

Supplementary Tables

Supplementary Table S1.

The cDNA target sequences of shRNAs, and primer sequences used for cloning.

| Name | Species | Sequence (5'→3') |
|-------------------------------------|---------|---|
| The cDNA target sequences of shRNAs | | |
| shSIRT2-1 | Mouse | CCAACCATCTGCCACTACT |
| shSIRT2-2 | Mouse | AGCTGTTGGTGGATGAGCA |
| shLRG1 | Mouse | GGCCTACAGCACCTGGATA |
| shSIRT2-1 | Human | TGGACGAGCTGACCTTGGA |
| shSIRT2-2 | Human | AGCGCGTTTCTTCTCCTGT |
| Primers sequences used for cloning | | |
| LRG1 | Mouse | Forward: ATGGTCTCTTGGCAGCATC A Reverse: T TACTTATCGTCGTCATCCT |

Supplementary Tables S2.

The primary antibodies used in Western blot analysis.

| Antibody | Company name | Dilution | Catalogue number |
|------------------|---------------------------|----------|------------------|
| TSG101 | Proteintech | 1:1000 | 28283-1-AP |
| HSP70 | Proteintech | 1:1000 | 10995-1-AP |
| Alix | Proteintech | 1:1000 | 12422-1-AP |
| SIRT2 | Sigma | 1:500 | S8447 |
| LRG1 | Abcam | 1:250 | ab231188 |
| β -tubulin | Proteintech | 1:2000 | HRP-66240 |
| Anti-rabbit IgG | Cell Signaling Technology | 1:5000 | #7074 |
| FLAG | Sigma | 1:2500 | F1804 |
| Anti-mouse IgG | Cell Signaling Technology | 1:5000 | #7076 |
| β -actin | MBL | 1:5000 | PM053-7 |
| Acetyl-H4K16 | Cell Signaling Technology | 1:1000 | #13534 |
| Histone H4 | Proteintech | 1:500 | 16047-1-AP |
| p-p65 | Cell Signaling Technology | 1:1000 | #3033 |
| p65 | Cell Signaling Technology | 1:1000 | #8242 |
| p-Smad2/3 | Cell Signaling Technology | 1:500 | #8828 |
| Smad2/3 | Cell Signaling Technology | 1:1000 | #8685 |
| p-Smad1/5 | Cell Signaling Technology | 1:500 | #9516 |
| Smad1 | Cell Signaling Technology | 1:1000 | #6944 |
| Smad5 | Cell Signaling Technology | 1:1000 | #12534 |
| Saa1/Saa2 | Abcam | 1:1000 | ab199030 |
| LaminB | Santa Cruz | 1:500 | sc6216 |
| anti-goat IgG | Millipore | 1:2000 | AP106P |

Supplementary Table S3.

Primers sequences used for real-time PCR.

| Name | Species | Sequence (5'->3') |
|-------------|---------|--|
| RPL13A | Mouse | Forward: GAGGTCGGGTGGAAGTACCA Reverse: TGCATCTTGGCCTTTTCCTT |
| LRG1 | Mouse | Forward: CCATGTCAGTGTGCAGATTC Reverse: AAGAGTGAGAGGTGGAAGAG |
| Runx2 | Mouse | Forward: GCATGGTGGAGGTACTAGCTG Reverse: GCCGTCCACTGTGATTTTG |
| Sp7 | Mouse | Forward: ATGGCGTCCTCTCTGCTTG Reverse: TGAAAGGTCAGCGTATGGCTT |
| ALP | Mouse | Forward: ATCTTTGGTCTGGCTCCCATG Reverse: TTTCCCGTTCACCGTCCAC |
| Osteocalcin | Mouse | Forward: GCAATAAGGTAGTGAACAGACTCC Reverse: GTTTGTAGGCGGTCTTCAAGC |
| GAPDH | Mouse | Forward: ACTGAGGACCAGGTTGTC Reverse: TGCTGTAGCCGTATTCATTG |
| NFATc1 | Mouse | Forward: GGAGAGTCCGAGAATCGAGAT Reverse: TTGCAGCTAGGAAGTACGTCT |
| CathespinK | Mouse | Forward: GGAGTTGACTTCCGCAATCCT Reverse: ACTTGAACACCCACATCCTGC |
| Acp5 | Mouse | Forward: AGCAGCTCCCTAGAAGATGGA Reverse: AGCCACAAATCTCAGGGTGG |
| DC-STAMP | Mouse | Forward: CCGTGAAGGTAGGAACGCTT Reverse: AGATTCAGCGGAGTGGCAAG |
| CYP2R1 | Mouse | Forward: TCAACTGTCGTTCTAAATGGCT Reverse: TCTGGAATTGAGTAAGCCTCCC |
| CYP27A1 | Mouse | Forward: TCCAGGCACAGGAGAGTACG |

