

Supplementary Information

Methacrylamide-modified Collagen Hydrogel with Improved Anti-actin-mediated Matrix Contraction Behavior

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Table S1. Primers Sequence for Targeted Genes

Gene name	Oligonucleotide sequence (5' -3')
AGG	Forward: GGCCACTGTTACCGTCACTT Reverse: GTCCTGAGCGTTGTTGTTGAC
COL II	Forward: TGATAAGGATGTGTGGAAGCCG Reverse: CAGGCAGTCCTTGGTGTCTTC
SOX9	Forward: TCTGGAGACTGCTGAACGAG Reverse: CTGCCCATTCTTCACCGACTT
OSX	Forward: GCTGGTGTTTGCTCAGGTGG Reverse: CTTCTGTGGCAAGCGGTTCA
Runx2	Forward: TCTGGCCTTCCACTCTCAGT Reverse: GACTGGCGGGGTGTAAGTAA
COL I	Forward: GTCGATGGCTGCACGAAAAA Reverse: GGGCCAACGTCCACATAGAA
Itgb1	Forward: GGAGCTCCATGGTCTTACGC Reverse: CAAGGTGAGCAACCCTGTCT
CDH2	Forward: AGAGCTCGTCAGGATCAGGT Reverse: AAACCGGGCTATCAGCTCAC
Grb2	Forward: GCCGGGGAGATTTTCATCCAT Reverse: GTTCACGGGGGTGACGTAAT
SOS2	Forward: AGATTGCGCAGAAGAGCAAGC Reverse: TGGAAGTAGCATAAGGCGTGG
Ras	Forward: ACAGAGAGTGGAGGATGCTTT Reverse: GGCATCGTCAACACCCAGATT
Raf	Forward: AGCAGTTTGGCTATCAGCGT Reverse: GCACATTGACCACTGTTCGT
MAPK1	Forward: TAAATTTGTCAGCACGAGGGC Reverse: TTCGAACGGCTCAAAGGAGT
Wnt1	Forward: GATGGTGGGGCATCGTAAAC Reverse: CGGAATTGCCACTTGCACTC
Wnt3a	Forward: CTTTGCTGTGACGCGTTCCT Reverse: AAACTCCCGTGACACCATCC
Fzd3	Forward: CATGGCACCAGCATGAATCG Reverse: GCAGTCAGTCATGCAAAGGC
Dvl3	Forward: GCTGCTGATGGACGCATAGA Reverse: ATGGGTTCAGTTCTGGGCAA
Ctnnb1	Forward: GGAATGAAGGTGTTGCCACG Reverse: GGGCGCCAATATCAAGTCCA
Tcf4	Forward: CAAATAGAGGAAGCGGGGCA Reverse: CAGTGCCTGCTGAGAGTGAA
Itga5	Forward: AACGGACGGGGTCAGTGT Reverse: TACTCCACAGGCTCCTCTCC
IL-1b	Forward: CGACAAGATACCTGTGGCCT Reverse: GTTGGGGTCTACACTCTCCAG
MMP 13	Forward: CGGAAACCAAGTCTGGAGCTAT Reverse: ACAGCATCTACTTTGCCACCA
GAPDH	Forward: TCGGAGTGAACGGATTTGGC Reverse: TTCCCGTTCTCAGCCTTGAC

