

**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), *Okm* (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.

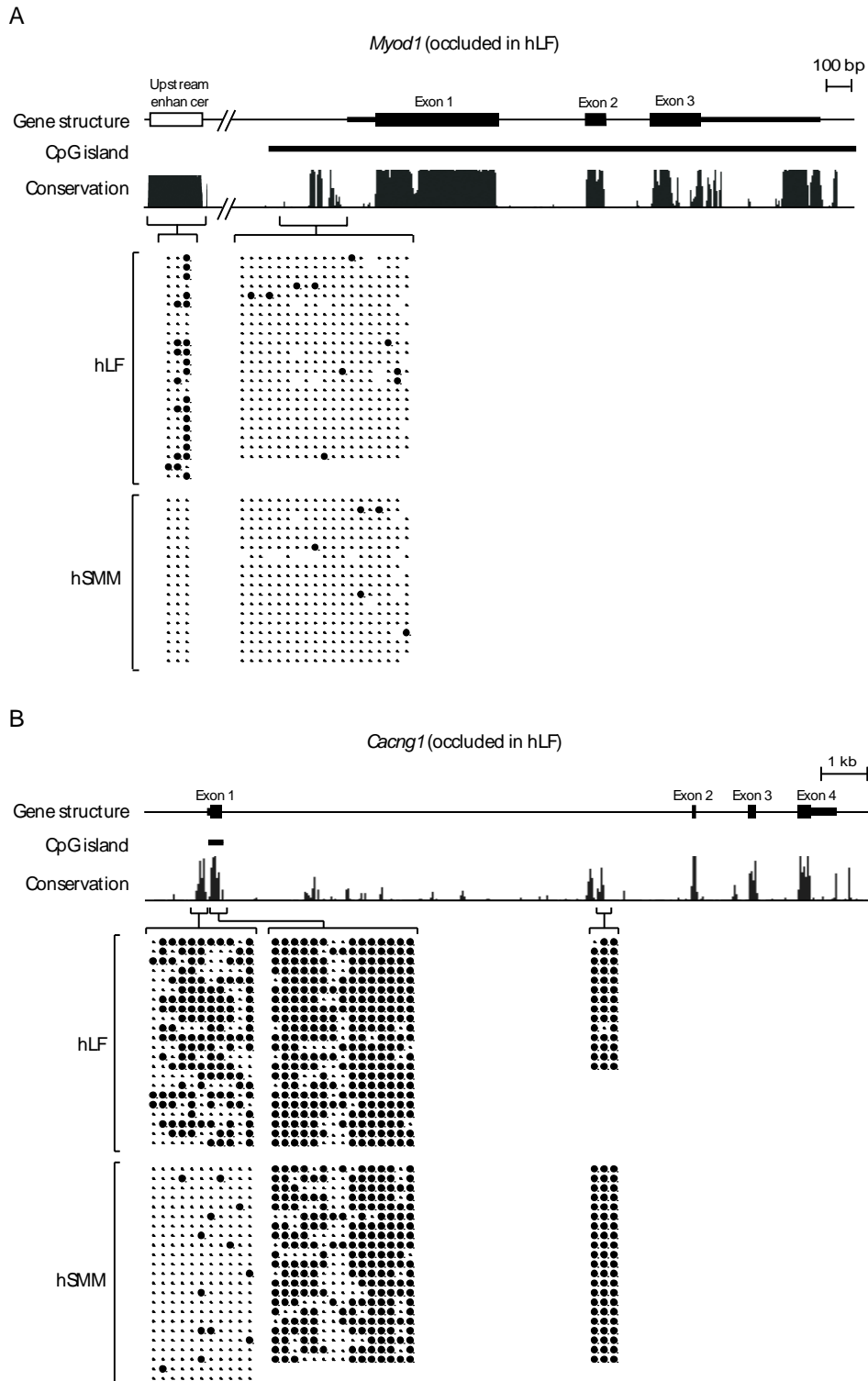
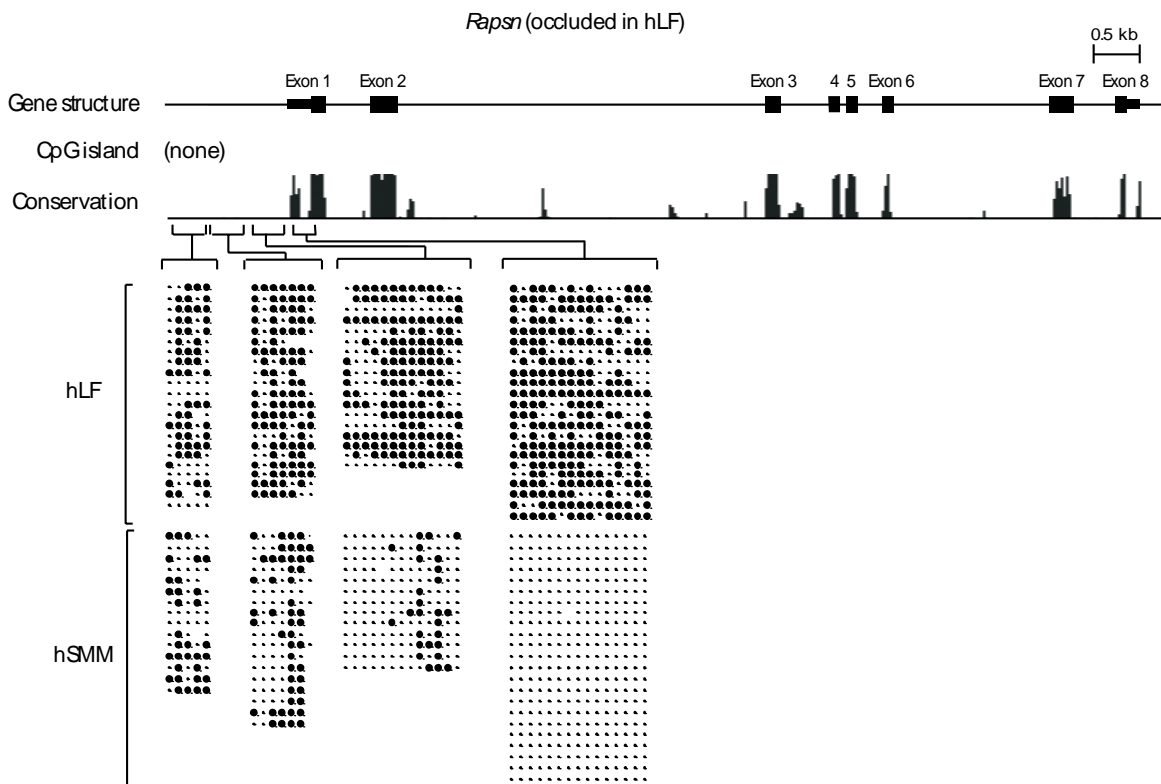


