**Supplemental Material**

Table S1. Sequences of *Mstn* RNAi and control shRNA

|  |  |  |  |
| --- | --- | --- | --- |
| **ShRNA** | **Sequences** | **Accession number** | **Region** |
| Control | ACACTTTAACAACGGATGT |  |  |
| ShRNA1 | TGAAAGACGGTACAAGGTATA | NM\_010834.3 | 542bp-562bp |
| ShRNA2 | GCTCAGGAGAGTGTGAATTTG | NM\_010834.3 | 929bp-949bp |

Table S2. Primers used for real-time PCR

|  |  |  |
| --- | --- | --- |
| Genes | | Sequences |
| *Mstn*-F | 5' –GCTCAAACAGCCTGAATCCAACTTA -3’ | |
| *Mstn* -R | 5' –CGCAGTCAAGCCCAAAGTCTC -3’ | |
| *Gata2*-F | 5' –CGACCACACTTGTTGCACAG -3’ | |
| *Gata2*-R | 5' –GGGTAAACAGACAGAGGCCC -3’ | |
| *Lpl*-F | 5' –CTCGCTCTCAGATGCCCTACAA -3’ | |
| *Lpl*-R | 5' –GTCCACCTCCGTGTAAATCAAGAA -3’ | |
| *Pparg*-F | 5’- ATTGAGTGCCGAGTCTGTGG -3’ | |
| *Pparg* -R | 5’- GCAAGGCACTTCTGAAACCG -3’ | |
| *Prdm16* -F | 5' –TCCCACCAGACTTCGAGCTA -3’ | |
| *Prdm16* -R | 5' –AAAGTCGGCCTCCTTCAGTG -3’ | |
| *Jmjd3*-F | 5' –TCATGTGTCCTGGAACGTCG -3’ | |
| *Jmjd3*-R | 5' –CGTCGCATTCGTTGCAGTAG -3’ | |
| *Gapdh*-F | 5’- TGGCCTTCCGTGTTCCTAC -3’ | |
| *Gapdh*-R | 5’- GAGTTGCTGTTGAAGTCGCA-3’ | |
|  |  | |

Table S3. Primers used for ChIP-qPCR

|  |  |  |
| --- | --- | --- |
| Genes | | Sequences |
| Ch*Jmjd3*-F | 5' –CCTTTGAGAAAGGTGCGCTG -3’ | |
| Ch*Jmjd3*-R | 5' –AGCATAGTCTCTCGCCCTGT -3’ | |
| Ch*Lpl*-F | 5' –TAGGGACCAGATTCCTCCCG -3’ | |
| Ch*Lpl*-R | 5' –AACGGTAACGAGGCTCAACG -3’ | |
| Ch*Pparg*-F | 5’- AGAACGGCCTTTGGTGTCCT -3’ | |
| Ch*Pparg* -R | 5’- AGCCTGAAGCCCACATGATA -3’ | |
| Ch*Prdm16*--F | 5’- TTTAAAAGGACCCAGGTAGCCC -3’ | |
| Ch*Prdm16*-R | 5’- TGGACCCGTGTCCCAACTAT -3’ | |

Fig. S1. Vectors used for *Mstn* RNAi (a) and the overexpression of *Jmjd3* (b).

Fig. S2. Exclusion of off-target effects. (a) The expression of *Mstn* after transfection with two shRNAs and control shRNA. (b) The expression of adipocyte-specific genes after transfection with shRNA1 and shRNA2 targeting *Mstn*.

Fig. S3. SMAD2/SMAD3 combined with the promoter of *Jmjd3*. (a) The motif of SMAD2/SMAD3/SMAD4. (b) The predicted results for the combination of SMAD2/SMAD3/SMAD4 with the promoter of *Jmjd3*. (c) Amplification of *Jmjd3* in by SMAD2/SMAD3 combination.

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Fig. S1 Li Gao

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Fig. S2 Li Gao

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Fig. S3 Li Gao