Electronic Supplementary Material (ESI) for Biomaterials Science.

Supporting information

Bioactive LbL-Assembled Multilayer Nano-films Up-regulate Tenogenesis and Angiogenesis Enabling Robust Healing of Degenerative Rotator Cuff Tendon In Vivo

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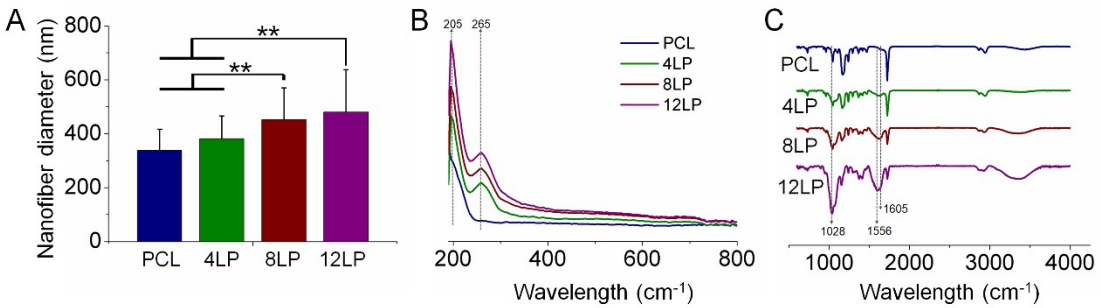
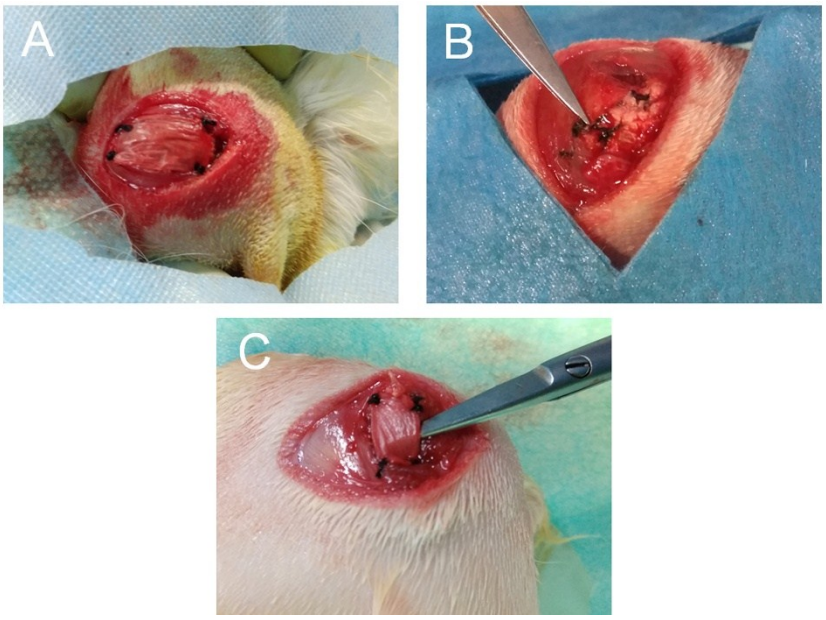


Fig. S1. (A) Average fiber diameter of PCL, 4L-PCL, 8L-PCL and 12L-PCL; (B) UV spectra of PCL, 4LP, 8LP and 12LP; (C) ATR-FIRT spectra. Statistically significant



at *p < 0.05, **p < 0.01.

Fig. S2. A diagrammatic representation of the procedure of chronic RCT repair surgery using the (A) 8LP-V, (B) SRF and (C) PP

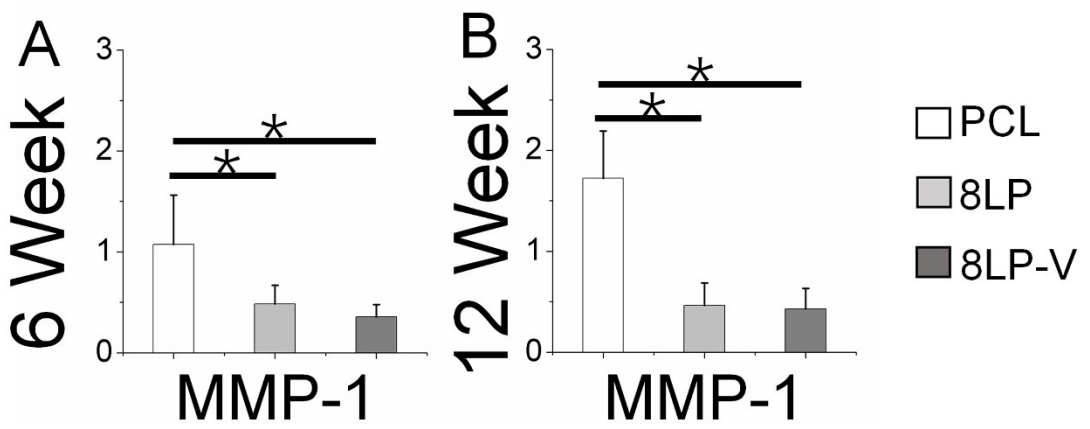


Fig. S3. Quantitative gene expression of matrix metalloproteinase-1 (MMP-1), as a hint of tendon degeneration, at (A) 6- and (B) 12-week post-surgery. (*P< 0.05)

