ACCSCIENCE PUBLISHING

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RESEARCH ARTICLE

3D bioprinting of biomimetic trachea with interspersed cartilage and vascularized connective tissue for prompt segmental tracheal reconstruction

Supplementary File

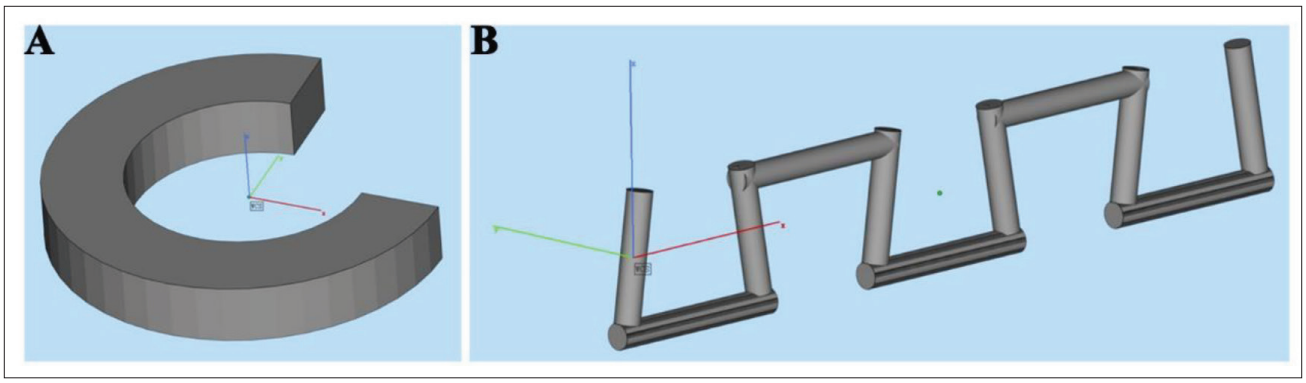

Figure S1. Customized 3D models for a C-shaped ring (A) and S-shaped PCL chains (SPC) (B).

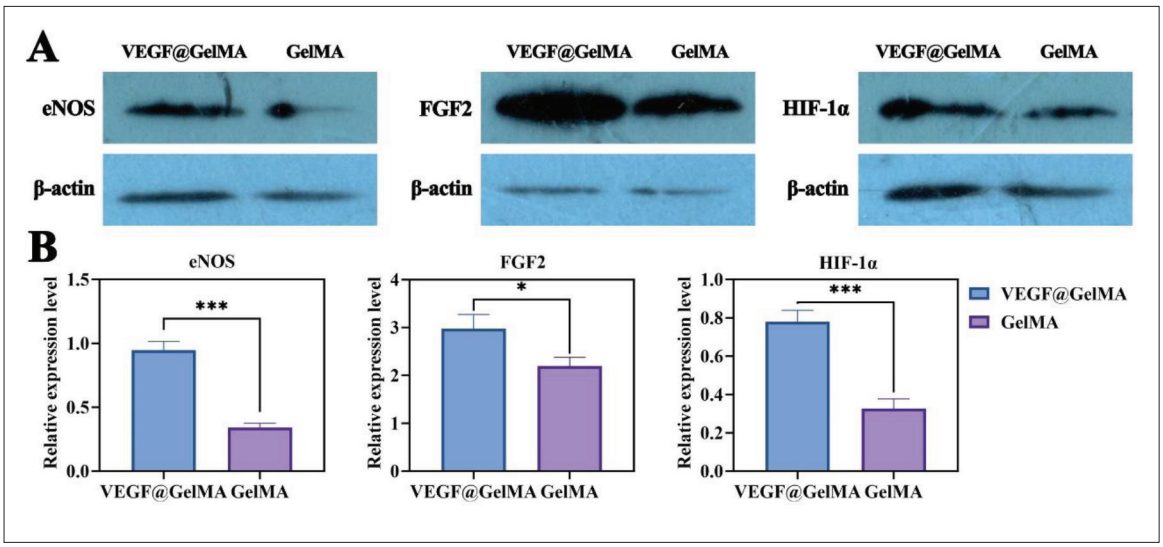

Figure S2. Angiogenic evaluation of VEGF@GelMA and pure GelMA hydrogels on HUVECs. (A) Expression levels of eNOS, FGF2, and HIF-1α determined by Western blot. (B) Relative quantitation of expression levels of eNOS, FGF2, and HIF-1α based on Western blots (the above images). $n = 3$; data are presented as means ± SD for each group. $^{*}p < 0.05$, $^{***}p < 0.001$. Abbreviations: FGF2, Fibroblast growth factor 2; GelMA, Gelatin methacrylate; HIF-1α, Hypoxia-inducible factor-1α; eNOS, endothelial nitric oxide synthase; VEGF, vascular endothelial growth factor.

