Supplementary Information

for

Glycosaminoglycan mimetic peptide nanofiber gel as an osteoinductive scaffold

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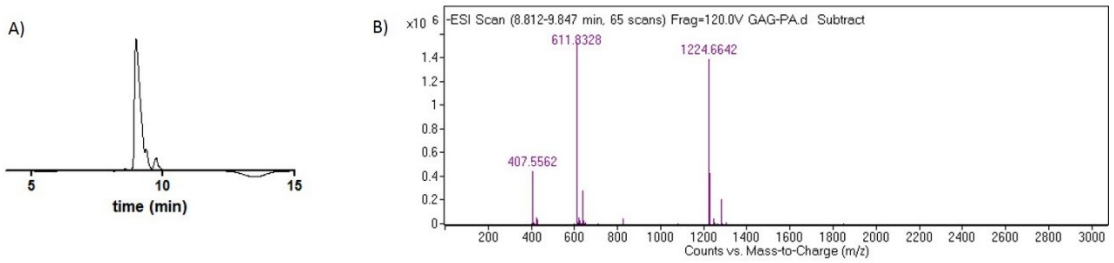

Fig. S1. Liquid chromatogram and mass spectrum of GAG-PA. (A) RP-HPLC chromatogram of GAG-PA, the change of response units with respect to time at 220 nm. (B) Mass spectrometry of GAG-PA. $[M-H]^-$ (calculated): 1225.59 $[M-H]^-$(observed): 1224.66, $[M-2H]^{-2}/2$ (calculated): 611.79 $[M-2H]^{-2}/2$(observed): 611.83 $[M-3H]^{-3}/3$ (calculated): 407.53 $[M-3H]^{-3}/3$ (observed): 407.55.

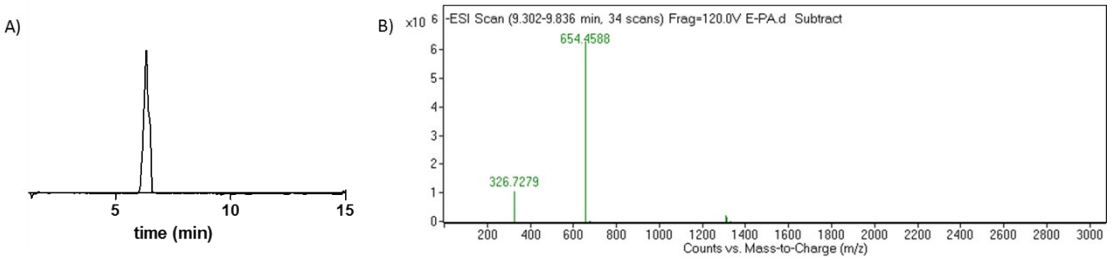

Fig. S2. Liquid chromatogram and mass spectrum of E-PA. A) RP-HPLC chromatogram of E-PA, the change of response units with respect to time at 220 nm. (B) Mass spectrometry of E-PA. $[M-H]^-$ (calculated): 655.42 $[M-H]^-$(observed): 654.45, $[M-2H]^{-2}/2$ (calculated): 326.71 $[M-2H]^{-2}/2$(observed): 326.72.

