musculus Dmx-like 2 (Dmxl2), mRNA [XM_358382]	2,2	4,74
Klhdc8a	NM_144810	Mus musculus kelch domain containing 8A (Klhdc8a), mRNA [NM_144810]	3,2	8,97
Wdr67	NM_001081396	Mus musculus WD repeat domain 67 (Wdr67), mRNA [NM_001081396]	2,5	5,58
Chrb1	NM_009601	Mus musculus cholinergic receptor, nicotinic, beta polypeptide 1 (muscle) (Chrb1), mRNA [NM_009601]	2,6	5,95
Efs	NM_010112	Mus musculus embryonal Fyn-associated substrate (Efs), mRNA [NM_010112]	3,2	8,91
Centg2	AK083235	Mus musculus adult male hippocampus cDNA, RIKEN full-length enriched library, clone:C630030A18 product:hypothetical protein, full insert sequence. [AK083235]	2,7	6,61
Rin1	NM_145495	Mus musculus Ras and Rab interactor 1 (Rin1), mRNA [NM_145495]	4,9	29,44
201011101Rik	NM_028079	Mus musculus RIKEN cDNA 201011101 gene (201011101Rik), mRNA [NM_028079]	2,7	6,64
Lmna	NM_019390	Mus musculus lamin A (Lmna), transcript variant 2, mRNA [NM_019390]	2,1	4,34

## Smad4-/-

Ces2	NM_145603	Mus musculus carboxylesterase 2 (Ces2), mRNA [NM_145603]	3,4	10,87
Dusp4	AK012530	Mus musculus 11 days embryo whole body cDNA, RIKEN full-length enriched library, clone:2700078F24 product:unclassifiable, full insert sequence [AK012530]	2,9	7,69
Reep2	NM_144865	Mus musculus receptor accessory protein 2 (Reep2), mRNA [NM_144865]	4,4	21,30
Spsb2	NM_013539	Mus musculus splA/ryanodine receptor domain and SOCS box containing 2 (Spsb2), mRNA [NM_013539]	3,0	8,13
Ass1	M31690	Mouse argininosuccinate synthetase (Ass) mRNA, complete cds. [M31690]	2,6	6,06
2010002N04Rik	NM_134133	Mus musculus RIKEN cDNA 2010002N04 gene (2010002N04Rik), mRNA [NM_134133]	2,6	6,03
Serp1b1a	NM_025429	Mus musculus serine (or cysteine) peptidase inhibitor, clade B, member 1a (Serp1b1a), mRNA [NM_025429]	2,5	5,48
2310009E04Rik	AK082737	Mus musculus 0 day neonate cerebellum cDNA, RIKEN full-length enriched library, clone:C230098P19 product:WEAKLY SIMILAR TO L-RIBULOKINASE homolog [Homo sapiens], full insert sequence. [AK082737]	2,4	5,42
Map4k4	NM_008696	Mus musculus mitogen-activated protein kinase kinase kinase 4 (Map4k4), mRNA [NM_008696]	2,2	4,57
Nrbp2	NM_144847	Mus musculus nuclear receptor binding protein 2 (Nrbp2), mRNA [NM_144847]	2,9	7,31
Mtss1	AK046628	Mus musculus 4 days neonate male adipose cDNA, RIKEN full-length enriched library, clone:B430212B02 product:METASTASIS SUPPRESSOR PROTEIN homolog [Homo sapiens], full insert sequence. [AK046628]	2,0	4,09
Cdk5r1	NM_009871	Mus musculus cyclin-dependent kinase 5, regulatory subunit (p35) 1 (Cdk5r1), mRNA [NM_009871]	2,9	7,48
Impdh1	NM_011829	Mus musculus inosine 5'-phosphate dehydrogenase 1 (Impdh1), mRNA [NM_011829]	2,0	4,07
LOC675507	XR_005114	PREDICTED: Mus musculus hypothetical protein LOC675507 (LOC675507), mRNA [XR_005114]	2,2	4,75
Ptprf	NM_011213	Mus musculus protein tyrosine phosphatase, receptor type, F (Ptprf), mRNA [NM_011213]	2,6	5,92
Whrn	NM_001008791	Mus musculus whirlin (Whrn), transcript variant 2, mRNA [NM_001008791]	2,3	5,00
D16Bwg1494e	AB041601	Mus musculus brain cDNA, clone MNCb-4137. [AB041601]	2,7	6,44
Hprt1	NM_013556	Mus musculus hypoxanthine guanine phosphoribosyl transferase 1 (Hprt1), mRNA [NM_013556]	2,3	4,98
Erb2ip	AK046880	Mus musculus 10 days neonate medulla oblongata cDNA, RIKEN full-length enriched library, clone:B830047G01 product:Erb2 interacting protein, full insert sequence. [AK046880]	2,6	6,09
6430706D22Rik	NM_198652	Mus musculus RIKEN cDNA 6430706D22 gene (6430706D22Rik), mRNA [NM_198652]	3,0	7,73
5033421B08Rik	AK050516	Mus musculus adult pancreas islet cells cDNA, RIKEN full-length enriched library, clone:C820006M04 product:unclassifiable, full insert sequence [AK050516]	3,6	11,86
Ngfr	NM_033217	Mus musculus nerve growth factor receptor (TNFR superfamily, member 16) (Ngfr), mRNA [NM_033217]	2,3	4,84
Lrrc17	BC030317	Mus musculus leucine rich repeat containing 17, mRNA (cDNA clone MGC:40896 IMAGE:5372009), complete cds. [BC030317]	3,5	11,15
Napb	X61450	M.musculus mRNA for clone E161 [X61450]	2,2	4,57
NAP058332-1	1	Unknown	2,2	4,62
Pld3	NM_011116	Mus musculus phospholipase D family, member 3 (Pld3), mRNA [NM_011116]	2,0	4,03
Erb2ip	AK079640	Mus musculus adult male spinal cord cDNA, RIKEN full-length enriched library, clone:A330090F21 product:unclassifiable, full insert sequence. [AK079640]	2,5	5,58
Gm784	NM_001007580	Mus musculus gene model 784, (NCBI) (Gm784), mRNA [NM_001007580]	2,2	4,62
Olfml2a	AK037205	Mus musculus 6 days neonate skin cDNA, RIKEN full-length enriched library, clone:A030009O20 product:unclassifiable, full insert sequence. [AK037205]	2,7	6,67
Esd	NM_016903	Mus musculus esterase D/formylglutathione hydrolase (Esd), mRNA [NM_016903]	2,1	4,25

## Smad4-/-

Fbxw17	NM_175401	Mus musculus F-box and WD-40 domain protein 17 (Fbxw17), mRNA [NM_175401]	2,3	4,96
Hes6	NM_019479	Mus musculus hairy and enhancer of split 6 (Drosophila) (Hes6), mRNA [NM_019479]	2,2	4,54
6720458D17Rik	AK032822	Mus musculus 12 days embryo male wolffian duct includes surrounding region cDNA, RIKEN full-length enriched library, clone:6720458D17 product:unclassifiable, full insert sequence [AK032822]	2,2	4,55
EG625054	NR_003363	Mus musculus predicted gene, EG625054 (EG625054) on chromosome 17 [NR_003363]	2,3	4,99
Cilp	NM_173385	Mus musculus cartilage intermediate layer protein, nucleotide pyrophosphohydrolase (Cilp), mRNA [NM_173385]	2,3	5,08
2700083E18Rik	NM_001029890	Mus musculus RIKEN cDNA 2700083E18 gene (2700083E18Rik), mRNA [NM_001029890]	2,6	6,20
Zfp52	NM_144515	Mus musculus zinc finger protein 52 (Zfp52), mRNA [NM_144515]	2,1	4,29
Traf4	NM_009423	Mus musculus Tnf receptor associated factor 4 (Traf4), mRNA [NM_009423]	2,5	5,59
Erbp2ip	NM_001005868	Mus musculus Erbb2 interacting protein (Erbp2ip), transcript variant 1, mRNA [NM_001005868]	2,0	4,10
Lrp1	AK078273	Mus musculus adult male olfactory brain cDNA, RIKEN full-length enriched library, clone:6430558M03 product:low density lipoprotein receptor-related protein 1, full insert sequence. [AK078273]	2,3	5,01
EG232875	BC094341	Mus musculus similar to hypothetical protein FLJ12895, mRNA (cDNA clone IMAGE:5687425), complete cds [BC094341]	2,3	4,76
Dclk1	BC050903	Mus musculus doublecortin-like kinase 1, mRNA (cDNA clone IMAGE:6416546), complete cds. [BC050903]	2,3	5,04
Sox9	NM_011448	Mus musculus SRY-box containing gene 9 (Sox9), mRNA [NM_011448]	2,6	5,90
Thbs4	NM_011582	Mus musculus thrombospondin 4 (Thbs4), mRNA [NM_011582]	2,0	4,00
Acsl3	NM_028817	Mus musculus acyl-CoA synthetase long-chain family member 3 (Acsl3), transcript variant 1, mRNA [NM_028817]	2,7	6,44
Tead4	NM_011567	Mus musculus TEA domain family member 4 (Tead4), transcript variant 1, mRNA [NM_011567]	2,9	7,34
Ubx2	NM_026390	Mus musculus UBX domain containing 2 (Ubx2), mRNA [NM_026390]	2,0	3,88
E2f2	NM_177733	Mus musculus E2F transcription factor 2 (E2f2), mRNA [NM_177733]	2,3	4,84
Sertad4	NM_198247	Mus musculus SERTA domain containing 4 (Sertad4), mRNA [NM_198247]	2,2	4,75
Mtap1b	AK141735	Mus musculus 9 days embryo whole body cDNA, RIKEN full-length enriched library, clone:D030047N09 product:unclassifiable, full insert sequence [AK141735]	3,1	8,75
Tec	NM_013689	Mus musculus cytoplasmic tyrosine kinase, Dscr28C related (Drosophila) (Tec), mRNA [NM_013689]	2,3	4,94
Adora2b	NM_007413	Mus musculus adenosine A2b receptor (Adora2b), mRNA [NM_007413]	2,5	5,73
NAP108473-1	NAP108473-1	Unknown	1,7	3,34
Gramd1b	NM_172768	Mus musculus GRAM domain containing 1B (Gramd1b), mRNA [NM_172768]	2,6	6,17
Gprc5c	NM_147217	Mus musculus G protein-coupled receptor, family C, group 5, member C (Gprc5c), mRNA [NM_147217]	2,3	4,88
Lmna	NM_019390	Mus musculus lamin A (Lmna), transcript variant 2, mRNA [NM_019390]	2,1	4,25
9130430E04	AK078975	Mus musculus adult male cecum cDNA, RIKEN full-length enriched library, clone:9130430E04 product:unclassifiable, full insert sequence [AK078975]	2,6	6,18
Ric8	NM_053194	Mus musculus resistance to inhibitors of cholinesterase 8 homolog (C. elegans) (Ric8), mRNA [NM_053194]	1,8	3,44
A930037G23Rik	AK044382	Mus musculus adult retina cDNA, RIKEN full-length enriched library, clone:A930010D23 product:hypothetical protein, full insert sequence. [AK044382]	2,3	4,80
2610030H06Rik	NM_001081356	Mus musculus RIKEN cDNA 2610030H06 gene (2610030H06Rik), mRNA [NM_001081356]	1,8	3,55

## Smad4-/-

E130112 L23Rik	NM_198249	Mus musculus RIKEN cDNA E130112L23 gene (E130112L23Rik), mRNA [NM_198249]	1,8	3,40
A930037 G23Rik	NM_178787	Mus musculus RIKEN cDNA A930037G23 gene (A930037G23Rik), transcript variant 2, mRNA [NM_178787]	2,3	4,85
E430024 C06Rik	AK088706	Mus musculus 2 days neonate thymus thymic cells cDNA, RIKEN full-length enriched library, clone:E430024C06 product:unclassifiable, full insert sequence [AK088706]	3,5	11,68
Errfi1	NM_133753	Mus musculus ERBB receptor feedback inhibitor 1 (Errfi1), mRNA [NM_133753]	2,2	4,52
Ttc19	NM_029704	Mus musculus tetratricopeptide repeat domain 19 (Ttc19), transcript variant 2, mRNA [NM_029704]	2,4	5,30
AV03084 9	AV030849	AV030849 AV030849 Mus musculus adult C57BL/6J cerebellum Mus musculus cDNA clone 1500015P16, mRNA sequence [AV030849]	2,1	4,34
Alx4	BC049786	Mus musculus aristaless 4, mRNA (cDNA clone MGC:59384 IMAGE:6506755), complete cds. [BC049786]	3,7	12,79
Sv2b	NM_153579	Mus musculus synaptic vesicle glycoprotein 2 b (Sv2b), mRNA [NM_153579]	2,9	7,28
C3300021 19Rik	AK083260	Mus musculus adult male hippocampus cDNA, RIKEN full-length enriched library, clone:C630031M24 product:KIDINS220 homolog [Rattus norvegicus], full insert sequence. [AK083260]	1,8	3,52
Mboat2	NM_026037	Mus musculus membrane bound O-acyltransferase domain containing 2 (Mboat2), transcript variant 1, mRNA [NM_026037]	2,5	5,85
4930539 N22Rik	AK016003	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:4930539N22 product:unclassifiable, full insert sequence. [AK016003]	2,8	7,16
AK14079 0	AK140790	Mus musculus 16 days embryo head cDNA, RIKEN full-length enriched library, clone:C130019G10 product:hypothetical protein, full insert sequence. [AK140790]	3,1	8,49
Arrdc3	NM_0010425 91	Mus musculus arrestin domain containing 3 (Arrdc3), mRNA [NM_001042591]	2,4	5,12
Clmn	AB059646	Mus musculus calmin isoform e mRNA for calmin delta, complete cds. [AB059646]	3,0	7,85
TC16585 25	TC1658525	Unknown	2,8	6,93
Ldlrap1	NM_145554	Mus musculus low density lipoprotein receptor adaptor protein 1 (Ldlrap1), mRNA [NM_145554]	2,0	4,11
Samd8	NM_026283	Mus musculus sterile alpha motif domain containing 8 (Samd8), mRNA [NM_026283]	2,3	4,87
Hlx1	NM_008250	Mus musculus H2.0-like homeo box 1 (Drosophila) (Hlx1), mRNA [NM_008250]	2,2	4,52
Irgm	NM_008326	Mus musculus immunity-related GTPase family, M (Irgm), mRNA [NM_008326]	1,9	3,68
Slc43a2	AK090207	Mus musculus 1 month neonate cerebellum cDNA, RIKEN full-length enriched library, clone:G630018E19 product:similar to PB39 (PROSTATE CANCER OVEREXPRESSED GENE 1) [Homo sapiens], full insert sequence. [AK090207]	2,4	5,39
Tmem9	NM_025439	Mus musculus transmembrane protein 9 (Tmem9), mRNA [NM_025439]	2,3	4,93
Ctps2	NM_018737	Mus musculus cytidine 5'-triphosphate synthase 2 (Ctps2), mRNA [NM_018737]	1,9	3,84
Zdhhc24	BC071194	Mus musculus zinc finger, DHHC domain containing 24, mRNA (cDNA clone IMAGE:3496514). [BC071194]	2,2	4,48
5330421 F07Rik	AK129480	Mus musculus mRNA for mKIAA3015 protein [AK129480]	3,5	11,29
Crip2	NM_024223	Mus musculus cysteine rich protein 2 (Crip2), mRNA [NM_024223]	2,2	4,66
Runx1t1	NM_009822	Mus musculus runt-related transcription factor 1; translocated to, 1 (cyclin D-related) (Runx1t1), mRNA [NM_009822]	2,5	5,56
AK08388 0	AK083880	Mus musculus 12 days embryo spinal ganglion cDNA, RIKEN full-length enriched library, clone:D130043C18 product:unclassifiable, full insert sequence. [AK083880]	3,1	8,51
Rabep2	NM_030566	Mus musculus rabaptin, RAB GTPase binding effector protein 2 (Rabep2), mRNA [NM_030566]	2,1	4,39
Gng12	NM_025278	Mus musculus guanine nucleotide binding protein (G protein), gamma 12 (Gng12), mRNA [NM_025278]	2,0	3,98
5430434 G16Rik	AK139147	Mus musculus 7 days neonate cerebellum cDNA, RIKEN full-length enriched library, clone:A730047B13 product:hypothetical protein, full insert sequence [AK139147]	2,9	7,22

## Smad4-/-

Tubb2a	NM_009450	Mus musculus tubulin, beta 2a (Tubb2a), mRNA [NM_009450]	2,0	4,05
BC022687	NM_145450	Mus musculus cDNA sequence BC022687 (BC022687), mRNA [NM_145450]	2,2	4,55
Kremen1	AK081707	Mus musculus 16 days embryo head cDNA, RIKEN full-length enriched library, clone:C130070D21 product:unclassifiable, full insert sequence. [AK081707]	2,0	4,01
Irgm	NM_008326	Mus musculus immunity-related GTPase family, M (Irgm), mRNA [NM_008326]	1,9	3,83
Ephb3	NM_010143	Mus musculus Eph receptor B3 (Ephb3), mRNA [NM_010143]	2,4	5,36
Serf1	NM_011353	Mus musculus small EDRK-rich factor 1 (Serf1), mRNA [NM_011353]	2,4	5,24
Dusp2	NM_010090	Mus musculus dual specificity phosphatase 2 (Dusp2), mRNA [NM_010090]	3,4	10,71
Serpin6a	NM_009254	Mus musculus serine (or cysteine) peptidase inhibitor, clade B, member 6a (Serp6a), mRNA [NM_009254]	1,9	3,85
Sh2d4a	AK008803	Mus musculus adult male stomach cDNA, RIKEN full-length enriched library, clone:2210402M20 product:hypothetical Src homology 2 (SH2) domain containing protein, full insert sequence. [AK008803]	2,1	4,27
Kif13b	NM_001081177	Mus musculus kinesin family member 13B (Kif13b), mRNA [NM_001081177]	3,1	8,51
Elk4	ENSMUST0000086556	ELK4, member of ETS oncogene family [Source:MarkerSymbol;Acc:MGI:102853] [ENSMUST0000086556]	2,0	4,06
Wdr78	NM_146254	Mus musculus WD repeat domain 78 (Wdr78), mRNA [NM_146254]	2,4	5,30
Klhdc8b	NM_030075	Mus musculus kelch domain containing 8B (Klhdc8b), mRNA [NM_030075]	2,1	4,17
A930003A15Rik	AK153879	Mus musculus 2 days neonate thymus thymic cells cDNA, RIKEN full-length enriched library, clone:E430002B13 product:hypothetical protein, full insert sequence. [AK153879]	2,6	6,25
Map4k4	NM_008696	Mus musculus mitogen-activated protein kinase kinase kinase 4 (Map4k4), mRNA [NM_008696]	2,3	5,10
Arhgef17	NM_001081116	Mus musculus Rho guanine nucleotide exchange factor (GEF) 17 (Arhgef17), mRNA [NM_001081116]	2,5	5,76
Obfc2a	NM_028696	Mus musculus oligonucleotide/oligosaccharide-binding fold containing 2A (Obfc2a), mRNA [NM_028696]	2,1	4,17
Sesn3	NM_030261	Mus musculus sestrin 3 (Sesn3), mRNA [NM_030261]	2,2	4,52
Hspa4l	NM_011020	Mus musculus heat shock protein 4 like (Hspa4l), mRNA [NM_011020]	2,2	4,71
Lrrc8b	AK054249	Mus musculus 2 days pregnant adult female ovary cDNA, RIKEN full-length enriched library, clone:E330003H12 product:unclassifiable, full insert sequence. [AK054249]	2,2	4,66
Sh3rf1	NM_021506	Mus musculus SH3 domain containing ring finger 1 (Sh3rf1), mRNA [NM_021506]	2,2	4,69
5830474E16Rik	AK018053	Mus musculus adult male thymus cDNA, RIKEN full-length enriched library, clone:5830474E16 product:unclassifiable, full insert sequence. [AK018053]	3,8	13,60
Rhod	NM_007485	Mus musculus ras homolog gene family, member D (Rhod), mRNA [NM_007485]	2,3	4,79
TC1642195	TC1642195	HS1005F21 {Homo sapiens} (exp=0; wgp=1; cg=0), partial (24%) [TC1642195]	2,0	4,03
Erb2ip	AK045806	Mus musculus adult male corpora quadrigemina cDNA, RIKEN full-length enriched library, clone:B230311M15 product:unclassifiable, full insert sequence. [AK045806]	2,3	4,88
Lox	NM_010728	Mus musculus lysyl oxidase (Lox), mRNA [NM_010728]	2,5	5,57
Ankrd42	AK029888	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:4931426M20 product:hypothetical Ankyrin-repeat/Yeast DNA-binding domain containing protein, full insert sequence. [AK029888]	2,1	4,37
Tlr4	NM_021297	Mus musculus toll-like receptor 4 (Tlr4), mRNA [NM_021297]	2,1	4,16
BC043934	NM_177770	Mus musculus cDNA sequence BC043934 (BC043934), mRNA [NM_177770]	2,4	5,45
4930579G22Rik	BC100444	Mus musculus RIKEN cDNA 4930579G22 gene, mRNA (cDNA clone MGC:118256 IMAGE:30919544), complete cds. [BC100444]	2,1	4,32