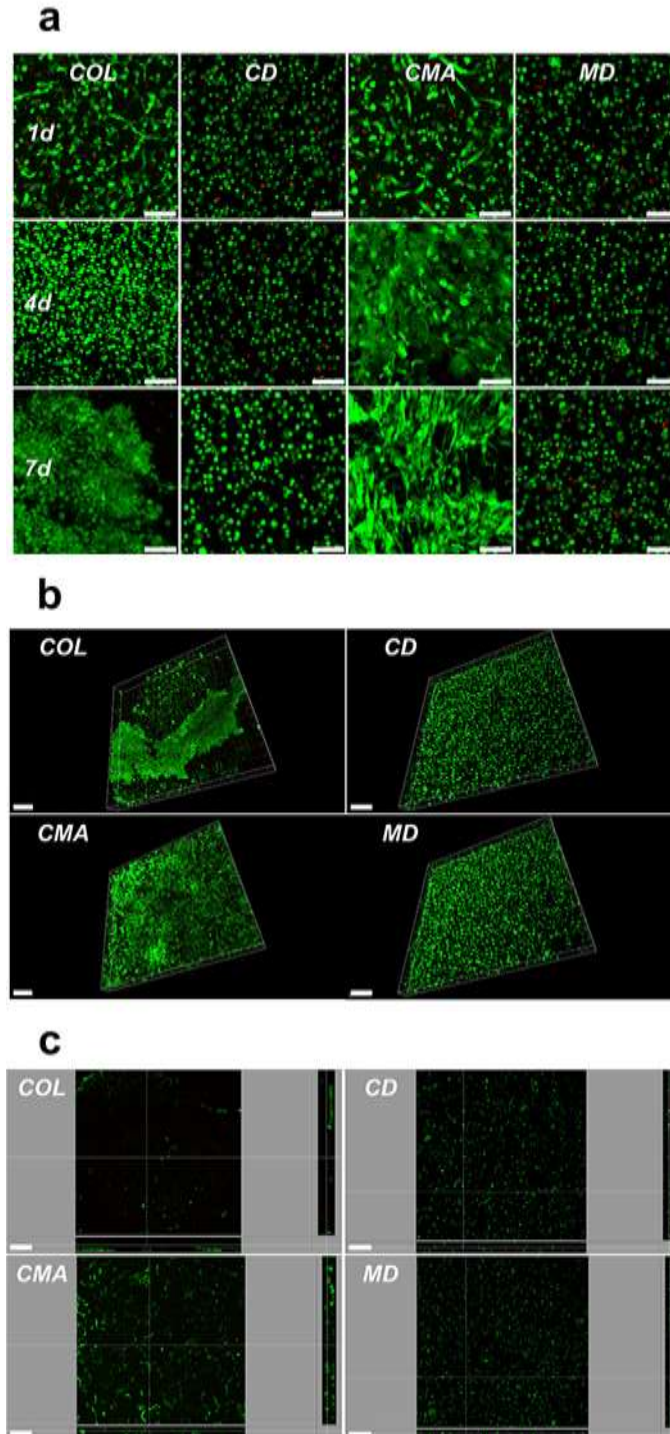


Figure S1. The high magnification (a), three-dimensional reconstruction (b) and section images (c) of FDA staining for BMSCs in different hydrogel systems at 7-day (scale bars, a, 100 μm , b and c, 200 μm).