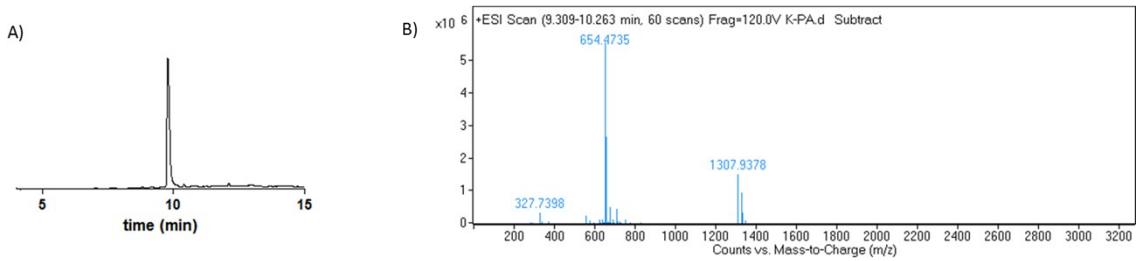

Fig. S3. Liquid chromatogram and mass spectrum of K-PA. (A) RP-HPLC chromatogram of K-PA, the change of response units with respect to time at 220 nm. (B) Mass spectrometry of K-PA. $[M+H]^+$ (calculated):653.48 $[M+H]^+$ (observed): 654.47, $[2M+H]^+$ (calculated): 1307.96 $[2M+H]^+$ (observed): 1307.93, $[M+2H]^{+2}/2$ (calculated): 327.74 $[M+2H]^{+2}/2$ (observed): 327.73.

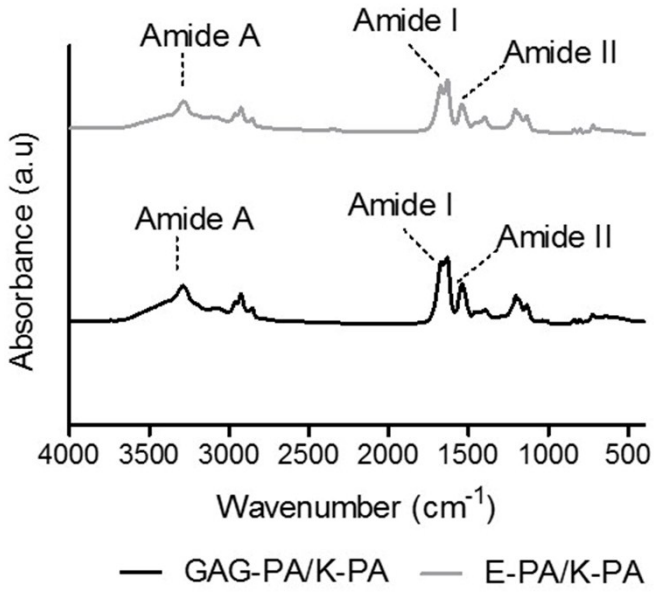

Fig. S4. FT-IR spectra of PA nanofibers. Both peptides displayed amide I peaks located in 1630–1640 cm^{-1} region, suggesting β-sheet formation.

