

Supporting Information

Construction of responsive OPG release platform for enhanced osteoporotic bone regeneration via programmed regulation of osteogenesis and bone resorption

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Table S1. Primers used for qRT-PCR in this study.

Target genes	Primer sequence
ALP	F: 5'-AGCGACACGGACAAGAAGC-3' R: 5'-GGCAAAGACCGCCACATC-3'
OCN	F: 5'-AGATTGTTGGGGCACAAG- 3' R: 5'-CCTTCAGCAGGGAAACCG- 3
OPN	F: 5'-GACAGCAACGGGAAGACC-3' R:5'-CAGGCTGGCTTTGGA ACT-3'
Col I	F:5'-AGCCCATGAAGTGGTGAAGT-3' R:5'-GCTCACAGTGATTTTCTGGCTT-3'
Runx2	F:5'-GCCGTAGAGAGCAGGGAAGA-3' R: 5'-CTGGCTTGGATTAGGGAGTCA-3'
TRAP	F:5'-CACTCCCACCCTGAGATTTGT-3' R:5'-CATCGTCTGCACGGTTCTG-3'
CTSK	F:5'-AATACCTCCCTCTCGATCCTACA-3' R:5'-TGGTTCTTGACTGGAGTAACGTA-3'
MMP9	F:5'-CTGGACAGCCAGACACTAAAG-3' R:5'-CTCGCGGCAAGTCTTCAGAG-3'
NFATC1	F:5'-GGAGAGTCCGAGAATCGAGAT-3' R:5'-TTGCAGCTAGGAAGTACGTCT-3'
TNFRS11A	F:5'-GGACGGTGTTGCAGCAGAT-3' R:5'-GCAGTCTGAGTTCCAGTGGTA-3'
GAPDH	F:5'-AGGTCGGTGTGTGAACGGATTTG-3' R:5'-TGTAGACCATGTAGTTGAGGTCA-3'

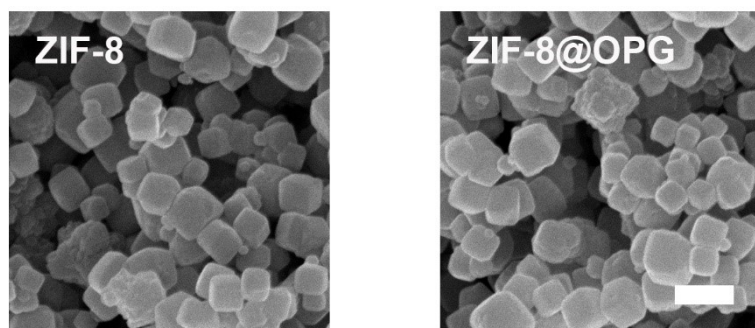


Fig. S1. SEM images of ZIF-8 and ZIF-8@OPG NPs, scale bar = 500 nm.

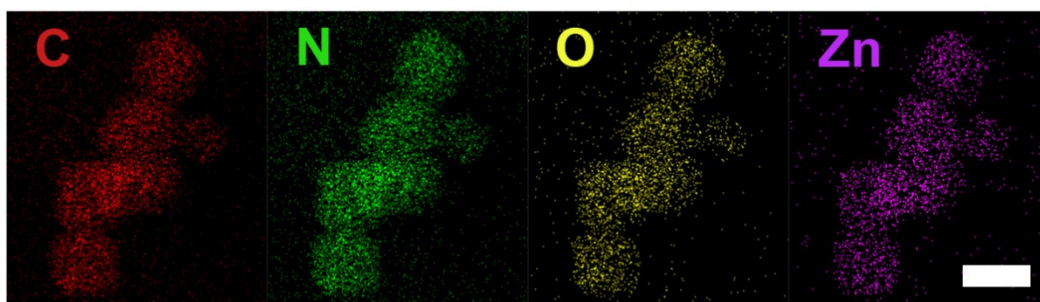


Fig. S2. Mapping of MOF@OPG nanoparticles, scale bar = 300 nm.

