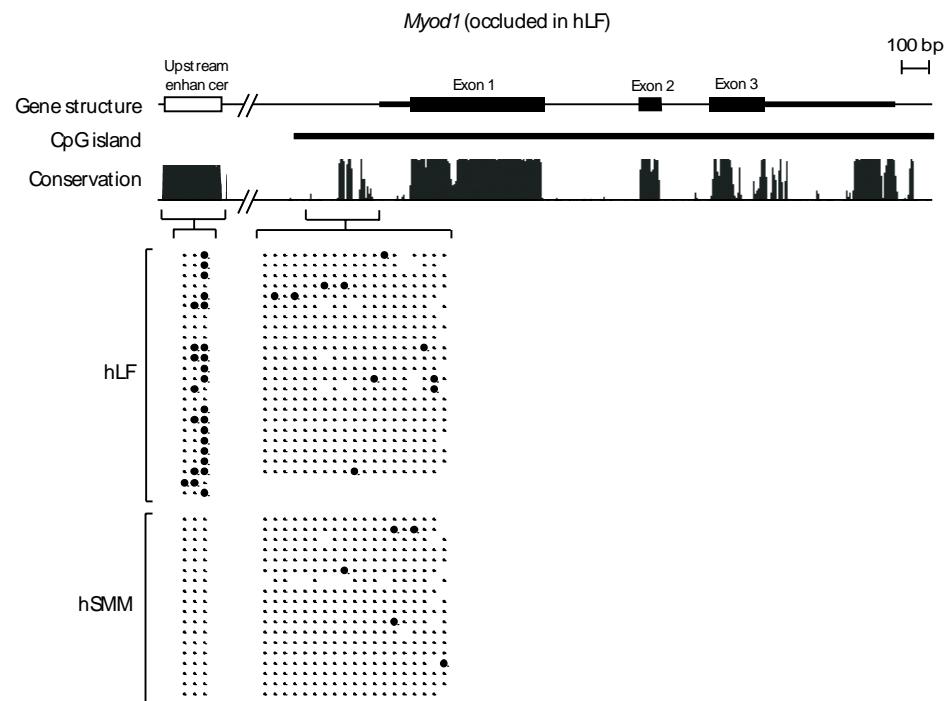


Figure S1: Bisulfite sequencing analysis of occluded and transactivated hLF genes.

Occluded genes include *Myod1* (A), *Cacng1* (B), *Rapsn* (C), and *Tnni2* (D). Transactivated genes include *Myog* (E), *Ckm* (F), *Tnni1* (G), and *Tnnc1* (H). Comparison is made between hLF and hSMM. This figure follows the same convention as Figure 4. hLF: human lung fibroblasts; hSMM: human skeletal muscle myoblasts.

A



B

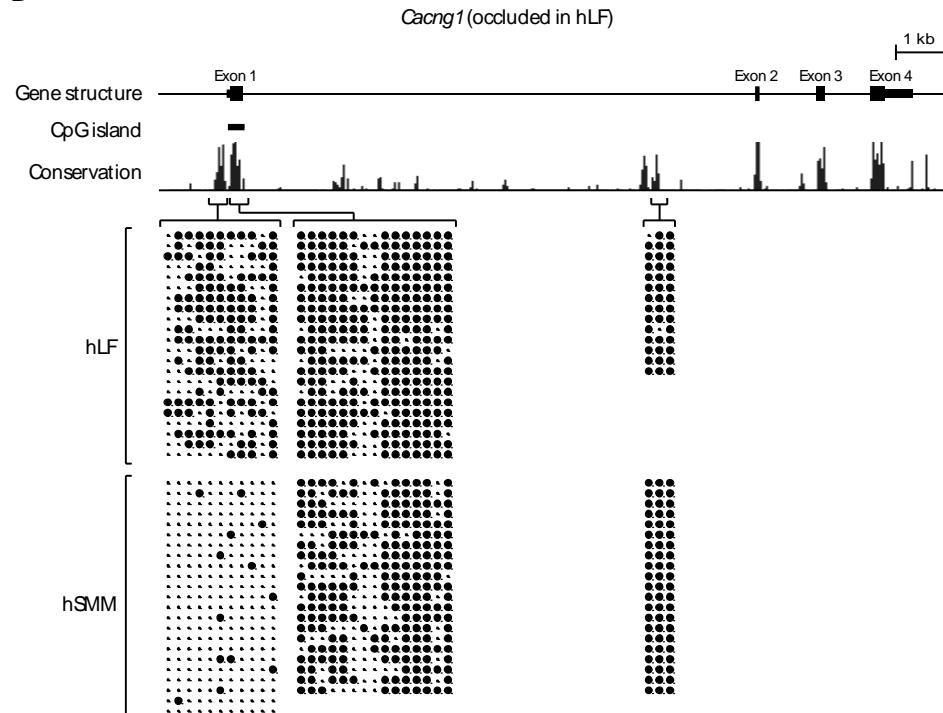


Figure S1: (continued)