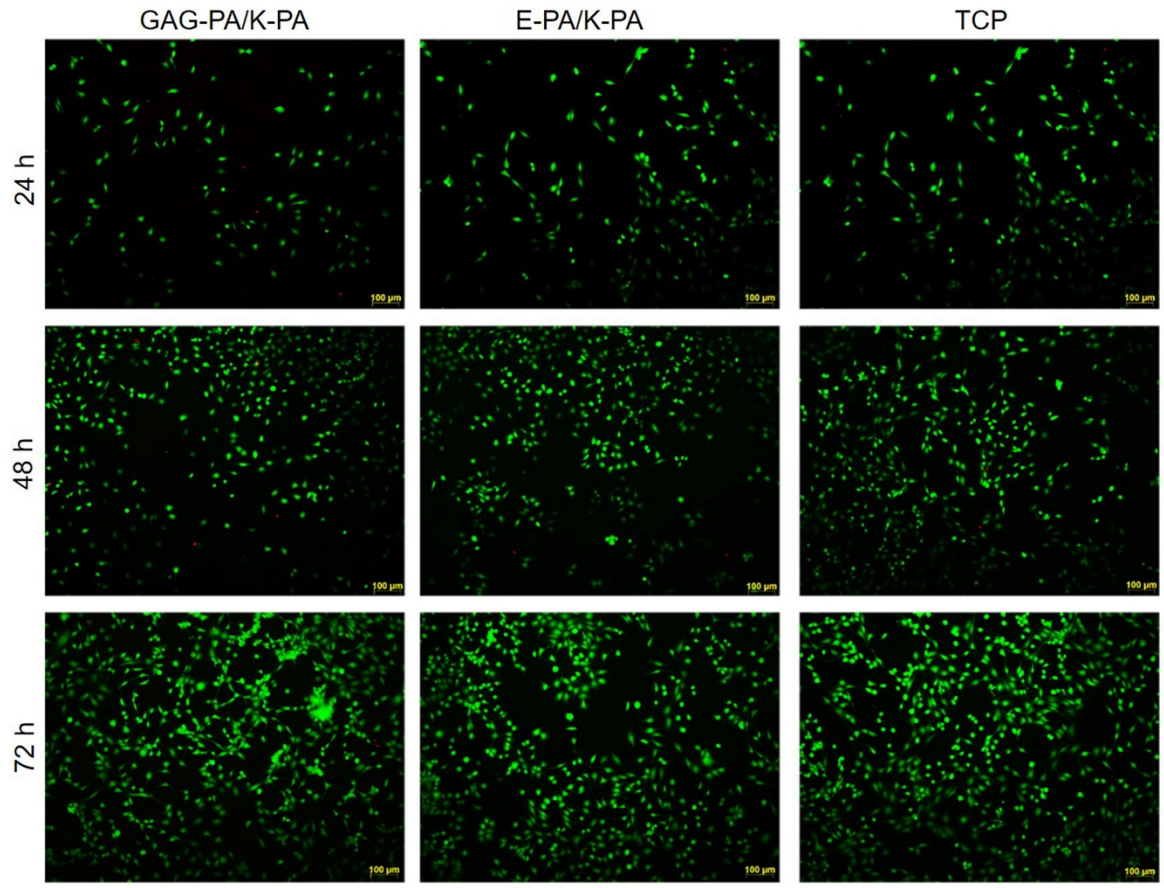

Fig. S5. Viability of rMSCs cultured on peptide nanofibers and TCP, analyzed by calcein ethidium homodimer live−dead assay.

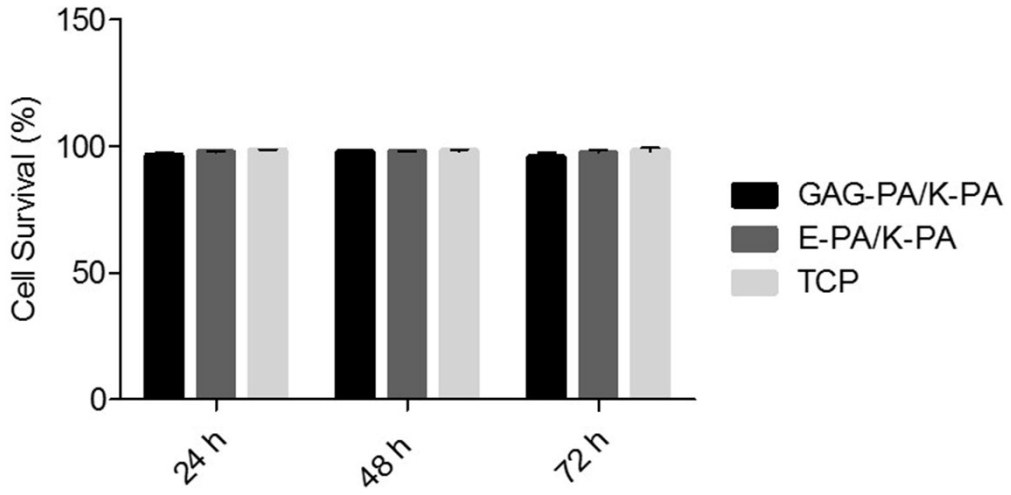

Fig. S6. Viability of rMSCs cultured on peptide nanofibers and TCP, analyzed by calcein ethidium homodimer live−dead assay.

