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Supplementary Information

The regenerated silk fibroin hydrogel with designed architecture bioprinted by its microhydrogel

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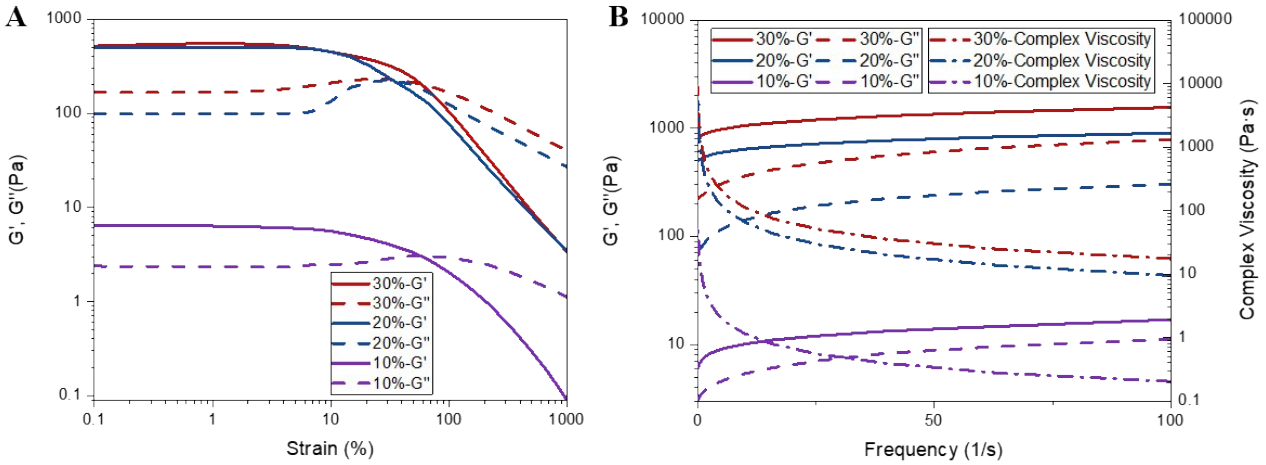

Fig. S1 (A) Strain and (B) Frequency sweep of RSF microhydrogel.

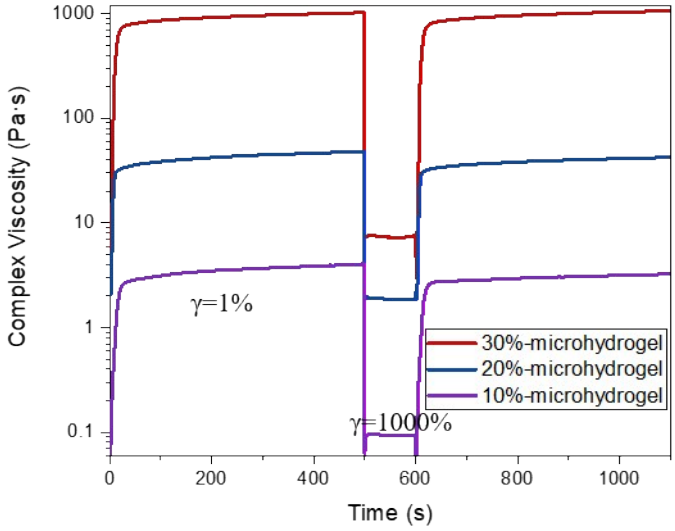

Fig. S2 Shear thinning and recovery for complex viscosity of RSF microhydrogel in 3ITT.