Figure S1: (continued)

C



D

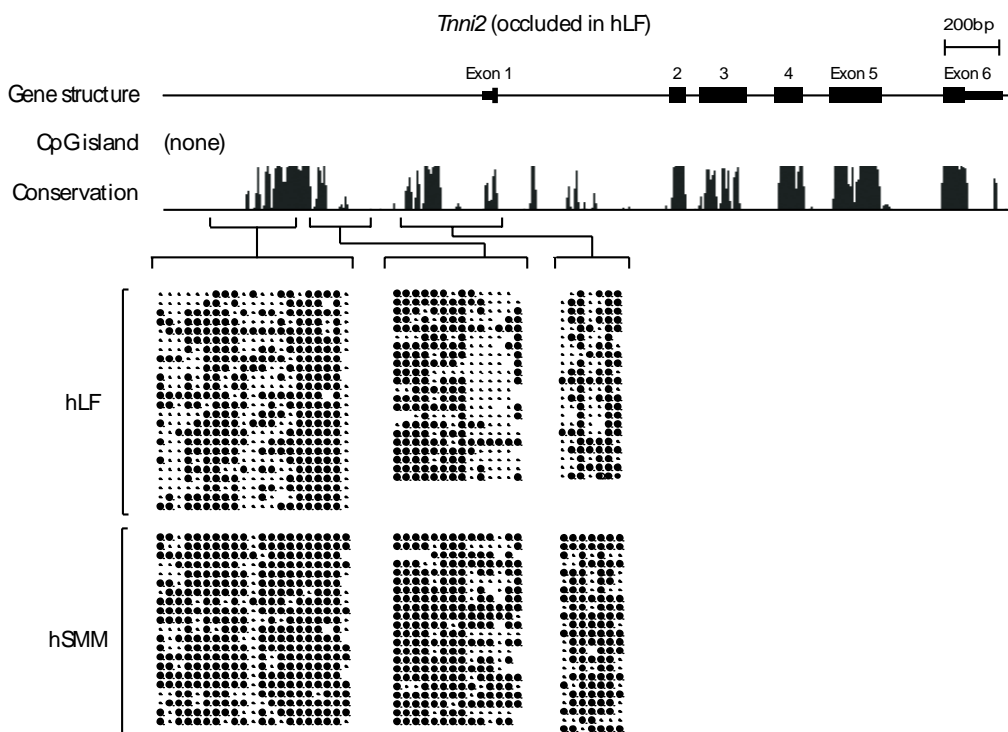


Figure S1: (continued)