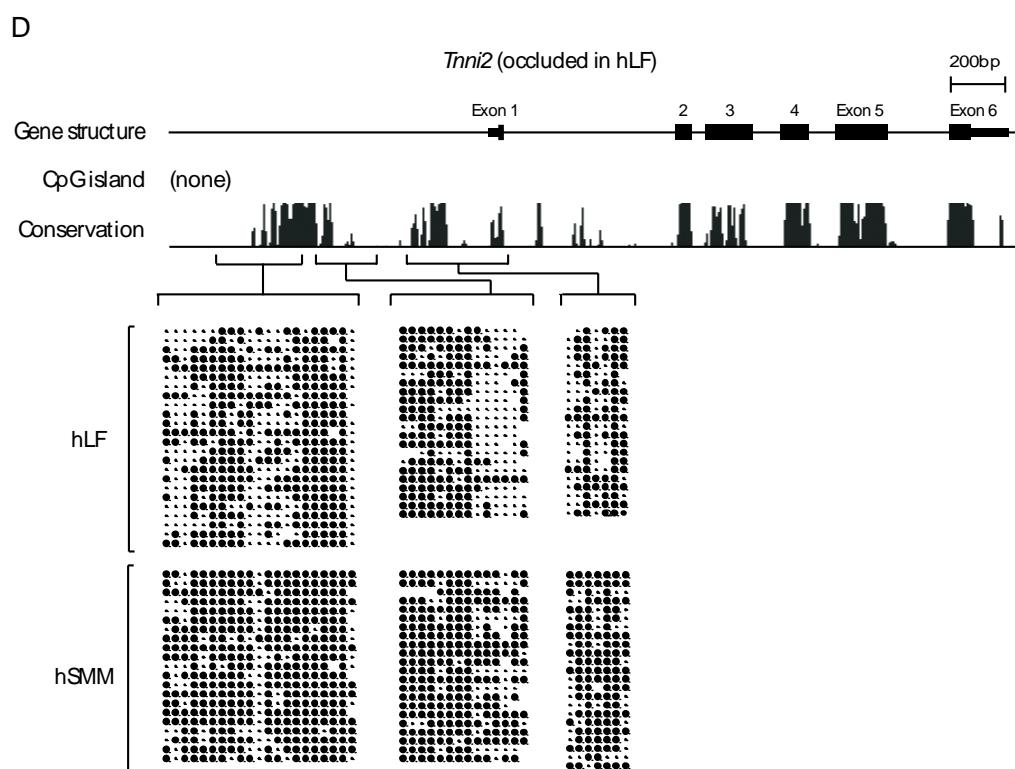
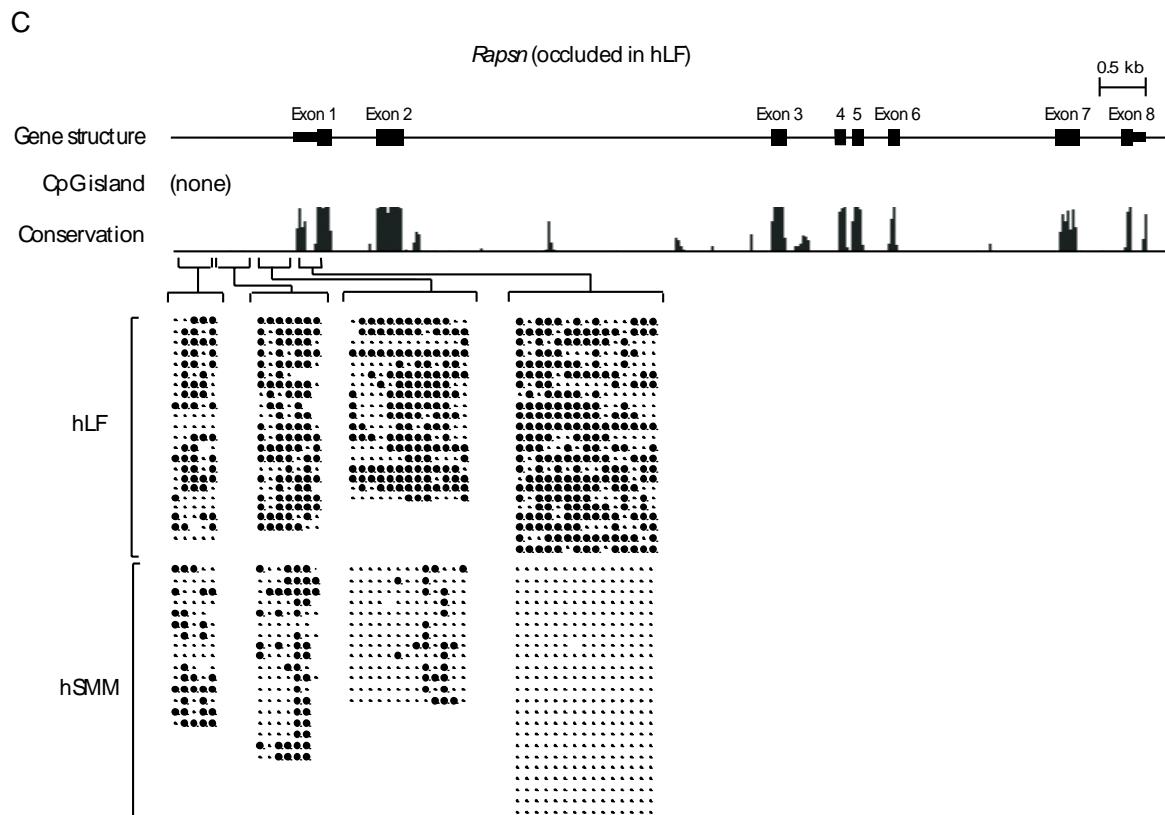
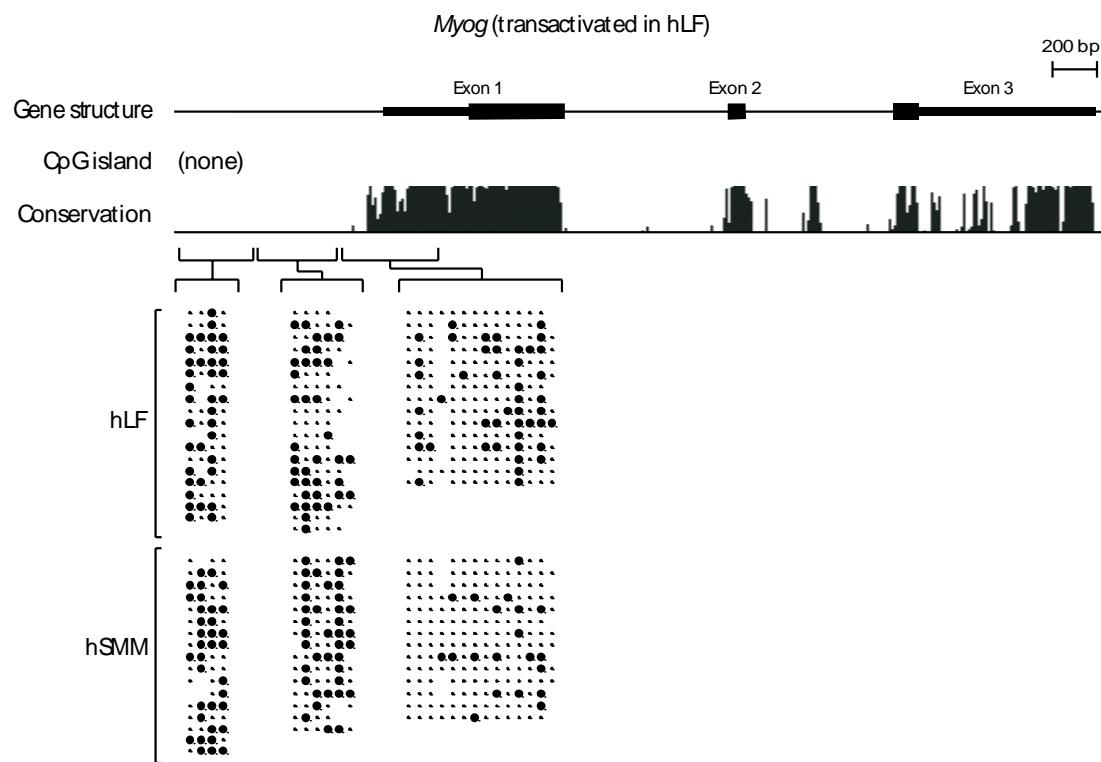