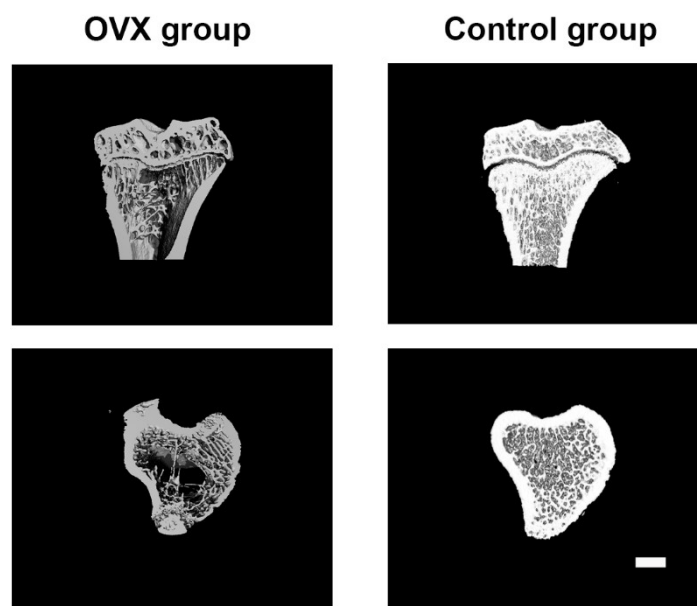


Fig. S3. Different sections images of Micro-CT reconstruction for OVX group and control group, scale bar = 500 nm.

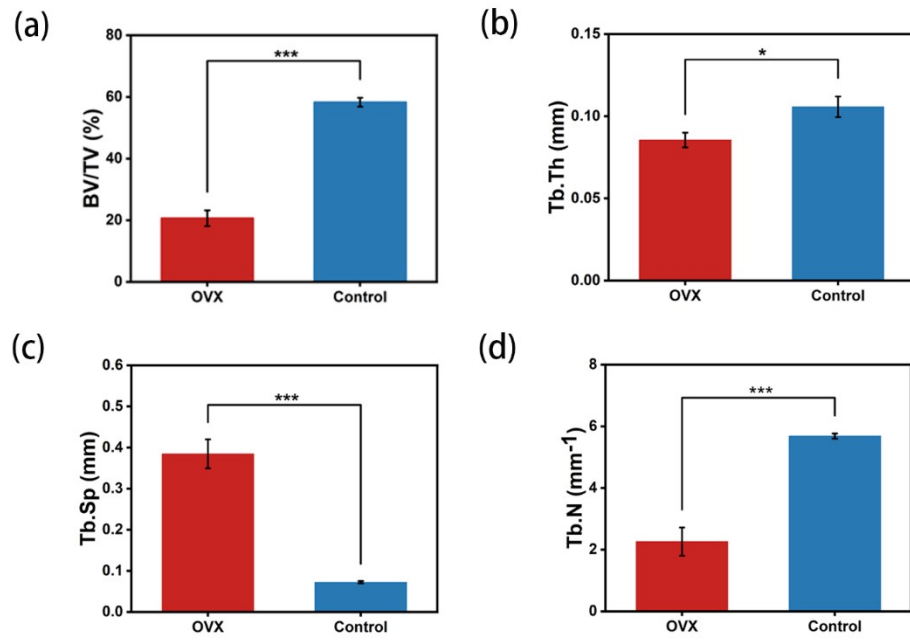


Fig. S4. Quantitative analysis of BV/TV (a), Tb. Th (b), Tb. Sp (c) and Tb. N (d) (n=4), * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$