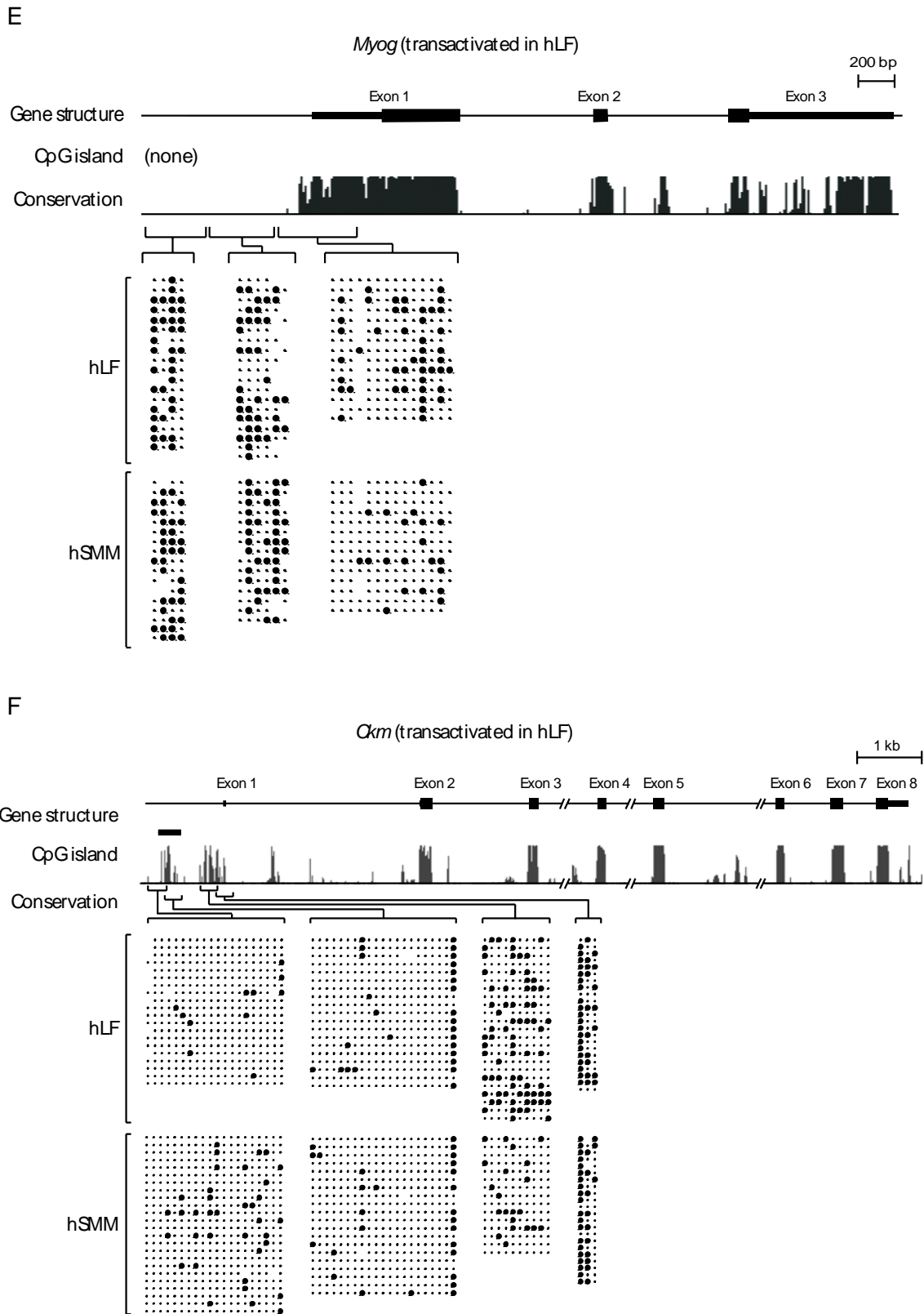
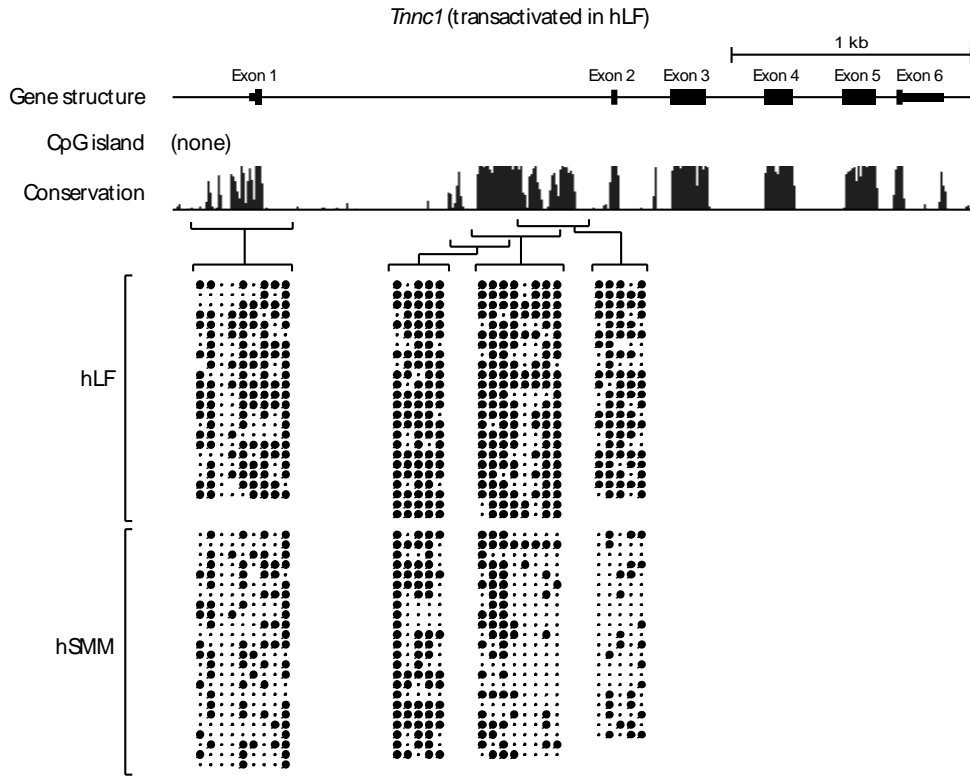