Figure S1: (continued)

E



F

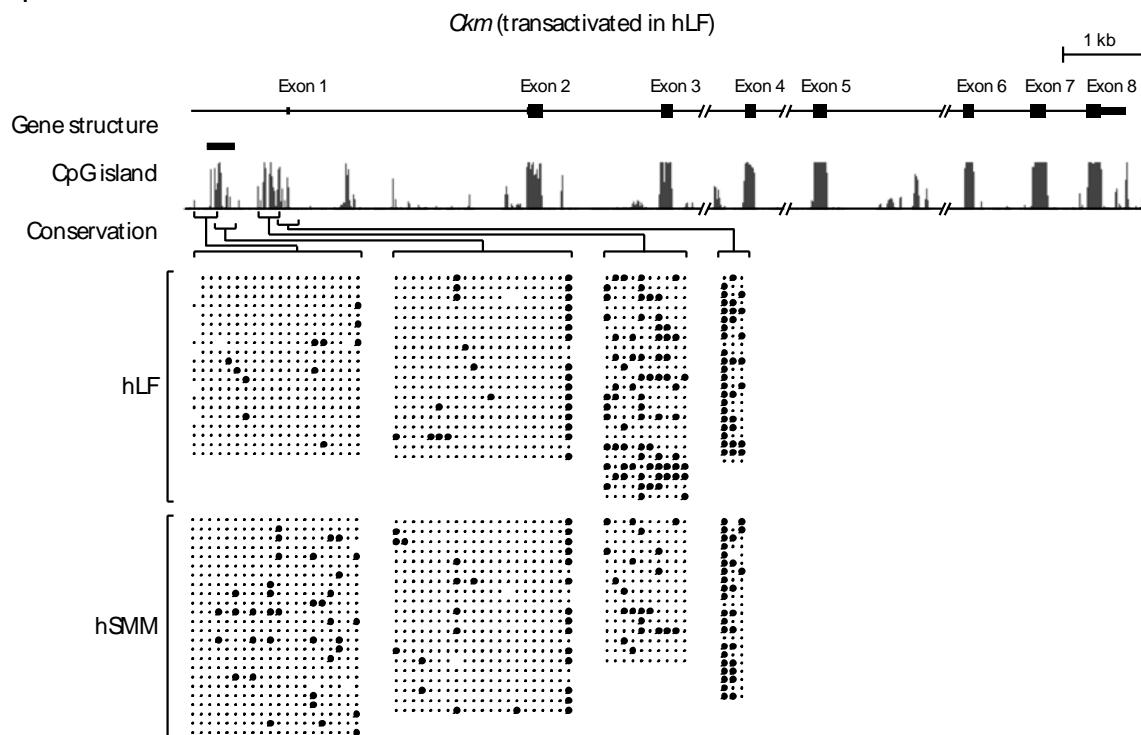
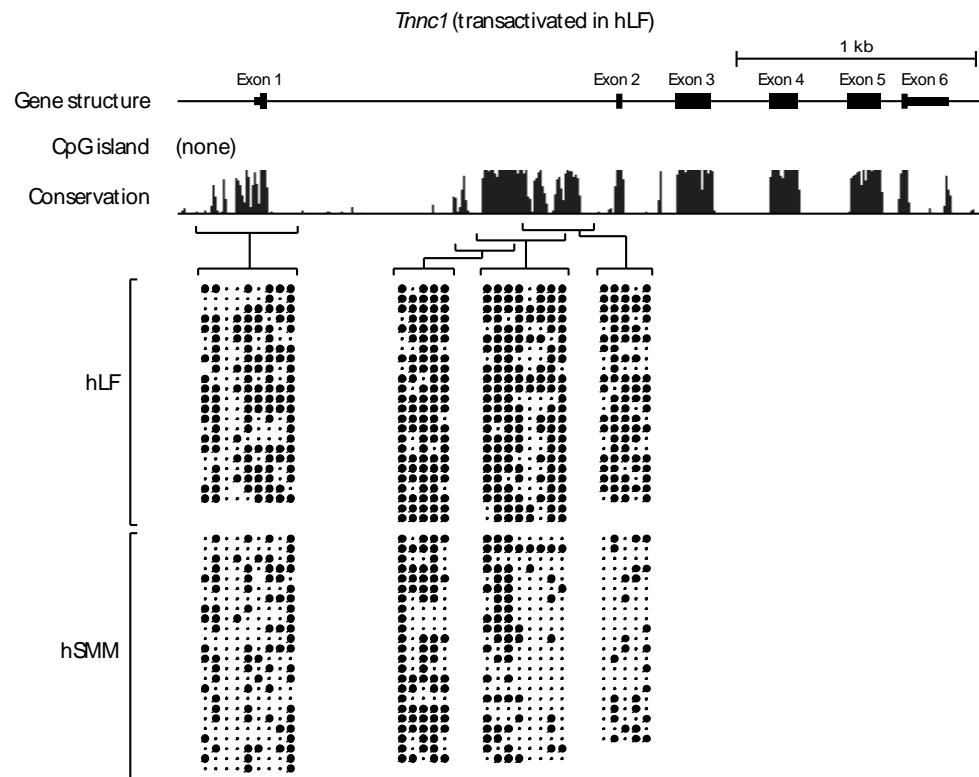