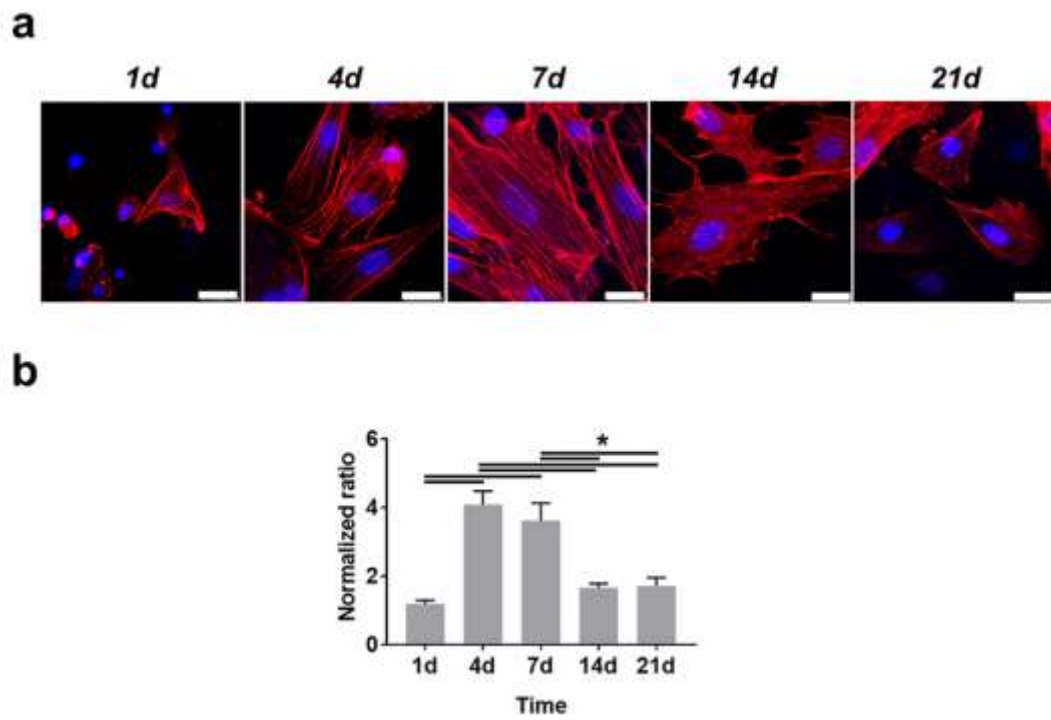


Figure S2. Phalloidin/DAPI staining of BMSCs in CMA over the whole culture period (a, scale bars, 25 μ m). The change of length-diameter ratio of BMSCs within the culture stage calculated by ImageJ (b).

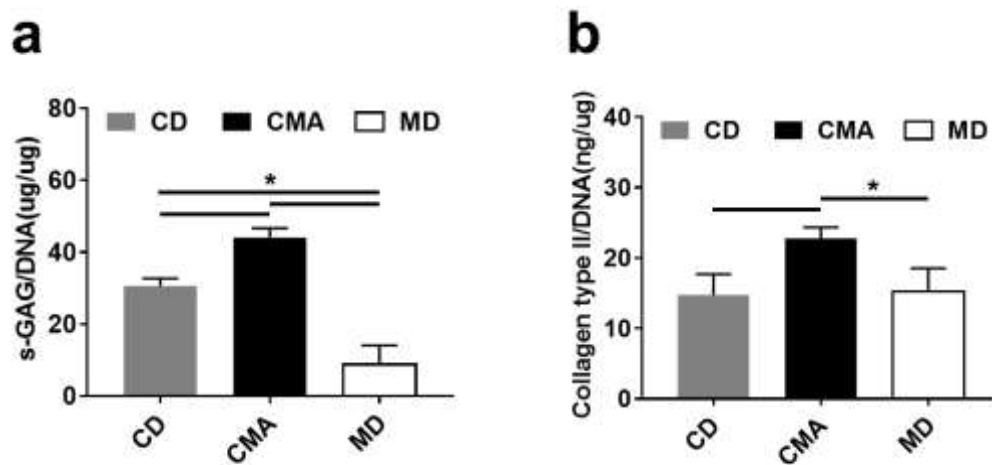


Figure S3. Quantitative analysis of deposited cartilaginous matrix (s-GAG, a and collagen type II, b) at 21-day.