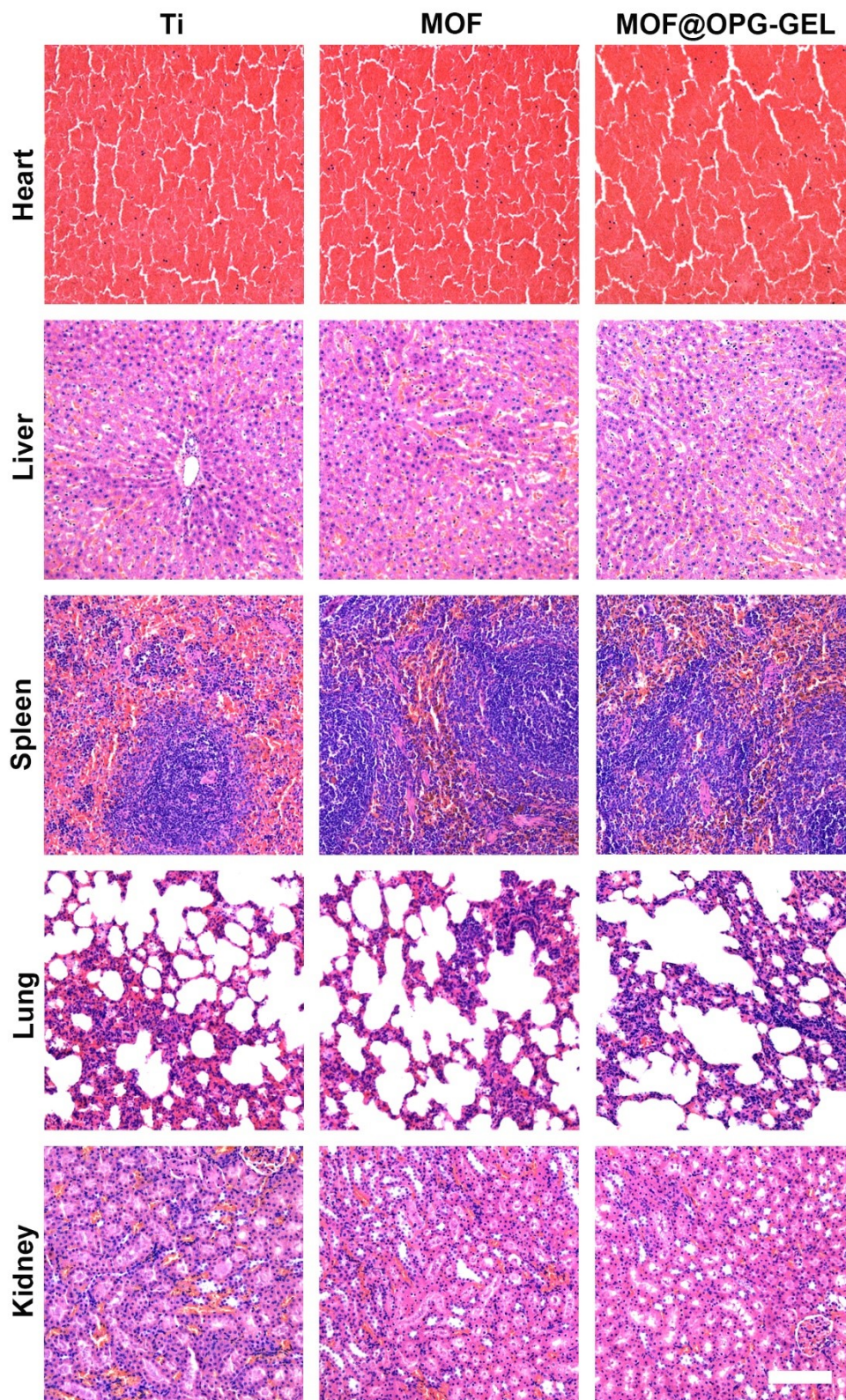


Fig. S5. H&E staining of the heart, liver, spleen, lungs, and kidneys in rats, scale bar = 200 μ m.