

Supplementary Figures

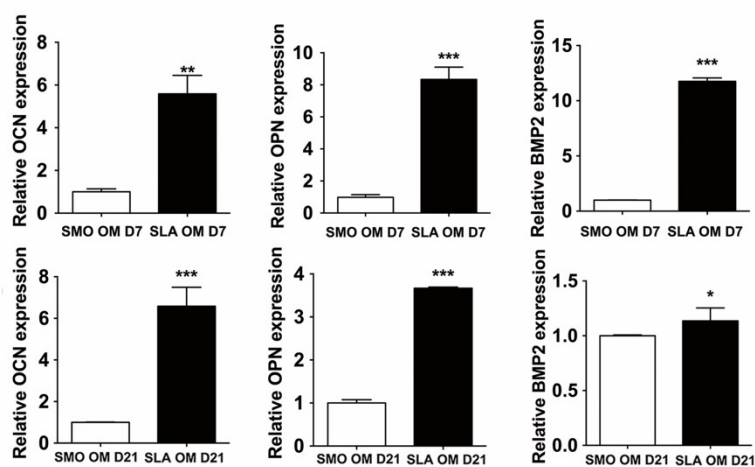


Figure S1. Osteogenic differentiation of hBMSCs on SLA and SMO surfaces *in vitro*.

Quantitative RT-PCR measurement of the expression levels of osteogenic differentiation markers (OCN, OPN, and BMP2) in hBMSCs cultured on different surfaces for 7 and 21 days. Data are presented as the mean \pm s.d. (n=3). * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

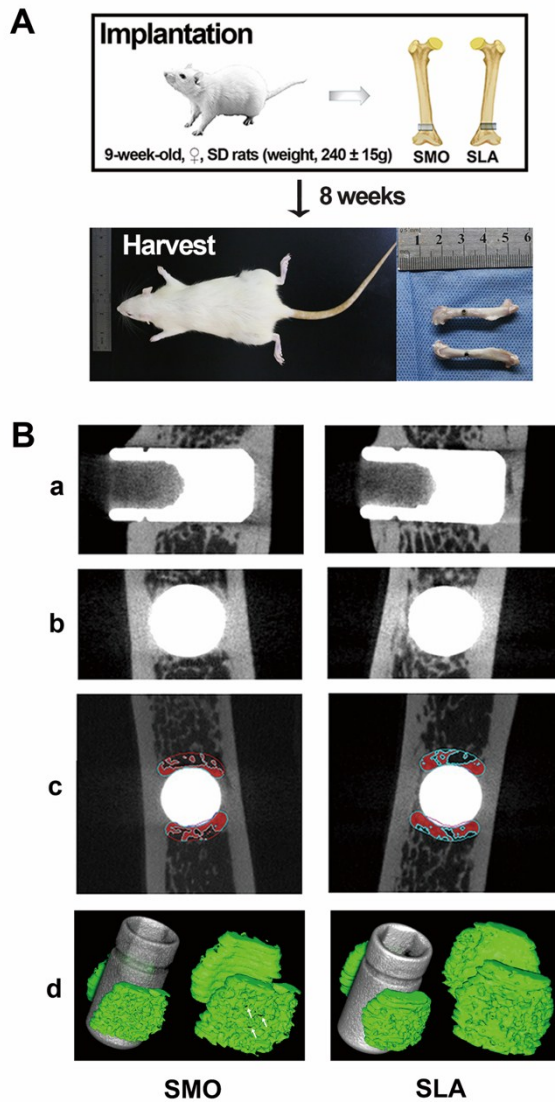


Figure S2. Schematic illustration and the corresponding 3D models based on micro-computed tomography *in vivo*.

(A) Schematic illustration of the *in vivo* experiment. (B) Corresponding 3D models based on micro-computed tomography *in vivo*. Representative sections of micro-computed tomography images through (a) the sagittal plane and (b) thorax plane. (c) Peri-implant segments of interest. Inveon Research Workplace 3.0 software (Siemens) was used for automatic computation. Meanwhile, bone mineral density shown by (d) the corresponding 3D models based on micro-computed tomography. The 3D models show the differences in bone mineral density between SMO and SLA groups. The grey

cylinders represent implants and green portions represent bone. White arrows represent trabecular voids of new bone formation around the implants.