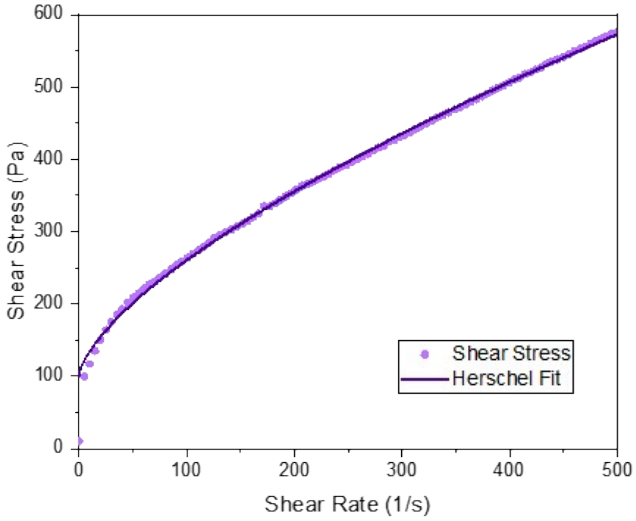

Fig.S3 Shear stress as a function of shear rate and Herschel-Bulkley model fitting of 30%-microhydrogel.

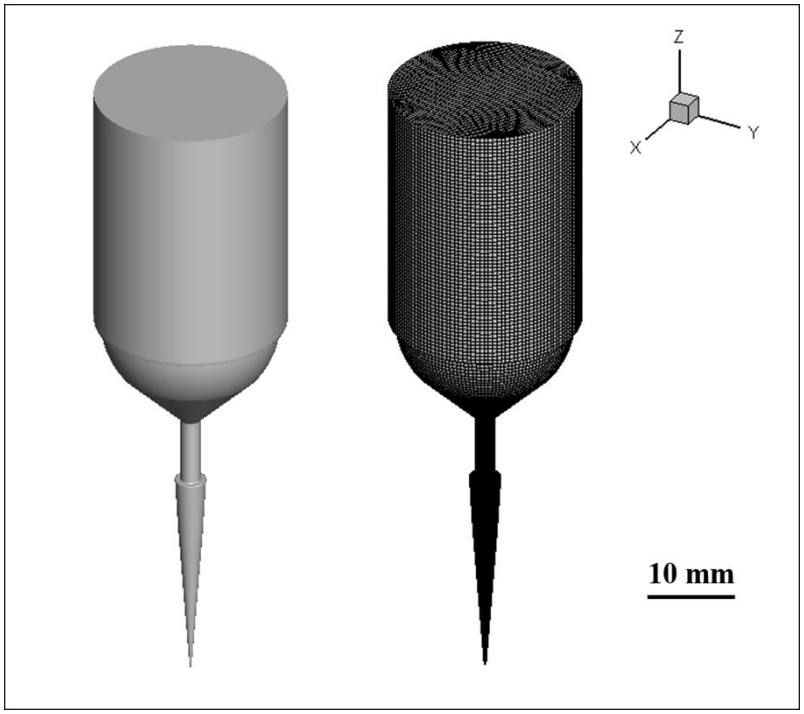

Fig. S4 3D model and meshing of bioprinting syringe with a 0.26 mm conical needle. The model was divided into around 6.9×10^5 cells, 2.1×10^6 faces and 7.2×10^5 nodes.

