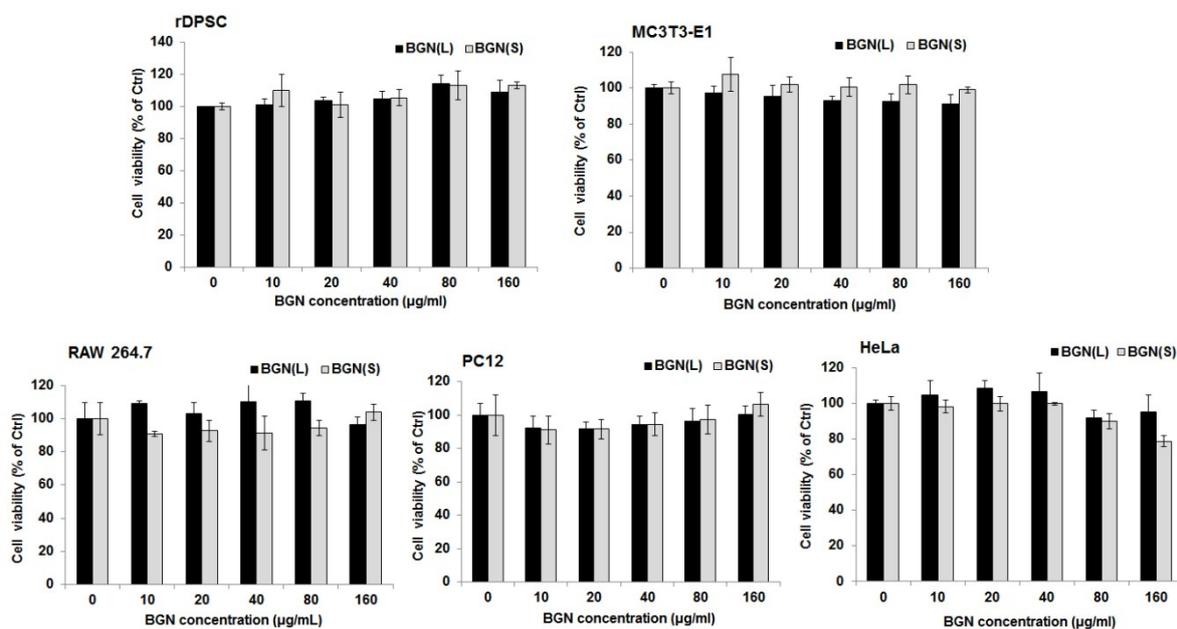
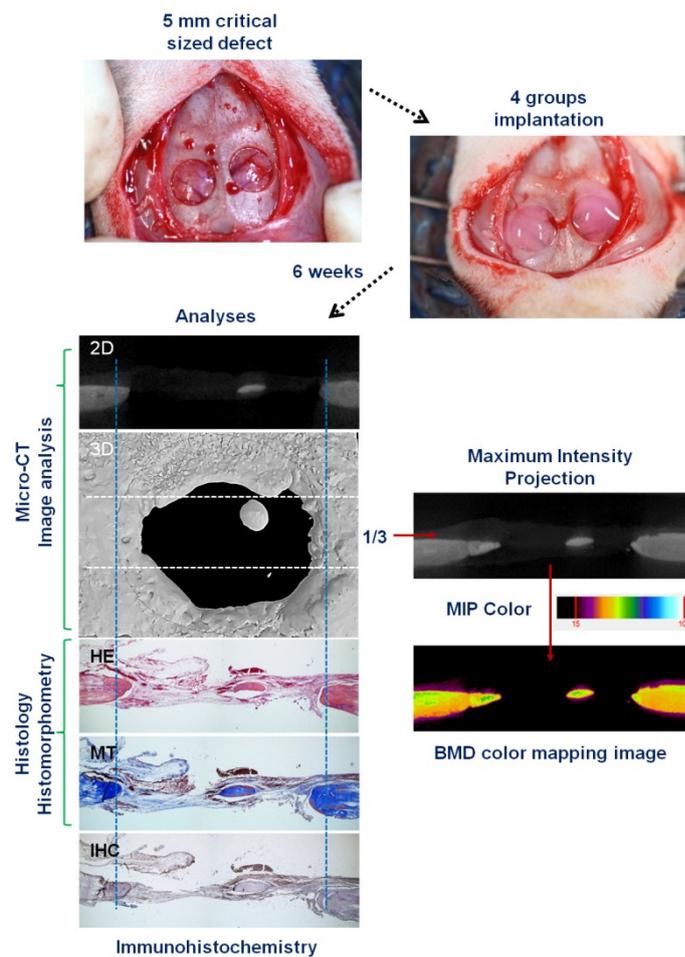


## Supplementary Figures



**Figure S1.** Cell viability assays of the BGN(S) and BGN(L) with respect to various cell types, rDPSC, MC3T3-E1, RAW 264.7, PC12, and HeLa cells. Cells were treated with MBS(S) or MBG(L) at various concentrations (0, 10, 02, 40, 80, and 160 µg/mL) for 24 h, and the viability level was measured by CCK method. Data are normalized to levels in control medium without the nanoparticles and is shown as mean  $\pm$  standard deviation from three replicate tests.



**Figure S2.** Flow chart of the in vivo animal model and the assay tools to examine the feasibility of the gene delivery system for bone regeneration. Two 5 mm critical-sized defects in rat calvarium generated to implant the BMP2-pDNA/BGN transfected rMSCs in the form of collagen gel encapsulated gel. Six weeks following surgery, harvested samples were analyzed i) micro-CT imaging of newly formed bone quality and quantity, ii) maximum intensity projection of color mapping of mineralized bone, iii) histological analyses, and iv) immunohistochemistry for the expression of bone matrix proteins.