Figure S3. Orthotopic reconstruction of segmental trachea. (A) Exposing the cervical trachea. (B) Resecting a 1.5-cm-long native trachea in rabbits. (C) Performing orthotopic reconstruction using tissue-engineered tracheal construct (TETC).

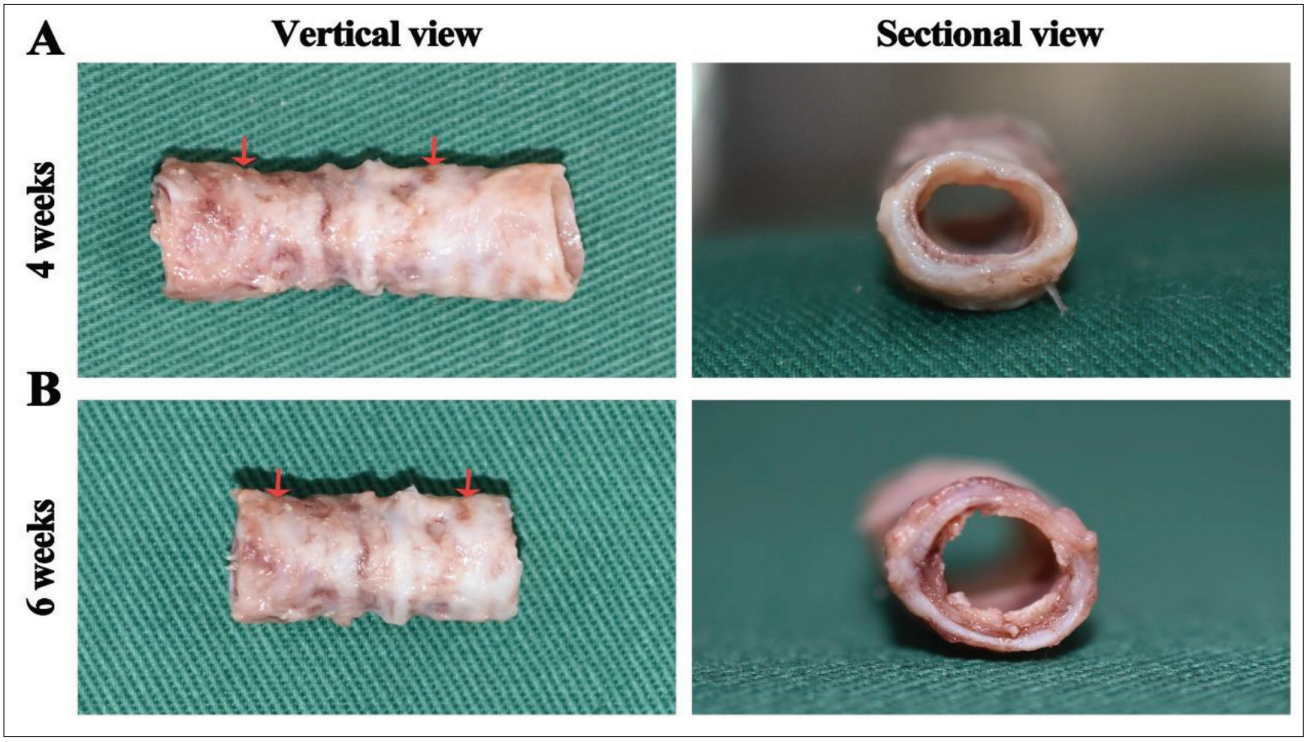

Figure S4. Vertical and sectional views of the orthotopically regenerated engineered tracheal tissue after 4 weeks (A) and (B) 6 weeks.

Table S1. Primer sequences used in qPCR

Gene	Forward (5'–3')	Reverse (5'–3')
NOS3	TGTCCAACATGCTGCTGGAAATTG	AGGAGGTCTTCTTCCTGGTGATGCC
HIF1A	AGTTCCGCAAGCCCTGAAAGC	GCAGTGGTAGTGGTGGCATTAGC
FGF2	CAATTCCCATGTGCTGTGAC	ACCTTGACCTCTCAGCCTCA
GAPDH	AGGTCGGTGTGAACGGATTTG	TGTAGACCATGTAGTTGAGGTCA

Supplementary video

Video S1. Repeated force application to implanted bioengineered trachea.