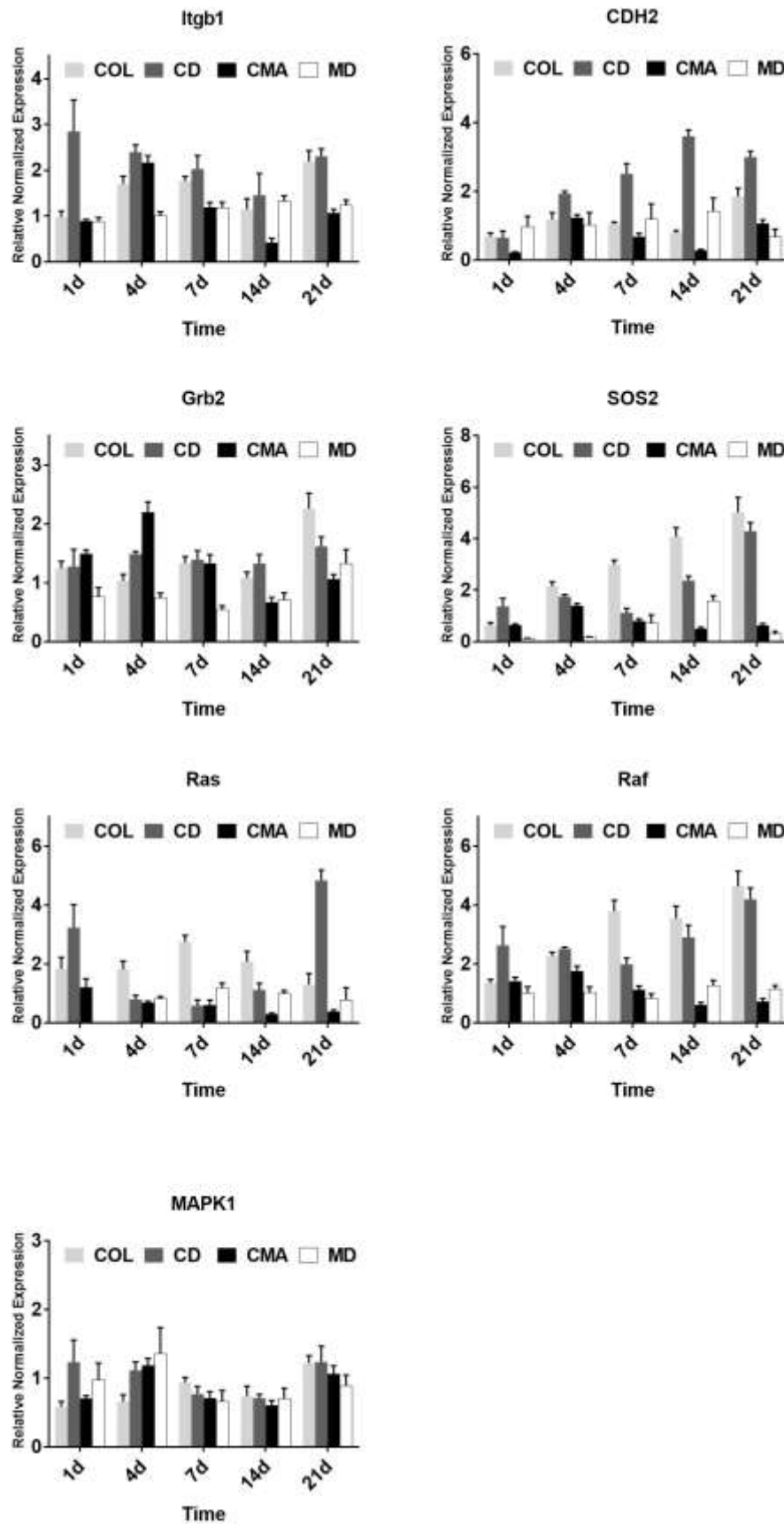


Figure S4. The gene expression of markers in MAPK signaling pathway.