Figure S1: (continued)

G



H

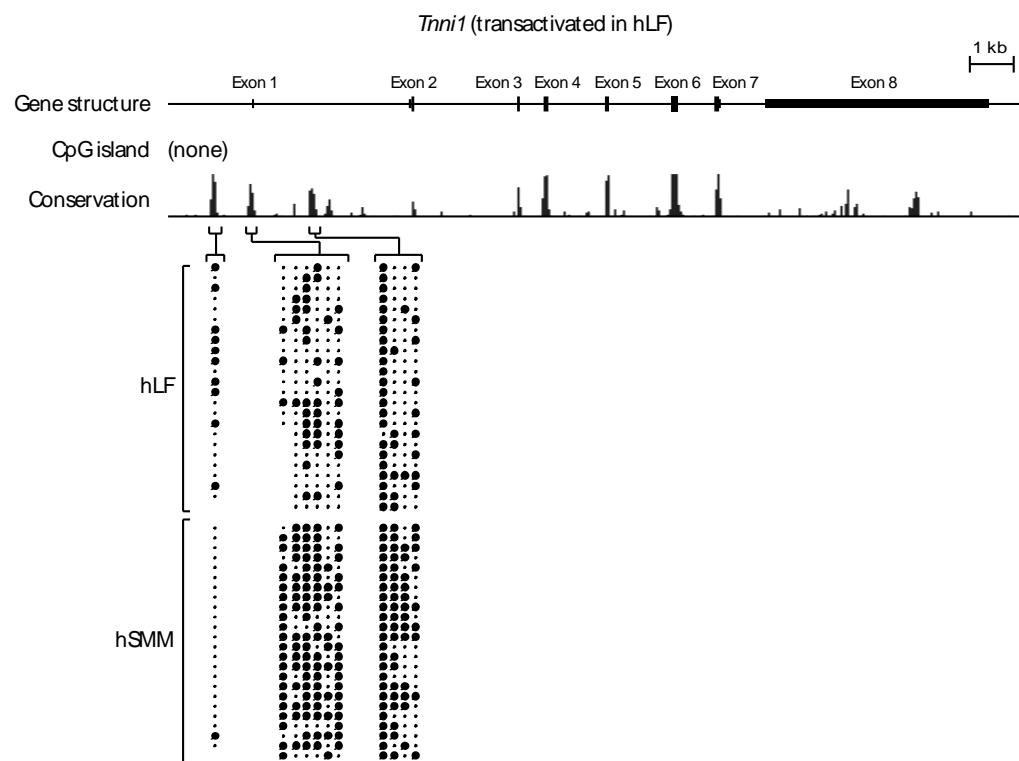


Figure S2: Bisulfite sequencing analysis of transcription start site (TSS) of 18 occluded and 5 transactivated hLF genes.

Comparison is made between hLF and hSMM. The TSS of *Ncam1* is covered in 2 amplicons. *Ocr4* and *Myl4* each have two distinct TSS (indicated as a & b), which are analyzed separately. Genes indicated by "*" are not expressed in hSMM, and it is therefore not known if they are occluded or competent in hSMM. All the other genes are expressed (and therefore competent) in hSMM. hLF: human lung fibroblasts; hSMM: human skeletal muscle myoblasts.

