

Table S1. Human Samples, Related to the Experimental Procedures

Name	Sample type	Gender	Muscle site	D4Z4 kb
CN1	Myoblasts	male	quadriceps	>40
CN2	Myoblasts	male	quadriceps	>40
CN3	Myoblasts	male	quadriceps	>40
CN4	Myoblasts	female	quadriceps	>40
CN5	Muscle biopsy	male	deltoid	>40
CN6	Muscle biopsy	male	deltoid	>40
CN7	Myoblasts	male	quadriceps	>40
CN8	Myoblasts	male	quadriceps	>40
CN9	Myoblasts	female	quadriceps	>40
FSHD1	Myoblasts	female	quadriceps	18
FSHD2	Myoblasts	male	quadriceps	23
FSHD3	Myoblasts	male	quadriceps	24
FSHD4	Myoblasts	female	quadriceps	30
FSHD5	Muscle biopsy	female	deltoid	38
FSHD6	Muscle biopsy	female	deltoid	38
FSHD7	Muscle biopsy	female	deltoid	21
FSHD8	Myoblasts	female	quadriceps	29
FSHD9	Myoblasts	female	quadriceps	17
FSHD10	Myoblasts	female	quadriceps	29
FSHD11	Myoblasts	male	quadriceps	9

Table S2. Primers, Related to the Experimental Procedures

Target	Sequence
5RACE1	TTTGCCTGTGAGTTCGAATGC
5RACE2	CTGGAGCAGAGATGACCACA
ANT1-promoter F	TGCAGGCCGGAGGGTCAAGA
ANT1-promoter R	CGGCATGTGGGCCGCGTATT
ANT1- F	GCACATTTTTGTGAGCTGGA
ANT1- R	CTTGGCTCCTTCGTCTTTTG
Ash1L- F	TCTGAACAACCCAGGTTTC
Ash1L- R	AAGGTGTTTGCAATCCCAAG
BAC-F	CGATCCGGCGCGCCAATAGT
BAC-R	CGACCGATGCCCTTGAGAGCC
β -actin-promoter F	GCCCATGGGTCTTTGTCTAA
β -actin-promoter R	CCCAATACCCAGCCATAGAG
β -actin- F 58	GTCGTACCACTGGCATTGTG
β -actin- R 58	GTCACGCACAATTTCCCTCT
β -actin- F 68	TCCTGACCGAGCGTGGCTACA
β -actin- R 68	CCTGGCCATCAGGCAGCTCAT
D-1- F	GAGAGAGGAACGGGAGACCT
D-1- R	GGACGCTGACCGTTTTCC
D-2- F	GGAGGCGTGATTTTGTTT
D-2- R	GTGGGGAGTCTGCAGTGTG
D-4- F	TGAGAAGGATCGCTTTCCAG
D-4- R	CCCTTCGATTCTGAAACCAG
D-5- F	CTCAGCGAGGAAGAATACCG
D-5- R	GTAGCCAGCCAGGTGTTCC
DBE- F	AGGCCTCGACGCCCTGGGTC
DBE- R	TCAGCCGGACTGTGCACTGCGGC
DUX4- F	GGACTCGAGACTCCGTTCAA
DUX4- R	CCATCCTGAGTTCATTTTTGTG
FRG1-promoter F *	AGCTTCCTCCATCTCTGTCG
FRG1-promoter R *	GTGTGTGCAGGAAACAAGCA
FRG1- F	TCTACAGAGACGTAGGCTGTCA
FRG1- R	CTTGAGCACGAGCTTGGTAG
FRG2-promoter F	TCCTGCCGCTTCTTAGAGCCT
FRG2-promoter R	CCCCGATTTTCCGGTCCCTG
FRG2- F	ACAAAGGCAAGGATCGGAGC
FRG2- R	CTGACATAGCTCGCACAGAA
Gapdh- F 58	TCAAGAAGGTGGTGAAGCAGG
Gapdh- R 58	ACCAGGAAATGAGCTTGACAAA
Gapdh-F2	ACCACAGTCCATGCCATCAC

Gapdh-R2	TCCACCACCCTGTTGCTGTA
hGAPDH- F 68	TCAACAGCGACACCCACTCCTC
hGAPDH- R 68	CATGAGGTCCACCACCCTGTTG
Hoxd11 prom- F	ATTTCTCTCCATGGCGTCAC
Hoxd11 prom- R	CTTGGGCCAGGATCAACTAA
Hoxd11expr- F	TGAACGACTTTGACGAGTGC
Hoxd11expr- R	TAGGGGAAAGTCATCTGGCA
NDE-F	AGGCCAAAATCCTCCCAGAATC
NDE-R	CCATCTCCCCTCACACACTT
p13E-11-F	CCCCGCTTTTTCTCTGAAAT
p13E-11-R	ACACAACAGCGAACAATGGA
pre-miR19A F	CCTCTGTTAGTTTTGCATAGTTGC
pre-miR19A R	CAGGCCACCATCAGTTTTG
Q-PCR-F **	CCGCGTCCGTCCGTGAAA
Q-PCR-R **	TCCGTCGCCGTCTCGTC
Reg1-F	TGGGCATTTTCTCATTAGCC
Reg1-R	CCATCTCCCCTCACACACTT
Reg2-F	AGGCCAAAATCCTCCCAGAATC
Reg2-R	CCTAAAGCTCCTCCAGCAGA
Reg3-F	CGCAACCTCTCCTAGAAACG
Reg3-R	CTGGTGGAGAGGCAGGAGAG
Reg4-F	CGGAGAACTGCCATTCTTTC
Reg4-R	GGACGCTGACCGTTTTCC
Reg5-F	GAGAGAGGAACGGGAGACCT
Reg5-R	GGAGAGACGTGAGCAACAGG
Reg6-F	GGTTCACAGACCGCACATC
Reg6-R	GTGGGGAGTCTGCAGTGTG
Reg7-F	GGAGGCGTGATTTTGGTTT
Reg7-R	GAGGGGAGTGTGGAAGTAA
Reg8-F	ACGTGGAAATGAACGAGAGC
Reg8-R	TCAGCCGGACTGTGCACTGCGGC
SSLP F	CAGGCTCTTGAGCTCGTCTT
SSLP R	TGTCTGAGAAGGGTCGTTCC
Suz12-F	CTTCCAGCCAGAAGAAAACG
Suz12-R	CAGCCTCTTCCCATCAAGAA
U1 snRNA F	ATACTTACCTGGCAGGGGAG
U1 snRNA R	CAGGGGGAAAGCGCGAACGCA