## Smad4-/-

Tnfrsf1a	NM_011609	Mus musculus tumor necrosis factor receptor superfamily, member 1a (Tnfrsf1a), mRNA [NM_011609]	1,7	3,21
Klc1	NM_008450	Mus musculus kinesin light chain 1 (Klc1), transcript variant a, mRNA [NM_008450]	1,7	3,36
Zdhhc24	NM_027476	Mus musculus zinc finger, DHHC domain containing 24 (Zdhhc24), mRNA [NM_027476]	2,7	6,48
F2	NM_010168	Mus musculus coagulation factor II (F2), mRNA [NM_010168]	2,2	4,52
Abhd2	NM_018811	Mus musculus abhydrolase domain containing 2 (Abhd2), mRNA [NM_018811]	3,5	10,93
A230106D06Rik	AK220535	Mus musculus mRNA for mKIAA4190 protein [AK220535]	2,0	3,89
Camk2d	AK086018	Mus musculus 16 days neonate heart cDNA, RIKEN full-length enriched library, clone:D830045E03 product:calcium/calmodulin-dependent protein kinase II, delta, full insert sequence. [AK086018]	2,7	6,38
Mboat2	NM_026037	Mus musculus membrane bound O-acyltransferase domain containing 2 (Mboat2), transcript variant 1, mRNA [NM_026037]	2,4	5,36
Slc4a3	NM_009208	Mus musculus solute carrier family 4 (anion exchanger), member 3 (Slc4a3), mRNA [NM_009208]	2,4	5,22
Ppfia4	XM_129443	PREDICTED: Mus musculus protein tyrosine phosphatase, receptor type, f polypeptide (PTPRF), interacting protein (liprin), alpha 4, transcript variant 1 (Ppfia4), mRNA [XM_129443]	2,3	4,88
Tmem9	NM_025439	Mus musculus transmembrane protein 9 (Tmem9), mRNA [NM_025439]	2,2	4,52
A_51_P101283	A_51_P101283	Unknown	2,1	4,17
Tbx6	NM_011538	Mus musculus T-box 6 (Tbx6), mRNA [NM_011538]	2,0	4,05
3110080007Rik	AK014267	Mus musculus 13 days embryo head cDNA, RIKEN full-length enriched library, clone:3110080007 product:unclassifiable, full insert sequence. [AK014267]	2,2	4,74
TC1640144	TC1640144	TGFR1_MOUSE (Q64729) TGF-beta receptor type-1 precursor (TGF-beta receptor type I) (TGFR-1) (TGF-beta type I receptor) (ESK2) , partial (17%) [TC1640144]	2,5	5,60
Ptgfrn	NM_011197	Mus musculus prostaglandin F2 receptor negative regulator (Ptgfrn), mRNA [NM_011197]	3,1	8,34
4930431J08Rik	XM_991644	PREDICTED: Mus musculus RIKEN cDNA 4930431J08 gene (4930431J08Rik), mRNA [XM_991644]	1,9	3,64
Serpinb6c	AF425084	Mus musculus SPI3C (Serpinb6c) mRNA, complete cds. [AF425084]	1,8	3,53
Sirpa	NM_007547	Mus musculus signal-regulatory protein alpha (Sirpa), mRNA [NM_007547]	2,3	4,79
Dclk1	NM_019978	Mus musculus doublecortin-like kinase 1 (Dclk1), mRNA [NM_019978]	2,1	4,43
ENSMUSG0000057802	AK086953	Mus musculus 0 day neonate lung cDNA, RIKEN full-length enriched library, clone:E030015K02 product:hypothetical protein, full insert sequence [AK086953]	2,8	6,87
Psm4	AB029144	Mus musculus mRNA for pUb-R3, complete cds. [AB029144]	2,4	5,32
D230038C21	AK052031	Mus musculus 12 days embryo eyeball cDNA, RIKEN full-length enriched library, clone:D230038C21 product:unclassifiable, full insert sequence. [AK052031]	2,5	5,79
1200016E24Rik	AK035396	Mus musculus adult male urinary bladder cDNA, RIKEN full-length enriched library, clone:9530030H05 product:unclassifiable, full insert sequence [AK035396]	2,9	7,21
Sytl2	NM_001040087	Mus musculus synaptotagmin-like 2 (Sytl2), transcript variant 4, mRNA [NM_001040087]	2,4	5,19
2700038G22Rik	AK002390	Mus musculus adult male kidney cDNA, RIKEN full-length enriched library, clone:0610009F16 product:unclassifiable, full insert sequence [AK002390]	2,2	4,65
Ncam1	NM_010875	Mus musculus neural cell adhesion molecule 1 (Ncam1), transcript variant 2, mRNA [NM_010875]	3,0	7,77
Snx7	NM_029655	Mus musculus sorting nexin 7 (Snx7), mRNA [NM_029655]	2,2	4,70
AA409316	NM_134087	Mus musculus expressed sequence AA409316 (AA409316), mRNA [NM_134087]	2,6	5,99
Opn3	NM_010098	Mus musculus opsin (encephalopsin) (Opn3), mRNA [NM_010098]	2,6	6,10

## Smad4-/-

1110046J04Rik	AK004186	Mus musculus 18-day embryo whole body cDNA, RIKEN full-length enriched library, clone:1110046J04 product:unclassifiable, full insert sequence [AK004186]	1,9	3,79
Mtap4	AK046825	Mus musculus 10 days neonate medulla oblongata cDNA, RIKEN full-length enriched library, clone:B830016E23 product:microtubule-associated protein 4, full insert sequence. [AK046825]	2,3	4,92
ErbB3	XM_972868	PREDICTED: Mus musculus v-erb-b2 erythroblastic leukemia viral oncogene homolog 3 (avian) (ErbB3), mRNA [XM_972868]	1,9	3,75
Rassf7	NM_025886	Mus musculus Ras association (RalGDS/AF-6) domain family 7 (Rassf7), mRNA [NM_025886]	2,6	6,09
2810474O19Rik	NM_026054	Mus musculus RIKEN cDNA 2810474O19 gene (2810474O19Rik), mRNA [NM_026054]	2,3	5,03
Hs6st2	NM_015819	Mus musculus heparan sulfate 6-O-sulfotransferase 2 (Hs6st2), transcript variant 2, mRNA [NM_015819]	2,5	5,60
Il20rb	AK076401	Mus musculus 10 days neonate skin cDNA, RIKEN full-length enriched library, clone:4732496H22 product:unclassifiable, full insert sequence [AK076401]	2,8	7,10
Cstf2	NM_133196	Mus musculus cleavage stimulation factor, 3' pre-RNA subunit 2 (Cstf2), mRNA [NM_133196]	1,7	3,25
Csrp3	NM_013808	Mus musculus cysteine and glycine-rich protein 3 (Csrp3), mRNA [NM_013808]	2,2	4,66
NAP070880-1	NAP070880-1	Unknown	2,9	7,28
Tbc1d1	NM_019636	Mus musculus TBC1 domain family, member 1 (Tbc1d1), mRNA [NM_019636]	1,9	3,69
Stk17b	NM_133810	Mus musculus serine/threonine kinase 17b (apoptosis-inducing) (Stk17b), mRNA [NM_133810]	1,9	3,61
Obfc2a	NM_028696	Mus musculus oligonucleotide/oligosaccharide-binding fold containing 2A (Obfc2a), mRNA [NM_028696]	1,9	3,77
BC031426	BC031426	Mus musculus, clone IMAGE:4010479, mRNA, partial cds. [BC031426]	2,4	5,29
Zhx2	NM_199449	Mus musculus zinc fingers and homeoboxes protein 2 (Zhx2), mRNA [NM_199449]	2,1	4,34
Camk2d	NM_001025439	Mus musculus calcium/calmodulin-dependent protein kinase II, delta (Camk2d), transcript variant 1, mRNA [NM_001025439]	2,1	4,21
4833417J20Rik	AK014716	Mus musculus 0 day neonate head cDNA, RIKEN full-length enriched library, clone:4833417J20 product:unclassifiable, full insert sequence [AK014716]	2,4	5,13
AK079732	AK079732	Mus musculus 0 day neonate thymus cDNA, RIKEN full-length enriched library, clone:A430048E13 product:unclassifiable, full insert sequence. [AK079732]	3,1	8,58
Zfp3611	M58566	Mouse TIS11 primary response gene, complete cds. [M58566]	1,8	3,59
D930014E17Rik	NM_020616	Mus musculus RIKEN cDNA D930014E17 gene (D930014E17Rik), mRNA [NM_020616]	1,7	3,25
Tulp4	NM_054040	Mus musculus tubby like protein 4 (Tulp4), mRNA [NM_054040]	1,9	3,66
6430706D22Rik	BC004768	Mus musculus RIKEN cDNA 6430706D22 gene, mRNA (cDNA clone IMAGE:3156506), complete cds. [BC004768]	2,8	6,75
Epor	NM_010149	Mus musculus erythropoietin receptor (Epor), mRNA [NM_010149]	2,5	5,68
Kcnq5	NM_023872	Mus musculus potassium voltage-gated channel, subfamily Q, member 5 (Kcnq5), mRNA [NM_023872]	2,7	6,45
Nxn	NM_008750	Mus musculus nucleoredoxin (Nxn), mRNA [NM_008750]	1,8	3,55
Mdm2	NM_010786	Mus musculus transformed mouse 3T3 cell double minute 2 (Mdm2), mRNA [NM_010786]	1,8	3,57
Cdkl3	NM_153785	Mus musculus cyclin-dependent kinase-like 3 (Cdkl3), mRNA [NM_153785]	1,7	3,32
D930014E17Rik	NM_020616	Mus musculus RIKEN cDNA D930014E17 gene (D930014E17Rik), mRNA [NM_020616]	1,7	3,26
Duoxa1	NM_145395	Mus musculus dual oxidase maturation factor 1 (Duoxa1), mRNA [NM_145395]	2,5	5,79
Zfp185	NM_009549	Mus musculus zinc finger protein 185 (Zfp185), mRNA [NM_009549]	2,5	5,54



## Smad4-/-

Clmn	NM_053155	Mus musculus calmin (Clmn), transcript variant 1, mRNA [NM_053155]	2,7	6,71
Tspo	NM_009775	Mus musculus translocator protein (Tspo), mRNA [NM_009775]	1,7	3,31
Ophn1	NM_052976	Mus musculus oligophrenin 1 (Ophn1), mRNA [NM_052976]	2,1	4,28
Me2	NM_145494	Mus musculus malic enzyme 2, NAD(+)-dependent, mitochondrial (Me2), mRNA [NM_145494]	1,8	3,41
Frap1	BC043920	Mus musculus FK506 binding protein 12-rapamycin associated protein 1, mRNA (cDNA clone IMAGE:5064192), complete cds. [BC043920]	1,7	3,33
Best3	AK049492	Mus musculus 7 days embryo whole body cDNA, RIKEN full-length enriched library, clone:C430017E22 product:unclassifiable, full insert sequence [AK049492]	2,1	4,16
Ddah1	NM_026993	Mus musculus dimethylarginine dimethylaminohydrolase 1 (Ddah1), mRNA [NM_026993]	1,8	3,56
EG665756	XM_979235	PREDICTED: Mus musculus hypothetical protein LOC665756 (LOC665756), mRNA [XM_979235]	1,8	3,55
1810062O18Rik	AK007938	Mus musculus 10 day old male pancreas cDNA, RIKEN full-length enriched library, clone:1810062O18 product:hypothetical protein, full insert sequence. [AK007938]	1,8	3,50
BC025575	NM_199200	Mus musculus cDNA sequence BC025575 (BC025575), mRNA [NM_199200]	1,8	3,45
Timp1	NM_011593	Mus musculus tissue inhibitor of metalloproteinase 1 (Timp1), transcript variant 2, mRNA [NM_011593]	2,7	6,32
RP23-64F17.3	NM_001045534	Mus musculus similar to bM64F17.3 (putative novel protein) (LOC433728), mRNA [NM_001045534]	1,9	3,83
Osdbl10	NM_148958	Mus musculus oxysterol binding protein-like 10 (Osdbl10), mRNA [NM_148958]	2,0	3,97
Samd8	NM_026283	Mus musculus sterile alpha motif domain containing 8 (Samd8), mRNA [NM_026283]	1,5	2,90
4732471D19Rik	NM_176987	Mus musculus RIKEN cDNA 4732471D19 gene (4732471D19Rik), mRNA [NM_176987]	2,0	3,91
Esd	NM_016903	Mus musculus esterase D/formylglutathione hydrolase (Esd), mRNA [NM_016903]	1,9	3,63
Plekho1	NM_023320	Mus musculus pleckstrin homology domain containing, family O member 1 (Plekho1), mRNA [NM_023320]	2,2	4,73
Rpl13	BC083148	Mus musculus ribosomal protein L13, mRNA (cDNA clone IMAGE:30458056) [BC083148]	1,6	3,13
Fhl2	NM_010212	Mus musculus four and a half LIM domains 2 (Fhl2), mRNA [NM_010212]	2,2	4,52
TC1634227	TC1634227	Q80ZN1_MOUSE (Q80ZN1) Dual specificity phosphatase 2 (Adult male thymus cDNA, RIKEN full-length enriched library, clone:5830428A14 product:dual specificity phosphatase 2, full insert sequence), partial (37%) [TC1634227]	3,0	7,87
Odc1	NM_013614	Mus musculus ornithine decarboxylase, structural 1 (Odc1), mRNA [NM_013614]	1,8	3,37
TC1603713	TC1603713	HUMRRL3A ribosomal protein L3 {Homo sapiens} (exp=-1; wgp=0; cg=0), partial (15%) [TC1603713]	2,1	4,14
Tubg2	NM_134028	Mus musculus tubulin, gamma 2 (Tubg2), mRNA [NM_134028]	2,1	4,27
Hspa4l	NM_011020	Mus musculus heat shock protein 4 like (Hspa4l), mRNA [NM_011020]	1,9	3,75
Panx1	NM_019482	Mus musculus pannexin 1 (Panx1), mRNA [NM_019482]	3,0	7,93
Timp1	NM_011593	Mus musculus tissue inhibitor of metalloproteinase 1 (Timp1), transcript variant 2, mRNA [NM_011593]	2,8	6,83
Tspo	NM_009775	Mus musculus translocator protein (Tspo), mRNA [NM_009775]	1,7	3,30
1700011J10Rik	AK005870	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:1700011J10 product:hypothetical protein, full insert sequence. [AK005870]	1,7	3,15
Pctk3	NM_008795	Mus musculus PCTAIRE-motif protein kinase 3 (Pctk3), mRNA [NM_008795]	1,9	3,62
AK035808	AK035808	Mus musculus 16 days neonate cerebellum cDNA, RIKEN full-length enriched library, clone:9630006A19 product:unclassifiable, full insert sequence. [AK035808]	2,1	4,36

## Smad4-/-

Gramd1b	BC070451	Mus musculus GRAM domain containing 1B, mRNA (cDNA clone MGC:99432 IMAGE:30616509), complete cds. [BC070451]	1,8	3,50
Ptrh1	NM_178595	Mus musculus peptidyl-tRNA hydrolase 1 homolog ( <i>S. cerevisiae</i> ) (Ptrh1), mRNA [NM_178595]	1,9	3,80
Rnf12	NM_011276	Mus musculus ring finger protein 12 (Rnf12), mRNA [NM_011276]	2,3	4,79
Sreb2	AK172219	Mus musculus activated spleen cDNA, RIKEN full-length enriched library, clone:F830106O06 product:sterol regulatory element binding factor 2, full insert sequence [AK172219]	1,6	3,07
Riok3	NM_024182	Mus musculus RIO kinase 3 (yeast) (Riok3), mRNA [NM_024182]	1,6	3,09
Zfp361	NM_007564	Mus musculus zinc finger protein 36, C3H type-like 1 (Zfp361), mRNA [NM_007564]	1,8	3,60
Eef1a1	NM_010106	Mus musculus eukaryotic translation elongation factor 1 alpha 1 (Eef1a1), mRNA [NM_010106]	1,8	3,47
Trp63	NM_011641	Mus musculus transformation related protein 63 (Trp63), mRNA [NM_011641]	2,2	4,66
AV121721	AV121721	AV121721 AV121721 Mus musculus C57BL/6J 10-day embryo Mus musculus cDNA clone 2610509G11, mRNA sequence [AV121721]	1,7	3,15
Ass1	NM_007494	Mus musculus argininosuccinate synthetase 1 (Ass1), mRNA [NM_007494]	2,3	5,04
Sap30	NM_021788	Mus musculus sin3 associated polypeptide (Sap30), mRNA [NM_021788]	1,7	3,26
Aebp2	NM_009637	Mus musculus AE binding protein 2 (Aebp2), transcript variant 3, mRNA [NM_009637]	1,8	3,48
Ap2b1	NM_027915	Mus musculus adaptor-related protein complex 2, beta 1 subunit (Ap2b1), transcript variant 2, mRNA [NM_027915]	1,5	2,88
EG665756	XM_979235	PREDICTED: Mus musculus hypothetical protein LOC665756 (LOC665756), mRNA [XM_979235]	1,9	3,66
Fyb	NM_011815	Mus musculus FYN binding protein (Fyb), mRNA [NM_011815]	2,1	4,20
Evi2a	NM_010161	Mus musculus ecotropic viral integration site 2a (Evi2a), transcript variant 2, mRNA [NM_010161]	2,2	4,70
Abhd2	NM_018811	Mus musculus abhydrolase domain containing 2 (Abhd2), mRNA [NM_018811]	2,7	6,55
Gpx1	NM_008160	Mus musculus glutathione peroxidase 1 (Gpx1), mRNA [NM_008160]	1,6	2,97
Cacng1	NM_007582	Mus musculus calcium channel, voltage-dependent, gamma subunit 1 (Cacng1), mRNA [NM_007582]	1,6	3,13
AK047235	AK047235	Mus musculus 10 days neonate cerebellum cDNA, RIKEN full-length enriched library, clone:B930041B10 product:leukocyte receptor cluster (LRC) member 4, full insert sequence. [AK047235]	2,2	4,69
Prmt2	NM_133182	Mus musculus protein arginine N-methyltransferase 2 (Prmt2), transcript variant 1, mRNA [NM_133182]	1,9	3,84
Tgif1	NM_009372	Mus musculus TG interacting factor 1 (Tgif1), mRNA [NM_009372]	2,3	4,94
5730521K06Rik	AK017782	Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730521K06 product:unclassifiable, full insert sequence. [AK017782]	2,0	4,12
9130404D14Rik	NM_146119	Mus musculus RIKEN cDNA 9130404D14 gene (9130404D14Rik), mRNA [NM_146119]	1,9	3,69
OTTMUSG0000000712	NM_001076790	Mus musculus predicted gene, OTTMUSG00000000712 (OTTMUSG00000000712), mRNA [NM_001076790]	2,2	4,71
Ptpn14	NM_008976	Mus musculus protein tyrosine phosphatase, non-receptor type 14 (Ptpn14), mRNA [NM_008976]	2,0	4,07
LOC671973	XR_003643	PREDICTED: Mus musculus hypothetical protein LOC671973 (LOC671973), mRNA [XR_003643]	1,8	3,47
NAP123224-1	NAP123224-1	Unknown	2,0	4,13
5730419I09Rik	NM_029081	Mus musculus RIKEN cDNA 5730419I09 gene (5730419I09Rik), mRNA [NM_029081]	1,6	3,07
Wdr47	NM_181400	Mus musculus WD repeat domain 47 (Wdr47), mRNA [NM_181400]	1,9	3,77

## Smad4-/-

Ovgp1	NM_007696	Mus musculus oviductal glycoprotein 1 (Ovgp1), mRNA [NM_007696]	2,0	4,00
B230369 F24Rik	AK046316	Mus musculus adult male corpora quadrigemina cDNA, RIKEN full-length enriched library, clone:B230369F24 product:similar to RIBOSOMAL PROTEIN L27A (RIBOSMAL PROTEIN L27A) [Mus musculus], full insert sequence [AK046316]	1,9	3,79
Tanc2	DV064943	NEONATAL_24_B21.x1 FH NEONATAL Mus musculus cDNA clone NEONATAL_24_B21, mRNA sequence [DV064943]	1,8	3,58
Txn1	NM_011660	Mus musculus thioredoxin 1 (Txn1), mRNA [NM_011660]	1,6	3,05
Ric8	NM_053194	Mus musculus resistance to inhibitors of cholinesterase 8 homolog (C. elegans) (Ric8), mRNA [NM_053194]	1,6	3,11
Rab31	NM_133685	Mus musculus RAB31, member RAS oncogene family (Rab31), mRNA [NM_133685]	1,6	2,95
Morc4	NM_029413	Mus musculus microrchidia 4 (Morc4), mRNA [NM_029413]	2,1	4,30
Rasa3	NM_009025	Mus musculus RAS p21 protein activator 3 (Rasa3), mRNA [NM_009025]	1,8	3,58
Ccnl2	NM_207678	Mus musculus cyclin L2 (Ccnl2), mRNA [NM_207678]	1,6	2,94
Dapk1	NM_029653	Mus musculus death associated protein kinase 1 (Dapk1), transcript variant 1, mRNA [NM_029653]	2,1	4,39
AK07829 4	AK078294	Mus musculus adult male olfactory brain cDNA, RIKEN full-length enriched library, clone:6430577J20 product:unclassifiable, full insert sequence. [AK078294]	2,6	6,23
Aox1	NM_009676	Mus musculus aldehyde oxidase 1 (Aox1), mRNA [NM_009676]	1,6	2,93
NAP0663 48-1	NAP066348- 1	Unknown	2,4	5,23
Pcf11	BC048838	Mus musculus cleavage and polyadenylation factor subunit homolog (S. cerevisiae), mRNA (cDNA clone IMAGE:4948470), complete cds. [BC048838]	1,6	3,02
Mknk2	NM_021462	Mus musculus MAP kinase-interacting serine/threonine kinase 2 (Mknk2), mRNA [NM_021462]	1,5	2,76
Spred1	AK017680	Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730461F13 product:hypothetical protein, full insert sequence [AK017680]	1,6	3,14
A1836758	AK134716	Mus musculus adult male medulla oblongata cDNA, RIKEN full-length enriched library, clone:6330535A08 product:unclassifiable, full insert sequence [AK134716]	1,8	3,60
Ctsl	NM_009984	Mus musculus cathepsin L (Ctsl), mRNA [NM_009984]	1,5	2,74
LOC6763 30	XR_004911	PREDICTED: Mus musculus hypothetical protein LOC676330 (LOC676330), mRNA [XR_004911]	1,8	3,43
Myo5a	NM_010864	Mus musculus myosin Va (Myo5a), mRNA [NM_010864]	2,4	5,43
Fst	NM_008046	Mus musculus follistatin (Fst), mRNA [NM_008046]	2,7	6,39
Ltbp1	NM_019919	Mus musculus latent transforming growth factor beta binding protein 1 (Ltbp1), transcript variant 1, mRNA [NM_019919]	1,5	2,85
Bbc3	NM_133234	Mus musculus Bcl-2 binding component 3 (Bbc3), mRNA [NM_133234]	2,2	4,58
A430081 F14Rik	AK084623	Mus musculus 13 days embryo heart cDNA, RIKEN full-length enriched library, clone:D330022F04 product:unclassifiable, full insert sequence. [AK084623]	2,7	6,57
Pabpn1	AK032172	Mus musculus adult male olfactory brain cDNA, RIKEN full-length enriched library, clone:6430407F06 product:poly(A) binding protein, nuclear 1, full insert sequence. [AK032172]	1,8	3,40
BB63672 1	BB636721	BB636721 RIKEN full-length enriched, adult male aorta and vein Mus musculus cDNA clone A530025H02 5', mRNA sequence [BB636721]	2,6	5,89
Tulp4	NM_054040	Mus musculus tubby like protein 4 (Tulp4), mRNA [NM_054040]	1,8	3,47
Orm1	NM_008768	Mus musculus orosomuroid 1 (Orm1), mRNA [NM_008768]	2,4	5,43
Anxa4	NM_013471	Mus musculus annexin A4 (Anxa4), mRNA [NM_013471]	1,7	3,14
LOC6702 79	XR_002901	PREDICTED: Mus musculus similar to Ornithine decarboxylase (ODC) (LOC670279), mRNA [XR_002901]	1,8	3,42