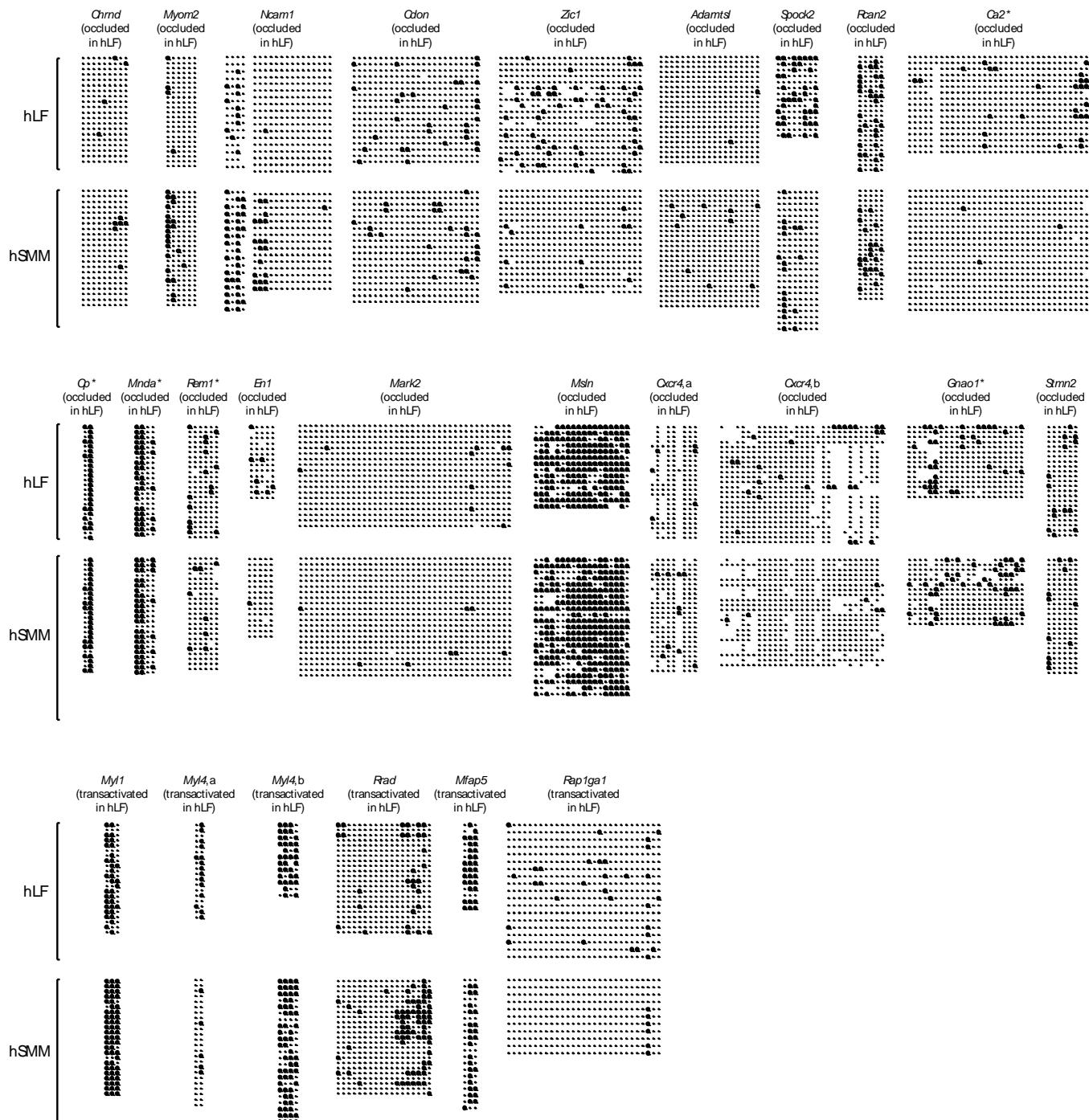


Table S1. Occluded and transactivated hLF genes targeted by chromatin analysis.

Gene Symbol	Gene Name	Alternate Names	Gene Function
Myod1 (occluded)	Myogenic differentiation antigen 1	Myod, Myf3	Basic helix-loop-helix transcription factor playing a key role in specifying the myogenic lineage, believed to engage in positive autoregulation.
Myf5 (occluded)	Myogenic factor 5		Basic helix-loop-helix transcription factor playing a key role in specifying the myogenic lineage, believed to be positively regulated by Myod1.
Chrnd (occluded)	Cholinergic receptor, nicotinic, delta subunit	Achrd	Subunit of the nicotinic acetylcholine receptor present in synapses of the neuromuscular junction.
Cacng1 (occluded)	Calcium channel, voltage-dependent, gamma-1 subunit		Subunit of calcium channel controlling calcium ion influx in skeletal muscle.
Rapsn (occluded)	Receptor associated protein of the synapse, 43 kD	Rapsyn	Peripheral membrane protein involved in the localization and clustering of neurotransmitter receptors on dendritic processes.
Myom2 (occluded)	Myomesin 2		Structural component of cytoskeleton found specifically in skeletal muscle.
Tnni2 (occluded)	Troponin 1		Actin groove protein involved in fast twitch muscle contraction in skeletal muscle.
Ncam1 (occluded)	Neural cell adhesion molecule 1	CD56; Msk39	Cell membrane glycoprotein possibly involved in cell adhesion and migration in developing brain and muscle.
Cdon (occluded)	Cell adhesion molecule-related/down regulated by oncogenes	Cdo	Positive regulator of myogenesis and development of midline structures.
Zic1 (occluded)	Zinc finger protein of cerebellum 1	Zic	Zinc finger protein family member specifically restricted to folial development of the cerebellum.
Adamtsl2 (occluded)	Adamts-like 2		Disintegrin and metalloproteinase family member containing a thrombospondin type 1 motif, believed to mediate endopeptidase function and cellular de-adhesion.
Spock2 (occluded)	Sparc/Osteonectin, Cwcv, and Kazal-like domains proteoglycan 2	Testican 2	Calcium-binding protein involved in neurite extension, but expressed in multiple tissues.
Rcan2 (occluded)	Regulator of calcineurin	Dscr1I1, Csp2, Mcip2, Zak14	Idiopathic function with expression in liver, heart, brain, and lungs dependent on regulation by triiodothyroxine.
Ca2 (occluded)	Carbonic Anhydrase 2		Metalloprotein responsible for catalyzing carbon dioxide to bicarbonate.
Cp (occluded)	Ceruloplasmin	Ferroxidase	Plasma metalloprotein involved in the peroxidation of iron.
Mnda (occluded)	Myeloid cell nuclear differentiation antigen		Transcription factor believed to be involved in blood cell response to interferon stimulation.
Rem1 (occluded)	Ras (Rad and Gem)-like GTP-binding 1		Ras-related small GTP-binding protein involved in regulating cell shape and calcium ion channel function.
Ly75 (occluded)	Lymphocyte antigen 75	CD205	Involved in the cascade response to antigenic stimuli leading to CD4-positive T cell response.
En1 (occluded)	Engrailed 1		Homeobox-containing transcription factor involved in hindbrain and peripheral nervous system formation during embryogenesis.
Mark2 (occluded)	MAP/microtubule affinity-regulating kinase 2	Emk1	Kinase involved in regulating microtubule stability by phosphorylating the EMK class of microtubule associated proteins.
Msln (occluded)	Mesothelin	Cak1; Mpif; Smr	Glycosylphosphatidylinositol binding protein for cell-cell adhesion.
Cxcr4 (occluded)	Chemokine CXC motif receptor 4	Npy3r; Fusin; Lestr; Lap3	Pleiotrophic receptor for SDF1 involved in neural and hematopoietic development.
Gnao1 (occluded)	Guanine nucleotide-binding protein, alpha-activating polypeptide O	Gnao	Pleiotrophic function involved in the binding of GRIN1 and upregulation of CDC42-mediated alteration in neuronal cell morphology.
Stmn2 (occluded)	Stathmin-like 2	Scgn10; Scg10	Involved in regulating neurite growth by binding microtubule dimmers.