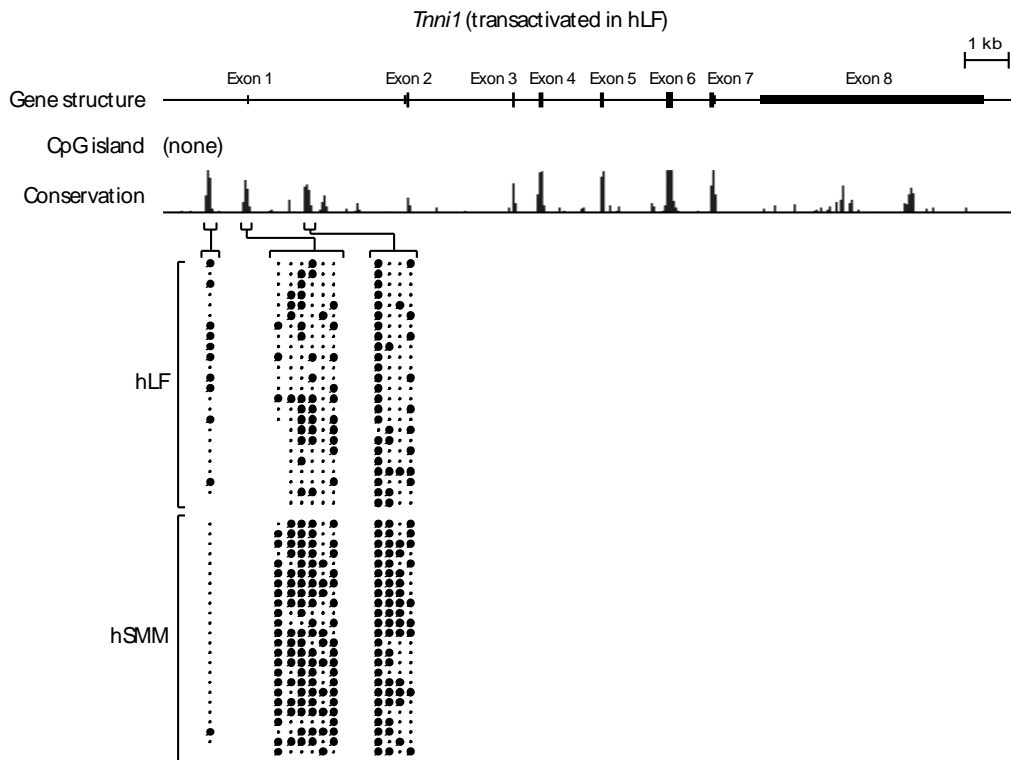


