

## Supporting Information

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**BMP Gene-Immobilization to Dental Implants Enhances  
Bone Regeneration**

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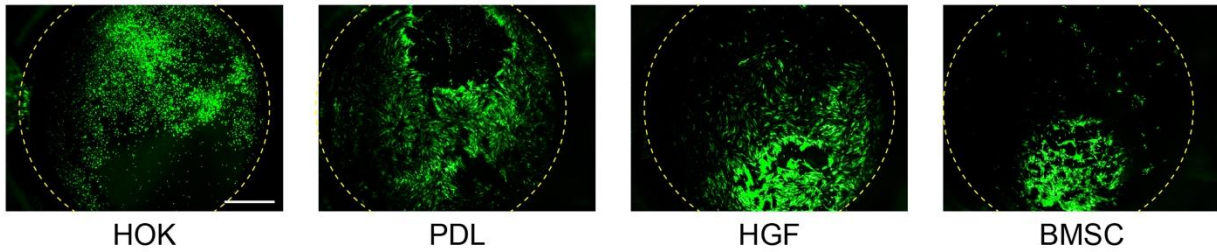
# ADVANCED MATERIALS INTERFACES

Supporting Information

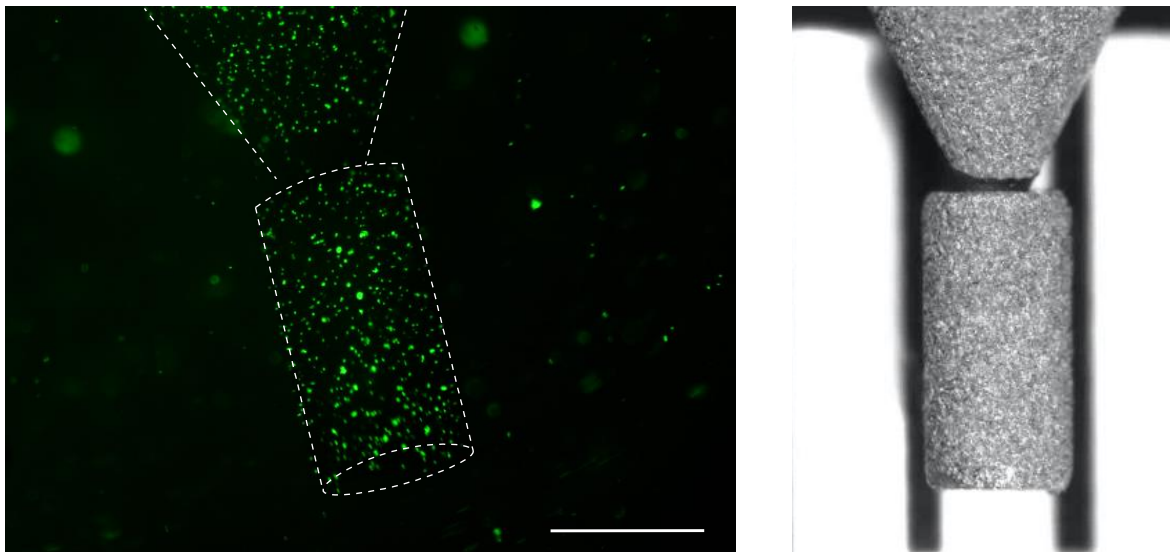
BMP Gene-immobilization to Dental Implants Enhances Bone Regeneration

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## Supporting Information



**Supplementary Figure S1. GFP expression in various primary human cells incubated for 48-72 hrs with Ad-GFP immobilized on CVD coated titanium disks.** HOK; human oral keratinocytes. PDL; periodontal ligament cells. HGF; human gingival fibroblasts. BMSC; bone marrow stem cells.



**Supplementary Figure S2. Fluorescent image showing green fluorescent protein (GFP) expression in human gingival fibroblast (HGF) cells transfected by Ad-GFP tethered to a CVD coated titanium implant.** Scale bar = 1mm.

**Supplementary Table S1.** Statistical results of  $\mu$ CT analysis for Tissue Mineral Density (TMD).

TMD	Control	rhBMP-7	Ad-BMP7
Day 10	760.9 $\pm$ 12.0	803.1 $\pm$ 25.4	807.5 $\pm$ 34.6
Day 14	783.8 $\pm$ 34.6	781.2 $\pm$ 23.8	763.9 $\pm$ 18.6
Day 21	825.2 $\pm$ 14.0	847.2 $\pm$ 12.4	843.5 $\pm$ 18.6

Data was shown as mean  $\pm$  SEM.

**Supplementary Table S2. Primer sequences for in-vitro study.**

Gene	Sequence
<i>Type I collagen</i>	Forward: 5'-GCTCCTCTTAGGGGCCACT-3' Reverse: 5'-CCACGTCTCACCATTGGGG-3'
<i>Runx2</i>	TTCTCCAACCCACGAATGCAC CAGGTACGTGTGGTAGTGAGT
<i>Alp</i>	GGCTACATTGGTCTTGAGCTTTT CCAACCTTTTTGTGCCAGAGA
<i>Ocn</i>	CTGACAAAGCCTTCATGTCCAA GCGCCGGAGTCTGTTCACTA
<i>Gapdh</i>	GGCCTCACCCCATTTGATGT CATGTTCCAGTATGACTCCACTC

### Supporting Methods

PDL, HGF and HOK cells were purchased from ScienCell (Carlsbad, CA, USA) and cultured in DMEM (Gibco BRL, Grand Island, NY, USA) with 10% FBS (Hyclone, USA) and 500U/ml penicillin and 500µg/ml streptomycin (Gibco BRL) in a 37°C incubator with 95% air, 5% CO<sub>2</sub>, and 100% relative humidity. CVD coated titanium discs or implants were incubated overnight at 4°C in PBS containing 10 µg/ml goat anti-adenovirus antibody (AbD Serotec, Oxford, UK). Following 3-5 washes with PBS, the titanium discs/implants were incubated in a 10<sup>11</sup> PN/ml Ad-GFP solution for 4 hours and then washed again to remove any unbound virus particles. hPDL cells between the fourth and fifth passage were used. Cells were passaged and seeded onto the discs at a density of 5 × 10<sup>4</sup> cells/well (48-well plate), using 500µl of culture media per well. Incubation was performed up to 72 hours and then imaged for GFP expression.