## Smad4-/-

AK044852	AK044852	Mus musculus 9.5 days embryo parthenogenote cDNA, RIKEN full-length enriched library, clone:B130008C17 product:unclassifiable, full insert sequence. [AK044852]	2.0	3.91
Tgfb1	NM_009370	Mus musculus transforming growth factor, beta receptor I (Tgfb1), mRNA [NM_009370]	1.6	2.95
Ddc	NM_016672	Mus musculus dopa decarboxylase (Ddc), mRNA [NM_016672]	2.2	4.66
BF719154	BF719154	BF719154 mab33d12.x1 Soares_NMEBA_branchial_arch Mus musculus cDNA clone IMAGE:3972143 3', mRNA sequence [BF719154]	1.7	3.30
Kcne1l	NM_021487	Mus musculus potassium voltage-gated channel, Isk-related family, member 1-like (Kcne1l), mRNA [NM_021487]	2.6	6.21
AK132208	AK132208	Mus musculus 10 days embryo whole body cDNA, RIKEN full-length enriched library, clone:3426403C01 product:ribosomal protein S12, full insert sequence. [AK132208]	2.0	4.08
Rapgef1	NM_001080925	Mus musculus Rap guanine nucleotide exchange factor (GEF)-like 1 (Rapgef1), mRNA [NM_001080925]	2.8	6.94
Serp1b1c	NM_173051	Mus musculus serine (or cysteine) peptidase inhibitor, clade B, member 1c (Serp1b1c), mRNA [NM_173051]	2.6	6.17
Atp6v1a	NM_007508	Mus musculus ATPase, H+ transporting, lysosomal V1 subunit A (Atp6v1a), mRNA [NM_007508]	1.7	3.20
Egfr	NM_007912	Mus musculus epidermal growth factor receptor (Egfr), transcript variant 2, mRNA [NM_007912]	1.6	3.07
Qscn6	NM_023268	Mus musculus quiescin Q6 (Qscn6), transcript variant 2, mRNA [NM_023268]	2.0	3.98
Sec22c	AK049750	Mus musculus 12 days embryo spinal cord cDNA, RIKEN full-length enriched library, clone:C530046H07 product:unclassifiable, full insert sequence [AK049750]	1.9	3.69
Tjp3	NM_013769	Mus musculus tight junction protein 3 (Tjp3), mRNA [NM_013769]	3.4	10.37
Sirpa	NM_007547	Mus musculus signal-regulatory protein alpha (Sirpa), mRNA [NM_007547]	1.7	3.16
Nek8	BC057995	Mus musculus NIMA (never in mitosis gene a)-related expressed kinase 8, mRNA (cDNA clone IMAGE:5344135), partial cds. [BC057995]	2.7	6.28
A430090L17Rik	AK086918	Mus musculus 0 day neonate lung cDNA, RIKEN full-length enriched library, clone:E030011O19 product:unclassifiable, full insert sequence. [AK086918]	1.8	3.38
Psip1	BC052177	Mus musculus PC4 and SFRS1 interacting protein 1, mRNA (cDNA clone MGC:59472 IMAGE:6512126), complete cds. [BC052177]	1.6	3.12
Nfe2l2	AK029360	Mus musculus 0 day neonate head cDNA, RIKEN full-length enriched library, clone:4833405D16 product:nuclear, factor, erythroid derived 2, like 2, full insert sequence. [AK029360]	2.7	6.41
A_52_P517668	A_52_P517668	Unknown	2.0	4.02
Rb1	NM_009029	Mus musculus retinoblastoma 1 (Rb1), mRNA [NM_009029]	1.8	3.54
Ccne1	NM_007633	Mus musculus cyclin E1 (Ccne1), mRNA [NM_007633]	2.1	4.18
Cst6	NM_028623	Mus musculus cystatin E/M (Cst6), mRNA [NM_028623]	1.9	3.74
Rras	NM_009101	Mus musculus Harvey rat sarcoma oncogene, subgroup R (Rras), mRNA [NM_009101]	1.6	2.97
Mid2	NM_011845	Mus musculus midline 2 (Mid2), mRNA [NM_011845]	1.4	2.71
Ncam1	NM_001081445	Mus musculus neural cell adhesion molecule 1 (Ncam1), transcript variant 1, mRNA [NM_001081445]	1.7	3.16
A_52_P1029561	A_52_P1029561	Unknown	2.8	6.90
NAP020861-001	NAP020861-001	Unknown	3.3	9.67
Cnn3	NM_028044	Mus musculus calponin 3, acidic (Cnn3), mRNA [NM_028044]	1.8	3.41
9130023D20Rik	AK087182	Mus musculus 0 day neonate lung cDNA, RIKEN full-length enriched library, clone:E030032L11 product:unclassifiable, full insert sequence. [AK087182]	2.6	5.94
Fzd10	NM_175284	Mus musculus frizzled homolog 10 (Drosophila) (Fzd10), mRNA [NM_175284]	2.1	4.38

## Smad4-/-

Thbs4	NM_011582	Mus musculus thrombospondin 4 (Thbs4), mRNA [NM_011582]	2,2	4,63
Tubb2b	NM_023716	Mus musculus tubulin, beta 2b (Tubb2b), mRNA [NM_023716]	2,3	5,03
Otos	NM_153114	Mus musculus otospiralin (Otos), mRNA [NM_153114]	2,5	5,53
Cenpj	NM_001014996	Mus musculus centromere protein J (Cenpj), mRNA [NM_001014996]	1,8	3,37
2310028H24Rik	NM_027993	Mus musculus RIKEN cDNA 2310028H24 gene (2310028H24Rik), mRNA [NM_027993]	1,6	3,05
Ccdc131	NM_001033261	Mus musculus coiled-coil domain containing 131 (Ccdc131), mRNA [NM_001033261]	1,7	3,23
Arhgef2	NM_008487	Mus musculus rho/rac guanine nucleotide exchange factor (GEF) 2 (Arhgef2), mRNA [NM_008487]	2,3	4,76
Fbxo30	NM_027968	Mus musculus F-box protein 30 (Fbxo30), mRNA [NM_027968]	1,8	3,51
2810008D09Rik	AK035703	Mus musculus adult male urinary bladder cDNA, RIKEN full-length enriched library, clone:9530092L13 product:unclassifiable, full insert sequence [AK035703]	1,8	3,38
Lgals3	NM_010705	Mus musculus lectin, galactose binding, soluble 3 (Lgals3), mRNA [NM_010705]	1,8	3,55
2810417H13Rik	NM_026515	Mus musculus RIKEN cDNA 2810417H13 gene (2810417H13Rik), mRNA [NM_026515]	1,7	3,22
Smc5	NM_153808	Mus musculus structural maintenance of chromosomes 5 (Smc5), mRNA [NM_153808]	1,5	2,73
Mmp3	NM_010809	Mus musculus matrix metalloproteinase 3 (Mmp3), mRNA [NM_010809]	3,0	7,74
Btg1	NM_007569	Mus musculus B-cell translocation gene 1, anti-proliferative (Btg1), mRNA [NM_007569]	2,5	5,73
Foxo1	NM_019739	Mus musculus forkhead box O1 (Foxo1), mRNA [NM_019739]	1,5	2,88
Atp6v1a	NM_007508	Mus musculus ATPase, H+ transporting, lysosomal V1 subunit A (Atp6v1a), mRNA [NM_007508]	1,5	2,91
Cyr61	NM_010516	Mus musculus cysteine rich protein 61 (Cyr61), mRNA [NM_010516]	2,1	4,36
Gramd1b	BC070451	Mus musculus GRAM domain containing 1B, mRNA (cDNA clone MGC:99432 IMAGE:30616509), complete cds. [BC070451]	1,8	3,47
Zfp346	NM_012017	Mus musculus zinc finger protein 346 (Zfp346), mRNA [NM_012017]	1,9	3,70
Mylc2b	NM_023402	Mus musculus myosin light chain, regulatory B (Mylc2b), mRNA [NM_023402]	1,4	2,70
Ppp1r12a	AK077739	Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730577I22 product:inferred: myosin phosphatase, target subunit 1, full insert sequence [AK077739]	1,9	3,61
Cpxm1	NM_019696	Mus musculus carboxypeptidase X 1 (M14 family) (Cpxm1), mRNA [NM_019696]	1,9	3,77
Arfgap3	NM_025445	Mus musculus ADP-ribosylation factor GTPase activating protein 3 (Arfgap3), mRNA [NM_025445]	2,4	5,14
Abhd1	NM_021304	Mus musculus abhydrolase domain containing 1 (Abhd1), mRNA [NM_021304]	1,8	3,60
Rnf19	NM_013923	Mus musculus ring finger protein (C3HC4 type) 19 (Rnf19), mRNA [NM_013923]	1,8	3,59
ENSMUST0000080362	ENSMUST0000080362	AGENCOURT_10876042 NIH_MGC_156 Mus musculus cDNA clone IMAGE:6755724 5', mRNA sequence [CA786455]	1,4	2,58
Emid2	NM_024474	Mus musculus EMI domain containing 2 (Emid2), mRNA [NM_024474]	2,1	4,14
Psat1	NM_177420	Mus musculus phosphoserine aminotransferase 1 (Psat1), mRNA [NM_177420]	2,1	4,34
Macf1	AF150755	Mus musculus microtubule-actin crosslinking factor (Macf) mRNA, complete cds. [AF150755]	1,6	2,98
D130059P03Rik	AK053217	Mus musculus 0 day neonate lung cDNA, RIKEN full-length enriched library, clone:E030042P04 product:unclassifiable, full insert sequence [AK053217]	1,7	3,31

## Smad4-/-

Zfp810	NM_145612	Mus musculus zinc finger protein 810 (Zfp810), mRNA [NM_145612]	1,6	3,01
Slc24a6	NM_133221	Mus musculus solute carrier family 24 (sodium/potassium/calcium exchanger), member 6 (Slc24a6), mRNA [NM_133221]	1,8	3,46
201020901 2Rik	BC047275	Mus musculus RIKEN cDNA 2010209012 gene, mRNA (cDNA clone MGC:54971 IMAGE:6441739), complete cds. [BC047275]	1,7	3,34
Freq	NM_019681	Mus musculus frequenin homolog (Drosophila) (Freq), mRNA [NM_019681]	1,4	2,72
AK032448	AK032448	Mus musculus adult male olfactory brain cDNA, RIKEN full-length enriched library, clone:6430548O12 product:hypothetical protein, full insert sequence. [AK032448]	2,0	4,07
AK080164	AK080164	Mus musculus adult male aorta and vein cDNA, RIKEN full-length enriched library, clone:A530073K21 product:unclassifiable, full insert sequence. [AK080164]	2,1	4,23
Me2	NM_145494	Mus musculus malic enzyme 2, NAD(+)-dependent, mitochondrial (Me2), mRNA [NM_145494]	1,6	3,12
Psrc1	NM_019976	Mus musculus proline/serine-rich coiled-coil 1 (Psrc1), mRNA [NM_019976]	2,3	4,96
Rhbdd2	NM_146002	Mus musculus rhomboid domain containing 2 (Rhbdd2), mRNA [NM_146002]	1,8	3,43
Lpin3	NM_022883	Mus musculus lipin 3 (Lpin3), mRNA [NM_022883]	1,5	2,79
BC049807	NM_001002008	Mus musculus cDNA sequence BC049807 (BC049807), mRNA [NM_001002008]	2,4	5,29
Postn	NM_015784	Mus musculus periostin, osteoblast specific factor (Postn), mRNA [NM_015784]	3,2	9,23
AK032608	AK032608	Mus musculus adult male olfactory brain cDNA, RIKEN full-length enriched library, clone:6430704I19 product:Mus musculus Air, mRNA sequence, full insert sequence. [AK032608]	2,1	4,22
Mdm4	NM_008575	Mus musculus transformed mouse 3T3 cell double minute 4 (Mdm4), mRNA [NM_008575]	3,6	11,73
Musk	NM_010944	Mus musculus muscle, skeletal, receptor tyrosine kinase (Musk), transcript variant 4, mRNA [NM_010944]	1,9	3,70
Emx1	NM_010131	Mus musculus empty spiracles homolog 1 (Drosophila) (Emx1), mRNA [NM_010131]	2,0	3,94
Plk2	NM_152804	Mus musculus polo-like kinase 2 (Drosophila) (Plk2), mRNA [NM_152804]	1,8	3,48
2610301F0 2Rik	NM_001025576	Mus musculus RIKEN cDNA 2610301F02 gene (2610301F02Rik), mRNA [NM_001025576]	3,0	8,15
Snx10	NM_028035	Mus musculus sorting nexin 10 (Snx10), mRNA [NM_028035]	1,6	3,06
TC1688342	TC1688342	Q4SZ31_TETNG (Q4SZ31) Chromosome undetermined SCAF11859, whole genome shotgun sequence. (Fragment), partial (3%) [TC1688342]	3,0	8,17
Dusp11	NM_028099	Mus musculus dual specificity phosphatase 11 (RNA/RNP complex 1-interacting) (Dusp11), mRNA [NM_028099]	1,5	2,78
Ccl12	NM_011331	Mus musculus chemokine (C-C motif) ligand 12 (Ccl12), mRNA [NM_011331]	2,0	4,01
Ribc1	NM_025660	Mus musculus RIB43A domain with coiled-coils 1 (Ribc1), mRNA [NM_025660]	1,5	2,82
9030025P2 0Rik	AK089867	Mus musculus activated spleen cDNA, RIKEN full-length enriched library, clone:F830034K24 product:hypothetical protein, full insert sequence. [AK089867]	2,1	4,22
Jmjd1a	AK082379	Mus musculus 0 day neonate cerebellum cDNA, RIKEN full-length enriched library, clone:C230043E16 product:similar to PUTATIVE ZINC FINGER PROTEIN [Homo sapiens], full insert sequence. [AK082379]	2,1	4,31
Cstb	NM_007793	Mus musculus cystatin B (Cstb), mRNA [NM_007793]	1,5	2,76
Hps1	NM_019424	Mus musculus Hermansky-Pudlak syndrome 1 homolog (human) (Hps1), mRNA [NM_019424]	1,7	3,30
Klhc7a	NM_173427	Mus musculus kelch domain containing 7A (Klhc7a), mRNA [NM_173427]	2,0	3,86
B230208H1 1Rik	AK045519	Mus musculus adult male corpora quadrigemina cDNA, RIKEN full-length enriched library, clone:B230208H11 product:unclassifiable, full insert sequence [AK045519]	2,3	4,91
Nek8	NM_080849	Mus musculus NIMA (never in mitosis gene a)-related expressed kinase 8 (Nek8), mRNA [NM_080849]	2,8	6,81

## Smad4-/-

Ttll1	AK016577	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:4932702F08 product:hypothetical Glutathione synthetase ATP-binding domain-like structure containing protein, full insert sequence. [AK016577]	1,8	3,53
Hmgn3	BC005693	Mus musculus high mobility group nucleosomal binding domain 3, mRNA (cDNA clone MGC:11574 IMAGE:3597594), complete cds. [BC005693]	2,6	5,97
Apobec1	NM_031159	Mus musculus apolipoprotein B editing complex 1 (Apobec1), mRNA [NM_031159]	1,8	3,51
A230083H2 2Rik	AK018172	Mus musculus adult male medulla oblongata cDNA, RIKEN full-length enriched library, clone:6330414G02 product:unclassifiable, full insert sequence [AK018172]	2,6	6,02
NAP032887- 1	NAP032887- 1	Unknown	2,1	4,20
C4b	NM_009780	Mus musculus complement component 4B (Chido blood group) (C4b), mRNA [NM_009780]	1,8	3,39
EG665798	XR_002295	PREDICTED: Mus musculus similar to aurora kinase C (LOC665798), mRNA [XR_002295]	2,8	6,83
H3f3b	NM_008211	Mus musculus H3 histone, family 3B (H3f3b), mRNA [NM_008211]	1,6	2,98
5330421C1 5Rik	AK039175	Mus musculus adult male hypothalamus cDNA, RIKEN full-length enriched library, clone:A230104L24 product:unclassifiable, full insert sequence. [AK039175]	2,0	3,91
Bhlhb9	NM_198161	Mus musculus basic helix-loop-helix domain containing, class B9 (Bhlhb9), mRNA [NM_198161]	1,7	3,14
Trafd1	NM_172275	Mus musculus TRAF type zinc finger domain containing 1 (Trafd1), mRNA [NM_172275]	1,6	2,99
2500002L1 4Rik	NM_025607	Mus musculus RIKEN cDNA 2500002L14 gene (2500002L14Rik), mRNA [NM_025607]	1,3	2,54
Hspa4l	NM_011020	Mus musculus heat shock protein 4 like (Hspa4l), mRNA [NM_011020]	1,7	3,36
Zap70	NM_009539	Mus musculus zeta-chain (TCR) associated protein kinase (Zap70), mRNA [NM_009539]	3,2	8,93
Eml5	NM_0010811 91	Mus musculus echinoderm microtubule associated protein like 5 (Eml5), mRNA [NM_001081191]	1,8	3,37
Ttll12	NM_183017	Mus musculus tubulin tyrosine ligase-like family, member 12 (Ttll12), mRNA [NM_183017]	1,6	3,08
Rnf19	NM_013923	Mus musculus ring finger protein (C3HC4 type) 19 (Rnf19), mRNA [NM_013923]	1,6	3,12
2810403D2 1Rik	AK086455	Mus musculus 15 days embryo head cDNA, RIKEN full-length enriched library, clone:D930030D24 product:unclassifiable, full insert sequence. [AK086455]	1,5	2,76
Ccl8	NM_021443	Mus musculus chemokine (C-C motif) ligand 8 (Ccl8), mRNA [NM_021443]	3,1	8,47
Nxn	NM_008750	Mus musculus nucleoredoxin (Nxn), mRNA [NM_008750]	1,6	2,96
Junb	NM_008416	Mus musculus Jun-B oncogene (Junb), mRNA [NM_008416]	2,3	4,83
NAP056782- 1	NAP056782- 1	Unknown	2,3	4,80
Gsta1	NM_008181	Mus musculus glutathione S-transferase, alpha 1 (Ya) (Gsta1), mRNA [NM_008181]	3,4	10,65
Foxo1	NM_019739	Mus musculus forkhead box O1 (Foxo1), mRNA [NM_019739]	1,5	2,82
Neo1	AK019159	Mus musculus 10 days embryo whole body cDNA, RIKEN full-length enriched library, clone:2610028H22 product:unclassifiable, full insert sequence. [AK019159]	1,8	3,53
Synj2	BC058749	Mus musculus synaptojanin 2, mRNA (cDNA clone MGC:67830 IMAGE:6390688), complete cds. [BC058749]	1,5	2,85
E130112L2 3Rik	BC058405	Mus musculus RIKEN cDNA E130112L23 gene, mRNA (cDNA clone IMAGE:5701960), complete cds. [BC058405]	1,4	2,69
Abca5	NM_147219	Mus musculus ATP-binding cassette, sub-family A (ABC1), member 5 (Abca5), mRNA [NM_147219]	1,7	3,25
Sin3b	BC021160	Mus musculus transcriptional regulator, SIN3B (yeast), mRNA (cDNA clone IMAGE:4190752), complete cds. [BC021160]	1,4	2,62
AK051012	AK051012	Mus musculus 9 days embryo whole body cDNA, RIKEN full-length enriched library, clone:D030054J22 product:unclassifiable, full insert sequence. [AK051012]	1,6	2,98

## Smad4-/-

C330024D1 2Rik	AK021221	Mus musculus ES cells cDNA, RIKEN full-length enriched library, clone:C330024D12 product:hypothetical Pyrrolidone carboxyl peptidase (pyroglutamate aminopeptidase) structure containing protein, full insert sequence. [AK021221]	2,3	5,00
Poli	NM_011972	Mus musculus polymerase (DNA directed), iota (Poli), mRNA [NM_011972]	1,5	2,88
Ppp1r12a	NM_027892	Mus musculus protein phosphatase 1, regulatory (inhibitor) subunit 12A (Ppp1r12a), mRNA [NM_027892]	2,0	4,13
Abcc8	NM_011510	Mus musculus ATP-binding cassette, sub-family C (CFTR/MRP), member 8 (Abcc8), mRNA [NM_011510]	1,5	2,86
Mbp	NM_0010252 45	Mus musculus myelin basic protein (Mbp), transcript variant 8, mRNA [NM_001025245]	2,0	4,13
Igf2r	NM_010515	Mus musculus insulin-like growth factor 2 receptor (Igf2r), mRNA [NM_010515]	1,4	2,67
AK089360	AK089360	Mus musculus B6-derived CD11 +ve dendritic cells cDNA, RIKEN full-length enriched library, clone:F730014O09 product:unclassifiable, full insert sequence [AK089360]	1,7	3,30
Nubp1	NM_011955	Mus musculus nucleotide binding protein 1 (Nubp1), mRNA [NM_011955]	1,4	2,61
Tmem55a	NM_028264	Mus musculus transmembrane protein 55A (Tmem55a), mRNA [NM_028264]	1,3	2,52
Der1	NM_024207	Mus musculus Der1-like domain family, member 1 (Der1), mRNA [NM_024207]	1,5	2,73
Map1lc3a	NM_025735	Mus musculus microtubule-associated protein 1 light chain 3 alpha (Map1lc3a), mRNA [NM_025735]	1,7	3,26
Htatip2	NM_016865	Mus musculus HIV-1 tat interactive protein 2, homolog (human) (Htatip2), mRNA [NM_016865]	1,4	2,70
AK044799	AK044799	Mus musculus 9.5 days embryo parthenogenote cDNA, RIKEN full-length enriched library, clone:B130002B09 product:hypothetical protein, full insert sequence. [AK044799]	2,1	4,26
Dhrs7c	NM_0010130 13	Mus musculus dehydrogenase/reductase (SDR family) member 7C (Dhrs7c), mRNA [NM_001013013]	-5,0	0,03
AK084656	AK084656	Mus musculus 13 days embryo heart cDNA, RIKEN full-length enriched library, clone:D330025O06 product:unclassifiable, full insert sequence [AK084656]	-5,5	0,02
Gpd1	NM_010271	Mus musculus glycerol-3-phosphate dehydrogenase 1 (soluble) (Gpd1), mRNA [NM_010271]	-3,6	0,08
Cntnap2	NM_025771	Mus musculus contactin associated protein-like 2 (Cntnap2), transcript variant 2, mRNA [NM_025771]	-4,6	0,04
Rhbd1	NM_144816	Mus musculus rhomboid, veinlet-like 1 (Drosophila) (Rhbd1), mRNA [NM_144816]	-3,6	0,08
1500016O1 0Rik	BC093505	Mus musculus RIKEN cDNA 1500016O10 gene, mRNA (cDNA clone MGC:103222 IMAGE:4503230), complete cds. [BC093505]	-4,2	0,06
9630033F2 0Rik	NM_177003	Mus musculus RIKEN cDNA 9630033F20 gene (9630033F20Rik), mRNA [NM_177003]	-3,6	0,08
Tuba8	NM_017379	Mus musculus tubulin, alpha 8 (Tuba8), mRNA [NM_017379]	-3,3	0,10
Plcd4	NM_148937	Mus musculus phospholipase C, delta 4 (Plcd4), transcript variant 2, mRNA [NM_148937]	-3,7	0,08
Adhfe1	NM_175236	Mus musculus alcohol dehydrogenase, iron containing, 1 (Adhfe1), mRNA [NM_175236]	-3,8	0,07
Slc16a3	NM_030696	Mus musculus solute carrier family 16 (monocarboxylic acid transporters), member 3 (Slc16a3), mRNA [NM_030696]	-4,4	0,05
Kcnc1	NM_008421	Mus musculus potassium voltage gated channel, Shaw-related subfamily, member 1 (Kcnc1), mRNA [NM_008421]	-5,1	0,03
Dhrs7c	AK003267	Mus musculus 18-day embryo whole body cDNA, RIKEN full-length enriched library, clone:1110001P11 product:unclassifiable, full insert sequence. [AK003267]	-4,0	0,06
Map2k6	NM_011943	Mus musculus mitogen activated protein kinase kinase 6 (Map2k6), mRNA [NM_011943]	-3,6	0,09
Acvr2b	NM_007397	Mus musculus activin receptor IIB (Acvr2b), mRNA [NM_007397]	-3,3	0,10
Pfkfb1	NM_008824	Mus musculus 6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 1 (Pfkfb1), mRNA [NM_008824]	-3,6	0,08
Ppp1r1a	NM_021391	Mus musculus protein phosphatase 1, regulatory (inhibitor) subunit 1A (Ppp1r1a), mRNA [NM_021391]	-3,3	0,10