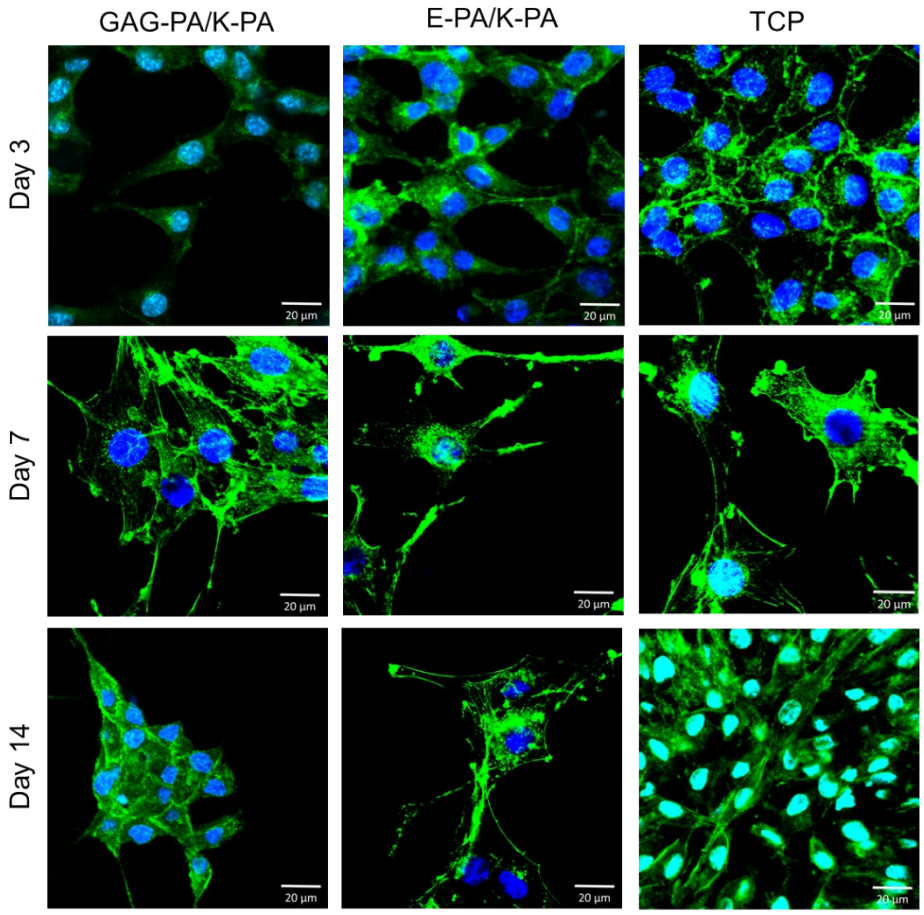

Fig. S7. F-actin filaments stained with phalloidin (green) showing actin networks formed by rMSCs on PA nanofibers and TCP. Nuclei were stained with TO-PRO-3 reagent (blue). Scale bars are 20 μm.

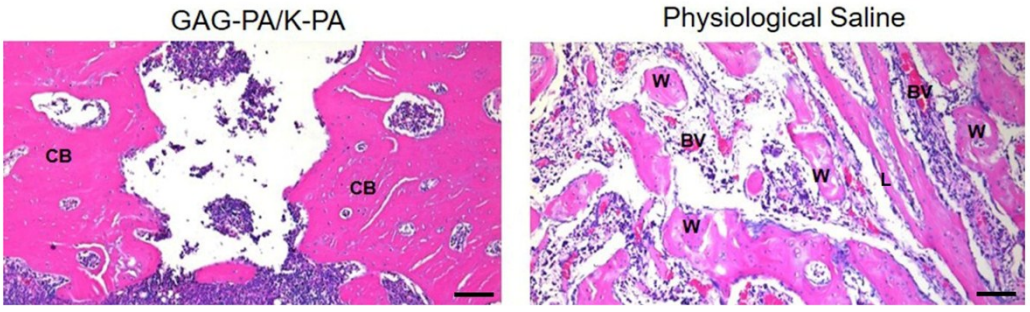

Fig. S8. Histological evaluation of rabbit tibial defects after 4 weeks of GAG-PA gel treatment. Tissue sections of GAG-PA gel and physiological saline control groups were stained with H&E. Scale bars are 100 μm. (CB: Cortical bone, W: Woven bone, L: Lamellar bone, BV: Blood vessel).