Myog (transactivated)	Myogenin	Myf4	Basic helix-loop-helix transcription factor playing a critical role in specifying the myogenic lineage, believed to be downstream of Myod1 and Myf5.
Ckm (transactivated)	Creatine kinase, muscle type	Ckmm	Muscle-specific enzyme involved in energy delivery.
Acta1 (transactivated)	Actin, alpha 1, skeletal muscle 1	Asma	Skeletal muscle-specific actin isoform.
Myl1 (transactivated)	Myosin; light polypeptide 1		One of several myosin alkali light chain constituent of the sarcomere.
Myl4 (transactivated)	Myosin, light polypeptide 4	MLC1a	One of several myosin alkali light chain constituent of the sarcomere.
Tnncc1 (transactivated)	Troponin C, slow	Tnc	Myofibrillar protein involved in calcium-mediated contraction of striated muscle.
Tnni1 (transactivated)	Troponin 1, slow-twitch skeletal muscle isoform		Myofibrillar protein involved in calcium-mediated contraction of striated muscle.
Rrad (transactivated)	Ras-related associated with diabetes	Rad; Rad1	Rho kinase pathway second messenger involved in multiple cellular processes including cytoskeletal (dis)assembly.
Mfap5 (transactivated)	Microfibrillar associated protein 5	MAGP2	Involved in stimulating the assembly of elastic fibers in maturing muscle cell types.
Rap1ga1 (transactivated)	Rap1, GTPase activating protein	Rap1gap	Guanine nucleotide binding protein involved in integrin-mediated cell adhesion.

Table S2: Genes targeted by bisulfite sequencing.

