International Journal of Bioprinting

RESEARCH ARTICLE

Multi-scale vascularization strategy for 3D-bioprinted tissue using coaxial core–shell pre-set extrusion bioprinting and biochemical factors

Supplementary file

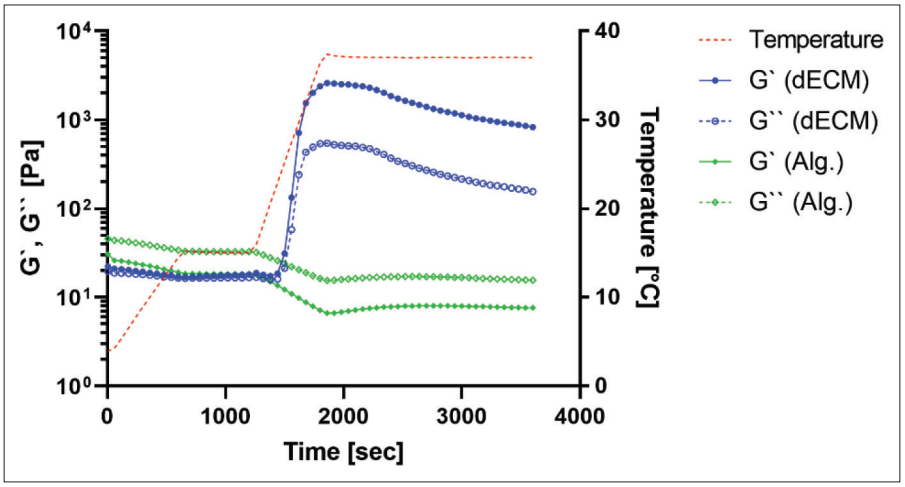

Figure S1. Changes of rheological properties of dECM and alginate with temperature.

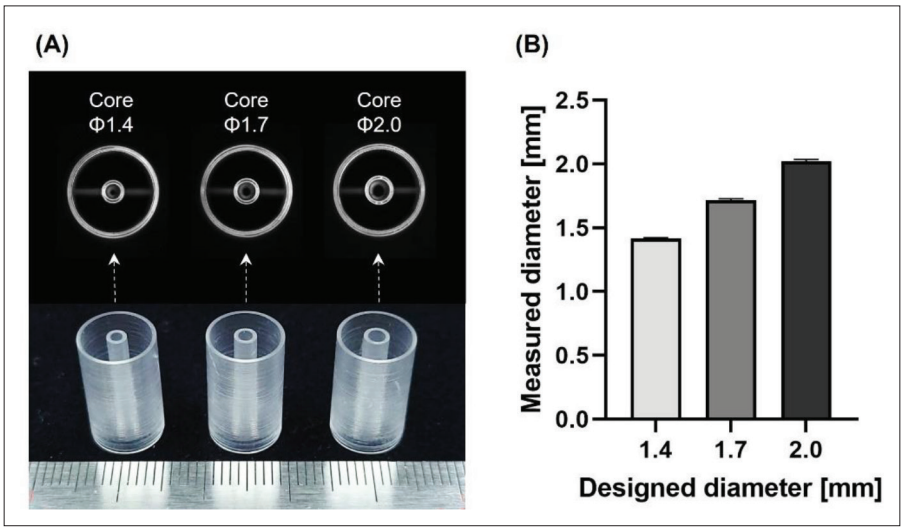

Figure S2. (A) Representative image of precursor cartridges used in this research. (B) Diameter of core region (n = 10).