## Smad4-/-

Wfdc1	NM_023395	Mus musculus WAP four-disulfide core domain 1 (Wfdc1), mRNA [NM_023395]	-3,3	0,10
Cdh4	AK038529	Mus musculus adult male hypothalamus cDNA, RIKEN full-length enriched library, clone:A230026A20 product:unclassifiable, full insert sequence [AK038529]	-4,9	0,03
Fgfbp1	NM_008009	Mus musculus fibroblast growth factor binding protein 1 (Fgfbp1), mRNA [NM_008009]	-4,5	0,04
Fbp2	NM_007994	Mus musculus fructose bisphosphatase 2 (Fbp2), mRNA [NM_007994]	-3,5	0,09
Kcnc1	NM_008421	Mus musculus potassium voltage gated channel, Shaw-related subfamily, member 1 (Kcnc1), mRNA [NM_008421]	-5,3	0,03
Ramp1	NM_016894	Mus musculus receptor (calcitonin) activity modifying protein 1 (Ramp1), mRNA [NM_016894]	-3,7	0,08
AK047066	AK047066	Mus musculus 10 days neonate cerebellum cDNA, RIKEN full-length enriched library, clone:B930015L22 product:unclassifiable, full insert sequence [AK047066]	-3,8	0,07
Map2k6	NM_011943	Mus musculus mitogen activated protein kinase kinase 6 (Map2k6), mRNA [NM_011943]	-3,9	0,07
Ldhd	NM_027570	Mus musculus lactate dehydrogenase D (Ldhd), mRNA [NM_027570]	-3,1	0,11
Cmb1	NM_181588	Mus musculus carboxymethylenebutenolidase-like (Pseudomonas) (Cmb1), mRNA [NM_181588]	-2,9	0,14
Rpl3l	NM_025425	Mus musculus ribosomal protein L3-like (Rpl3l), mRNA [NM_025425]	-3,2	0,11
Ostn	NM_198112	Mus musculus osteocrin (Ostn), mRNA [NM_198112]	-4,7	0,04
Mlf1	NM_010801	Mus musculus myeloid leukemia factor 1 (Mlf1), transcript variant 2, mRNA [NM_010801]	-3,5	0,09
9630033F2ORik	NM_177003	Mus musculus RIKEN cDNA 9630033F20 gene (9630033F2ORik), mRNA [NM_177003]	-3,9	0,07
TC1589973	TC1589973	O70259_MOUSE (O70259) Voltage-gated potassium channel Kv1.7, complete [TC1589973]	-3,1	0,11
St8sia5	X98014	M.musculus mRNA for alpha-2,8-sialyltransferase. [X98014]	-3,2	0,11
Pla2g5	NM_011110	Mus musculus phospholipase A2, group V (Pla2g5), mRNA [NM_011110]	-3,9	0,07
LOC672731	XR_004464	PREDICTED: Mus musculus similar to triosephosphate isomerase 1 (LOC672731), mRNA [XR_004464]	-3,1	0,12
ENSMUST0000050697	ENSMUST0000050697	RIKEN cDNA 0610009L18 gene [Source:MarkerSymbol;Acc:MGI:1914088] [ENSMUST0000050697]	-2,7	0,16
Asb11	NM_026853	Mus musculus ankyrin repeat and SOCS box-containing protein 11 (Asb11), mRNA [NM_026853]	-3,3	0,10
Hs3st5	NM_001081208	Mus musculus heparan sulfate (glucosamine) 3-O-sulfotransferase 5 (Hs3st5), mRNA [NM_001081208]	-2,8	0,14
Il15	NM_008357	Mus musculus interleukin 15 (Il15), mRNA [NM_008357]	-3,4	0,10
Slc41a3	NM_027868	Mus musculus solute carrier family 41, member 3 (Slc41a3), transcript variant 1, mRNA [NM_027868]	-3,6	0,08
Rxrg	NM_009107	Mus musculus retinoid X receptor gamma (Rxrg), mRNA [NM_009107]	-2,9	0,13
Lrrc38	XM_144076	PREDICTED: Mus musculus leucine rich repeat containing 38 (Lrrc38), mRNA [XM_144076]	-3,5	0,09
Maf	AK132165	Mus musculus 17 days embryo head cDNA, RIKEN full-length enriched library, clone:3321401C13 product:avian musculoaponeurotic fibrosarcoma (v-maf) AS42 oncogene homolog, full insert sequence. [AK132165]	-3,7	0,07
Asb15	NM_080847	Mus musculus ankyrin repeat and SOCS box-containing protein 15 (Asb15), mRNA [NM_080847]	-3,7	0,08
Abcb4	NM_008830	Mus musculus ATP-binding cassette, sub-family B (MDR/TAP), member 4 (Abcb4), mRNA [NM_008830]	-3,0	0,12
Pfkfb3	NM_133232	Mus musculus 6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 3 (Pfkfb3), mRNA [NM_133232]	-3,3	0,10
Slc9a2	NM_001033289	Mus musculus solute carrier family 9 (sodium/hydrogen exchanger), member 2 (Slc9a2), mRNA [NM_001033289]	-3,1	0,12

## Smad4<sup>-/-</sup>

Aldh1a1	NM_013467	Mus musculus aldehyde dehydrogenase family 1, subfamily A1 (Aldh1a1), mRNA [NM_013467]	-3,1	0,12
4933417O08Rik	NM_027694	Mus musculus RIKEN cDNA 4933417O08 gene (4933417O08Rik), mRNA [NM_027694]	-3,5	0,09
5430433E21Rik	AK048611	Mus musculus 16 days embryo head cDNA, RIKEN full-length enriched library, clone:C130087F03 product:hypothetical Kelch repeat containing protein, full insert sequence. [AK048611]	-4,2	0,05
C030044C12Rik	AK030860	Mus musculus adult male thymus cDNA, RIKEN full-length enriched library, clone:5830432P16 product:unclassifiable, full insert sequence [AK030860]	-2,7	0,15
1110006G14Rik	XM_001001687	PREDICTED: Mus musculus RIKEN cDNA 1110006G14 gene (1110006G14Rik), mRNA [XM_001001687]	-3,3	0,10
Slc25a12	AK140681	Mus musculus 10 days neonate cerebellum cDNA, RIKEN full-length enriched library, clone:B930088H17 product:unclassifiable, full insert sequence [AK140681]	-3,1	0,12
Tbc1d4	NM_001081278	Mus musculus TBC1 domain family, member 4 (Tbc1d4), mRNA [NM_001081278]	-3,0	0,12
Trim45	NM_194343	Mus musculus tripartite motif-containing 45 (Trim45), mRNA [NM_194343]	-2,9	0,13
ENSMUST0000065731	ENSMUST0000065731	RIKEN cDNA 2310001K24 gene [Source:MarkerSymbol;Acc:MGI:1916767] [ENSMUST0000065731]	-2,9	0,13
ldh2	NM_173011	Mus musculus isocitrate dehydrogenase 2 (NADP+), mitochondrial (ldh2), mRNA [NM_173011]	-3,6	0,08
Flt3l	NM_013520	Mus musculus FMS-like tyrosine kinase 3 ligand (Flt3l), mRNA [NM_013520]	-2,9	0,13
2310042D19Rik	NM_172417	Mus musculus RIKEN cDNA 2310042D19 gene (2310042D19Rik), mRNA [NM_172417]	-5,6	0,02
Tcea3	NM_011542	Mus musculus transcription elongation factor A (SII), 3 (Tcea3), mRNA [NM_011542]	-3,0	0,13
Ppp1r1a	NM_021391	Mus musculus protein phosphatase 1, regulatory (inhibitor) subunit 1A (Ppp1r1a), mRNA [NM_021391]	-3,3	0,10
Car14	NM_011797	Mus musculus carbonic anhydrase 14 (Car14), mRNA [NM_011797]	-3,3	0,10
4930535I16Rik	AK015982	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:4930535I16 product:hypothetical protein, full insert sequence. [AK015982]	-3,2	0,11
Ces3	NM_053200	Mus musculus carboxylesterase 3 (Ces3), mRNA [NM_053200]	-3,1	0,12
Hhatl	NM_029095	Mus musculus hedgehog acyltransferase-like (Hhatl), mRNA [NM_029095]	-3,0	0,12
Maf	NM_001025577	Mus musculus avian musculoaponeurotic fibrosarcoma (v-maf) AS42 oncogene homolog (Maf), mRNA [NM_001025577]	-2,8	0,14
Prx	NM_019412	Mus musculus periaxin (Prx), transcript variant 2, mRNA [NM_019412]	-3,8	0,07
1810005K13Rik	AK141935	Mus musculus 12 days embryo spinal ganglion cDNA, RIKEN full-length enriched library, clone:D130067O22 product:unclassifiable, full insert sequence [AK141935]	-2,9	0,14
Ldhd	NM_027570	Mus musculus lactate dehydrogenase D (Ldhd), mRNA [NM_027570]	-3,3	0,10
OTTMUSG00000002191	AK017437	Mus musculus 10 days neonate head cDNA, RIKEN full-length enriched library, clone:5530401L02 product:homologue to ultra-high-sulfur keratin - mouse, complete, full insert sequence. [AK017437]	-2,7	0,15
Ntf5	NM_198190	Mus musculus neurotrophin 5 (Ntf5), mRNA [NM_198190]	-3,0	0,12
BC048679	NM_183143	Mus musculus cDNA sequence BC048679 (BC048679), mRNA [NM_183143]	-6,4	0,01
Kcnab1	NM_010597	Mus musculus potassium voltage-gated channel, shaker-related subfamily, beta member 1 (Kcnab1), mRNA [NM_010597]	-3,7	0,08
Mgst3	NM_025569	Mus musculus microsomal glutathione S-transferase 3 (Mgst3), mRNA [NM_025569]	-3,0	0,12
Ppp1r3c	NM_016854	Mus musculus protein phosphatase 1, regulatory (inhibitor) subunit 3C (Ppp1r3c), mRNA [NM_016854]	-3,6	0,08
St8sia5	NM_153124	Mus musculus ST8 alpha-N-acetyl-neuraminide alpha-2,8-sialyltransferase 5 (St8sia5), transcript variant 2, mRNA [NM_153124]	-2,7	0,15
Asb12	NM_080858	Mus musculus ankyrin repeat and SOCS box-containing protein 12 (Asb12), mRNA [NM_080858]	-2,7	0,15

## Smad4-/-

NAP061200-1	NAP061200-1	Unknown	-3,2	0,11
Gdf8	NM_010834	Mus musculus growth differentiation factor 8 (Gdf8), mRNA [NM_010834]	-2,9	0,13
2310042D19Rik	NM_172417	Mus musculus RIKEN cDNA 2310042D19 gene (2310042D19Rik), mRNA [NM_172417]	-4,9	0,03
Ptx3	AK162281	Mus musculus 15 days embryo embryonic body below diaphragm cDNA, RIKEN full-length enriched library, clone:8230402K13 product:unclassifiable, full insert sequence [AK162281]	-2,6	0,16
Aebp1	NM_009636	Mus musculus AE binding protein 1 (Aebp1), mRNA [NM_009636]	-3,2	0,11
Egflam	NM_178748	Mus musculus EGF-like, fibronectin type III and laminin G domains (Egflam), mRNA [NM_178748]	-2,9	0,14
ENSMUST0000023427	ENSMUST0000023427	ST3 beta-galactoside alpha-2,3-sialyltransferase 6 [Source:MarkerSymbol;Acc:MGI:1888707] [ENSMUST0000023427]	-2,7	0,15
1110067D22Rik	NM_173752	Mus musculus RIKEN cDNA 1110067D22 gene (1110067D22Rik), mRNA [NM_173752]	-3,1	0,12
Ak3l1	NM_009647	Mus musculus adenylate kinase 3 alpha-like 1 (Ak3l1), mRNA [NM_009647]	-3,2	0,11
Slc27a1	NM_011977	Mus musculus solute carrier family 27 (fatty acid transporter), member 1 (Slc27a1), mRNA [NM_011977]	-2,7	0,15
Tcea3	NM_011542	Mus musculus transcription elongation factor A (SII), 3 (Tcea3), mRNA [NM_011542]	-2,7	0,16
Asb18	NM_139152	Mus musculus ankyrin repeat and SOCS box-containing 18 (Asb18), mRNA [NM_139152]	-3,0	0,13
S3-12	NM_020568	Mus musculus plasma membrane associated protein, S3-12 (S3-12), mRNA [NM_020568]	-2,7	0,16
ENSMUST0000063037	ENSMUST0000063037	similar to L-lactate dehydrogenase A chain (LDH-A) (LDH muscle subunit) (LDH-M) (LOC383509), mRNA [Source:RefSeq_dna;Acc:XR_003372] [ENSMUST0000063037]	-2,8	0,14
Prss23	NM_029614	Mus musculus protease, serine, 23 (Prss23), mRNA [NM_029614]	-2,8	0,15
Rab11fip2	NM_001033172	Mus musculus RAB11 family interacting protein 2 (class I) (Rab11fip2), mRNA [NM_001033172]	-3,3	0,10
Bfsp2	NM_001002896	Mus musculus beaded filament structural protein 2, phakinin (Bfsp2), mRNA [NM_001002896]	-3,0	0,13
ENSMUST0000065731	ENSMUST0000065731	RIKEN cDNA 2310001K24 gene [Source:MarkerSymbol;Acc:MGI:1916767] [ENSMUST0000065731]	-3,5	0,09
pPtp4a3	NM_008975	Mus musculus protein tyrosine phosphatase 4a3 (pPtp4a3), mRNA [NM_008975]	-3,1	0,12
Me3	NM_181407	Mus musculus malic enzyme 3, NADP(+)-dependent, mitochondrial (Me3), mRNA [NM_181407]	-3,2	0,11
Actr3b	BC053106	Mus musculus ARP3 actin-related protein 3 homolog B (yeast), mRNA (cDNA clone IMAGE:5685374), partial cds [BC053106]	-2,9	0,14
Slc8a3	BC052435	Mus musculus solute carrier family 8 (sodium/calcium exchanger), member 3, mRNA (cDNA clone MGC:63358 IMAGE:6837128), complete cds. [BC052435]	-2,4	0,19
ENSMUSG0000055440	AK046642	Mus musculus 4 days neonate male adipose cDNA, RIKEN full-length enriched library, clone:B430216N15 product:hypothetical protein, full insert sequence. [AK046642]	-2,6	0,17
AI118078	NM_172923	Mus musculus expressed sequence AI118078 (AI118078), mRNA [NM_172923]	-2,8	0,15
Emid1	NM_080595	Mus musculus EMI domain containing 1 (Emid1), mRNA [NM_080595]	-3,6	0,08
Sh3bgr	NM_015825	Mus musculus SH3-binding domain glutamic acid-rich protein (Sh3bgr), mRNA [NM_015825]	-2,6	0,17
Asb15	AK079418	Mus musculus adult male bone cDNA, RIKEN full-length enriched library, clone:9830163L08 product:ankyrin repeat domain-containing SOCS box protein Asb-15 mRNA, full insert sequence. [AK079418]	-3,0	0,13
Amd1	NM_009665	Mus musculus S-adenosylmethionine decarboxylase 1 (Amd1), mRNA [NM_009665]	-2,9	0,13
Mgst3	AK008211	Mus musculus adult male small intestine cDNA, RIKEN full-length enriched library, clone:2010012L10 product:RIKEN cDNA 2010012L10 gene, full insert sequence. [AK008211]	-2,8	0,15
6430571L13Rik	NM_175486	Mus musculus RIKEN cDNA 6430571L13 gene (6430571L13Rik), mRNA [NM_175486]	-3,0	0,12

## Smad4-/-

2310007A19Rik	NM_025506	Mus musculus RIKEN cDNA 2310007A19 gene (2310007A19Rik), mRNA [NM_025506]	-3,0	0,13
2310005P05Rik	NM_026189	Mus musculus RIKEN cDNA 2310005P05 gene (2310005P05Rik), mRNA [NM_026189]	-2,4	0,19
Dnajb5	NM_019874	Mus musculus DnaJ (Hsp40) homolog, subfamily B, member 5 (Dnajb5), mRNA [NM_019874]	-2,4	0,19
Tuba3a	NM_009446	Mus musculus tubulin, alpha 3A (Tuba3a), mRNA [NM_009446]	-2,6	0,16
Rps6ka2	NM_011299	Mus musculus ribosomal protein S6 kinase, polypeptide 2 (Rps6ka2), mRNA [NM_011299]	-2,6	0,16
D0H4S114	NM_053078	Mus musculus DNA segment, human D4S114 (D0H4S114), mRNA [NM_053078]	-3,1	0,12
Nek5	NM_177898	Mus musculus NIMA (never in mitosis gene a)-related expressed kinase 5 (Nek5), mRNA [NM_177898]	-3,3	0,10
3110057O12Rik	NM_026622	Mus musculus RIKEN cDNA 3110057O12 gene (3110057O12Rik), mRNA [NM_026622]	-2,8	0,14
2310076L09Rik	NM_025874	Mus musculus RIKEN cDNA 2310076L09 gene (2310076L09Rik), transcript variant 1, mRNA [NM_025874]	-3,3	0,10
4930544O15Rik	AK016041	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:4930544O15 product:hypothetical protein, full insert sequence. [AK016041]	-2,4	0,19
Snph	NM_198214	Mus musculus syntaphilin (Snph), mRNA [NM_198214]	-2,9	0,14
Kcnf1	NM_201531	Mus musculus potassium voltage-gated channel, subfamily F, member 1 (Kcnf1), mRNA [NM_201531]	-4,6	0,04
Aurka	NM_011497	Mus musculus aurora kinase A (Aurka), mRNA [NM_011497]	-2,5	0,17
Trim66	NM_181853	Mus musculus tripartite motif-containing 66 (Trim66), mRNA [NM_181853]	-3,4	0,10
Baiap2l2	NM_177580	Mus musculus BAI1-associated protein 2-like 2 (Baiap2l2), mRNA [NM_177580]	-3,1	0,12
Mrgprh	NM_030726	Mus musculus MAS-related GPR, member H (Mrgprh), mRNA [NM_030726]	-2,8	0,14
Gdf1	NM_008107	Mus musculus growth differentiation factor 1 (Gdf1), mRNA [NM_008107]	-2,6	0,16
Dnajb5	NM_019874	Mus musculus DnaJ (Hsp40) homolog, subfamily B, member 5 (Dnajb5), mRNA [NM_019874]	-2,4	0,19
A_52_P764117	A_52_P764117	Unknown	-2,4	0,19
2610528E23Rik	NM_025599	Mus musculus RIKEN cDNA 2610528E23 gene (2610528E23Rik), mRNA [NM_025599]	-2,4	0,19
Cdk3	NM_027165	Mus musculus cyclin-dependent kinase 3 (Cdk3), mRNA [NM_027165]	-2,8	0,15
Fsd2	NM_172904	Mus musculus fibronectin type III and SPRY domain containing 2 (Fsd2), mRNA [NM_172904]	-3,2	0,11
A530098C11Rik	NM_001013799	Mus musculus RIKEN cDNA A530098C11 gene (A530098C11Rik), mRNA [NM_001013799]	-2,6	0,16
Syne1	NM_153399	Mus musculus synaptic nuclear envelope 1 (Syne1), transcript variant 1, mRNA [NM_153399]	-4,7	0,04
2310005C01Rik	AK009163	Mus musculus adult male tongue cDNA, RIKEN full-length enriched library, clone:2310005C01 product:unclassifiable, full insert sequence [AK009163]	-3,1	0,12
Mgst3	AK019197	Mus musculus 11 days embryo whole body cDNA, RIKEN full-length enriched library, clone:2700004G04 product:unclassifiable, full insert sequence. [AK019197]	-3,4	0,09
TC1620610	TC1620610	AF052147 cul-3 {Homo sapiens} (exp=-1; wgp=0; cg=0), partial (27%) [TC1620610]	-2,2	0,23
Aqp4	NM_009700	Mus musculus aquaporin 4 (Aqp4), mRNA [NM_009700]	-3,6	0,08
EG272350	BC052838	Mus musculus predicted gene, EG272350, mRNA (cDNA clone MGC:60745 IMAGE:30049363), complete cds [BC052838]	-3,3	0,10
Kazald1	NM_178929	Mus musculus Kazal-type serine peptidase inhibitor domain 1 (Kazald1), mRNA [NM_178929]	-2,8	0,14

