Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.

Supporting information

Fig. S1 (a) SEM image of gelatin microspheres without cells, scale bar = 10 um. (b) WST assay of cells cultured on the gelatin microspheres.

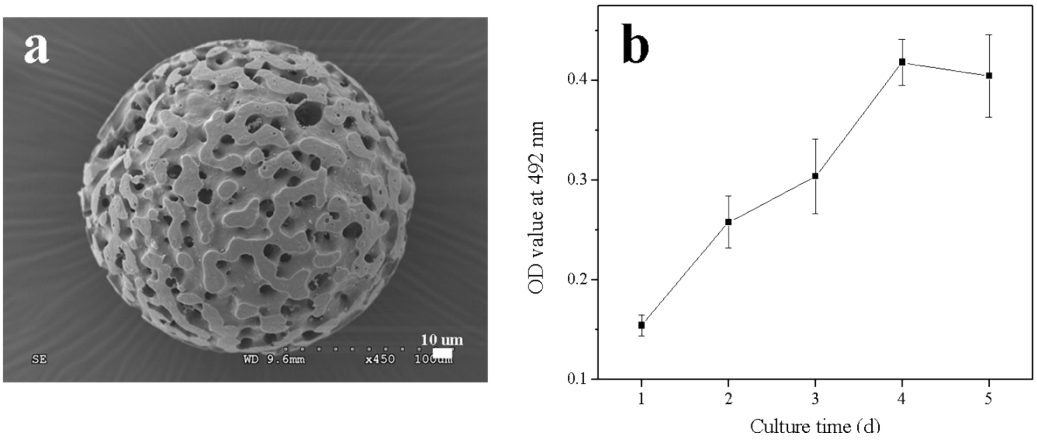

Fig. S2 (a) Cell perfusion culture system. Perfusion pump (b) and perfusion chamber (c).

Fig. S3 ALP staining and Alizarin red staining of *in vitro* samples with (a, b) and without (c, d) CCM respectively. EDX analysis of *in vitro* test (e) and control (f) group. DNA concentration (g). Stress-strain curve of compression test (h). Compression modulus (i). * represents the difference is no statistically significant ($p > 0.05$), ** represents the difference is statistically significant ($p < 0.05$).

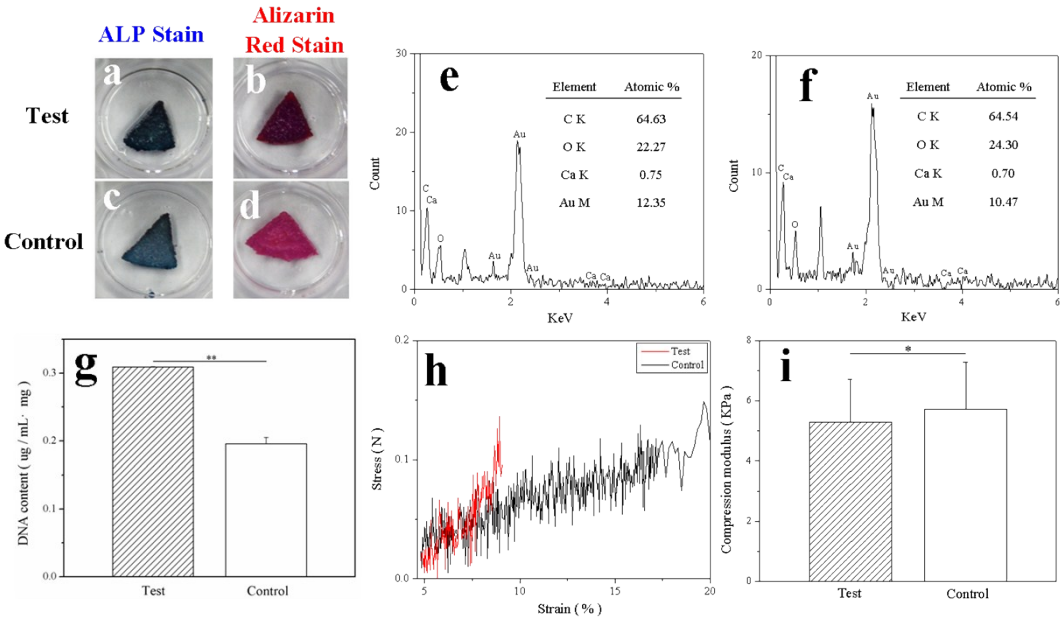

Fig. S4 Injected rats fed for 0 week (a), 1 week (b), 2 weeks (c), 3 weeks (d) and 4 weeks (e). The test BGM/CCM group (a1), the control 1 BGM group (a2) and the control 2 CCM group (a3) respectively.