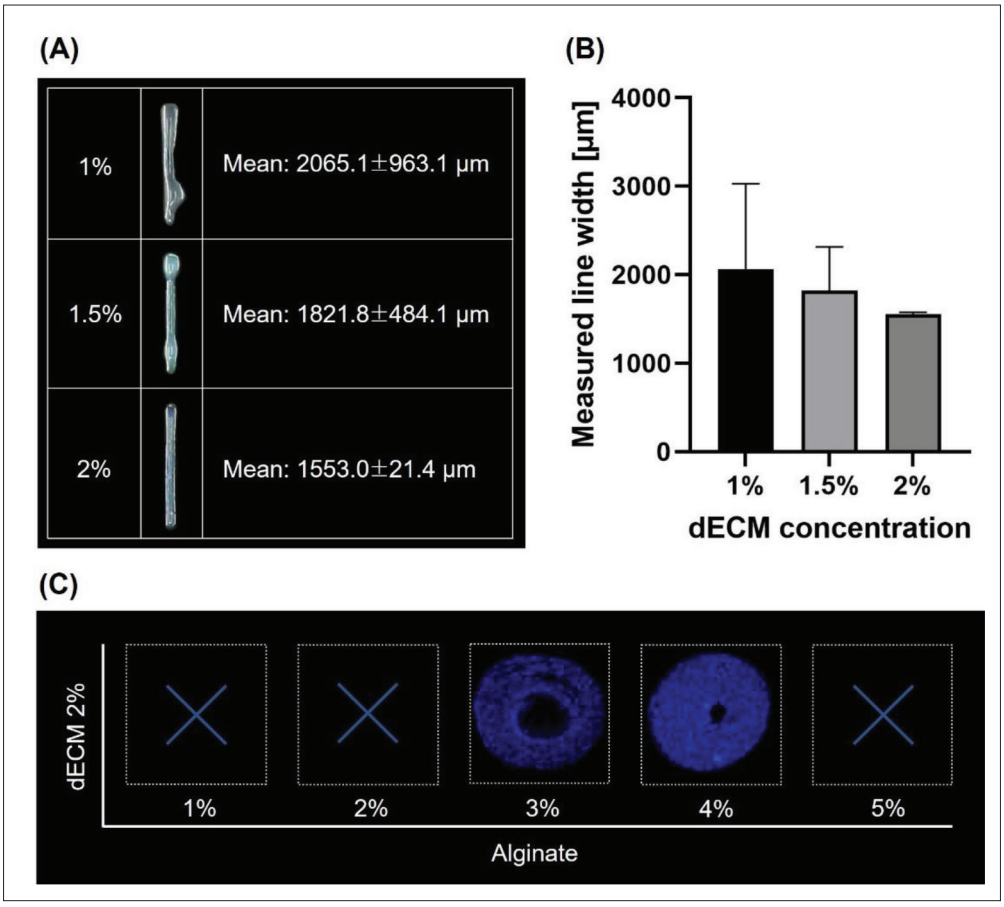

Figure S3. (A,B) Shape fidelity test result for dECM bioink. (C) Co-printability test result for 2% dECM and alginate solution.