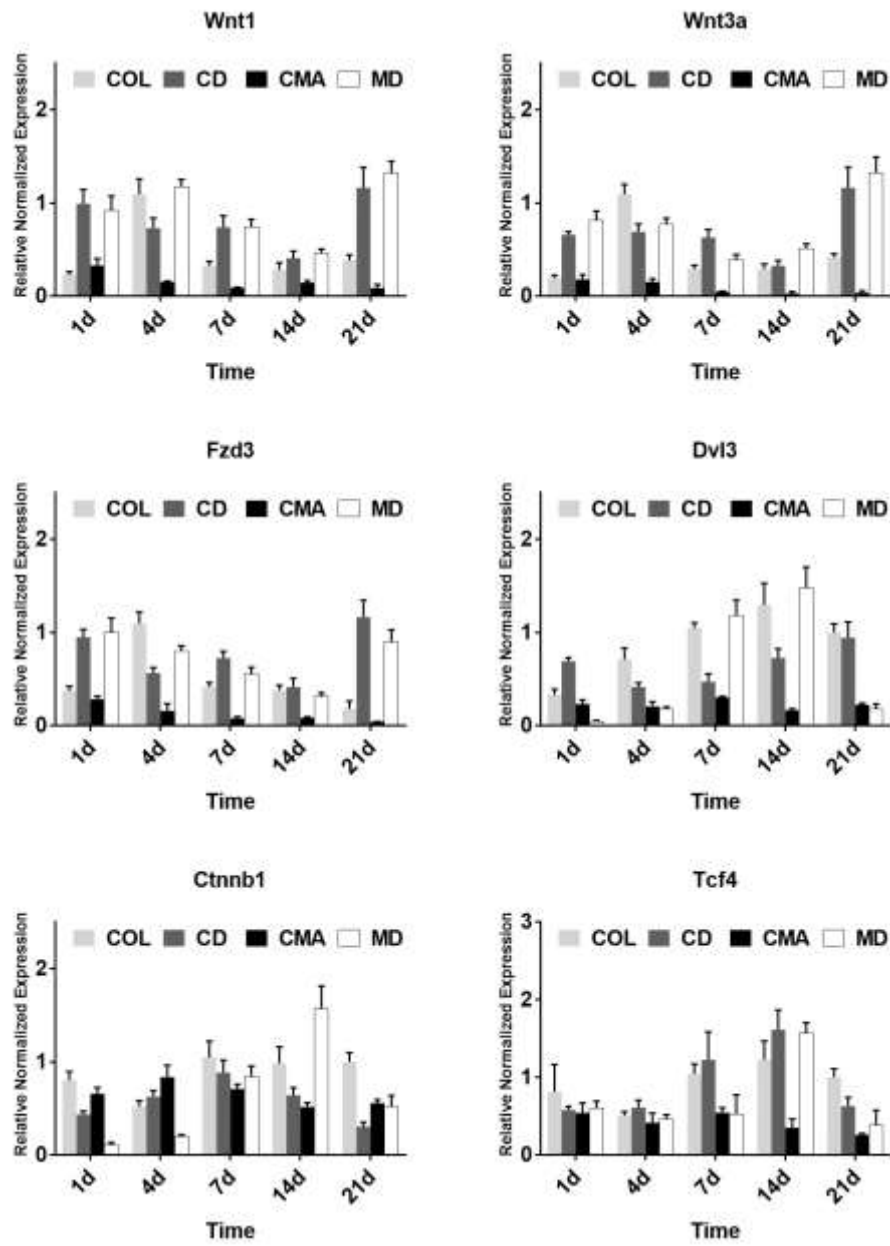


Figure S5. The gene expression of markers in Wnt signaling pathway.