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Pde4a	NM_019798	Mus musculus phosphodiesterase 4A, cAMP specific (Pde4a), transcript variant 1, mRNA [NM_019798]	-2,6	0,17
D0H4S114	NM_053078	Mus musculus DNA segment, human D4S114 (D0H4S114), mRNA [NM_053078]	-3,2	0,11
Pdzx	NM_018832	Mus musculus PDZ domain containing, X chromosome (Pdzx), mRNA [NM_018832]	-3,1	0,11
Lrrc39	NM_175413	Mus musculus leucine rich repeat containing 39 (Lrrc39), transcript variant 2, mRNA [NM_175413]	-2,9	0,13
Padi2	NM_008812	Mus musculus peptidyl arginine deiminase, type II (Padi2), mRNA [NM_008812]	-3,2	0,11
Tmem46	NM_145463	Mus musculus transmembrane protein 46 (Tmem46), mRNA [NM_145463]	-2,3	0,20
Cib2	NM_019686	Mus musculus calcium and integrin binding family member 2 (Cib2), mRNA [NM_019686]	-2,3	0,20
ENSMUST0000025033	ENSMUST0000025033	RIKEN cDNA 0610031G08 gene [Source:MarkerSymbol;Acc:MGI:1922643] [ENSMUST0000025033]	-2,7	0,15
Pitpnc1	NM_145823	Mus musculus phosphatidylinositol transfer protein, cytoplasmic 1 (Pitpnc1), mRNA [NM_145823]	-2,9	0,14
AK077350	AK077350	Mus musculus adult male pituitary gland cDNA, RIKEN full-length enriched library, clone:5330434I02 product:unclassifiable, full insert sequence [AK077350]	-2,9	0,14
Kcnj12	NM_010603	Mus musculus potassium inwardly-rectifying channel, subfamily J, member 12 (Kcnj12), mRNA [NM_010603]	-2,7	0,16
Arrdc2	NM_027560	Mus musculus arrestin domain containing 2 (Arrdc2), mRNA [NM_027560]	-3,6	0,08
Ppp1r3c	NM_016854	Mus musculus protein phosphatase 1, regulatory (inhibitor) subunit 3C (Ppp1r3c), mRNA [NM_016854]	-2,9	0,13
2310002L09Rik	AK009124	Mus musculus adult male tongue cDNA, RIKEN full-length enriched library, clone:2310003M01 product:hypothetical protein, full insert sequence. [AK009124]	-2,5	0,18
LOC385319	XR_002509	PREDICTED: Mus musculus similar to L-lactate dehydrogenase A chain (LDH-A) (LDH muscle subunit) (LDH-M) (LOC385319), mRNA [XR_002509]	-2,6	0,16
Homer1	NM_011982	Mus musculus homer homolog 1 (Drosophila) (Homer1), transcript variant S, mRNA [NM_011982]	-2,2	0,21
Atp8a1	NM_001038999	Mus musculus ATPase, aminophospholipid transporter (APLT), class I, type 8A, member 1 (Atp8a1), transcript variant 1, mRNA [NM_001038999]	-2,0	0,25
Oxct1	NM_024188	Mus musculus 3-oxoacid CoA transferase 1 (Oxct1), mRNA [NM_024188]	-2,6	0,17
Tbc1d10c	NM_178650	Mus musculus TBC1 domain family, member 10c (Tbc1d10c), mRNA [NM_178650]	-2,8	0,15
Gm967	BC099492	Mus musculus gene model 967, (NCBI), mRNA (cDNA clone IMAGE:30843089), partial cds. [BC099492]	-2,3	0,21
Ephx2	NM_007940	Mus musculus epoxide hydrolase 2, cytoplasmic (Ephx2), mRNA [NM_007940]	-2,1	0,24
Tbc1d4	XM_619279	PREDICTED: Mus musculus TBC1 domain family, member 4, transcript variant 2 (Tbc1d4), mRNA [XM_619279]	-2,5	0,18
BI100969	BI100969	BI100969 602886295F1 NCI_CGAP_Kid14 Mus musculus cDNA clone IMAGE:5041727 5', mRNA sequence [BI100969]	-2,3	0,21
4930577N17Rik	AK086057	Mus musculus 15 days embryo head cDNA, RIKEN full-length enriched library, clone:D930001I15 product:hypothetical protein, full insert sequence [AK086057]	-2,3	0,20
Pdzx	NM_018832	Mus musculus PDZ domain containing, X chromosome (Pdzx), mRNA [NM_018832]	-2,8	0,14
Mylk2	NM_001081044	Mus musculus myosin, light polypeptide kinase 2, skeletal muscle (Mylk2), mRNA [NM_001081044]	-2,3	0,20
Mtus1	NM_001005863	Mus musculus mitochondrial tumor suppressor 1 (Mtus1), transcript variant 1, mRNA [NM_001005863]	-2,6	0,16
Sema6c	NM_011351	Mus musculus sema domain, transmembrane domain (TM), and cytoplasmic domain, (semaphorin) 6C (Sema6c), mRNA [NM_011351]	-2,6	0,16
Prom1	NM_008935	Mus musculus prominin 1 (Prom1), mRNA [NM_008935]	-2,6	0,17
Stxbp4	AK031650	Mus musculus 13 days embryo male testis cDNA, RIKEN full-length enriched library, clone:6030470M02 product:unclassifiable, full insert sequence. [AK031650]	-2,5	0,17

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Prkaa2	NM_178143	Mus musculus protein kinase, AMP-activated, alpha 2 catalytic subunit (Prkaa2), mRNA [NM_178143]	-2,1	0,23
TC1620610	TC1620610	AF052147 cul-3 {Homo sapiens} (exp=-1; wgp=0; cg=0), partial (27%) [TC1620610]	-2,3	0,21
Iqcg	NM_178378	Mus musculus IQ motif containing G (Iqcg), mRNA [NM_178378]	-2,2	0,21
St3gal6	NM_018784	Mus musculus ST3 beta-galactoside alpha-2,3-sialyltransferase 6 (St3gal6), mRNA [NM_018784]	-2,5	0,18
Ppara	NM_011144	Mus musculus peroxisome proliferator activated receptor alpha (Ppara), mRNA [NM_011144]	-2,8	0,15
Mdga1	NM_001081160	Mus musculus MAM domain containing glycosylphosphatidylinositol anchor 1 (Mdga1), mRNA [NM_001081160]	-2,3	0,21
NAP113376-1	NAP113376-1	Unknown	-3,1	0,12
Abcb1b	NM_011075	Mus musculus ATP-binding cassette, sub-family B (MDR/TAP), member 1B (Abcb1b), mRNA [NM_011075]	-2,3	0,20
Nr4a1	NM_010444	Mus musculus nuclear receptor subfamily 4, group A, member 1 (Nr4a1), mRNA [NM_010444]	-3,0	0,12
Slc9a2	AK077026	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:4932415O19 product:SODIUM [AK077026]	-2,5	0,18
Atp8a1	NM_001038999	Mus musculus ATPase, aminophospholipid transporter (APLT), class I, type 8A, member 1 (Atp8a1), transcript variant 1, mRNA [NM_001038999]	-2,8	0,14
1300013J15Rik	NM_026183	Mus musculus RIKEN cDNA 1300013J15 gene (1300013J15Rik), mRNA [NM_026183]	-2,4	0,19
Yipf7	NM_023784	Mus musculus Yip1 domain family, member 7 (Yipf7), mRNA [NM_023784]	-2,1	0,23
Agpat5	NM_026792	Mus musculus 1-acylglycerol-3-phosphate O-acyltransferase 5 (lysophosphatidic acid acyltransferase, epsilon) (Agpat5), mRNA [NM_026792]	-2,1	0,24
Ing2	NM_023503	Mus musculus inhibitor of growth family, member 2 (Ing2), mRNA [NM_023503]	-2,4	0,19
Oxct1	NM_024188	Mus musculus 3-oxoacid CoA transferase 1 (Oxct1), mRNA [NM_024188]	-2,4	0,19
Arhgef6	NM_152801	Mus musculus Rac/Cdc42 guanine nucleotide exchange factor (GEF) 6 (Arhgef6), mRNA [NM_152801]	-1,9	0,26
2900011G08Rik	AK013526	Mus musculus adult male hippocampus cDNA, RIKEN full-length enriched library, clone:2900011G08 product:unclassifiable, full insert sequence. [AK013526]	-2,2	0,21
Grtp1	NM_025768	Mus musculus GH regulated TBC protein 1 (Grtp1), mRNA [NM_025768]	-2,9	0,13
Pick1	AK090155	Mus musculus 15 days embryo brain cDNA, RIKEN full-length enriched library, clone:G630007M13 product:protein that interacts with C kinase 1, full insert sequence. [AK090155]	-2,2	0,22
Gpd1	NM_010271	Mus musculus glycerol-3-phosphate dehydrogenase 1 (soluble) (Gpd1), mRNA [NM_010271]	-2,1	0,24
Mfn1	AK220169	Mus musculus mRNA for mKIAA4032 protein [AK220169]	-2,0	0,24
Acss1	NM_080575	Mus musculus acyl-CoA synthetase short-chain family member 1 (Acss1), mRNA [NM_080575]	-2,0	0,25
A530058N18Rik	AK081828	Mus musculus 16 days embryo head cDNA, RIKEN full-length enriched library, clone:C130080G10 product:unclassifiable, full insert sequence. [AK081828]	-3,3	0,10
Gdap1	NM_010267	Mus musculus ganglioside-induced differentiation-associated-protein 1 (Gdap1), mRNA [NM_010267]	-2,5	0,17
Rtn4ip1	NM_130892	Mus musculus reticulon 4 interacting protein 1 (Rtn4ip1), mRNA [NM_130892]	-2,3	0,21
Sh3kbp1	NM_021389	Mus musculus SH3-domain kinase binding protein 1 (Sh3kbp1), mRNA [NM_021389]	-2,8	0,14
Camk2a	NM_177407	Mus musculus calcium/calmodulin-dependent protein kinase II alpha (Camk2a), transcript variant 2, mRNA [NM_177407]	-2,7	0,16
Sh3kbp1	NM_021389	Mus musculus SH3-domain kinase binding protein 1 (Sh3kbp1), mRNA [NM_021389]	-2,5	0,18
Lrig1	NM_008377	Mus musculus leucine-rich repeats and immunoglobulin-like domains 1 (Lrig1), mRNA [NM_008377]	-2,2	0,22

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Lrrc39	NM_027321	Mus musculus leucine rich repeat containing 39 (Lrrc39), transcript variant 1, mRNA [NM_027321]	-2,0	0,25
Jph2	NM_021566	Mus musculus junctophilin 2 (Jph2), mRNA [NM_021566]	-2,7	0,15
Atp8a1	NM_009727	Mus musculus ATPase, aminophospholipid transporter (APLT), class I, type 8A, member 1 (Atp8a1), transcript variant 2, mRNA [NM_009727]	-3,6	0,08
Fndc5	NM_027402	Mus musculus fibronectin type III domain containing 5 (Fndc5), mRNA [NM_027402]	-2,8	0,15
2900046G09Rik	NM_133778	Mus musculus RIKEN cDNA 2900046G09 gene (2900046G09Rik), mRNA [NM_133778]	-2,2	0,21
pPtp4a3	NM_008975	Mus musculus protein tyrosine phosphatase 4a3 (pPtp4a3), mRNA [NM_008975]	-2,1	0,23
9430079G20Rik	AK020497	Mus musculus 12 days embryo embryonic body between diaphragm region and neck cDNA, RIKEN full-length enriched library, clone:9430079G20 product:unclassifiable, full insert sequence. [AK020497]	-2,5	0,18
Gmpr	NM_025508	Mus musculus guanosine monophosphate reductase (Gmpr), mRNA [NM_025508]	-2,0	0,25
Homer1	NM_011982	Mus musculus homer homolog 1 (Drosophila) (Homer1), transcript variant S, mRNA [NM_011982]	-2,4	0,19
4930544O15Rik	AK016041	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:4930544O15 product:hypothetical protein, full insert sequence. [AK016041]	-2,7	0,15
Asb15	AK079418	Mus musculus adult male bone cDNA, RIKEN full-length enriched library, clone:9830163L08 product:ankyrin repeat domain-containing SOCS box protein Asb-15 mRNA, full insert sequence. [AK079418]	-2,7	0,15
Aqp4	NM_009700	Mus musculus aquaporin 4 (Aqp4), mRNA [NM_009700]	-4,4	0,05
Vgll2	NM_153786	Mus musculus vestigial like 2 homolog (Drosophila) (Vgll2), mRNA [NM_153786]	-2,6	0,17
Pitpnc1	NM_145823	Mus musculus phosphatidylinositol transfer protein, cytoplasmic 1 (Pitpnc1), mRNA [NM_145823]	-3,8	0,07
Asb10	NM_080444	Mus musculus ankyrin repeat and SOCS box-containing protein 10 (Asb10), mRNA [NM_080444]	-2,1	0,23
Dlat	NM_145614	Mus musculus dihydrolipoamide S-acetyltransferase (E2 component of pyruvate dehydrogenase complex) (Dlat), mRNA [NM_145614]	-2,1	0,23
2900041A09Rik	NM_182839	Mus musculus RIKEN cDNA 2900041A09 gene (2900041A09Rik), mRNA [NM_182839]	-2,1	0,24
Dennd4b	NM_201407	Mus musculus DENN/MADD domain containing 4B (Dennd4b), mRNA [NM_201407]	-2,4	0,18
Cntnap2	NM_001004357	Mus musculus contactin associated protein-like 2 (Cntnap2), transcript variant 1, mRNA [NM_001004357]	-3,0	0,12
Ank1	NM_031158	Mus musculus ankyrin 1, erythroid (Ank1), mRNA [NM_031158]	-1,9	0,27
Dnajb5	NM_019874	Mus musculus DnaJ (Hsp40) homolog, subfamily B, member 5 (Dnajb5), mRNA [NM_019874]	-2,6	0,16
5730559C18Rik	NM_028872	Mus musculus RIKEN cDNA 5730559C18 gene (5730559C18Rik), mRNA [NM_028872]	-2,4	0,18
Col24a1	NM_027770	Mus musculus procollagen, type XXIV, alpha 1 (Col24a1), mRNA [NM_027770]	-3,2	0,11
Nudt4	NM_027722	Mus musculus nudix (nucleoside diphosphate linked moiety X)-type motif 4 (Nudt4), mRNA [NM_027722]	-2,0	0,25
Aqp4	NM_009700	Mus musculus aquaporin 4 (Aqp4), mRNA [NM_009700]	-4,2	0,05
Cited4	NM_019563	Mus musculus Cbp/p300-interacting transactivator, with Glu/Asp-rich carboxy-terminal domain, 4 (Cited4), mRNA [NM_019563]	-2,5	0,18
Olf446	NM_146295	Mus musculus olfactory receptor 446 (Olf446), mRNA [NM_146295]	-2,2	0,22
Pcp41	AK002772	Mus musculus adult male kidney cDNA, RIKEN full-length enriched library, clone:0610037I05 product:hypothetical protein, full insert sequence. [AK002772]	-2,4	0,18
Col22a1	XM_981889	PREDICTED: Mus musculus collagen, type XXII, alpha 1, transcript variant 2 (Col22a1), mRNA [XM_981889]	-2,2	0,22
Pdgfb	NM_011057	Mus musculus platelet derived growth factor, B polypeptide (Pdgfb), mRNA [NM_011057]	-2,1	0,24

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A_51_P383 950	A_51_P3839 50	Unknown	-2,0	0,25
3110057O1 2Rik	NM_026622	Mus musculus RIKEN cDNA 3110057O12 gene (3110057O12Rik), mRNA [NM_026622]	-2,7	0,15
Sema6c	NM_011351	Mus musculus sema domain, transmembrane domain (TM), and cytoplasmic domain, (semaphorin) 6C (Sema6c), mRNA [NM_011351]	-2,7	0,16
Tk1	NM_009387	Mus musculus thymidine kinase 1 (Tk1), mRNA [NM_009387]	-2,5	0,17
Rasd2	XM_204287	PREDICTED: Mus musculus RASD family, member 2 (Rasd2), mRNA [XM_204287]	-2,7	0,15
Agt	NM_007428	Mus musculus angiotensinogen (serpin peptidase inhibitor, clade A, member 8) (Agt), mRNA [NM_007428]	-2,0	0,25
Fndc5	NM_027402	Mus musculus fibronectin type III domain containing 5 (Fndc5), mRNA [NM_027402]	-2,4	0,19
Lynx1	NM_011838	Mus musculus Ly6/neurotoxin 1 (Lynx1), mRNA [NM_011838]	-2,3	0,21
Sh3kbp1	NM_021389	Mus musculus SH3-domain kinase binding protein 1 (Sh3kbp1), mRNA [NM_021389]	-2,5	0,18
Serpine2	NM_009255	Mus musculus serine (or cysteine) peptidase inhibitor, clade E, member 2 (Serpine2), mRNA [NM_009255]	-2,0	0,25
Txlnb	NM_138628	Mus musculus taxilin beta (Txlnb), mRNA [NM_138628]	-2,0	0,25
Fzd7	NM_008057	Mus musculus frizzled homolog 7 (Drosophila) (Fzd7), mRNA [NM_008057]	-2,1	0,23
A230075M0 4Rik	AK084787	Mus musculus 13 days embryo heart cDNA, RIKEN full-length enriched library, clone:D330042116 product:unclassifiable, full insert sequence [AK084787]	-2,1	0,23
Cpt1b	NM_009948	Mus musculus carnitine palmitoyltransferase 1b, muscle (Cpt1b), mRNA [NM_009948]	-2,1	0,23
Clic5	NM_172621	Mus musculus chloride intracellular channel 5 (Clic5), mRNA [NM_172621]	-2,0	0,25
Clcn1	NM_013491	Mus musculus chloride channel 1 (Clcn1), mRNA [NM_013491]	-2,9	0,14
Fbxo2	NM_176848	Mus musculus F-box protein 2 (Fbxo2), mRNA [NM_176848]	-2,0	0,25
Pdlim7	NM_026131	Mus musculus PDZ and LIM domain 7 (Pdlim7), mRNA [NM_026131]	-2,2	0,22
Znrf1	AK078819	Mus musculus 16 days embryo lung cDNA, RIKEN full-length enriched library, clone:8430426C06 product:hypothetical RING finger containing protein, full insert sequence [AK078819]	-1,9	0,27
Cabc1	NM_023341	Mus musculus chaperone, ABC1 activity of bc1 complex like (S. pombe) (Cabc1), mRNA [NM_023341]	-2,2	0,22
Stxbp4	NM_011505	Mus musculus syntaxin binding protein 4 (Stxbp4), mRNA [NM_011505]	-2,3	0,20
Amd1	Z14986	M.musculus mRNA encoding adenosylmethionine decarboxylase. [Z14986]	-2,4	0,18
Yipf7	NM_023784	Mus musculus Yip1 domain family, member 7 (Yipf7), mRNA [NM_023784]	-1,8	0,29
1700020C1 1Rik	NM_026443	Mus musculus RIKEN cDNA 1700020C11 gene (1700020C11Rik), mRNA [NM_026443]	-2,0	0,26
Ampd1	NM_0010333 03	Mus musculus adenosine monophosphate deaminase 1 (isoform M) (Ampd1), mRNA [NM_001033303]	-1,9	0,27
Smoc2	NM_022315	Mus musculus SPARC related modular calcium binding 2 (Smoc2), mRNA [NM_022315]	-2,2	0,22
A_52_P265 9	A_52_P2659	Unknown	-2,4	0,19
Ache	NM_009599	Mus musculus acetylcholinesterase (Ache), mRNA [NM_009599]	-2,5	0,17
Kcnn1	NM_032397	Mus musculus potassium intermediate/small conductance calcium-activated channel, subfamily N, member 1 (Kcnn1), mRNA [NM_032397]	-1,9	0,26
2610524H0 6Rik	NM_181075	Mus musculus RIKEN cDNA 2610524H06 gene (2610524H06Rik), mRNA [NM_181075]	-2,1	0,23



## Smad4-/-

Abcb4	NM_008830	Mus musculus ATP-binding cassette, sub-family B (MDR/TAP), member 4 (Abcb4), mRNA [NM_008830]	-2,1	0,24
Cacna1h	NM_021415	Mus musculus calcium channel, voltage-dependent, T type, alpha 1H subunit (Cacna1h), mRNA [NM_021415]	-2,4	0,19
Capn3	NM_007601	Mus musculus calpain 3 (Capn3), mRNA [NM_007601]	-1,9	0,27
Sdhb	NM_023374	Mus musculus succinate dehydrogenase complex, subunit B, iron sulfur (Ip) (Sdhb), mRNA [NM_023374]	-1,9	0,27
NAP026179-1	NAP026179-1	Unknown	-2,1	0,23
Crym	NM_016669	Mus musculus crystallin, mu (Crym), mRNA [NM_016669]	-1,8	0,28
1110054M08Rik	AK039760	Mus musculus adult male spinal cord cDNA, RIKEN full-length enriched library, clone:A330104M08 product:unclassifiable, full insert sequence [AK039760]	-1,9	0,26
Slc2a12	NM_178934	Mus musculus solute carrier family 2 (facilitated glucose transporter), member 12 (Slc2a12), mRNA [NM_178934]	-1,9	0,27
Irs1	AK141842	Mus musculus 12 days embryo spinal ganglion cDNA, RIKEN full-length enriched library, clone:D130017A09 product:insulin receptor substrate 1, full insert sequence. [AK141842]	-2,2	0,22
Phka1	NM_008832	Mus musculus phosphorylase kinase alpha 1 (Phka1), transcript variant 1, mRNA [NM_008832]	-2,3	0,21
Podxl2	NM_176973	Mus musculus podocalyxin-like 2 (Podxl2), mRNA [NM_176973]	-1,9	0,27
Ccrn4l	NM_009834	Mus musculus CCR4 carbon catabolite repression 4-like (S. cerevisiae) (Ccrn4l), mRNA [NM_009834]	-2,1	0,23
Rbm38	NM_019547	Mus musculus RNA binding motif protein 38 (Rbm38), mRNA [NM_019547]	-2,3	0,20
9530058B02Rik	NM_026633	Mus musculus RIKEN cDNA 9530058B02 gene (9530058B02Rik), mRNA [NM_026633]	-1,9	0,27
A130092J06Rik	NM_175511	Mus musculus RIKEN cDNA A130092J06 gene (A130092J06Rik), mRNA [NM_175511]	-2,2	0,22
Egln1	NM_053207	Mus musculus EGL nine homolog 1 (C. elegans) (Egln1), mRNA [NM_053207]	-2,1	0,23
Clic5	NM_172621	Mus musculus chloride intracellular channel 5 (Clic5), mRNA [NM_172621]	-2,3	0,20
Sall4	NM_175303	Mus musculus sal-like 4 (Drosophila) (Sall4), transcript variant a, mRNA [NM_175303]	-3,0	0,13
6430571L13Rik	NM_175486	Mus musculus RIKEN cDNA 6430571L13 gene (6430571L13Rik), mRNA [NM_175486]	-2,8	0,14
Frat2	NM_177603	Mus musculus frequently rearranged in advanced T-cell lymphomas 2 (Frat2), mRNA [NM_177603]	-2,1	0,23
Arhgap20	NM_175535	Mus musculus Rho GTPase activating protein 20 (Arhgap20), mRNA [NM_175535]	-2,3	0,21
1810014F10Rik	NM_026928	Mus musculus RIKEN cDNA 1810014F10 gene (1810014F10Rik), mRNA [NM_026928]	-1,8	0,29
Lpl	NM_008509	Mus musculus lipoprotein lipase (Lpl), mRNA [NM_008509]	-2,6	0,16
Foxi2	NM_183193	Mus musculus forkhead box I2 (Foxi2), mRNA [NM_183193]	-2,1	0,23
Cox10	NM_178379	Mus musculus COX10 homolog, cytochrome c oxidase assembly protein, heme A: farnesyltransferase (yeast) (Cox10), mRNA [NM_178379]	-2,2	0,22
M17518	M17518	Mouse lactate dehydrogenase A-4 pseudogene mRNA, 3' end [M17518]	-2,5	0,17
Ppapdc3	NM_145521	Mus musculus phosphatidic acid phosphatase type 2 domain containing 3 (Ppapdc3), mRNA [NM_145521]	-2,4	0,19
1810014B01Rik	AK090016	Mus musculus brain CRL-1443 BC3H1 cDNA, RIKEN full-length enriched library, clone:G430060N02 product:unclassifiable, full insert sequence [AK090016]	-2,1	0,24
Bpgm	NM_007563	Mus musculus 2,3-bisphosphoglycerate mutase (Bpgm), mRNA [NM_007563]	-1,9	0,27
P2rx3	NM_145526	Mus musculus purinergic receptor P2X, ligand-gated ion channel, 3 (P2rx3), mRNA [NM_145526]	-2,3	0,21