Figure S1: (continued)

G

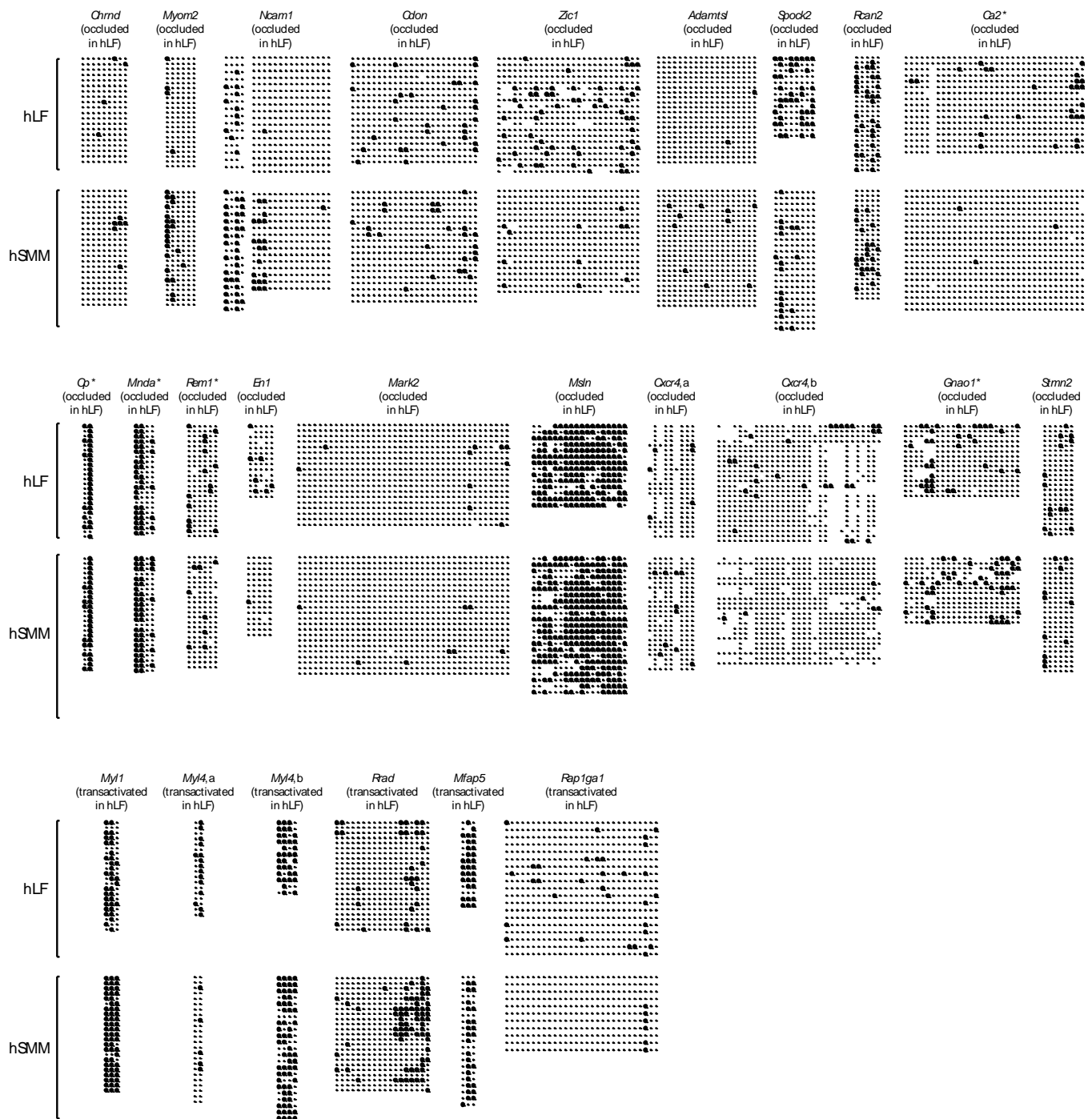


H



**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. *Cxcr4* and *Myf4* 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	Dscr111, 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 catalyzating 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; Mpf; 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.
My11 (transactivated)	Myosin; light polypeptide 1		One of several myosin alkali light chain constituent of the sarcomere.
My14 (transactivated)	Myosin, light polypeptide 4	MLC1a	One of several myosin alkali light chain constituent of the sarcomere.
Tnnc1 (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 S3: Genes targeted by ChIP-PCR analysis.**