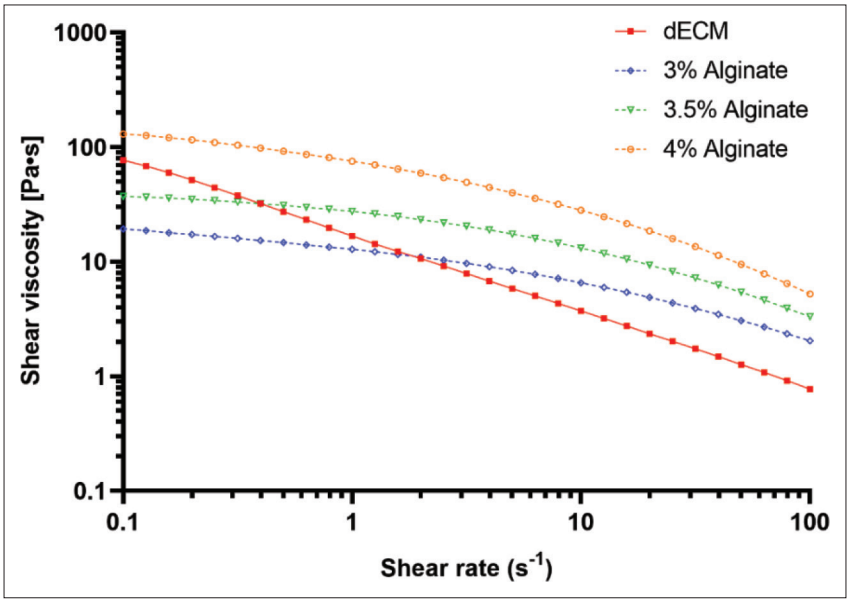

Figure S4. Rheological property of dECM, 3% alginate solution, 3.5% alginate solution, and 4% alginate solution.

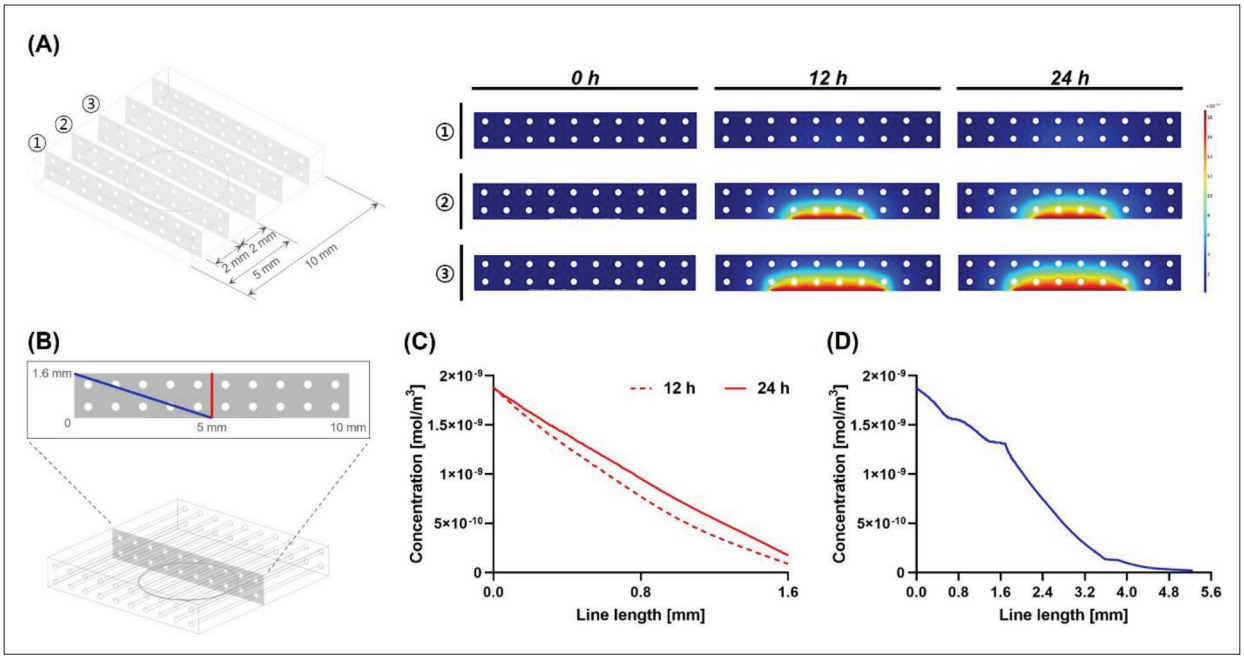

Figure S5. Simulation result of VEGF diffusion on bioprinted tissue. (A) Concentration distribution on different planes in bioprinted tissue at different time. (B) Illustration of the observation for linear concentration profile. (C) Linear concentration profile of red line at 12 h and 24 h. (D) Linear concentration profile of blue line at 24 h.