## Smad4-/-

E330017A01Rik	NM_175011	Mus musculus RIKEN cDNA E330017A01 gene (E330017A01Rik), mRNA [NM_175011]	-2,0	0,25
Thra	NM_178060	Mus musculus thyroid hormone receptor alpha (Thra), mRNA [NM_178060]	-2,1	0,23
Nfil3	NM_017373	Mus musculus nuclear factor, interleukin 3, regulated (Nfil3), mRNA [NM_017373]	-2,8	0,14
Homer1	NM_152134	Mus musculus homer homolog 1 (Drosophila) (Homer1), transcript variant d, mRNA [NM_152134]	-2,1	0,23
Fkbp5	NM_010220	Mus musculus FK506 binding protein 5 (Fkbp5), mRNA [NM_010220]	-2,5	0,18
Actc1	NM_009608	Mus musculus actin, alpha, cardiac (Actc1), mRNA [NM_009608]	-2,4	0,19
Cd59b	NM_181858	Mus musculus CD59b antigen (Cd59b), mRNA [NM_181858]	-2,1	0,24
2310005E10Rik	NM_172398	Mus musculus RIKEN cDNA 2310005E10 gene (2310005E10Rik), mRNA [NM_172398]	-1,7	0,30
Plekha6	NM_182930	Mus musculus pleckstrin homology domain containing, family A member 6 (Plekha6), mRNA [NM_182930]	-2,2	0,21
Dennd4b	NM_201407	Mus musculus DENN/MADD domain containing 4B (Dennd4b), mRNA [NM_201407]	-2,0	0,25
Pcsk6	XM_355911	PREDICTED: Mus musculus proprotein convertase subtilisin [XM_355911]	-2,1	0,23
EG245190	XM_486328	PREDICTED: Mus musculus hypothetical protein 6430704N06 (6430704N06), mRNA [XM_486328]	-3,1	0,12
Vegfa	NM_009505	Mus musculus vascular endothelial growth factor A (Vegfa), transcript variant 2, mRNA [NM_009505]	-2,1	0,23
Cpt1b	NM_009948	Mus musculus carnitine palmitoyltransferase 1b, muscle (Cpt1b), mRNA [NM_009948]	-1,9	0,27
ENSMUSG00000052976	BB609792	BB609792 RIKEN full-length enriched, 18 days embryo Mus musculus cDNA clone 1190008K20 5', mRNA sequence [BB609792]	-2,1	0,24
Cited4	NM_019563	Mus musculus Cbp/p300-interacting transactivator, with Glu/Asp-rich carboxy-terminal domain, 4 (Cited4), mRNA [NM_019563]	-2,3	0,20
Iqgap2	NM_027711	Mus musculus IQ motif containing GTPase activating protein 2 (Iqgap2), mRNA [NM_027711]	-2,3	0,20
TC1638459	TC1638459	Q9JIF1_RAT (Q9JIF1) Kalirin-12a, partial (6%) [TC1638459]	-2,4	0,18
Hist1h1e	BC032927	Mus musculus, clone IMAGE:3465495, mRNA [BC032927]	-2,1	0,23
Jph2	AK157145	Mus musculus activated spleen cDNA, RIKEN full-length enriched library, clone:F830204M13 product:junctophilin 2, full insert sequence [AK157145]	-2,1	0,23
Kctd15	NM_146188	Mus musculus potassium channel tetramerisation domain containing 15 (Kctd15), mRNA [NM_146188]	-1,9	0,26
LOC672434	XR_003860	PREDICTED: Mus musculus similar to S-adenosylmethionine decarboxylase 1 (LOC672434), mRNA [XR_003860]	-2,5	0,18
ENSMUST00000049869	ENSMUST0000049869	predicted gene, ENSMUSG00000051555 [Source:MarkerSymbol;Acc:MGI:3642452] [ENSMUST00000049869]	-2,7	0,15
C330006P03Rik	AK049142	Mus musculus ES cells cDNA, RIKEN full-length enriched library, clone:C330006P03 product:unclassifiable, full insert sequence [AK049142]	-2,1	0,23
Tcfef	NM_011549	Mus musculus transcription factor EB (Tcfef), mRNA [NM_011549]	-2,4	0,19
Txnip	NM_023719	Mus musculus thioredoxin interacting protein (Txnip), transcript variant 2, mRNA [NM_023719]	-2,3	0,20
Adk	NM_134079	Mus musculus adenosine kinase (Adk), mRNA [NM_134079]	-1,8	0,28
Kif1b	NM_008441	Mus musculus kinesin family member 1B (Kif1b), transcript variant 1, mRNA [NM_008441]	-2,0	0,25
Arc	NM_018790	Mus musculus activity regulated cytoskeletal-associated protein (Arc), mRNA [NM_018790]	-2,5	0,18
Zfp467	NM_020589	Mus musculus zinc finger protein 467 (Zfp467), transcript variant 1, mRNA [NM_020589]	-2,0	0,25

## Smad4-/-

Tarsl2	NM_172310	Mus musculus threonyl-tRNA synthetase-like 2 (Tarsl2), mRNA [NM_172310]	-1,8	0,28
Cycc	NM_007808	Mus musculus cytochrome c, somatic (Cycc), mRNA [NM_007808]	-1,8	0,29
Rcsd1	NM_178593	Mus musculus RCSD domain containing 1 (Rcsd1), transcript variant 1, mRNA [NM_178593]	-2,2	0,22
Slc30a2	AK031425	Mus musculus 13 days embryo male testis cDNA, RIKEN full-length enriched library, clone:6030430C21 product:ZINC TRANSPORTER 2 (ZNT-2) homolog [Rattus norvegicus], full insert sequence [AK031425]	-2,1	0,23
Metrn	NM_133719	Mus musculus meteorin, glial cell differentiation regulator (Metrn), mRNA [NM_133719]	-2,5	0,18
Pgea1	NM_028634	Mus musculus PKD2 interactor, golgi and endoplasmic reticulum associated 1 (Pgea1), mRNA [NM_028634]	-1,7	0,30
2310014F07Rik	AK009336	Mus musculus adult male tongue cDNA, RIKEN full-length enriched library, clone:2310014F07 product:inferred: RIKEN cDNA 2310014F07 gene, full insert sequence. [AK009336]	-2,4	0,18
8230402K04Rik	NM_177755	Mus musculus RIKEN cDNA 8230402K04 gene (8230402K04Rik), mRNA [NM_177755]	-2,4	0,19
Gpt2	NM_173866	Mus musculus glutamic pyruvate transaminase (alanine aminotransferase) 2 (Gpt2), mRNA [NM_173866]	-1,9	0,27
Lypd6	NM_177139	Mus musculus LY6/PLAUR domain containing 6 (Lypd6), mRNA [NM_177139]	-2,5	0,18
4921511C04Rik	NM_027580	Mus musculus RIKEN cDNA 4921511C04 gene (4921511C04Rik), mRNA [NM_027580]	-3,1	0,12
4930402E16Rik	NM_198308	Mus musculus RIKEN cDNA 4930402E16 gene (4930402E16Rik), mRNA [NM_198308]	-2,1	0,24
1110012N22Rik	BC091000	Mus musculus RIKEN cDNA 1110012N22 gene, mRNA (cDNA clone MGC:107698 IMAGE:6756293), complete cds. [BC091000]	-1,9	0,26
Gm498	XM_146165	PREDICTED: Mus musculus gene model 498, (NCBI) (LOC244239), mRNA [XM_146165]	-3,2	0,11
Amd2	NM_007444	Mus musculus S-adenosylmethionine decarboxylase 2 (Amd2), mRNA [NM_007444]	-2,2	0,22
Akap1	NM_009648	Mus musculus A kinase (PRKA) anchor protein 1 (Akap1), transcript variant 1, mRNA [NM_009648]	-2,3	0,21
Six2	NM_011380	Mus musculus sine oculis-related homeobox 2 homolog (Drosophila) (Six2), mRNA [NM_011380]	-2,5	0,17
Ptpn3	AV463959	AV463959 Abe mouse ES cell Mus musculus cDNA clone 19990831EK03H10, mRNA sequence [AV463959]	-2,4	0,18
Rhobtb2	NM_153514	Mus musculus Rho-related BTB domain containing 2 (Rhobtb2), mRNA [NM_153514]	-2,0	0,26
ENSMUST0000071077	ENSMUST0000071077	spermatogenesis associated 18 [Source:MarkerSymbol;Acc:MGI:1920722] [ENSMUST0000071077]	-2,3	0,20
N28178	NM_172690	Mus musculus expressed sequence N28178 (N28178), mRNA [NM_172690]	-1,8	0,29
Phtf2	NM_172992	Mus musculus putative homeodomain transcription factor 2 (Phtf2), mRNA [NM_172992]	-1,7	0,31
Tspan8	NM_146010	Mus musculus tetraspanin 8 (Tspan8), mRNA [NM_146010]	-1,8	0,28
AK035785	AK035785	Mus musculus 16 days neonate cerebellum cDNA, RIKEN full-length enriched library, clone:9630004F19 product:unclassifiable, full insert sequence [AK035785]	-2,3	0,20
AK038400	AK038400	Mus musculus adult male hypothalamus cDNA, RIKEN full-length enriched library, clone:A230004G12 product:wingless related MMTV integration site 2b, full insert sequence. [AK038400]	-1,9	0,28
Fn3k	NM_022014	Mus musculus fructosamine 3 kinase (Fn3k), transcript variant 1, mRNA [NM_022014]	-2,6	0,17
Neu2	NM_015750	Mus musculus neuraminidase 2 (Neu2), mRNA [NM_015750]	-2,2	0,22
Nfil3	NM_017373	Mus musculus nuclear factor, interleukin 3, regulated (Nfil3), mRNA [NM_017373]	-2,6	0,17
BC034069	BC034069	Mus musculus RIKEN cDNA A830073O21 gene, mRNA (cDNA clone MGC:31276 IMAGE:4217593), complete cds. [BC034069]	-1,9	0,28
Klhl31	NM_172925	Mus musculus kelch-like 31 (Drosophila) (Klhl31), mRNA [NM_172925]	-1,8	0,29

## Smad4<sup>-/-</sup>

Plekhf1	NM_024413	Mus musculus pleckstrin homology domain containing, family F (with FYVE domain) member 1 (Plekhf1), mRNA [NM_024413]	-2,2	0,22
Pde7a	NM_008802	Mus musculus phosphodiesterase 7A (Pde7a), mRNA [NM_008802]	-1,7	0,32
Arhgap20	NM_175535	Mus musculus Rho GTPase activating protein 20 (Arhgap20), mRNA [NM_175535]	-2,3	0,20
4833422F2 4Rik	NM_029021	Mus musculus RIKEN cDNA 4833422F24 gene (4833422F24Rik), mRNA [NM_029021]	-2,4	0,19
D16Bwg154 3e	AK149652	Mus musculus bone marrow macrophage cDNA, RIKEN full-length enriched library, clone:G530007L06 product:unclassifiable, full insert sequence [AK149652]	-1,9	0,27
D16H22S68 0E	NM_138583	Mus musculus DNA segment, Chr 16, human D22S680E, expressed (D16H22S680E), mRNA [NM_138583]	-1,8	0,28
Narf	NM_026272	Mus musculus nuclear prelamin A recognition factor (Narf), mRNA [NM_026272]	-1,9	0,27
Card11	NM_175362	Mus musculus caspase recruitment domain family, member 11 (Card11), mRNA [NM_175362]	-2,7	0,16
Eml1	NM_0010433 35	Mus musculus echinoderm microtubule associated protein like 1 (Eml1), transcript variant 1, mRNA [NM_001043335]	-2,9	0,14
Sor1	AF031816	Mus musculus hybrid receptor gp250 precursor, mRNA, partial cds. [AF031816]	-2,2	0,22
AK035485	AK035485	Mus musculus adult male urinary bladder cDNA, RIKEN full-length enriched library, clone:9530055M18 product:unclassifiable, full insert sequence [AK035485]	-2,2	0,21
Metrn	NM_133719	Mus musculus meteorin, glial cell differentiation regulator (Metrn), mRNA [NM_133719]	-1,9	0,27
Pfkfb3	NM_133232	Mus musculus 6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 3 (Pfkfb3), mRNA [NM_133232]	-2,9	0,13
Wnk2	NM_029361	Mus musculus WNK lysine deficient protein kinase 2 (Wnk2), mRNA [NM_029361]	-2,0	0,26
5830404H0 4Rik	AK220454	Mus musculus mRNA for mKIAA4045 protein [AK220454]	-1,8	0,28
Lpin1	AF180471	Mus musculus Lpin1 (Kiaa0188) mRNA, complete cds [AF180471]	-1,9	0,27
Gnmt	NM_010321	Mus musculus glycine N-methyltransferase (Gnmt), mRNA [NM_010321]	-2,2	0,22
Smox	NM_145533	Mus musculus spermine oxidase (Smox), mRNA [NM_145533]	-2,3	0,21
Bdh1	NM_175177	Mus musculus 3-hydroxybutyrate dehydrogenase, type 1 (Bdh1), mRNA [NM_175177]	-3,9	0,07
Arhgef9	NM_0010333 29	Mus musculus Cdc42 guanine nucleotide exchange factor (GEF) 9 (Arhgef9), mRNA [NM_001033329]	-1,9	0,27
Ptpr	NM_011217	Mus musculus protein tyrosine phosphatase, receptor type, R (Ptpr), mRNA [NM_011217]	-1,7	0,31
Ckmt2	NM_198415	Mus musculus creatine kinase, mitochondrial 2 (Ckmt2), mRNA [NM_198415]	-2,8	0,15
Plcg1	AF027185	Mus musculus ELP mRNA, complete cds. [AF027185]	-2,3	0,20
Smcr8	NM_0010854 40	Mus musculus Smith-Magenis syndrome chromosome region, candidate 8 homolog (human) (Smcr8), transcript variant 1, mRNA [NM_001085440]	-1,9	0,27
Lmbr1	NM_020295	Mus musculus limb region 1 (Lmbr1), mRNA [NM_020295]	-2,0	0,25
Qser1	XM_130565	PREDICTED: Mus musculus glutamine and serine rich 1, transcript variant 1 (Qser1), mRNA [XM_130565]	-1,9	0,27
Tirap	NM_054096	Mus musculus toll-interleukin 1 receptor (TIR) domain-containing adaptor protein (Tirap), mRNA [NM_054096]	-2,2	0,22
Igfals	NM_008340	Mus musculus insulin-like growth factor binding protein, acid labile subunit (Igfals), mRNA [NM_008340]	-3,1	0,12
TC1632605	TC1632605	Q8JZP8_MOUSE (Q8JZP8) Zfp689 protein, partial (18%) [TC1632605]	-1,7	0,30
Klhl31	NM_172925	Mus musculus kelch-like 31 (Drosophila) (Klhl31), mRNA [NM_172925]	-2,0	0,25

## Smad4<sup>-/-</sup>

Arhgap20	NM_175535	Mus musculus Rho GTPase activating protein 20 (Arhgap20), mRNA [NM_175535]	-2,0	0,25
Zic4	AK028305	Mus musculus 17 days embryo head cDNA, RIKEN full-length enriched library, clone:3322402110 product:zinc finger protein of the cerebellum 4, full insert sequence. [AK028305]	-2,3	0,20
Ckb	NM_021273	Mus musculus creatine kinase, brain (Ckb), mRNA [NM_021273]	-2,4	0,19
3110057 O12Rik	NM_026622	Mus musculus RIKEN cDNA 3110057O12 gene (3110057O12Rik), mRNA [NM_026622]	-2,1	0,23
Alox12	NM_007440	Mus musculus arachidonate 12-lipoxygenase (Alox12), mRNA [NM_007440]	-2,2	0,21
Timp4	NM_080639	Mus musculus tissue inhibitor of metalloproteinase 4 (Timp4), mRNA [NM_080639]	-2,3	0,21
Car4	NM_007607	Mus musculus carbonic anhydrase 4 (Car4), mRNA [NM_007607]	-2,1	0,24
Stxbp4	NM_011505	Mus musculus syntaxin binding protein 4 (Stxbp4), mRNA [NM_011505]	-2,3	0,21
Kihl23	NM_177784	Mus musculus kelch-like 23 (Drosophila) (Kihl23), mRNA [NM_177784]	-1,7	0,30
Mccc2	NM_030026	Mus musculus methylcrotonoyl-Coenzyme A carboxylase 2 (beta) (Mccc2), mRNA [NM_030026]	-1,8	0,29
Jam2	NM_023844	Mus musculus junction adhesion molecule 2 (Jam2), mRNA [NM_023844]	-2,0	0,25
Cdc34	XM_982476	PREDICTED: Mus musculus cell division cycle 34 homolog (S. cerevisiae), transcript variant 2 (Cdc34), mRNA [XM_982476]	-1,7	0,30
Sar1b	NM_025535	Mus musculus SAR1 gene homolog B (S. cerevisiae) (Sar1b), mRNA [NM_025535]	-1,8	0,29
Ube2b	NM_009458	Mus musculus ubiquitin-conjugating enzyme E2B, RAD6 homology (S. cerevisiae) (Ube2b), mRNA [NM_009458]	-1,6	0,33
Slc16a10	NM_028247	Mus musculus solute carrier family 16 (monocarboxylic acid transporters), member 10 (Slc16a10), mRNA [NM_028247]	-1,8	0,29
Bmp7	NM_007557	Mus musculus bone morphogenetic protein 7 (Bmp7), mRNA [NM_007557]	-1,6	0,32
Slc2a4	NM_009204	Mus musculus solute carrier family 2 (facilitated glucose transporter), member 4 (Slc2a4), mRNA [NM_009204]	-1,8	0,29
Ldha	NM_010699	Mus musculus lactate dehydrogenase A (Ldha), mRNA [NM_010699]	-1,7	0,30
5031439 G07Rik	NM_0010332 73	Mus musculus RIKEN cDNA 5031439G07 gene (5031439G07Rik), mRNA [NM_001033273]	-1,9	0,26
Lmbr1	NM_020295	Mus musculus limb region 1 (Lmbr1), mRNA [NM_020295]	-1,8	0,29
Prom1	NM_008935	Mus musculus prominin 1 (Prom1), mRNA [NM_008935]	-2,0	0,24
Adrbk1	NM_130863	Mus musculus adrenergic receptor kinase, beta 1 (Adrbk1), mRNA [NM_130863]	-1,8	0,28
Snta1	NM_009228	Mus musculus syntrophin, acidic 1 (Snta1), mRNA [NM_009228]	-1,8	0,28
Hbb-b1	NM_008220	Mus musculus hemoglobin, beta adult major chain (Hbb-b1), mRNA [NM_008220]	-2,5	0,18
Git25d2	NM_177756	Mus musculus glycosyltransferase 25 domain containing 2 (Git25d2), mRNA [NM_177756]	-1,8	0,29
Dusp8	NM_008748	Mus musculus dual specificity phosphatase 8 (Dusp8), mRNA [NM_008748]	-2,0	0,25
AI846867	AI846867	UI-M-AI1-afk-f-12-0-UI.s1 NIH_BMAP_MBS_N Mus musculus cDNA clone UI-M-AI1-afk-f-12-0-UI 3'. [AI846867]	-1,7	0,30
BB66708 5	BB667085	BB667085 RIKEN full-length enriched, 10, 11 days embryo Mus musculus cDNA clone 2810416G20 3', mRNA sequence [BB667085]	-2,8	0,15
EG66897 8	XR_002277	PREDICTED: Mus musculus similar to Voltage-dependent anion-selective channel protein 1 (VDAC-1) (mVDAC1) (mVDAC5) (Outer mitochondrial membrane protein porin 1) (Plasmalemmal porin) (LOC668978), mRNA [XR_002277]	-1,5	0,35
Ank	NM_020332	Mus musculus progressive ankylosis (Ank), mRNA [NM_020332]	-1,6	0,34

## Smad4-/-

Acaa2	NM_177470	Mus musculus acetyl-Coenzyme A acyltransferase 2 (mitochondrial 3-oxoacyl-Coenzyme A thiolase) (Acaa2), mRNA [NM_177470]	-2,1	0,23
Prkg1	AK052877	Mus musculus 16 days neonate heart cDNA, RIKEN full-length enriched library, clone:D830017E01 product:inferred: protein kinase, cGMP-dependent, type I, full insert sequence [AK052877]	-1,7	0,31
Echdc3	NM_024208	Mus musculus enoyl Coenzyme A hydratase domain containing 3 (Echdc3), mRNA [NM_024208]	-1,9	0,28
P2ry1	NM_008772	Mus musculus purinergic receptor P2Y, G-protein coupled 1 (P2ry1), mRNA [NM_008772]	-1,6	0,33
0610010D24Rik	BC043115	Mus musculus RIKEN cDNA 0610010D24 gene, mRNA (cDNA clone MGC:58041 IMAGE:6408630), complete cds [BC043115]	-2,1	0,24
BC072620	NM_001013758	Mus musculus cDNA sequence BC072620 (BC072620), mRNA [NM_001013758]	-2,0	0,24
Calm1	NM_009790	Mus musculus calmodulin 1 (Calm1), mRNA [NM_009790]	-1,9	0,26
Klf15	NM_023184	Mus musculus Kruppel-like factor 15 (Klf15), mRNA [NM_023184]	-1,9	0,27
Cacng6	NM_133183	Mus musculus calcium channel, voltage-dependent, gamma subunit 6 (Cacng6), mRNA [NM_133183]	-2,3	0,21
Mapkapk2	NM_008551	Mus musculus MAP kinase-activated protein kinase 2 (Mapkapk2), mRNA [NM_008551]	-1,9	0,28
Suclg2	NM_011507	Mus musculus succinate-Coenzyme A ligase, GDP-forming, beta subunit (Suclg2), mRNA [NM_011507]	-1,8	0,28
Plekha6	BC025841	Mus musculus pleckstrin homology domain containing, family A member 6, mRNA (cDNA clone IMAGE:5149318), partial cds. [BC025841]	-1,6	0,32
Sesn1	NM_001013370	Mus musculus sestrin 1 (Sesn1), mRNA [NM_001013370]	-1,8	0,28
Ldhd	NM_008492	Mus musculus lactate dehydrogenase B (Ldhd), mRNA [NM_008492]	-2,2	0,22
6820401H01Rik	AK039998	Mus musculus 0 day neonate thymus cDNA, RIKEN full-length enriched library, clone:A430041H23 product:unclassifiable, full insert sequence. [AK039998]	-1,5	0,35
5530400B01Rik	AK017419	Mus musculus 10 days neonate head cDNA, RIKEN full-length enriched library, clone:5530400B01 product:hypothetical Isoleucine-rich region containing protein, full insert sequence. [AK017419]	-2,1	0,23
Slc37a4	NM_008063	Mus musculus solute carrier family 37 (glucose-6-phosphate transporter), member 4 (Slc37a4), mRNA [NM_008063]	-1,6	0,32
Gpd2	AK080240	Mus musculus adult male aorta and vein cDNA, RIKEN full-length enriched library, clone:A530087K12 product:unclassifiable, full insert sequence [AK080240]	-1,8	0,29
Akp2	NM_007431	Mus musculus alkaline phosphatase 2, liver (Akp2), mRNA [NM_007431]	-2,4	0,20
Retsat	NM_026159	Mus musculus retinol saturase (all trans retinol 13,14 reductase) (Retsat), mRNA [NM_026159]	-2,2	0,21
Eml1	AK082168	Mus musculus 0 day neonate cerebellum cDNA, RIKEN full-length enriched library, clone:C230016L24 product:unclassifiable, full insert sequence. [AK082168]	-2,0	0,24
2010011I20Rik	NM_025912	Mus musculus RIKEN cDNA 2010011I20 gene (2010011I20Rik), mRNA [NM_025912]	-1,9	0,27
Bmp6	NM_007556	Mus musculus bone morphogenetic protein 6 (Bmp6), mRNA [NM_007556]	-2,0	0,25
Oxct1	NM_024188	Mus musculus 3-oxoacid CoA transferase 1 (Oxct1), mRNA [NM_024188]	-1,8	0,29
2310045A20Rik	NM_172710	Mus musculus RIKEN cDNA 2310045A20 gene (2310045A20Rik), mRNA [NM_172710]	-1,8	0,29
Phkg1	NM_011079	Mus musculus phosphorylase kinase gamma 1 (Phkg1), mRNA [NM_011079]	-1,8	0,29
Ppm1j	NM_027982	Mus musculus protein phosphatase 1J (Ppm1j), mRNA [NM_027982]	-1,7	0,32
D830039M14Rik	AK028369	Mus musculus 18 days pregnant adult female placenta and extra embryonic tissue cDNA, RIKEN full-length enriched library, clone:3830425J23 product:hypothetical protein, full insert sequence. [AK028369]	-1,7	0,31
Synpo	AK141564	Mus musculus adult male hippocampus cDNA, RIKEN full-length enriched library, clone:C630029A17 product:synaptopodin, full insert sequence. [AK141564]	-2,0	0,24
Dmn	NM_201639	Mus musculus desmuslin (Dmn), transcript variant 1, mRNA [NM_201639]	-1,7	0,31