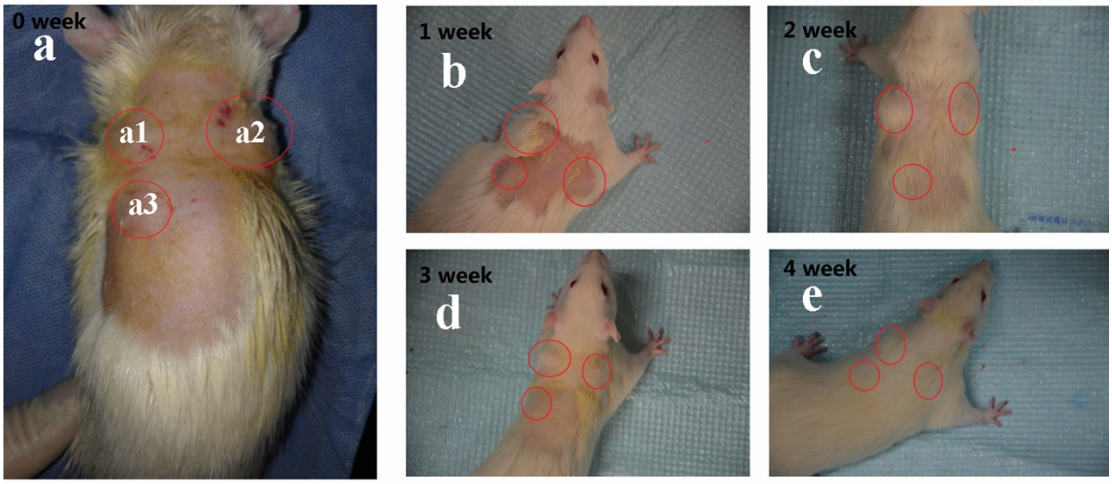

Fig. S5 *In vivo* constructed bone-like tissue. (a) The tissue obtained from the CCM group as control 2; (b) Gross view of the tissue obtained from the BGM/CCM group as test, BGM group as control 1 and CCM group as control 2. (c) Micro-CT analysis of the injected rats. EDX analysis of the test (d) and control (e) sample. RT-PCR results of sample 2 (f) and sample 3 (g).

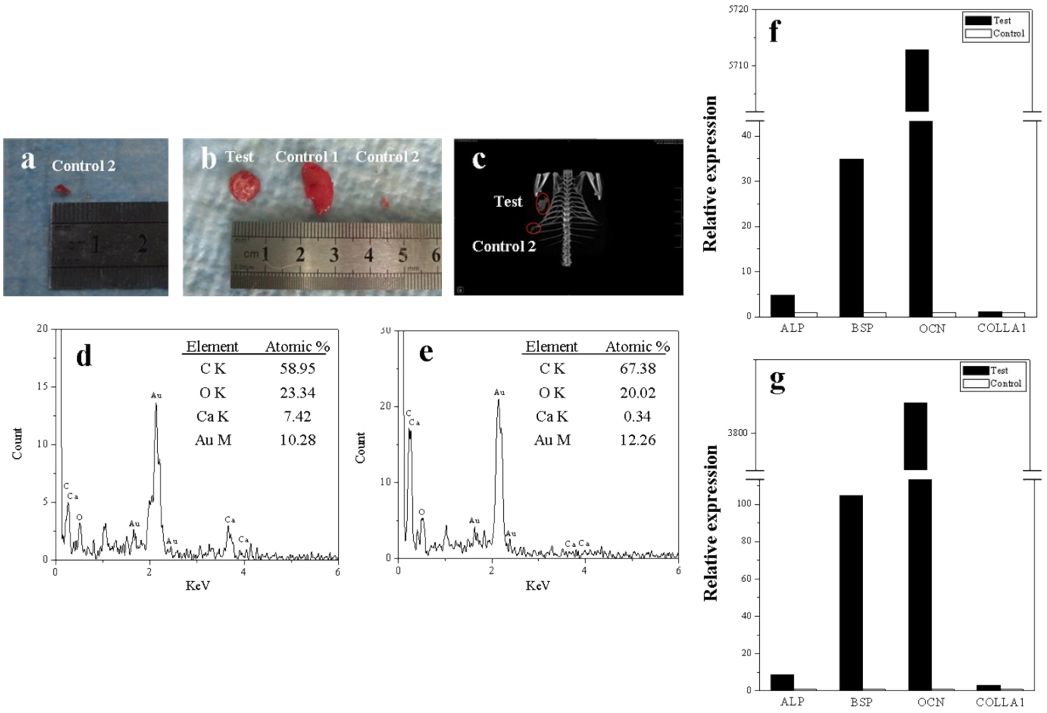

Table S1 Primers designed for RT-PCR

Gene	Forward Primer	Reverse Primer
Alkaline phosphatase (ALP)	CCGATCGGGACTGGTACTC	TCAGTTCTGTTCTTGGGGTACA
Bone sialoprotein (BSP)	CGGCCACGCTACTTTCTTTA	CCCTCCTCCTCCGAACTATC
Osteocalcin (OCN)	GAGGGCAGTAAGGTGGTGAA	GTCCGCTAGCTCGTCACAAT
Collagen type I (COLLA1)	CATGTTCAGCTTTGTGGACCT	GGTTTCCACGTCTCACCATT
GAPDH	AGAGACAGCCGCATCTTCTTG	ACCGACCTTCACCATCTTGTCTA