	Genes	PCR primer sequences (forward; reverse)	
Occluded genes	Myod1-En	CTTCCTATAAACTTCTGAGAGGGTAAC; GACTCCAGGAAGGAAGACAAG	
	Myod1	CCCCGAGTGTTCCTATTGG; CCCGGCTGTAGATAGCAAAG	
	Myf5-En	TACAACAGCTGAGCGAAGAGA; CTTCATGACGCATAGTAAAGCATT	
	Myf5	GCCTCCCTCCCGAAAGAATA; GCCGTCGTAGAAGTACTCAGA	
	Myf5-Int	ATGGAAGAATAACCCACACGG; GAAGAAGAGGAGAGCAGCAG	
	ChrmD	GATCTTTGCCTCATGTCCTTGG; GGAGGGTGTCTTCCCTTACC	
	Cacng1	AGCTCGGCTTGTCACT; CTTGGTACAATCCGCCAGA	
	Rapsn	ACCTCTGACACTGACCCTG; TGGCCTGGATGAGTGA	
	Myom2	TGCAGTTTGGGACTCAGAAAG; TCACCAAGCCACCCACA	
	Tnni2	AGGTATTAGACACTCCCTGACC; GGGTGAAGAAGTAAAGAGAGAAAG	
	Tnni2-Up	CGTCACCGAGCCCTAAATAGA; GCTGGGCCTCACCTAGAAT	
	Ncam1	CCCATCCCTCTCCAAAGTTC; TTTACACCGCAGTCTCCC	
	Cdon	CCTCTACCTAAGTTCTCTGAGCC; ACCACGCCTCTCCTAGC	
	Cdon-Int	GGCACGTAACCTCGGAGG; CTTGCAGAGTAGGCAGGTC	
	Zic1	TCAAGCGCTTTACAATACCTGG; AGCGCGAGACTGATAGCA	
	Adamts12	TCTGGACACCCGACATGT; TATAGCTGTCAAGCGACACGG	
	Spock2	TCCTGCGAGTTATGGCTCTA; CAAGGCAGATGAAATGGTCAGA	
	Rcan2-TSS1	CCGTGGGTCAGTGGGAT; CTGAGGGCAGGGTGAGAG	
	Rcan2-TSS2	TTCTGTTAATTGCTCTGTGCCA; ACTCCTTTCCATGAACTGCTTT	
	Ca2	CAAACACAACGGTGAGTGC; ATTCTCCACAGTGGCCT	
	Cp	GACACAATTTAGTGTTGCACAAGAG; ATATTGTGACAGGAACAAGGGAG	
	Mnda	AACAGGAAAGGAGGGAGAAAC; CAGATGTCAGAGAAAGTGGTCA	
	Rem1	CCATCCTTCTTTCTCGTCTG; TGGATGCTCCAGGCTGTA	
	Ly75	CAGCCTGTCTCATCTGA; ATCCGCACGTACTCTTCC	
	En1-Up	TGGCAAGACGCTTAATCAAAGT; AGAGTCCGCCTAATCCA	
	En1	CACGCCTAAGAACTCAGCTTT; CGTAAACGTGCGACGCTA	
	Mark2-TSS1	GGGTCGCTTCGTGGATTTC; ACCTGCTGCTCCCAACA	
	Mark2-TSS2	CACCTGCGGTCAGCACATC; CGGGTTTAGATCAACTCCTTCTC	
	Mark2-TSS3	CTGCTGCCATATCATTCTCACA; AGGAGCCGGTAGTTTCCAA	
	Msln-Up	AGGGCAGCTTTCCTTC; TGATGTGCAGGGTGATTGG	
	Msln	CCCACCTCCCAATTGAGGAAAC; TCAGATCGCGGGCCAAAT	
	Cxcr4-TSS1	CACCTTGTCTACCTGCTGCC; TACCGACCACCCGCAA	
	Cxcr4-TSS2	CCCAAGTTTCATTTCCTCACTCT; GCCAATTCAAAGACGCTCG	
	Gnao1	GCTCCAGCCTCGACTATTATTT; CGATATCCTCTCCTGGGCT	
	Stmn2	TAGGCACAGCCAGTCT; GGAGCCCATGAATAATTACTACTCAG	