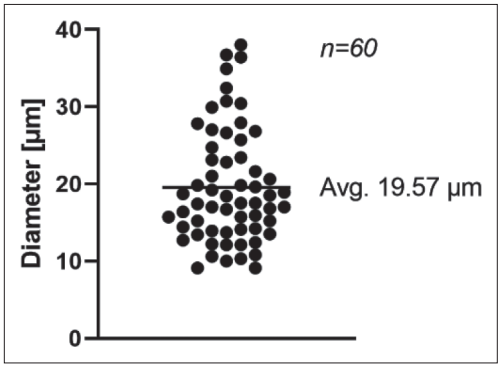

Figure S6. Measurement result for diameter of sprouted capillaries. Diameter of sprouted capillaries was measured with Imaris 7.2 software (Oxford Instruments, UK).

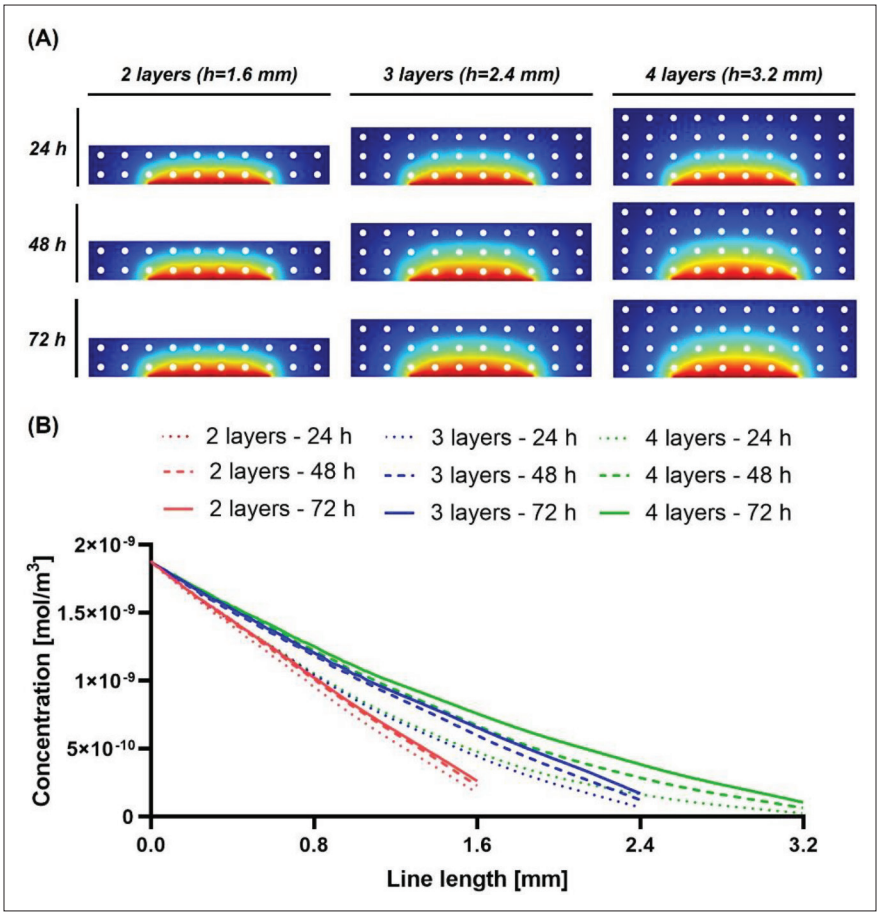

Figure S7. Diffusion simulation results with exposure time of VEGF and thickness of bioprinted construct as variables. (A) Two-dimensional concentration distribution on central plane of the bioprinted construct. (B) Linear concentration profile at center of the bioprinted construct.

Other files:

Videoclip S1. Three-dimensional rendering of mid-scale vasculature and capillary branches in bioprinted tissue. Green: CD31.

Videoclip S2. Three-dimensional rendering of fluorescent micro-particles in multi-scale vasculature-embedded bioprinted tissue. Red: fluorescence particles; green: CD31.