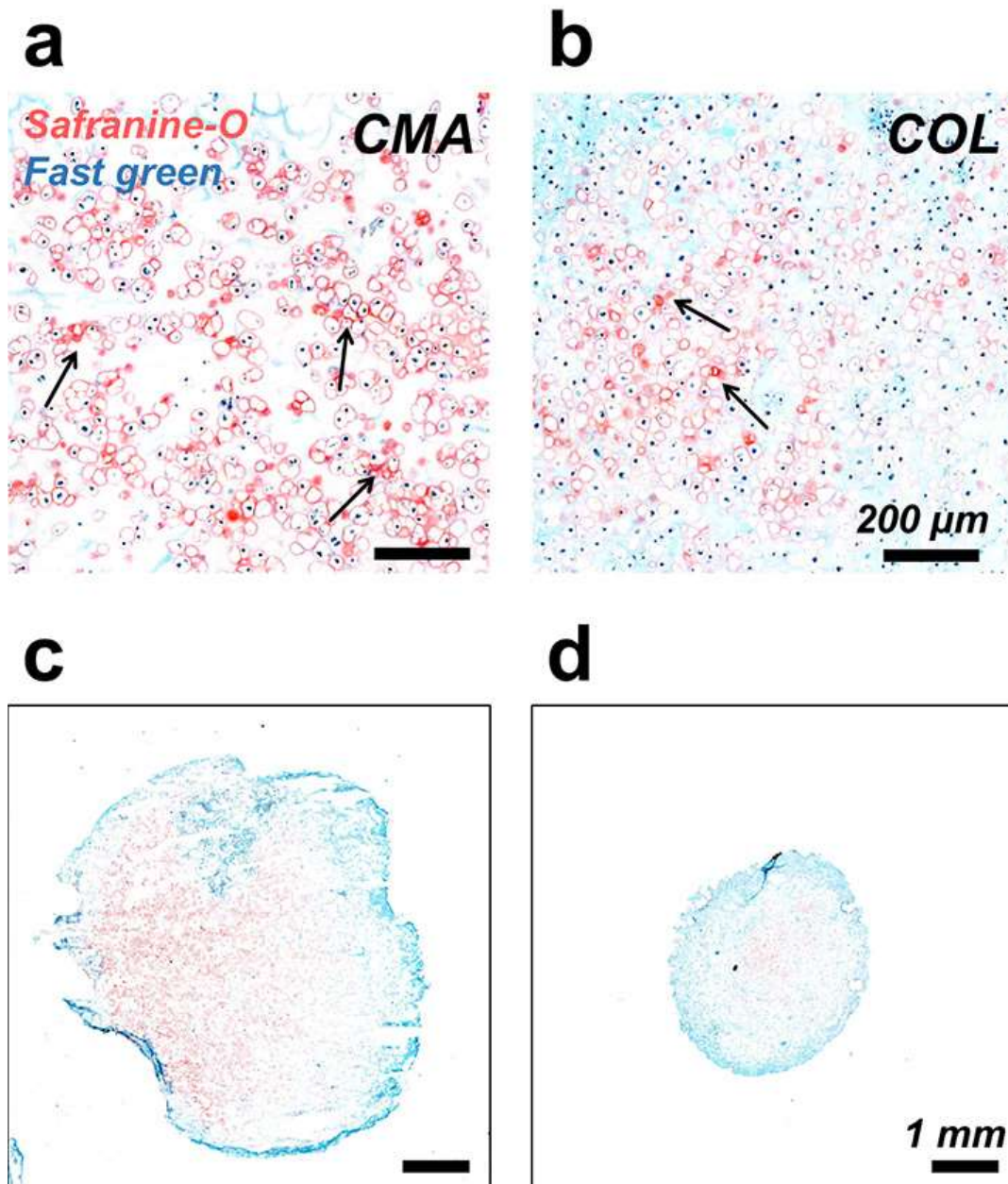


Figure S6. Safranin-O staining of BMSCs/CMA (a, c) and BMSCs/COL (b, d) constructs after *in vivo* implantation in nude mice. The black arrows showed the metachromasia of proteoglycans (red area).