## Smad4-/-

Tbl1xr1	AK021294	Mus musculus 13 days embryo stomach cDNA, RIKEN full-length enriched library, clone:D530019O13 product:hypothetical protein, full insert sequence. [AK021294]	-1,9	0,27
LOC545714	XR_004420	PREDICTED: Mus musculus similar to protein phosphatase 2, regulatory subunit B (B56), alpha isoform (LOC545714), mRNA [XR_004420]	-1,8	0,29
7530404M11Rik	NM_183224	Mus musculus RIKEN cDNA 7530404M11 gene (7530404M11Rik), mRNA [NM_183224]	-1,7	0,30
BC021785	NM_001001489	Mus musculus cDNA sequence BC021785 (BC021785), mRNA [NM_001001489]	-2,5	0,18
AK046172	AK046172	Mus musculus adult male corpora quadrigemina cDNA, RIKEN full-length enriched library, clone:B230346L21 product:unclassifiable, full insert sequence [AK046172]	-3,0	0,13
Snrpn	NM_013670	Mus musculus small nuclear ribonucleoprotein N (Snrpn), transcript variant 1, mRNA [NM_013670]	-2,1	0,24
Fzd9	AK021164	Mus musculus 16 days embryo head cDNA, RIKEN full-length enriched library, clone:C130077B15 product:frizzled homolog 9 (Drosophila), full insert sequence. [AK021164]	-2,0	0,25
Apbb2	NM_009686	Mus musculus amyloid beta (A4) precursor protein-binding, family B, member 2 (Apbb2), mRNA [NM_009686]	-1,5	0,34
Pde4dip	NM_001039376	Mus musculus phosphodiesterase 4D interacting protein (myomegalin) (Pde4dip), transcript variant 1, mRNA [NM_001039376]	-1,6	0,32
Snai3	NM_013914	Mus musculus snail homolog 3 (Drosophila) (Snai3), mRNA [NM_013914]	-2,9	0,13
2610200G18Rik	AK009389	Mus musculus adult male tongue cDNA, RIKEN full-length enriched library, clone:2310016I08 product:unclassifiable, full insert sequence [AK009389]	-2,0	0,25
Casq1	NM_009813	Mus musculus calsequestrin 1 (Casq1), mRNA [NM_009813]	-2,2	0,22
LOC627563	XR_004049	PREDICTED: Mus musculus similar to L-lactate dehydrogenase A chain (LDH-A) (LDH muscle subunit) (LDH-M) (LOC627563), mRNA [XR_004049]	-2,5	0,18
B230311B06Rik	BB643606	BB643606 RIKEN full-length enriched, adult male corpora quadrigemina Mus musculus cDNA clone B230311B06 5', mRNA sequence [BB643606]	-1,9	0,27
Cmtm5	NM_026066	Mus musculus CKLF-like MARVEL transmembrane domain containing 5 (Cmtm5), mRNA [NM_026066]	-2,9	0,14
Dci	NM_010023	Mus musculus dodecenyol-Coenzyme A delta isomerase (3,2 trans-enoyl-Coenzyme A isomerase) (Dci), mRNA [NM_010023]	-1,5	0,36
Tnfaip2	NM_009396	Mus musculus tumor necrosis factor, alpha-induced protein 2 (Tnfaip2), mRNA [NM_009396]	-1,8	0,29
Hist1h1a	NM_030609	Mus musculus histone cluster 1, H1a (Hist1h1a), mRNA [NM_030609]	-1,8	0,29
NAP063937-1	NAP063937-1	Unknown	-1,8	0,28
2610029K11Rik	AK011616	Mus musculus 10 days embryo whole body cDNA, RIKEN full-length enriched library, clone:2610029K11 product:unclassifiable, full insert sequence [AK011616]	-1,7	0,31
Cyp1a1	NM_009992	Mus musculus cytochrome P450, family 1, subfamily a, polypeptide 1 (Cyp1a1), mRNA [NM_009992]	-2,1	0,23
Fancc	NM_175027	Mus musculus Fanconi anemia, complementation group B (Fancc), mRNA [NM_175027]	-1,5	0,34
Asb4	NM_023048	Mus musculus ankyrin repeat and SOCS box-containing protein 4 (Asb4), mRNA [NM_023048]	-2,0	0,25
Ppm2c	NM_001033453	Mus musculus protein phosphatase 2C, magnesium dependent, catalytic subunit (Ppm2c), mRNA [NM_001033453]	-1,7	0,31
Endog	NM_007931	Mus musculus endonuclease G (Endog), mRNA [NM_007931]	-1,7	0,30
Mdh1	NM_008618	Mus musculus malate dehydrogenase 1, NAD (soluble) (Mdh1), mRNA [NM_008618]	-1,6	0,33
BC054438	NM_001001183	Mus musculus cDNA sequence BC054438 (BC054438), mRNA [NM_001001183]	-1,7	0,30
AK028520	AK028520	Mus musculus 0 day neonate skin cDNA, RIKEN full-length enriched library, clone:4632417G23 product:unclassifiable, full insert sequence. [AK028520]	-1,9	0,27
Cdc42ep1	NM_027219	Mus musculus CDC42 effector protein (Rho GTPase binding) 1 (Cdc42ep1), mRNA [NM_027219]	-1,7	0,30
Aes	NM_010347	Mus musculus amino-terminal enhancer of split (Aes), mRNA [NM_010347]	-2,2	0,22

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1700113H08Rik	AK007195	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:1700113H08 product:hypothetical protein, full insert sequence. [AK007195]	-2,6	0,16
Sdccag8	NM_029756	Mus musculus serologically defined colon cancer antigen 8 (Sdccag8), mRNA [NM_029756]	-1,7	0,31
Bcr	NM_001081412	Mus musculus breakpoint cluster region homolog (Bcr), mRNA [NM_001081412]	-2,2	0,22
Golph3	NM_025673	Mus musculus golgi phosphoprotein 3 (Golph3), mRNA [NM_025673]	-1,7	0,31
Cycc	NM_007808	Mus musculus cytochrome c, somatic (Cycc), mRNA [NM_007808]	-1,6	0,32
Sub1	NM_011294	Mus musculus SUB1 homolog (S. cerevisiae) (Sub1), mRNA [NM_011294]	-2,0	0,25
1500026H17Rik	AK005299	Mus musculus adult male cerebellum cDNA, RIKEN full-length enriched library, clone:1500026H17 product:unclassifiable, full insert sequence. [AK005299]	-1,6	0,32
4930519P11Rik	AK053350	Mus musculus 0 day neonate eyeball cDNA, RIKEN full-length enriched library, clone:E130011D12 product:hypothetical protein, full insert sequence. [AK053350]	-2,1	0,23
G0s2	NM_008059	Mus musculus G0/G1 switch gene 2 (G0s2), mRNA [NM_008059]	-1,9	0,27
Rab7	NM_009005	Mus musculus RAB7, member RAS oncogene family (Rab7), mRNA [NM_009005]	-1,5	0,36
Tirap	AK081514	Mus musculus 16 days embryo head cDNA, RIKEN full-length enriched library, clone:C130027E04 product:toll-interleukin 1 receptor (TIR) domain-containing adaptor protein, full insert sequence [AK081514]	-2,1	0,24
Cd300lg	NM_027987	Mus musculus CD300 antigen like family member G (Cd300lg), mRNA [NM_027987]	-1,8	0,28
Prei4	NM_028802	Mus musculus preimplantation protein 4 (Prei4), transcript variant 2, mRNA [NM_028802]	-1,6	0,33
Mapk9	NM_016961	Mus musculus mitogen activated protein kinase 9 (Mapk9), transcript variant 2, mRNA [NM_016961]	-1,6	0,33
Prei4	NM_028802	Mus musculus preimplantation protein 4 (Prei4), transcript variant 2, mRNA [NM_028802]	-1,6	0,34
Dnmt3a	NM_007872	Mus musculus DNA methyltransferase 3A (Dnmt3a), transcript variant 1, mRNA [NM_007872]	-1,8	0,30
NAP115505-1	NAP115505-1	Unknown	-2,5	0,17
Myoz3	NM_133363	Mus musculus myozenin 3 (Myoz3), mRNA [NM_133363]	-2,1	0,23
Cyp39a1	NM_018887	Mus musculus cytochrome P450, family 39, subfamily a, polypeptide 1 (Cyp39a1), mRNA [NM_018887]	-1,5	0,34
Asb4	NM_023048	Mus musculus ankyrin repeat and SOCS box-containing protein 4 (Asb4), mRNA [NM_023048]	-2,1	0,23
Ldb3	NM_001039076	Mus musculus LIM domain binding 3 (Ldb3), transcript variant 7, mRNA [NM_001039076]	-2,5	0,18
Pptc7	NM_177242	Mus musculus PTC7 protein phosphatase homolog (S. cerevisiae) (Pptc7), mRNA [NM_177242]	-2,3	0,21
Jtv1	NM_146165	Mus musculus JTV1 gene (Jtv1), mRNA [NM_146165]	-1,9	0,26
Lrrc24	NM_198119	Mus musculus leucine rich repeat containing 24 (Lrrc24), mRNA [NM_198119]	-2,0	0,26
Styx	NM_019637	Mus musculus phosphoserine/threonine/tyrosine interaction protein (Styx), mRNA [NM_019637]	-1,8	0,28
Smoc2	NM_022315	Mus musculus SPARC related modular calcium binding 2 (Smoc2), mRNA [NM_022315]	-1,8	0,30
Sema5a	NM_009154	Mus musculus sema domain, seven thrombospondin repeats (type 1 and type 1-like), transmembrane domain (TM) and short cytoplasmic domain, (semaphorin) 5A (Sema5a), mRNA [NM_009154]	-1,6	0,33
Mpst	NM_138670	Mus musculus mercaptopyruvate sulfurtransferase (Mpst), mRNA [NM_138670]	-2,0	0,24
Syt3	NM_016663	Mus musculus synaptotagmin III (Syt3), mRNA [NM_016663]	-1,7	0,31
Acss2	NM_019811	Mus musculus acyl-CoA synthetase short-chain family member 2 (Acss2), mRNA [NM_019811]	-1,7	0,30



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Ulk2	NM_013881	Mus musculus Unc-51 like kinase 2 ( <i>C. elegans</i> ) (Ulk2), mRNA [NM_013881]	-1,6	0,33
Ccbl1	NM_172404	Mus musculus cysteine conjugate-beta lyase 1 (Ccbl1), mRNA [NM_172404]	-1,6	0,32
Pfkfb3	NM_133232	Mus musculus 6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 3 (Pfkfb3), mRNA [NM_133232]	-2,3	0,20
Helt	NM_173789	Mus musculus Hey-like transcription factor (zebrafish) (Helt), mRNA [NM_173789]	-1,7	0,30
Hdac9	NM_024124	Mus musculus histone deacetylase 9 (Hdac9), mRNA [NM_024124]	-2,7	0,16
6530404 N21Rik	BC052355	Mus musculus cDNA clone MGC:58369 IMAGE:6770333, complete cds. [BC052355]	-1,4	0,37
Mia1	NM_019394	Mus musculus melanoma inhibitory activity 1 (Mia1), mRNA [NM_019394]	-2,5	0,18
Cd24a	NM_009846	Mus musculus CD24a antigen (Cd24a), mRNA [NM_009846]	-1,7	0,31
2310003L 22Rik	NM_027093	Mus musculus RIKEN cDNA 2310003L22 gene (2310003L22Rik), mRNA [NM_027093]	-1,5	0,36
Syn1	NM_013680	Mus musculus synapsin I (Syn1), mRNA [NM_013680]	-1,8	0,28
Ccdc6	XM_618775	PREDICTED: Mus musculus coiled-coil domain containing 6, transcript variant 1 (Ccdc6), mRNA [XM_618775]	-1,7	0,32
Eif4e	NM_007917	Mus musculus eukaryotic translation initiation factor 4E (Eif4e), mRNA [NM_007917]	-1,5	0,35
Lpl	NM_008509	Mus musculus lipoprotein lipase (Lpl), mRNA [NM_008509]	-2,2	0,22
Zbtb38	NM_175537	Mus musculus zinc finger and BTB domain containing 38 (Zbtb38), mRNA [NM_175537]	-1,8	0,29
TC17040 80	TC1704080	HSJ770C23 match: proteins: AAL48506 O35056 O35787 O43896 O60333 O88658 P33173 Q15058 Q60575 Q8VI89 Q9DDA6 Q9HCI2 Q9NXN9 {Homo sapiens} (exp=0; wgp=1; cg=0), partial (13%) [TC1704080]	-1,7	0,31
Ehhadh	NM_023737	Mus musculus enoyl-Coenzyme A, hydratase/3-hydroxyacyl Coenzyme A dehydrogenase (Ehhadh), mRNA [NM_023737]	-1,5	0,35
Kif1a	AK220487	Mus musculus mRNA for mKIAA4102 protein [AK220487]	-2,5	0,17
Ghsr	NM_177330	Mus musculus growth hormone secretagogue receptor (Ghsr), mRNA [NM_177330]	-2,4	0,20
Mlit3	NM_027326	Mus musculus myeloid/lymphoid or mixed lineage-leukemia translocation to 3 homolog ( <i>Drosophila</i> ) (Mlit3), transcript variant 1, mRNA [NM_027326]	-2,0	0,25
Olfir166	NM_147068	Mus musculus olfactory receptor 166 (Olfir166), mRNA [NM_147068]	-2,0	0,25
Prei4	NM_0010426 72	Mus musculus preimplantation protein 4 (Prei4), transcript variant 4, mRNA [NM_001042672]	-1,8	0,29
Msh3	NM_010829	Mus musculus mutS homolog 3 ( <i>E. coli</i> ) (Msh3), mRNA [NM_010829]	-1,8	0,30
Mapkapk 2	NM_008551	Mus musculus MAP kinase-activated protein kinase 2 (Mapkapk2), mRNA [NM_008551]	-2,2	0,22
Isca1	NM_026921	Mus musculus iron-sulfur cluster assembly 1 homolog ( <i>S. cerevisiae</i> ) (Isca1), mRNA [NM_026921]	-1,8	0,30
Bmp6	NM_007556	Mus musculus bone morphogenetic protein 6 (Bmp6), mRNA [NM_007556]	-1,6	0,33
Polk	NM_012048	Mus musculus polymerase (DNA directed), kappa (Polk), mRNA [NM_012048]	-1,8	0,29
Paqr9	NM_198414	Mus musculus progesterin and adipoQ receptor family member IX (Paqr9), mRNA [NM_198414]	-2,1	0,24
Prkch	NM_008856	Mus musculus protein kinase C, eta (Prkch), mRNA [NM_008856]	-1,7	0,30
NAP0658 26-1	NAP065826- 1	Unknown	-1,9	0,26
Pknox2	NM_0010298 38	Mus musculus Pbx/knotted 1 homeobox 2 (Pknox2), transcript variant 2, mRNA [NM_001029838]	-2,1	0,24

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NAP036015-1	NAP036015-1	Unknown	-1,4	0,37
Esrra	NM_007953	Mus musculus estrogen related receptor, alpha (Esrra), mRNA [NM_007953]	-1,5	0,35
Myoz1	NM_021508	Mus musculus myozenin 1 (Myoz1), mRNA [NM_021508]	-1,7	0,30
Lrg1	NM_029796	Mus musculus leucine-rich alpha-2-glycoprotein 1 (Lrg1), mRNA [NM_029796]	-1,7	0,31
Ldb3	NM_001039076	Mus musculus LIM domain binding 3 (Ldb3), transcript variant 7, mRNA [NM_001039076]	-2,5	0,18
NAP028877-1	NAP028877-1	Unknown	-2,4	0,18
Hrasls	NM_013751	Mus musculus HRAS-like suppressor (Hrasls), mRNA [NM_013751]	-1,9	0,28
Maz	NM_010772	Mus musculus MYC-associated zinc finger protein (purine-binding transcription factor) (Maz), mRNA [NM_010772]	-1,5	0,36
Ube2r2	NM_026275	Mus musculus ubiquitin-conjugating enzyme E2R 2 (Ube2r2), mRNA [NM_026275]	-1,5	0,36
Gstk1	AK002661	Mus musculus adult male kidney cDNA, RIKEN full-length enriched library, clone:0610025119 product:GLUTATHIONE S-TRANSFERASE, MITOCHONDRIAL (EC 2.5.1.18) (GST 13-13) (GLUTATHIONE S-TRANSFERASE SUBUNIT 13) (GST CLASS-KAPPA) homolog [Rattus norvegicus],...	-1,4	0,38
Speg	NM_007463	Mus musculus SPEG complex locus (Speg), mRNA [NM_007463]	-1,7	0,31
Slc27a1	AK165571	Mus musculus kidney CCL-142 RAG cDNA, RIKEN full-length enriched library, clone:G430020K07 product:solute carrier family 27 (fatty acid transporter), member 1, full insert sequence. [AK165571]	-1,8	0,28
Crim1	AK053197	Mus musculus 0 day neonate lung cDNA, RIKEN full-length enriched library, clone:E030031N22 product:cysteine-rich motor neuron 1, full insert sequence [AK053197]	-1,9	0,27
Ppm1l	NM_178726	Mus musculus protein phosphatase 1 (formerly 2C)-like (Ppm1l), mRNA [NM_178726]	-1,8	0,29
Maf	NM_001025577	Mus musculus avian musculoaponeurotic fibrosarcoma (v-maf) AS42 oncogene homolog (Maf), mRNA [NM_001025577]	-1,8	0,30
4930486L24Rik	NM_178098	Mus musculus RIKEN cDNA 4930486L24 gene (4930486L24Rik), mRNA [NM_178098]	-1,6	0,33
Epas1	NM_010137	Mus musculus endothelial PAS domain protein 1 (Epas1), mRNA [NM_010137]	-2,4	0,19
Arhgef6	NM_152801	Mus musculus Rac/Cdc42 guanine nucleotide exchange factor (GEF) 6 (Arhgef6), mRNA [NM_152801]	-1,8	0,28
Fhod1	NM_177699	Mus musculus formin homology 2 domain containing 1 (Fhod1), mRNA [NM_177699]	-1,7	0,32
Vegfa	NM_009505	Mus musculus vascular endothelial growth factor A (Vegfa), transcript variant 2, mRNA [NM_009505]	-1,7	0,31
Adrbk2	NM_177078	Mus musculus adrenergic receptor kinase, beta 2 (Adrbk2), transcript variant 1, mRNA [NM_177078]	-1,6	0,34
Cmya5	AJ575748	Mus musculus partial mRNA for myospryn protein. [AJ575748]	-1,6	0,32
Ccl11	NM_011330	Mus musculus small chemokine (C-C motif) ligand 11 (Ccl11), mRNA [NM_011330]	-1,6	0,33
Fabp3	NM_010174	Mus musculus fatty acid binding protein 3, muscle and heart (Fabp3), mRNA [NM_010174]	-2,0	0,25
A_52_P716487	A_52_P716487	Unknown	-2,4	0,19
BC004015	BC004015	Mus musculus cDNA clone MGC:7593 IMAGE:3493893, complete cds [BC004015]	-1,8	0,28
Padi1	NM_011059	Mus musculus peptidyl arginine deiminase, type I (Padi1), mRNA [NM_011059]	-1,7	0,32
Synpo2	XM_619958	PREDICTED: Mus musculus synaptopodin 2, transcript variant 1 (Synpo2), mRNA [XM_619958]	-2,2	0,21
ENSMUST0037357	ENSMUST0000037357	Unknown	-2,5	0,17
Mrpl1	NM_053158	Mus musculus mitochondrial ribosomal protein L1 (Mrpl1), transcript variant 1, mRNA [NM_053158]	-1,5	0,35