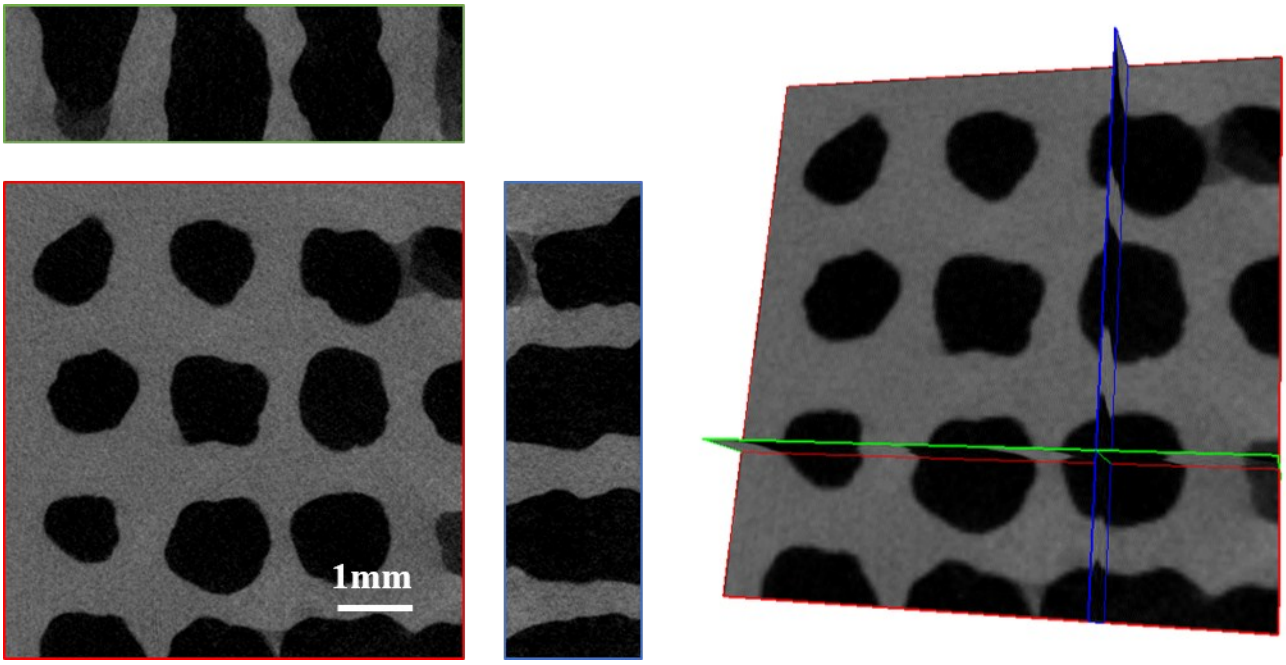

Fig. S5 Transverse (red), coronal (green) and sagittal (blue) plane of the bioprinted RSF hydrogel by Micro-CT reconstruction.

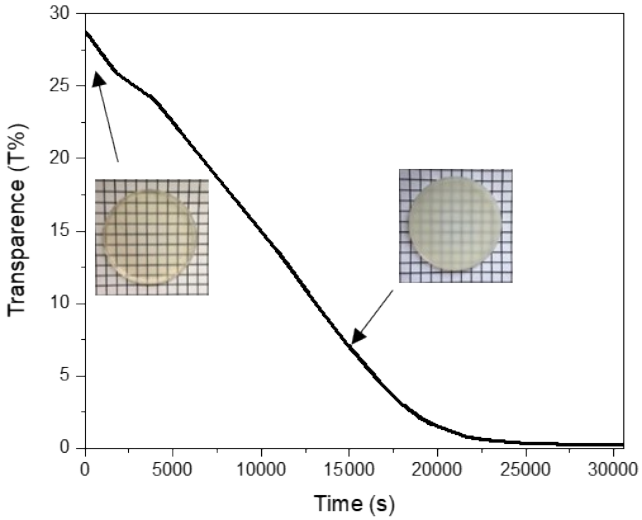

Fig. S6 Transmittance of RSF microhydrogel under visible light versus time, which measured in UV-Vis spectrophotometer using a cuvette. Inset: images corresponding to each state with a sample of 90 mm in diameter and 2 mm in height.

Table. S1 Modulus change before/after microhydrogel ripening and viscosity during 3D printing

	Solid content (wt)	Viscosity while printing (Pa·s)***	Modulus before ripening (Pa)*	Modulus after ripening (MPa)**
30%-microhydrogel	28.0%	7.4	18800	10.6
20% microhydrogel	18.7%	1.9	4420	3.2
10% microhydrogel	9.3%	0.1	314	1.1