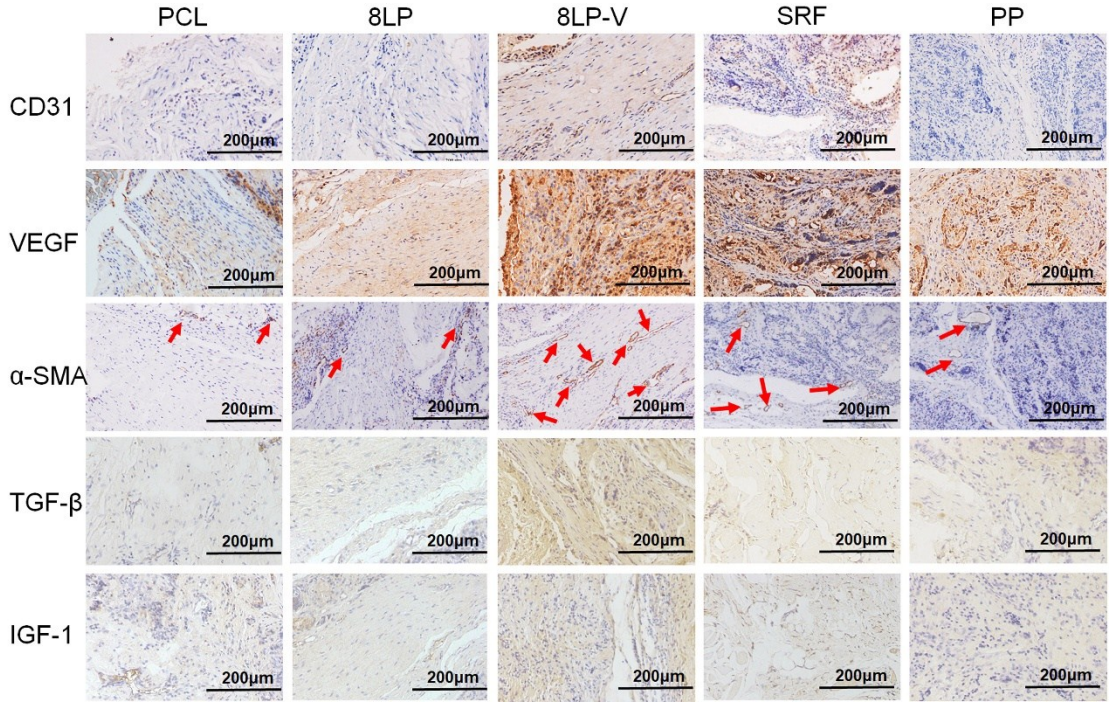


Fig. S4. Immunohistochemistry stain of angiogenesis markers and pre-tendon growth factors in regenerative rotator cuff tendon 12 weeks after RCT repair surgery in a rabbit model.

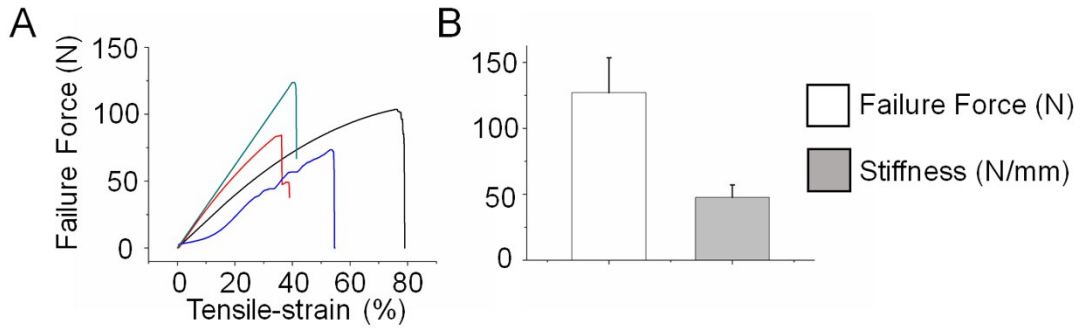


Fig. S5. Biomechanical features of normal tendons (A) Load–deformation curves of normal tendons; (D) Maximal failure force and stiffness of normal tendons.

Table S1. Primer sequences of rat specific genes used for QPCR.

Genes	5'-3'	Primers
GAPDH	Forward	GCAAGTTCAACGGCACAG
	Reverse	CGCCAGTAGACTCCACGAC
SCX	Forward	AACACGGCCTTCACTGCGCTG
	Reverse	AACACGGCCTTCACTGCGCTG
TNMD	Forward	CCAGACAAGCAAGCGAGGA
	Reverse	AACTTCCTATTAGACTCTCC
COL I	Forward	TGGATGGCTGCACGAGT
	Reverse	TTGGGATGGAGGGAGTTTA
COL III	Forward	GCCTCCCAGAACATTACATAC
	Reverse	CAATGTCATAGGGTGCGATA
BGN	Forward	GATGGCCTGAAGCTCAA
	Reverse	GGTTTGTTGAAGAGGCTG

Table S2. Primer sequences of rabbit specific genes used for QPCR.

Genes	5'-3'	Primers
GAPDH	Forward	TCACCATCTTCCAGGAGCGA
	Reverse	CACAATGCCGAAGTGGTCGT
TNC	Forward	CGTGAAAAACAATACCCGAGGC

	Reverse	GCCGTAGGAGAGTTCAATGCC
COL I	Forward	GATGGCCTGAAGCTCAA
	Reverse	GGTTTGTTGAAGAGGCTG
COL III	Forward	TTATAAACCAACCTCTTCCT
	Reverse	TATTATAGCACCATTGAGAC
mTOR	Forward	GCGTATTGTAGAGGACTGGCAG
	Reverse	GTCAAGTTGGCGAGATGGATC