* Bodega et al., 2009

** Zeng et al., 2009

Table S3. RNA/DNA FISH Probes, Related to the Experimental Procedures

D4Z4
5'-AGGGCG(aminoC6-dT)CGAGGCC(aminoC6-dT)GGGGCCGGCCGGCGGGG(aminoC6-dT)GGTGGTGGTGG(aminoC6-dT)GGTGG-3';
(5'-aminoC6)TTCATGAATGGCGG(aminoC6-dT)GAGCCCCC(aminoC6-dT)GGGACAGCCCGCCCCACCCCGGAAG(amino-C6-3');
(5'-aminoC6)CAGCCAGCCAGCCAGCCGCCCTTG(aminoC6-dT)AAAGGCCACAGGCAGGCAGGC(aminoC6-dT)CC;
5'-TGCACC(aminoC6-dT)CAGCCGGACTG(aminoC6-dT)GCACTGCGGCAGG(aminoC6-dT)GCAGCCAGGAGGCC(aminoC6-dT)GC-3'
DBE
5'-FAM-CCTCAGCCGGACTGTGCAC-FAM-3';
5'-FAM-CCCACAGGCAGGCAGGCTCC-FAM-3';
5'-FAM-CCAGCCAGCCGCCCTTGTA-FAM-3'
β-actin
(5'-amino-c6)ATGCCGTGTTCAA(amino-C6-dT)GGGGTACTTCAGGG(amino-C6-dT)CAGAATACCTCTCTTGC(amino-C6-dT)CTG-3';
(5'-amino-c6)GTTGTAGAAGGTG(amino-C6-dT)GGTGCCAGATCT(amino-C6-dT)CTCCATATCGTCCCAGT(amino-C6-dT)GGTGA-3';
(5'-amino-c6)CCTGAATGGCTACG(amino-C6-dT)ACATGGCTGGGG(amino-C6-dT)GTTGAAGGTCTCAAACA(amino-C6-dT)GATC-3';
(5'-amino-c6)TGATGTCACGCACAA(amino-C6-dT)TTCCCTCTCAGCTG(amino-C6-dT)GGTGGTAAAGCTG(amino-C6-dT)AGCCA-3'

Table S4. 3C Primers, Related to the Experimental Procedures

DBE bait:
D1: 5' CTCCCTCCTAACGTCCCTTC 3'
<i>FRG1</i> locus:
F1: 5' TCTGATGCTGTTGGATGGAA 3'
F2: 5' TTAAC TCAGAAGGGCCTGGA 3'
F3: 5' GGATCCACTGAATTTGTGCAG 3'
F4: 5' GGATGCTATTATTATCCCCCTTTT 3'
F6: 5' TCCATGGATGTGCTCCAATA 3'
F7: 5' CTCTAGCAGGAGGCGGTTC 3'
F8: 5' TGGAAAGTGCTGTCTCCTTTC 3'
F10: 5' CGAGCATGTCTGTAGGCAAA 3'
F11: 5' AGACAGCCTCTGACCCTCCT 3'
F12: 5' GCCGCTCATTCAAGTCGTAT 3'
F13: 5' CCTGCCTGCCTCTGTAGACT 3'

Table S5. ChIP Antibodies, Related to the Experimental Procedures

Antibody	Company	Catalogue number
α -Ash1L	Non-commercial	Tanaka et al., 2008
α -Ash1L	SIGMA	HPA004806
α -Bmi1	Abcam	ab85688
α -Chd7	Abcam	ab31824
α -Eed	Millipore	17-663
α -Ezh2	Millipore	17-662
α -H2A	Millipore	07-146
α -H2AUb1	Millipore	05-678
α -H3	Abcam	ab1791
α -H3K27me3	Abcam	ab6002
α -H3K4me3	Active Motif	39159
α -H3K36me2	Millipore	07-369
α -Jarid2	Abcam	ab48137
α -MacroH2A1	Millipore	DAM1487556
α -Mll1	Bethyl Laboratories	A300-086A
α -Rae28	Non-commercial	Ohtsubo et al., 2008
α -Ring1B	Active Motif	39663
α -Suz12	Abcam	ab12073
α -ThPok/Gaf	Abcam	ab20985
α -rabbit IgG	Jackson Laboratories	011-000-003
α -mouse IgG	Jackson Laboratories	015-000-003
α -mouse IgM	Millipore	MABC008