* Complex viscosity measured with an amplitude of 1000% in rheological tests

** Storage modulus measured with an amplitude of 1% measured in rheological tests

*** Compressive modulus measured in compression experiment

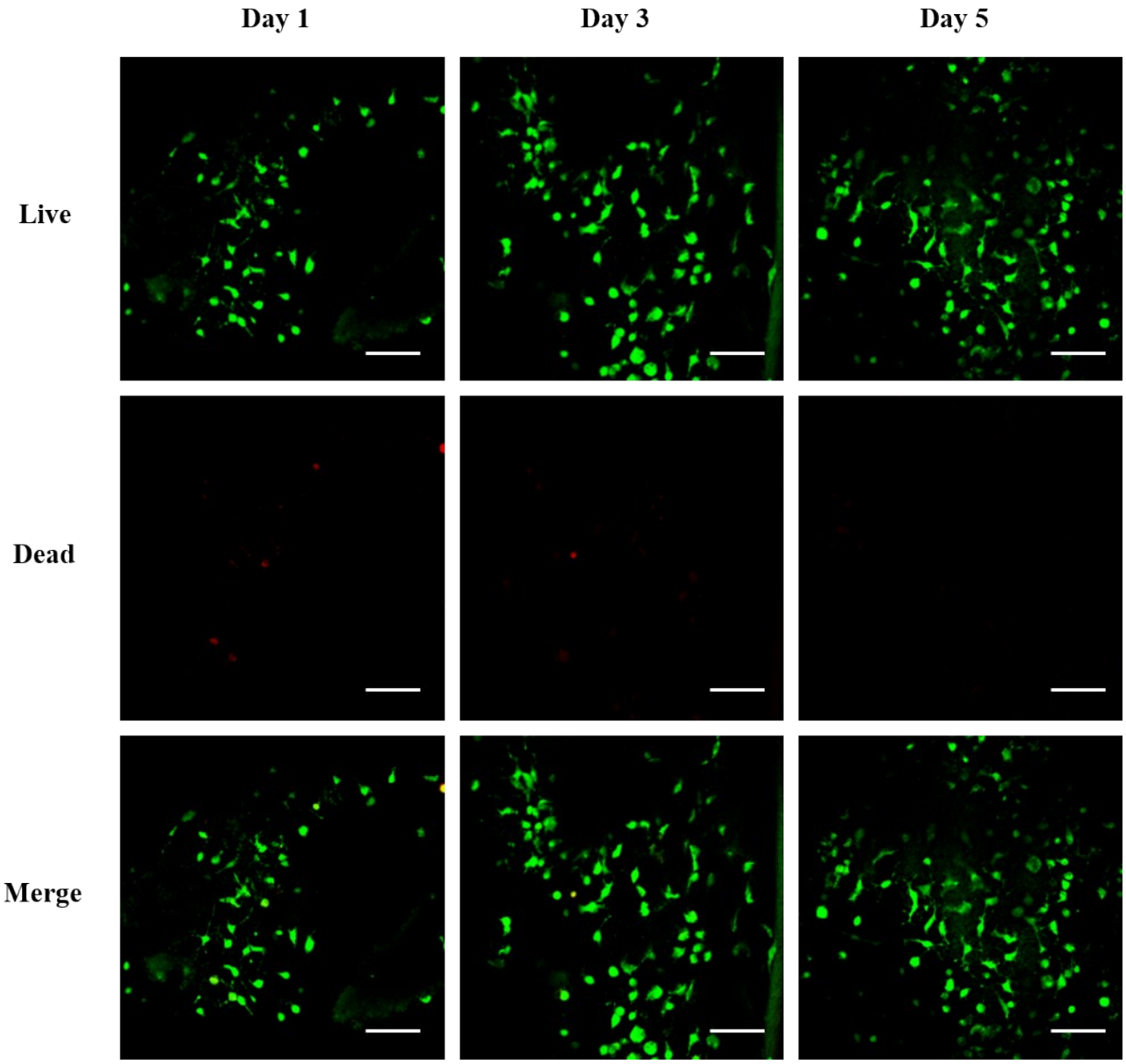

Fig. S7 Live/dead confocal microscopy images of hMSCs-laden bioprinted RSF hydrogel in 1, 3 and 5 days cultured. Scale bar is 100 μm.