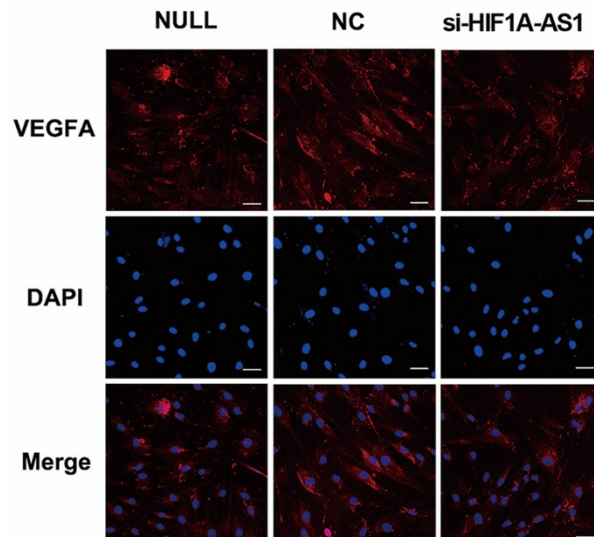


Figure S3. Knockdown of lncRNA HIF1A-AS1 inhibits VEGFA expression.

Immunofluorescence staining of VEGFA (red) and nuclei with DAPI (blue) after osteogenic induction for 24 hours. The scale bar in the upper right corner of the image is equal to 50 μm .

Table S1 Oligonucleotides Sequences

□

Name	Forward primer sequence (5'–3')	Reverse primer sequence (5'–3')
primers for qRT-PCR		
ALP	ACTGGGGCCTGAGATACCC	TCGTGTTGCACTGGTTAAAGC
RUNX2	CCGCCTCAGTGATTTAGGGC	GGGTCTGTAATCTGACTCTGTCC
OPN	GCGCTCGAGCATACCAGTTAAACA	GCGAAGCTTCCGGGTAAATTCCG
OCN	CACTCCTCGCCCTATTGGC	CCCTCCTGCTTGGACACAAAG
BMP2	GACATCCACTCCACAAACGAGA	GTCATTCCACCCCACATCACT
HOXD-AS	GGCTCTTCCCTAATGTGTGG	CAGGTCCAGCATGAAACAGA
MIAT	GTGTGTGTCTGCTGAGGTG	CTGGGGTTAGTAAGAAGAGAA
IGF2-AS	AGGGAAGAAGTGGTGAGAAGTTTG	TTTGGAGGTGGAGGAGGCT
VEGFA	CCAGCAGAAAGAGGAAAGAGGTAG	CCCCAAAAGCAGGTCACTCAC
GLI2	TGGCCGCTTCAGATGACAGATGTTG	CGTTAGCCGAATGTCAGCCGTGAAG
FGF10	CACATTGTGCCTCAGCCTTTC	AGGTGATTGTAGCTCCGCACA
HIF1A-AS1	CCCAGCTCCATTCTTCGGTAC	GCGGCATTCATCCCCTAAAC
GAPDH	GGTCACCAGGGCTGCTTTTA	GGATCTCGCTCCTGGAAGATG
siRNAs		
si-NC	UUCUCCGAACGUGUCACGUTT	ACGUGACACGUUCGGAGAATT
si-HIF1A-AS1	GCCGCUGAGAGUAUAGCATT	UGCUAUACUCUCAGCGGCTT

ALP: alkaline phosphatase; RUNX2: runt-related transcription factor 2; OPN: osteopontin; OCN: osteocalcin; BMP2: bone morphogenetic protein 2; HOXD-AS: homeobox D cluster antisense RNA; MIAT: myocardial infarction associated transcript; IGF2-AS: insulin-like growth factor 2 cluster antisense RNA; VEGFA: vascular endothelial growth factor A; GLI2: glioma-associated oncogene homolog 2; FGF10: fibroblast growth factor 10; HIF1A-AS1: hypoxia-inducible factor 1 alpha-antisense RNA 1; GAPDH: glyceraldehyde 3-phosphate dehydrogenase.