| | | |
|--------|-------|---|
| | | Reverse: TACTTGGTCTTG TTCAGCACCTGG |
| NFATc1 | Human | Forward: CCAGTCCCTTCCAAGTTTCCA Reverse: GCATAGCCATAGTGTTCTTCCT |
| CTSK | Human | Forward: TTCCCGCAGTAATGACACCC Reverse: GGAACCACACTGACCCTGAT |
| ITGB3 | Human | Forward: TGGTAGAAGAGCCAGAGTGTC Reverse: TACAGTGGGTTGTTGGCTGT |
| CALCR | Human | Forward: CCCAGGATGCAATTTTCTGG Reverse: AGAATTGGGGTTGGGTGATTTAG |
| GAPDH | Human | Forward: TCGGAGTCAACGGATTTGGT Reverse: TTCCCGTTCTCAGCCTTGAC |

Supplementary Table S4.

Primers sequences used for CHIP.

| Name | Species | Sequence (5'→3') |
|-----------------------|---------|--|
| LRG1-chip-primer 1 | Mouse | Forward: CAGACCTGGCACCAAGCTAA Reverse: GCAGGCCTGAATCTGTTCCT |
| LRG1-chip-primer 2 | Mouse | Forward: ACACTGTCCATCTGTCTGGTG Reverse: GAGAGCATTGCGGGTCAGAT |
| LRG1-chip-primer 3 | Mouse | Forward: TAACTCTCTGTCCAGCACGC Reverse: TTGTGGGAGATGTCGAAGCC |
| LRG1-chip-primer 4 | Mouse | Forward: CGCCAACCGAAACAAGATGT Reverse: TGACATGGGACCACATTGGC |
| LRG1-chip-primer 5 | Mouse | Forward: GGGCCTACAGCACCTGGATA Reverse: GAGATGTCGAAGCCGTCCTG |

Supplementary Table S5.

Characteristics of the female osteoporotic patients (related to Fig. 7n,o).

| Characteristics | Women | | p |
|----------------------|---------------------|-----------------------|------|
| | Normal Control | Osteoporotic patients | |
| | (n=28) | (n=25) | |
| Age (years) | 64.3 (60.0-70.0) | 65.2 (61.0-70.0) | 0.25 |
| β -CTX (pg/ml) | 400.99(263.0-564.0) | 437.55(203.0-693.0) | 0.23 |
| PINP (ng/ml) | 20.03(10.21-30.22) | 22.57(13.2-32.87) | 0.08 |
| BALP (ug/l) | 12.55(4.92-21.51) | 13.05(4.68-19.35) | 0.67 |

Characteristics of the study population (related to Fig. 7p-s).

| Characteristics | Sex | | p |
|----------------------|---------------------|---------------------|-------|
| | Men (n=36) | Women (n=84) | |
| | Age (years) | 65.3 (60.0-70.0) | |
| β -CTX (pg/ml) | 397.61(167.0-856.7) | 457.52(203.0-793.0) | 0.04 |
| PINP (ng/ml) | 22.29(12.40-33.0) | 22.02(10.21-39.26) | 0.81 |
| BALP (ug/l) | 10.08(4.34-19.3) | 12.93(4.68-26.25) | <0.01 |

β -CTX, type 1 collagen carboxyl terminal peptide; PINP, type 1 procollagen amino terminal peptide; BALP, bone-specific alkaline phosphatase.