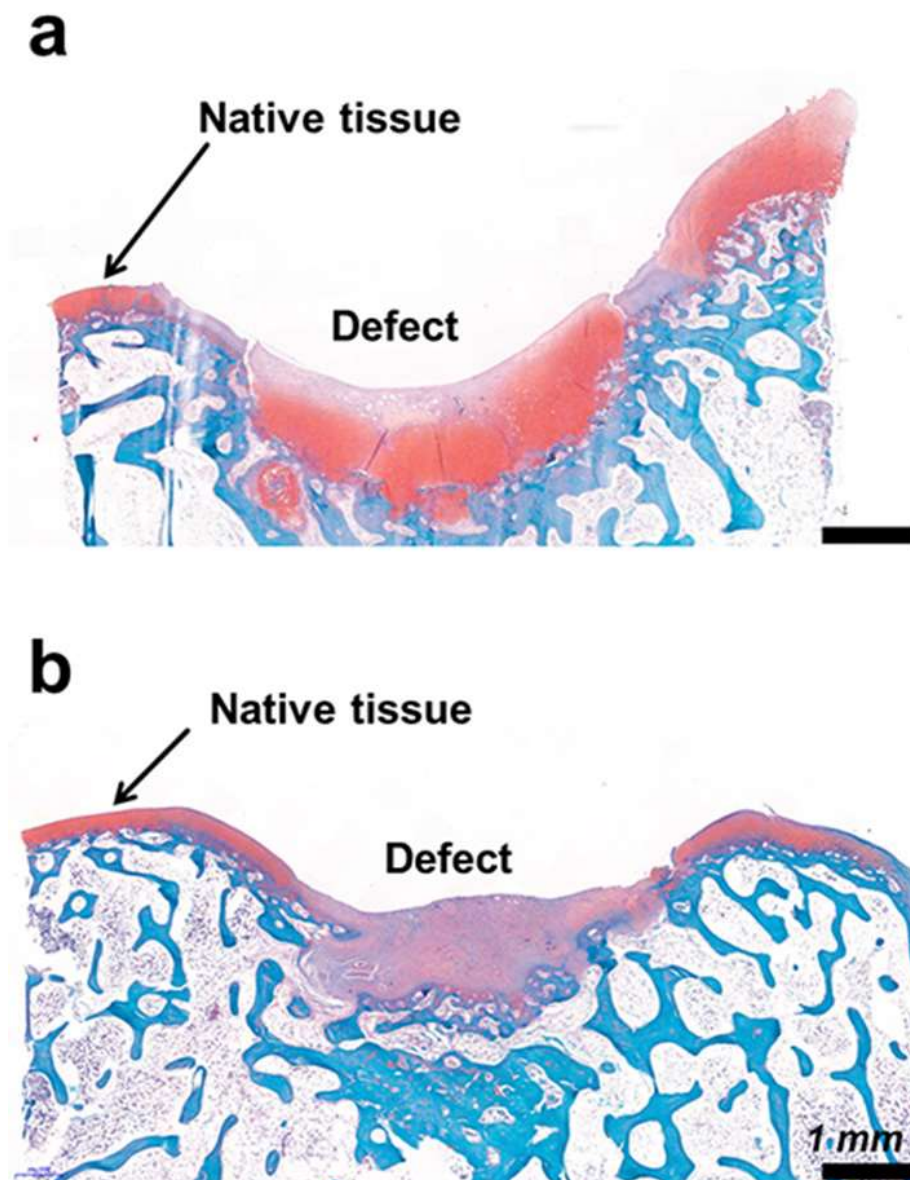


Figure S7. Safranin-O staining of BMSCs/CMA (a) and BMSCs/COL (b) constructs after *in vivo* implantation in rabbit mice.

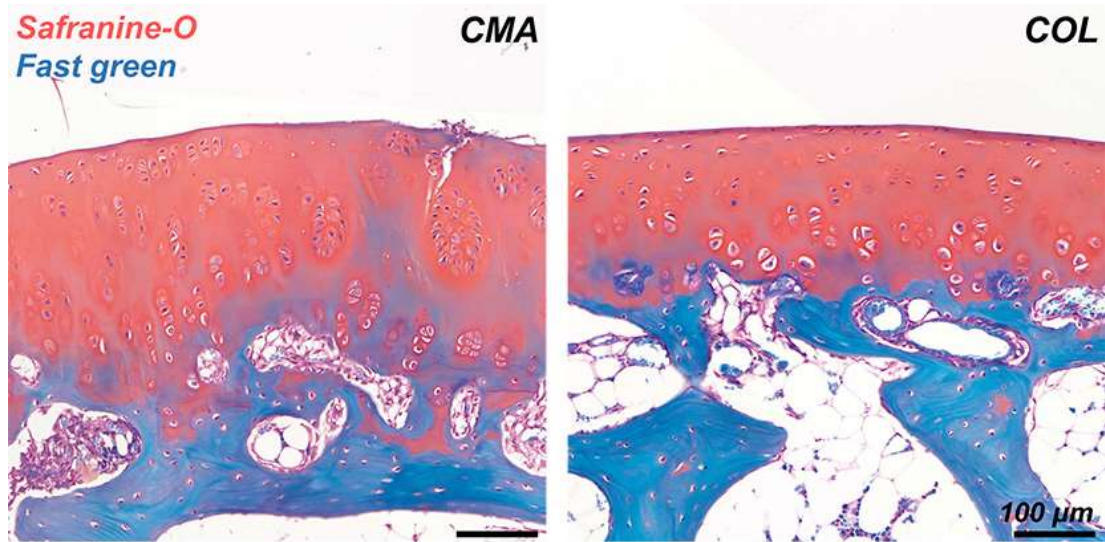


Figure S8. Safranin-O staining of the native cartilage parts indicated by the black arrows in Fig. S7.