	Genes	PCR primer sequences (forward; reverse)
Occluded genes	Myod1	GGGTTGTTAGGGGAATTAAG; CAATAAAAACAAACTCCAAAAAAA YGGAGAGTTAAGTAGTYGTTAGG; AAACCTCCTACCCCTAACCTCTC
	Myf5	AGTTTGATAGAATTATTGATT; TTTAATCCAAAATTACCA GTGTTAGTTTATTAGAGAGTG; ACCCTACAACTCTACTTT ATGGGTGGTTGTGAATGATTA; CTTAACAAAAATATTCTAACCC
	Chrnd	TTAGTGTGTTAGYGTGTT; CCATCCCTCTAACCTAACRTA
	Cacng1	YGTGTTAGGGTATTGTT; AATCCRACRACTACRTCTCCT TAGGAGAYGTAGTYGTYGGAT; TAAATACRTTACCCRAACA AAATAGAAGAGATTGTTAGTTAGT; TATAATCTCATACCATACCCCTCCT
	Rapsn	GTTGAGAAGGATTAGGATAGTGTT; CCCAACCAAAAAAAACTTAC TTTTTTTTATTAGATTTGAT; AACTCAAAAACTAAATTCTAACCC TTTGAGGAATGTTAGTAGTAAAGTTA; ATTAAATAAATATCAACCTAAACCTAA TTTGTTGGTTGGATTGGTATAGT; CCCAAAAAAATACCCAATAACA
	Myom2	AAGGATAYGTTTAGGTTGAATYGTG; AAAAAGAAATTCTAACCCRA
	Tnni2	GTGGAAGTGGGAAATTATTGTTAGG; ACATAAAATCCTCTAACCAATA TTTGGGGGAGGTTATTATATT; CAAAAAAATATCTAATACCTACCTCTC GGTTGGGGGATGTTATTAGTAGTT; CACCTCCTCAAAACAATATCTTAA
	Ncam1	GGTTATTTGGAAATTTTTTAAA; TAAATAAAATTCTAACATCCCAT ATATGTAATTGTTGATTAAGGAAGG; TTTTACAAAATTCTTACCAAC
	Cdon	TGGAGAGAYGGTTTTGG; ACTTAAACAAATCCAACRAACRA
	Zic1	GGTAGTTTGGTTGTTAAAGG; CTTCCTAAAAAAACTTCACT
	Adamtsl2	GTYGTYGTYGTYGGTAGTAAAT; CRCCTCCCTCTCCC
	Spock2	TGGTTATTAAATTAAATTGAAGT; CACAACCTAACAACTAACTTC
	Rcan2	GTATTTGTAATTGTTGGTTTTGTT; CTAAACACATCAATAATTACCCRT
	Ca2	GGAGTTGGAGTTYG; ACAAAACAAAATCRACACC
	Cp	TGTTGTAGGATATTGTTGTGAT; TCCCCTCTAACCTAAAAAA
	Mnda	AATTGGTGTGTTGTTTTTTA; ACACTTATTAAACCACTCTAAC
	Rem1	TTTTAGTTGGTGAATGAATGAATGA; CACATCTATCCACTCCATCAAA
	Ly75	Not analyzed due to inability to find working PCR primers.
	En1	TAGATTTGTTATTGTTGAAAAAT; TCCATAAACAACTTATTTAAAAAA
	Mark2	GGTTATGTTGGGAGTAGTAGGTT; TTCTCACAACAAACACCC
	Msln	ATTAGAGITATTGTTGGTAGGGT; TCAAAATTACTTACAAATCCC
	Cxcr4	TTGTTAGTTAGGGTGAATGGTTGAAT; CAACCAACAAACTAAAATTCTA GTTGAAGTTAGAATGGTTGTA; AAAATTCAAATCACATCTTAACT
	Gnao1	TTGGGTYGTGATAAGTTAGTG; TACATCCCTATAACCCCTC
	Stmn2	TTATTGGTYGATTAATTAAATGTT; ATTTAACCAATTAAAAATATACAAACRCA
Transactivated genes	Myog	ATGTTTAAGTTTTGTTTTT; CCAACCCCTAAACTAACCTTATT GTTGGAAAGGGTTTAAGAGTTAAT; ACATAAAAACAAATCAATAATCC TGTGGGTGTTAAATTTTTT; CCCATAAAATACCCAAATCTAAAC
	Ckm	GAATTTAGAGGAAGGGATTTT; CCTCCTTACAAAACAC GTGGTTGTTTGTAAGGAGG; AAAATTCAAACCTAAACAA GTGAAGGAGATTAGGGGTTAG; AACTAAACCTCTCACCTCCCTAC GAGTAGGGAGGTGAGAGGTTA; AAAATAACACACAAACCCCTTC
	Acta1	GGTYGTATATGGAGTTTTT; TCRACRTAACCTCAACTTTAAAT ATTGGGGYGGGTAGTTAA; CCCAAACRCTCAAATA
	Myl1	GTTGGTTGATTATAGTTAGTG; AAAAAGAAAAAAATTAAAAAAATTAAAT
	Myl4	TTTGTGTTAAAGGATTGGTTAGA; TCTTACCAATTAAACCAAC TTGGTGTATAATATAAGTGTAGTTGTA; TTAACAAAAAAATATCTAAAAAAAC
	Tnncl	GGGTTGAAGGTAYGTAGGTTTT; CATTCCAAAAACCTTTCAAAAAT TATTGGGTATTAAAGGAGAATAA; TCCTAACATAACCAACTATCCCC TTAGGGTTAGGGTGTAGGTG; CRCCTACTTACCTATAAAATCC TTATTGTTAGGTGAGAAGGTTGGAG; TATTCCCTRTTAAACCAAC
	Tnni1	TGTTGGAAATTAGTGAAGTTAATT; CRAACCTCTCTAACCTCTAA GGATTAATTATTTGAAGTTGGG; ACATAACTTCCRCCTATATACC GTATTAGGTTGYGTTGTT; CCTTCCAAACTACTATCTTCATC
	Rrad	TYGTYGTYGTTGTTAGTT; CCRCACCTCRCTCT
	Mfap5	GAGATGGGAATTGTTAGTTGTTAT; AAAAAGAAAAAAATACCAACAAAAAA
	Rap1ga1	GGGGYGTATTAAAGGG; TACRACRAACRAACRAC

Note: Some genes are covered by multiple amplicons, whose primer sequences are listed on separate lines.

Table S3: Genes targeted by ChIP-PCR analysis.

