Electronic Supplementary Information

Icariin Controlled Release on Silk Fibroin/Mesoporous Bioactive Glass Nanoparticles scaffold for Promoting Stem Cell Osteogenic Differentiation

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1.MBGNs synthesis process

As shown in Figure S1. (A), put calcium nitrate tetrahydrate (CN, Guanghua Chemical, China), triethylphosphate (TEP, Aladdin, Shanghai, China), and tetraethyl orthosilicate (TEOS, Thermo Fisher Scientific, USA) (In a molar composition of 80% SiO2, 16% CaO and 4% P_2O_5) in Tris-HCl buffer solution (pH=8.0) and CTAB (Cetyltrimethylammonium Bromide, Sigma-Aldrich, USA) as template agent. A white suspension was obtained after 8 hours of stirring. The MBGNs powder was obtained by calcining the precipitate after centrifugation at 650℃.

2.Preparation of Silk fibroin (SF)

The cocoons were boiled for 1 h in an aqueous solution of Na2CO3 (0.5% w/w) and subsequently rinsed with water to remove the sericin. The extracted SF was solubilized in 9.3 M LiBr (Strem Chemicals Inc., MA, USA) solution at 60℃ for 4 h to produce a 20% (w/v) solution. This solution was dialyzed against water for 4d. Finally, the purified SF solution was dialyzed against polyethylene glycol 20,000 (Biosharp, Shanghai, China) powder to obtain a concentrated SF of 15.0%. The solution was filtered through a syringe filter and stored at 4℃ for further use.

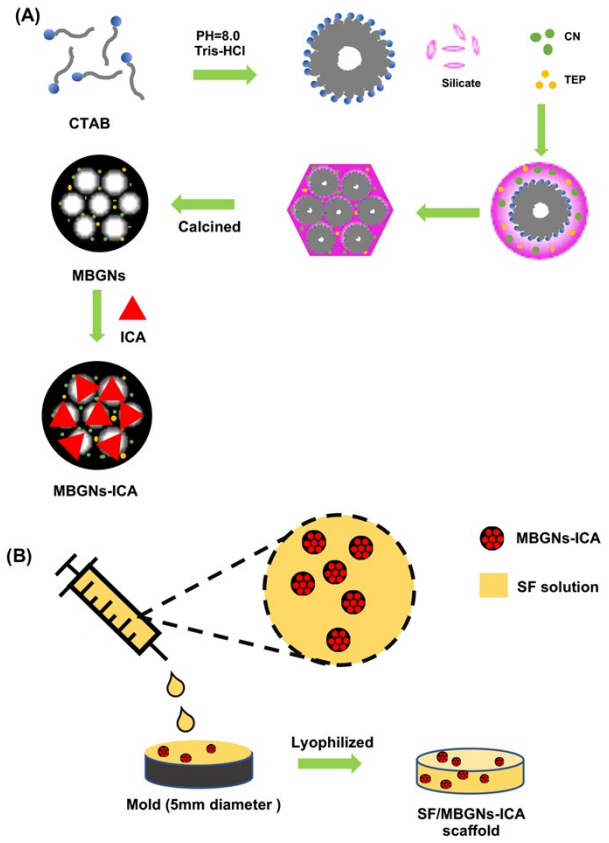

Figure S1 (A) MBGNs synthesis process, (B) SF/MBGNs-ICA Scaffolds synthesis process.

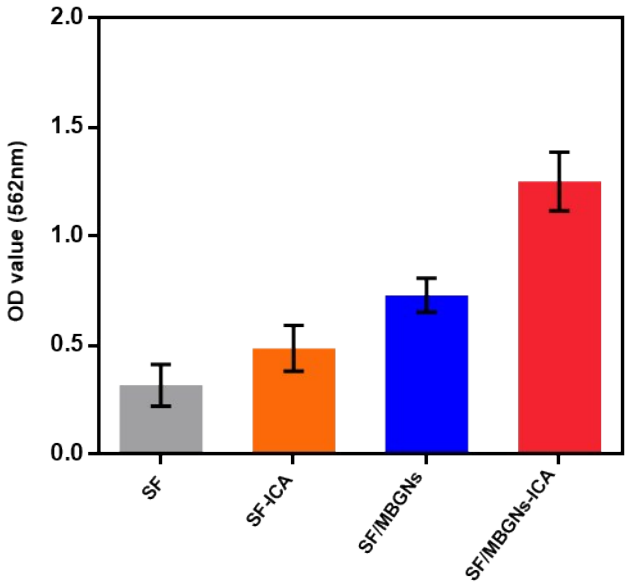

Figure S2 Quantized results of calcium nodule staining