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Arhgef10l	NM_172415	Mus musculus Rho guanine nucleotide exchange factor (GEF) 10-like (Arhgef10l), mRNA [NM_172415]	-1,8	0,30
Aldh1l1	NM_027406	Mus musculus aldehyde dehydrogenase 1 family, member L1 (Aldh1l1), mRNA [NM_027406]	-1,7	0,30
Crybb1	NM_023695	Mus musculus crystallin, beta B1 (Crybb1), mRNA [NM_023695]	-2,5	0,18
Crybb1	NM_023695	Mus musculus crystallin, beta B1 (Crybb1), mRNA [NM_023695]	-2,7	0,15
2310031A18Rik	NM_001081120	Mus musculus RIKEN cDNA 2310031A18 gene (2310031A18Rik), mRNA [NM_001081120]	-1,7	0,32
5031439G07Rik	AK030332	Mus musculus 11 days pregnant adult female ovary and uterus cDNA, RIKEN full-length enriched library, clone:5031439G07 product:hypothetical protein, full insert sequence. [AK030332]	-1,5	0,36
Nr3c1	NM_008173	Mus musculus nuclear receptor subfamily 3, group C, member 1 (Nr3c1), mRNA [NM_008173]	-1,9	0,26
Mlit3	NM_029931	Mus musculus myeloid/lymphoid or mixed lineage-leukemia translocation to 3 homolog (Drosophila) (Mlit3), transcript variant 2, mRNA [NM_029931]	-1,7	0,31
Slc7a2	NM_007514	Mus musculus solute carrier family 7 (cationic amino acid transporter, y+ system), member 2 (Slc7a2), transcript variant 1, mRNA [NM_007514]	-2,2	0,22
EG385234	BC064077	Mus musculus cDNA clone IMAGE:1366203, partial cds [BC064077]	-1,8	0,30
Mkl1	NM_153049	Mus musculus MKL (megakaryoblastic leukemia)/myocardin-like 1 (Mkl1), transcript variant 1, mRNA [NM_153049]	-2,5	0,18
Zfp651	XM_981733	PREDICTED: Mus musculus zinc finger protein 651 (Zfp651), mRNA [XM_981733]	-1,8	0,29
Asb2	NM_023049	Mus musculus ankyrin repeat and SOCS box-containing protein 2 (Asb2), mRNA [NM_023049]	-1,7	0,30
Map3k5	NM_008580	Mus musculus mitogen activated protein kinase kinase kinase 5 (Map3k5), mRNA [NM_008580]	-1,6	0,33
Crhr2	NM_009953	Mus musculus corticotropin releasing hormone receptor 2 (Crhr2), mRNA [NM_009953]	-1,6	0,33
Pdlim7	NM_026131	Mus musculus PDZ and LIM domain 7 (Pdlim7), mRNA [NM_026131]	-1,9	0,26
Klhl23	NM_177784	Mus musculus kelch-like 23 (Drosophila) (Klhl23), mRNA [NM_177784]	-2,1	0,24
C530008M17Rik	AK122469	Mus musculus mRNA for mKIAA1211 protein. [AK122469]	-1,9	0,26
Adal	NM_029475	Mus musculus adenosine deaminase-like (Adal), mRNA [NM_029475]	-1,3	0,40
Egln1	NM_053207	Mus musculus EGL nine homolog 1 (C. elegans) (Egln1), mRNA [NM_053207]	-1,8	0,28
Msrb3	NM_177092	Mus musculus methionine sulfoxide reductase B3 (Msrb3), mRNA [NM_177092]	-1,7	0,31
EG621324	XM_885734	PREDICTED: Mus musculus similar to Signal transducer CD24 precursor (M1/69-J11D heat stable antigen) (HSA) (Nectadrin) (Lymphocyte antigen Ly-52) (X62 heat stable antigen) (R13-Ag) (LOC621324), mRNA [XM_885734]	-1,8	0,29
Epn1	NM_010147	Mus musculus epsin 1 (Epn1), mRNA [NM_010147]	-1,8	0,28
Vgll4	NM_177683	Mus musculus vestigial like 4 (Drosophila) (Vgll4), mRNA [NM_177683]	-1,7	0,31
Tpi1	NM_009415	Mus musculus triosephosphate isomerase 1 (Tpi1), mRNA [NM_009415]	-1,6	0,32
Klhdc3	NM_027910	Mus musculus kelch domain containing 3 (Klhdc3), mRNA [NM_027910]	-1,7	0,32
Bpgm	NM_007563	Mus musculus 2,3-bisphosphoglycerate mutase (Bpgm), mRNA [NM_007563]	-1,6	0,32
NAP046356-1	NAP046356-1	Unknown	-2,2	0,22
Abcd2	NM_011994	Mus musculus ATP-binding cassette, sub-family D (ALD), member 2 (Abcd2), mRNA [NM_011994]	-1,8	0,30
Satb1	NM_009122	Mus musculus special AT-rich sequence binding protein 1 (Satb1), mRNA [NM_009122]	-1,5	0,36

## Smad4<sup>-/-</sup>

NAP028712-1	NAP028712-1	Unknown	-1,8	0,28
Gcdh	U18992	Mus musculus glutaryl-CoA dehydrogenase mRNA, complete cds. [U18992]	-1,4	0,37
ENSMUSG00000073540	BC022177	Mus musculus cDNA clone MGC:14005 IMAGE:3660311, complete cds. [BC022177]	-2,1	0,23
Tfrc	NM_011638	Mus musculus transferrin receptor (Tfrc), mRNA [NM_011638]	-2,4	0,19
Atpaf1	NM_181040	Mus musculus ATP synthase mitochondrial F1 complex assembly factor 1 (Atpaf1), mRNA [NM_181040]	-1,6	0,33
ENSMUST00000069577	ENSMUST00000069577	phosphodiesterase 4A, cAMP specific [Source:MarkerSymbol;Acc:MGI:99558] [ENSMUST00000069577]	-1,6	0,33
AI314180	ENSMUST0000102889	expressed sequence AI314180 [Source:MarkerSymbol;Acc:MGI:2140220] [ENSMUST000000102889]	-1,6	0,34
Tob2	NM_020507	Mus musculus transducer of ERBB2, 2 (Tob2), mRNA [NM_020507]	-1,8	0,30
Sipa1	NM_011379	Mus musculus signal-induced proliferation associated gene 1 (Sipa1), mRNA [NM_011379]	-1,5	0,36
Arhgef15	NM_177566	Mus musculus Rho guanine nucleotide exchange factor (GEF) 15 (Arhgef15), mRNA [NM_177566]	-1,6	0,34
Decr1	NM_026172	Mus musculus 2,4-dienoyl CoA reductase 1, mitochondrial (Decr1), mRNA [NM_026172]	-1,9	0,27
NAP027859-1	NAP027859-1	Unknown	-2,0	0,24
2610507B11Rik	NM_001002004	Mus musculus RIKEN cDNA 2610507B11 gene (2610507B11Rik), mRNA [NM_001002004]	-1,9	0,27
Tmem16e	NM_177694	Mus musculus transmembrane protein 16E (Tmem16e), mRNA [NM_177694]	-5,8	0,02
Lpin1	NM_015763	Mus musculus lipin 1 (Lpin1), transcript variant 2, mRNA [NM_015763]	-1,6	0,32
4930455C21Rik	NM_024273	Mus musculus RIKEN cDNA 4930455C21 gene (4930455C21Rik), mRNA [NM_024273]	-1,4	0,37
Grpel1	NM_024478	Mus musculus GrpE-like 1, mitochondrial (Grpel1), mRNA [NM_024478]	-1,5	0,36
Pabpc4	NM_148917	Mus musculus poly A binding protein, cytoplasmic 4 (Pabpc4), transcript variant 2, mRNA [NM_148917]	-1,9	0,27
Tmem16f	NM_175344	Mus musculus transmembrane protein 16F (Tmem16f), mRNA [NM_175344]	-1,8	0,28
Fbxl17	XM_925135	PREDICTED: Mus musculus F-box and leucine-rich repeat protein 17, transcript variant 3 (Fbxl17), mRNA [XM_925135]	-1,5	0,34
Got1	NM_010324	Mus musculus glutamate oxaloacetate transaminase 1, soluble (Got1), mRNA [NM_010324]	-1,6	0,34
Slc30a9	NM_178651	Mus musculus solute carrier family 30 (zinc transporter), member 9 (Slc30a9), mRNA [NM_178651]	-1,6	0,33
Olfir295	NM_146851	Mus musculus olfactory receptor 295 (Olfir295), mRNA [NM_146851]	-2,7	0,16
Capn1	NM_007600	Mus musculus calpain 1 (Capn1), mRNA [NM_007600]	-1,8	0,30
Cdc42ep3	NM_026514	Mus musculus CDC42 effector protein (Rho GTPase binding) 3 (Cdc42ep3), mRNA [NM_026514]	-1,6	0,32
Rasgrp3	NM_207246	Mus musculus RAS, guanyl releasing protein 3 (Rasgrp3), mRNA [NM_207246]	-2,1	0,23
Ivd	NM_019826	Mus musculus isovaleryl coenzyme A dehydrogenase (Ivd), mRNA [NM_019826]	-1,7	0,30
BC060267	NM_198603	Mus musculus cDNA sequence BC060267 (BC060267), mRNA [NM_198603]	-1,9	0,26
Pde4dip	NM_178080	Mus musculus phosphodiesterase 4D interacting protein (myomegalin) (Pde4dip), transcript variant 2, mRNA [NM_178080]	-2,0	0,26
Kcnc4	NM_145922	Mus musculus potassium voltage gated channel, Shaw-related subfamily, member 4 (Kcnc4), mRNA [NM_145922]	-2,0	0,25

## Smad4-/-

NAP092588-001	NAP092588-001	Unknown	-1,7	0,30
Mtus1	NM_001005863	Mus musculus mitochondrial tumor suppressor 1 (Mtus1), transcript variant 1, mRNA [NM_001005863]	-1,4	0,38
2610018G03Rik	NM_133729	Mus musculus RIKEN cDNA 2610018G03 gene (2610018G03Rik), mRNA [NM_133729]	-2,5	0,18
Arhgap10	NM_030113	Mus musculus Rho GTPase activating protein 10 (Arhgap10), mRNA [NM_030113]	-2,0	0,25
Otof	NM_031875	Mus musculus otoferlin (Otof), mRNA [NM_031875]	-1,6	0,33
Dusp23	NM_026725	Mus musculus dual specificity phosphatase 23 (Dusp23), mRNA [NM_026725]	-1,7	0,31
Rtn1	NM_153457	Mus musculus reticulon 1 (Rtn1), transcript variant 1, mRNA [NM_153457]	-1,6	0,33
Slc25a29	NM_181328	Mus musculus solute carrier family 25 (mitochondrial carrier, palmitoylcarnitine transporter), member 29 (Slc25a29), mRNA [NM_181328]	-1,9	0,27
Lpin1	NM_015763	Mus musculus lipin 1 (Lpin1), transcript variant 2, mRNA [NM_015763]	-1,6	0,33
Unc84b	NM_194342	Mus musculus unc-84 homolog B (C. elegans) (Unc84b), mRNA [NM_194342]	-1,5	0,35
Nutf2	NM_026532	Mus musculus nuclear transport factor 2 (Nutf2), mRNA [NM_026532]	-1,7	0,31
Pkn2	AK140746	Mus musculus 16 days embryo head cDNA, RIKEN full-length enriched library, clone:C130001L23 product:protein kinase N2, full insert sequence [AK140746]	-1,7	0,31
Laptm4b	NM_033521	Mus musculus lysosomal-associated protein transmembrane 4B (Laptm4b), mRNA [NM_033521]	-1,3	0,41
Mdh1	AK077724	Mus musculus 8 days embryo whole body cDNA, RIKEN full-length enriched library, clone:5730556L21 product:unclassifiable, full insert sequence [AK077724]	-1,7	0,31
Dhcr7	NM_007856	Mus musculus 7-dehydrocholesterol reductase (Dhcr7), mRNA [NM_007856]	-1,6	0,32
Dtna	NM_207650	Mus musculus dystrobrevin alpha (Dtna), transcript variant 1, mRNA [NM_207650]	-1,7	0,31
Rnf157	BC053070	Mus musculus ring finger protein 157, mRNA (cDNA clone IMAGE:6401088) [BC053070]	-1,7	0,30
Snca	NM_009221	Mus musculus synuclein, alpha (Snca), transcript variant 2, mRNA [NM_009221]	-2,3	0,21
Ppp2r5a	NM_144880	Mus musculus protein phosphatase 2, regulatory subunit B (B56), alpha isoform (Ppp2r5a), mRNA [NM_144880]	-1,6	0,34
2510009E07Rik	NM_001001881	Mus musculus RIKEN cDNA 2510009E07 gene (2510009E07Rik), mRNA [NM_001001881]	-1,4	0,37
Ppp2r5a	NM_144880	Mus musculus protein phosphatase 2, regulatory subunit B (B56), alpha isoform (Ppp2r5a), mRNA [NM_144880]	-1,9	0,27
Gpr4	NM_175668	Mus musculus G protein-coupled receptor 4 (Gpr4), mRNA [NM_175668]	-1,8	0,29
Maob	NM_172778	Mus musculus monoamine oxidase B (Maob), mRNA [NM_172778]	-1,5	0,36
Slc40a1	NM_016917	Mus musculus solute carrier family 40 (iron-regulated transporter), member 1 (Slc40a1), mRNA [NM_016917]	-1,8	0,29
Crim1	AK053197	Mus musculus 0 day neonate lung cDNA, RIKEN full-length enriched library, clone:E030031N22 product:cysteine-rich motor neuron 1, full insert sequence [AK053197]	-1,6	0,33
Ric8b	NM_183172	Mus musculus resistance to inhibitors of cholinesterase 8 homolog B (C. elegans) (Ric8b), transcript variant 2, mRNA [NM_183172]	-1,3	0,40
Aqp7	AB010100	Mus musculus mRNA for aquaporin 7, complete cds. [AB010100]	-1,5	0,34
Zfp708	NM_001012325	Mus musculus zinc finger protein 708 (Zfp708), transcript variant 1, mRNA [NM_001012325]	-1,4	0,37
Ppp1r3d	AK011539	Mus musculus 10 days embryo whole body cDNA, RIKEN full-length enriched library, clone:2610024M03 product:unclassifiable, full insert sequence [AK011539]	-1,9	0,27
Enoph1	NM_026421	Mus musculus enolase-phosphatase 1 (Enoph1), mRNA [NM_026421]	-1,7	0,31

## Smad4-/-

NAP046039-1	NAP046039-1	Unknown	-2,2	0,22
2010109I03Rik	NM_025929	Mus musculus RIKEN cDNA 2010109I03 gene (2010109I03Rik), mRNA [NM_025929]	-2,4	0,19
9630033F20Rik	NM_177003	Mus musculus RIKEN cDNA 9630033F20 gene (9630033F20Rik), mRNA [NM_177003]	-1,8	0,28
Atp1b2	NM_013415	Mus musculus ATPase, Na+/K+ transporting, beta 2 polypeptide (Atp1b2), mRNA [NM_013415]	-2,0	0,24
AV104666	AV104666	AV104666 AV104666 Mus musculus liver C57BL/6J 13-day embryo Mus musculus cDNA clone 2510008K06, mRNA sequence [AV104666]	-1,5	0,35
Asb14	NM_080856	Mus musculus ankyrin repeat and SOCS box-containing protein 14 (Asb14), mRNA [NM_080856]	-1,6	0,33
LOC667370	NM_001005858	Mus musculus similar to interferon-induced protein with tetratricopeptide repeats 3 (LOC667370), mRNA [NM_001005858]	-2,0	0,25
Git25d2	NM_177756	Mus musculus glycosyltransferase 25 domain containing 2 (Git25d2), mRNA [NM_177756]	-1,8	0,29
Ethe1	NM_023154	Mus musculus ethylmalonic encephalopathy 1 (Ethe1), mRNA [NM_023154]	-1,4	0,37
Ube2d1	NM_145420	Mus musculus ubiquitin-conjugating enzyme E2D 1, UBC4/5 homolog (yeast) (Ube2d1), mRNA [NM_145420]	-1,9	0,27
Kalrn	AK088732	Mus musculus 2 days neonate thymus thymic cells cDNA, RIKEN full-length enriched library, clone:E430024L14 product:KALIRIN-12A homolog [Rattus norvegicus], full insert sequence. [AK088732]	-1,8	0,30
Rilp	NM_001029938	Mus musculus Rab interacting lysosomal protein (Rilp), mRNA [NM_001029938]	-1,7	0,32
Echs1	NM_053119	Mus musculus enoyl Coenzyme A hydratase, short chain, 1, mitochondrial (Echs1), mRNA [NM_053119]	-1,5	0,36
1700030E15Rik	AK006538	Mus musculus adult male testis cDNA, RIKEN full-length enriched library, clone:1700030E15 product:hypothetical protein, full insert sequence. [AK006538]	-1,7	0,30
Ifngr2	NM_008338	Mus musculus interferon gamma receptor 2 (Ifngr2), mRNA [NM_008338]	-1,9	0,26
AV124335	AV124335	AV124335 AV124335 Mus musculus C57BL/6J 11-day embryo Mus musculus cDNA clone 2700017N24, mRNA sequence [AV124335]	-1,6	0,32
2210408F21Rik	XM_895387	PREDICTED: Mus musculus RIKEN cDNA 2210408F21 gene, transcript variant 6 (2210408F21Rik), mRNA [XM_895387]	-1,4	0,38
Ryr1	AK042482	Mus musculus 3 days neonate thymus cDNA, RIKEN full-length enriched library, clone:A630095L05 product:RYANODINE RECEPTOR 1 (SKELETAL MUSCLE-TYPE RYANODINE RECEPTOR) (RYR1) (RYR-1) (SKELETAL MUSCLE CALCIUM RELEASE CHANNEL) homolog [Homo sapiens], full...	-1,7	0,31
Hist1h1d	NM_145713	Mus musculus histone cluster 1, H1d (Hist1h1d), mRNA [NM_145713]	-1,6	0,33
Syng1	NM_207708	Mus musculus synaptogyrin 1 (Syng1), transcript variant 1a, mRNA [NM_207708]	-2,4	0,19
Lifr	NM_013584	Mus musculus leukemia inhibitory factor receptor (Lifr), mRNA [NM_013584]	-1,6	0,33
Tmem32	NM_146234	Mus musculus transmembrane protein 32 (Tmem32), mRNA [NM_146234]	-1,6	0,32
Pdhx	NM_175094	Mus musculus pyruvate dehydrogenase complex, component X (Pdhx), mRNA [NM_175094]	-1,4	0,39
F2r13	NM_007975	Mus musculus coagulation factor II (thrombin) receptor-like 3 (F2r13), mRNA [NM_007975]	-2,0	0,24
Sdccag8	NM_029756	Mus musculus serologically defined colon cancer antigen 8 (Sdccag8), mRNA [NM_029756]	-1,5	0,36
Lrrc20	NM_153542	Mus musculus leucine rich repeat containing 20 (Lrrc20), mRNA [NM_153542]	-1,7	0,31
Irs1	NM_010570	Mus musculus insulin receptor substrate 1 (Irs1), mRNA [NM_010570]	-2,3	0,21
Grb14	NM_016719	Mus musculus growth factor receptor bound protein 14 (Grb14), mRNA [NM_016719]	-1,9	0,27
Tns1	XM_619639	PREDICTED: Mus musculus tensin 1 (Tns1), mRNA [XM_619639]	-1,4	0,37
1190002H23Rik	NM_025427	Mus musculus RIKEN cDNA 1190002H23 gene (1190002H23Rik), mRNA [NM_025427]	-1,8	0,30

## Smad4-/-

Tarsl2	NM_172310	Mus musculus threonyl-tRNA synthetase-like 2 (Tarsl2), mRNA [NM_172310]	-1,3	0,41
Lrp2bp	NM_026278	Mus musculus Lrp2 binding protein (Lrp2bp), mRNA [NM_026278]	-2,6	0,16
Arfgef1	XM_975420	PREDICTED: Mus musculus ADP-ribosylation factor guanine nucleotide-exchange factor 1(brefeldin A-inhibited) (Arfgef1), mRNA [XM_975420]	-1,6	0,32
BC027382	AK134496	Mus musculus 11 days embryo head cDNA, RIKEN full-length enriched library, clone:6230417F08 product:unclassifiable, full insert sequence [AK134496]	-1,9	0,26
Snrpn	NM_013670	Mus musculus small nuclear ribonucleoprotein N (Snrpn), transcript variant 1, mRNA [NM_013670]	-2,0	0,24
Tm7sf2	NM_028454	Mus musculus transmembrane 7 superfamily member 2 (Tm7sf2), mRNA [NM_028454]	-1,5	0,34
BC011467	BC025823	Mus musculus cDNA sequence BC011467, mRNA (cDNA clone IMAGE:5100525), complete cds. [BC025823]	-1,5	0,36
P2ry2	NM_008773	Mus musculus purinergic receptor P2Y, G-protein coupled 2 (P2ry2), mRNA [NM_008773]	-1,8	0,30
LOC631366	XM_905147	PREDICTED: Mus musculus similar to Glyceraldehyde-3-phosphate dehydrogenase (GAPDH) (LOC631366), mRNA [XM_905147]	-2,3	0,20
Polh	NM_030715	Mus musculus polymerase (DNA directed), eta (RAD 30 related) (Polh), mRNA [NM_030715]	-2,1	0,23
AW548124	NM_134117	Mus musculus expressed sequence AW548124 (AW548124), mRNA [NM_134117]	-1,9	0,28
Nudt4	NM_027722	Mus musculus nudix (nucleoside diphosphate linked moiety X)-type motif 4 (Nudt4), mRNA [NM_027722]	-2,0	0,25
NAP057003-1	NAP057003-1	Unknown	-1,8	0,29
Cyp2a4	NM_009997	Mus musculus cytochrome P450, family 2, subfamily a, polypeptide 4 (Cyp2a4), mRNA [NM_009997]	-2,0	0,25
Unc84b	NM_194342	Mus musculus unc-84 homolog B (C. elegans) (Unc84b), mRNA [NM_194342]	-1,7	0,31
Gng2	NM_010315	Mus musculus guanine nucleotide binding protein (G protein), gamma 2 subunit (Gng2), transcript variant 1, mRNA [NM_010315]	-1,7	0,31
Ugp2	NM_139297	Mus musculus UDP-glucose pyrophosphorylase 2 (Ugp2), mRNA [NM_139297]	-1,4	0,38
TC1617558	TC1617558	2A5A_MOUSE (Q6PD03) Serine/threonine-protein phosphatase 2A 56 kDa regulatory subunit alpha isoform (PP2A, B subunit, B' alpha isoform) (PP2A, B subunit, B56 alpha isoform) (PP2A, B subunit, PR61 alpha isoform) (PP2A, B subunit, R5 alpha isoform)...	-1,5	0,36
Mrps36	NM_025369	Mus musculus mitochondrial ribosomal protein S36 (Mrps36), mRNA [NM_025369]	-1,7	0,30
Sms	NM_009214	Mus musculus spermine synthase (Sms), mRNA [NM_009214]	-1,4	0,37
Akap1	NM_009648	Mus musculus A kinase (PRKA) anchor protein 1 (Akap1), transcript variant 1, mRNA [NM_009648]	-1,7	0,30
1110012N22Rik	AK003645	Mus musculus 18-day embryo whole body cDNA, RIKEN full-length enriched library, clone:1110012N22 product:hypothetical protein, full insert sequence. [AK003645]	-1,7	0,31
Srpr	NM_026130	Mus musculus signal recognition particle receptor ('docking protein') (Srpr), mRNA [NM_026130]	-1,7	0,30
Gpt1	NM_182805	Mus musculus glutamic pyruvic transaminase 1, soluble (Gpt1), mRNA [NM_182805]	-1,5	0,35
Styx	U34973	Mus musculus protein tyrosine phosphatase-like mRNA, unspliced c-terminal product and spliced c-terminal end STYX, complete cds. [U34973]	-1,8	0,28
Clybl	NM_029556	Mus musculus citrate lyase beta like (Clybl), mRNA [NM_029556]	-1,5	0,36
Eng	NM_007932	Mus musculus endoglin (Eng), mRNA [NM_007932]	-1,4	0,37
Zfp41	NM_011759	Mus musculus zinc finger protein 41 (Zfp41), transcript variant 1, mRNA [NM_011759]	-1,6	0,33
Tbc1d16	NM_172443	Mus musculus TBC1 domain family, member 16 (Tbc1d16), mRNA [NM_172443]	-1,7	0,30
Efhd1	NM_028889	Mus musculus EF hand domain containing 1 (Efhd1), mRNA [NM_028889]	-1,8	0,28