	Genes	PCR primer sequences (forward; reverse)
Occluded genes	Myod1-En	CTTCCTATAAATCTGAGGGTAA; GACTCCAGGAAGGAAGACAAG
	Myod1	CCCGCAGTGTCTATTGG; CCCGGCTGTAGATAGCAAAG
	Myf5-En	TACAACAGCTGAGCGAAGAGA; CTTCATGACGCATAGTAAAGCATT
	Myf5	GCCTCCCTCCGAAAGAATA; GCGCTGAGAAGTACTCAGA
	Myf5-Int	ATGAAAGAAATACCCACACGG; GAAGAAGAGGAGAGCAGCAG
	Chrnd	GATCTTGCTCATGTCTTGG; GGAGGGTGTCTCCCTTACC
	Cacng1	AGCTCGGCTTGCACCT; CTTGGTACAATCCGCCAGA
	Rapsn	ACCTCTGACACTGACCTG; TGGGCTGGATGAGTGA
	Myom2	TGCAGTITGGACTCAGAAAG; TCACCAAGCCACCCACA
	Tnni2	AGGTATTAGACACTCCCTGACC; GGGTGAGAAGTAAGAGGAGAAG
	Tnni2-Up	CGTCACCGAGCCCTAAATAGA; GCTGGGCCTCACCTAGAAT
	Ncam1	CCCATCCCTCCAAAGTTC; TTTCACACGCAGTCTCCC
	Cdon	CCTCTACCTAACATTCTGAGCC; ACCACGCCTCTCTAGC
	Cdon-Int	GGCACGTAACTCGGAGG; CTTGCAGAGTAGGCAGGTC
	Zic1	TCAAGCGCTTACAATACCTGG; AGCGCGAGACTGATAGCA
	Adamtsl2	TCTGGACACCCGACATGT; TATAGCTGTCAAGGAGACGG
	Spock2	TCCTCGGAGTTATGGCTCTA; CAAGGCAGATGAAATGGTCAGA
	Rcan2-TSS1	CCGTGGGTCACTGGGAT; CTGAGGGCAGGGTGAGAG
	Rcan2-TSS2	TTCTGTAAATTGCTCTGTGCCA; ACTCCTTCCATGAACTGCTT
	Ca2	CAAACACAACGGTGAGTGC; ATTCTCCACAGTGGCCT
	Cp	GACACAAATTAGTGTGACAAGAG; ATATGTCAGAGGAACAAAGGGAG
	Mnda	AACAGGAAAGGAGGAGAAAC; CAGATGTCAGAGAAAGTGGTCA
	Rem1	CCATCCTCCCTTCTCGTCTG; TGGATGCTCCAGGCTGTA
	Ly75	CAGCCTGCTCATCCTGA; ATCCGACGTACCTCTCC
	En1-Up	TGGCAAGACGCTTAATCAAACT; AGAGTGGCGCTAATCCA
	En1	CACGCCCTAAGAAACTCAGCTT; CGTAAACGTGGCACGCTA
	Mark2-TSS1	GGGTCGCTTGTGGATTTC; ACCTGCTGCTCCCAAC
	Mark2-TSS2	CACTCTGGTCAGCACATC; CGGGTTAGATCAACTCCCTCTC
	Mark2-TSS3	CTGCTGCCATATCATTCTCACA; AGGAGCCGGTAGTTCCAA
	Msln-Up	AGGGCAGCTTGCCTTC; TGATGTGCAGGGTATTGG
	Msln	CCCACTCCCAATTGAGGAAC; TCAGATCGCGGGCAAT
	Cxcr4-TSS1	CACTTTGCTACCTGCTGCC; TACCGACCACCCGCAA
	Cxcr4-TSS2	CCCAAGTTCATTTCTCACTCT; CGCAATTCAAAGACGCTCG
	Gnao1	GCTCACGCTCGACTATTATT; CGATATCCTCTCTGGGCT
	Stmn2	TAGGCACAGCCCCAGTTCT; GGAGCCCCATGAATAATTACTCAG
Transactivated genes	Myog	CATCTGCTCTTCAATTACTCTA; GTGCCCATGAATGCCA
	Ckm	AGGCTGTGATTGGCTG; GGTGGCTCTACGTGCTT
	Acta1	ACAACTGCTACTCTCGGCT; CCGCTCTTCTGGTCAAC
	Myl1-TSS1	TGGACAGTTCTTAGTCAAGGG; GTCTCTAGGCAAGGGAA
	Myl1-TSS2	ATCCCTGGCTGAGGCTT; CTTAAAGGAAGATGCTCCAAGAGA
	Myl4-TSS1	GTTGAATGAATGACTGAGGGTGTG; AGCCCACTGCACATTCC
	Myl4-TSS2	CCTGTCTAGAGGTGAAGAGA; AGGAGTGTACTAAGAAGAACCGA
	Tnn1	GGCTCACAGGACAGCTG; GGGACAGGAGGGAAAGAAC
	Tnn1-Int	GCTGAGGAAACCAACCCATT; CCACCCAGCTTGAGTTTCAT
	Tnni1-Up	TCTGCCCTAATCTCATCTCCA; GCTCCCTAACCTCTGCTT
	Tnni1	ATAGAACGACCCACTGCC; GCTGCTATTCTCTCTCT
	Rrad	ATTAGGAGGCCACGCACT; CCTCTATTCCCAGACAGCTACC
	Mfap5	ATGAGATGAGGGAGAGCAAGAA; CTAAGAAAGACCAAGGAACAAAG
	Rap1gap	GGGACGTCACATGACCG; CATGAGCTTGTGCTGGA
Expressed genes	Zeb1	CCCTCAATTCAAATTCACTGAGTG; CATCCGCCATGATCCCTCTC
	Bmp4-TSS1	CCTCCCTCGCTTCTTCTT; CTTCTAGTACCTCCGCACG
	Bmp4-TSS2	GCCTCGGCTTCCCTTATT; CCTGCTGAAACGCTGAGT
	Commd4	GATTCTGGAGACGGAGGAG; TCATTCCCGCTCCAGCA
	Clk2	CACGTAGTTGGCAGGCAT; CACTACAGTCAGGCTTGCGAG
	Pnpla2	CCTGAGAAAAGCCTCTCGTTG; CCGGACCTTGGCTTCTAC
	Sgp1	ATTCACTGGAGGGCTGCTGG; TCCACCTCTGGCTCTC
	Rsu1	CGAACACGCCCTGTCTC; CCAACTCGGCCAAATCA
	Bcl6-TSS1	GGCCCAAGACGATGGTATG; CCCAGTGGTCAAACCTCTC
	Bcl6-TSS2	ACCACAGGAAGCCCAAGATT; TGCCCACACTCAACCCA
	Diaph3-TSS1	CGCAGCCAACACATCTGA; AAATCCAGGCCGATGACTTC
	Diaph3-TSS2	AGTGCATTAATGAGGGCTGT; CCTACACGAGGATTAGAGCATT
	Ptov1	CCCTGAAGTTGTGGCTCG; GCTGAGCCGTACCAAGC
	Kiaa0319I	ACCGACCCGGAAACACA; TTGCCGCCATCTGCTT
	Ube2i	TCCTCGGACGCTTCAGA; CTGGACACCTACGCCCTTA
	Rhod	TCTTCAGGGACCTAGACGG; AGGACCCACTTGCACGGA
	Itgb1-TSS1	TCCTCTCGCGCTCTGAT; AGAGGAGGAAACTGAGGCAC
	Itgb1-TSS2	GGTCAAAGCGCAATACAAGATAC; TGGTTTGAGAGCCATCATGTT
	Mdm2	ATCATCCCGGAGGTGGT; AGCAGGATCTCGGTAGA
	Rpl30	GACAGAGAACAGGACAGGAATT; GTACCAATAGCAACCGGCA
	Gapdh	CTCCCATCGGGCCAATC; GCTGCGGGCTCAATTATAGA

Note: Each entry lists a PCR amplicon of a gene. All amplicons target TSSs of genes unless indicated otherwise as follows. En: upstream enhancer; Int: intronic enhancer; Up: immediate upstream of TSS; TSS#: one of multiple alternative TSSs.