	Transactivated genes	Myog	CATCTGCTCCTTTCAATTACTCCTA; GTGCCATGAATGCCCA
		Ckm	AGGCTGTGCTATTGGCTG; GGTGGCTTCTACGTGCTT
		Acta1	ACAACCTGCTACTCTCGGCT; CCGCTCCTTCTTTGGTCAAC
		Myl1-TSS1	TGGACAGTTCTCTAGTCAAGGG; GTCTCTTAGGCAAGGTGGGAA
		Myl1-TSS2	ATCCCTGGCTGAGGCTT; CTTAAAGGAAGATGCTCCAAGAGA
		Myl4-TSS1	GTTGAATGAATGACTGAGGTTGTG; AGCCCACTGCACATTCC
		Myl4-TSS2	CCTGTCCTAGAGGTGAAGAGA; AGGAGTGATCTAAGAAGAAACCGA
		Tnnc1	GGCTCACAGGACAGCTTG; GGGACAGGAGGGAAAGAAAC
		Tnnc1-Int	GCTGAGGAAACCAACCCATT; CCACCCAGCTTGAGTTTCAT
		Tnni1-Up	TCTGCCCTAATCTTCATCTCCA; GCTCCCTAACCTCCTGCTT
		Tnni1	ATAGAACAGACCCACTGCCC; GCTGCTCATTCTTCCCTTCT
		Rrad	ATTAGGAGGCCACGCACT; CCTCTATTCAGACAGCTACC
		Mfap5	ATGAGATGAGGGAGAGCAAGAA; GTAAGAAAGAACCCAAAGGAACAAG
Rap1gap		GGGACGTCACATGACCG; CATGAGCTGTTGCCTGGA	
Expressed genes		Zeb1	CCCTCAATTCAAATTCAGCAGTG; CATCCGCCATGATCCTCTC
		Bmp4-TSS1	CCTCCCTCGCTTTCTTTCTT; CTTTCTAGTACTCCGCACG
		Bmp4-TSS2	GCCTCGGCTTCCCTTATTT; CCTGCTGAACGCTGAGT
		Commd4	GATTCTGGGAGACGAGGAG; TCATTCCGCTCCAGCA
		Clk2	CACGTAGTTGGCAGGCAT; CACTACAGTCAGGCTTGCAAG
		Pnpla2	CCTGAGAAAGCCTCTCGTTTG; CCGGACCTTGGCTTCTTAC
	Sgpl1	ATCACTGGAGGGTCTGGG; TCCACCTCTGCGTCTC	
	Rsu1	CGAACACGCCTGTCTC; CCAACTTCGGCCCAATCA	
	Bcl6-TSS1	GGCCCAAGACGATGGTATG; CCCAGTGGTTCAAACCTCTC	
	Bcl6-TSS2	ACCACAGGAAGCCAGATT; TGCCCACTCAACCCA	
	Diaph3-TSS1	CGCAGCCAACACATCTGA; AAATCCAGGCCGATGACTTC	
	Diaph3-TSS2	AGTGCATTAATGAGGGCTGTT; CCTACACGAGGATTTAGAGCATT	
	Ptov1	CCCTGAAGTTGTGGCTCG; GCTGAGCCGTACCAAGC	
	Kiaa0319l	ACCGACCCGAAACACA; TTGCCGCTCATTTGCTT	
	Ube2i	TCCTGCGACGCTTCTAGA; CTGGACACCTACGCCCTTA	
	Rhod	TCTTCAGGGACCTAGACGG; AGGACCACCTTGACGGA	
	Itgb1-TSS1	TCCTCTGCGCTCTGAT; AGAGGAGGAAACTGAGGCAC	
	Itgb1-TSS2	GGTCAAAGCGCAATACAAGATAC; TGGTTTGAGAGCCATCATGTT	
	Mdm2	ATCATCCGGAGGTGGT; AGCAGGATCTCGGTCAGA	
	Rpl30	GACAGAGAACAGGACAGGAATTT; GTACCAATAGCAACCCGCA	
	Gapdh	CTCCCATCGGGCAATC; GCTGCGGGCTCAATTTATAGA	

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.