

Supplementary file

Table S1. List of primers sequences for the target genes

Gene	Primer sequence
β -actin	Forward: 5'- CCACGAAACTACCTTCAACTCC-3' Reverse: 5'- CTTGATCTTCATTGTGCTGGGT-3'
Collagen-I	Forward: 5'-AACGGTGATAAAGGTCATGCTG-3' Reverse: 5'-TCACCTTTTCCACCTTGAACAC-3'
TGF- β 1	Forward: 5'-AATACAGCAACAATTCCTGGCG-3' Reverse: 5'-CCGGTGACATCAAAGATAACCA-3'
Vimentin	Forward: 5'-AGGAGGCAGAAGAATGGTA-3' Reverse: 5'-CAATAGTGTCTTGGTAGTTAGC-3'
α -SMA	Forward: 5'-ACTGAGCGTGGCTATTCCTCCGTT-3' Reverse: 5'-GCAGTGGCCATCTCATTTC-3'
P63	Forward: 5'-CCGAGATGAGTGAATGA-3' Reverse: 5'-TTGAAGATTAAGCAGGAGTG-3'
Filaggrin	Forward: 5'-CAATAGGAAGAGGCTAAGTGA-3' Reverse: 5'-GTGGTGTGTCATAGGCTTCAT-3'
Nrf2	Forward: 5'-GCTCCTACTGTGATGTGAA-3' Reverse: 5'-ATACTGACACTCCAATGCTT-3'

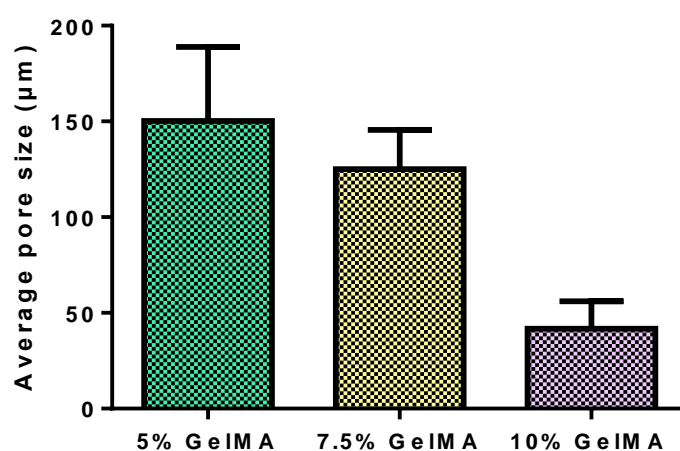


Figure S1. Micropore size of the lyophilized samples prepared from 5, 7.5 and 10% GelMA.

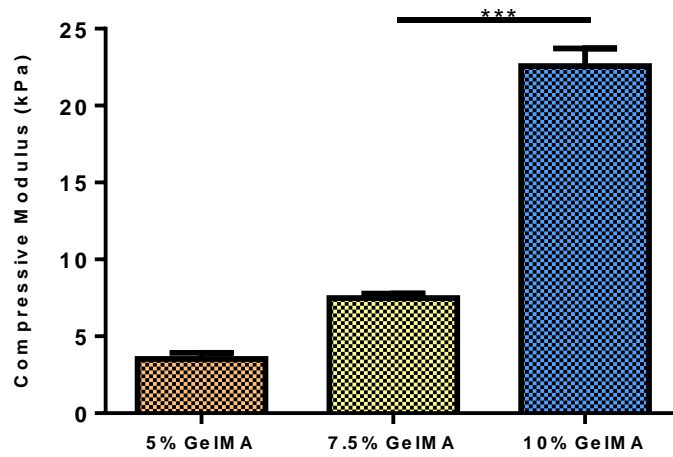


Figure S2. Compressive modulus of the 5, 7.5 and 10 wt% GelMA hydrogels.

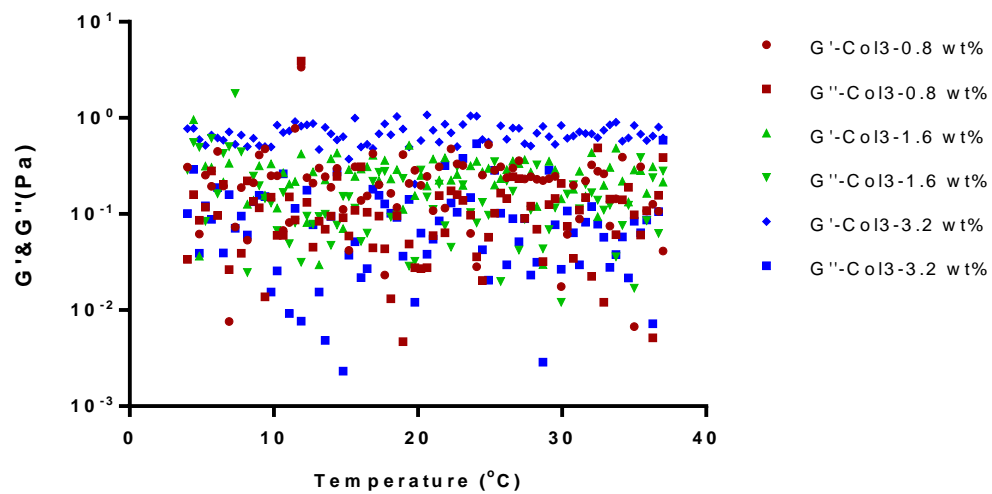


Figure S3. Storage and loss moduli of 0.8-3.2 wt% rhCol3 solutions determined by an oscillatory temperature sweep from 37 to 4 °C.

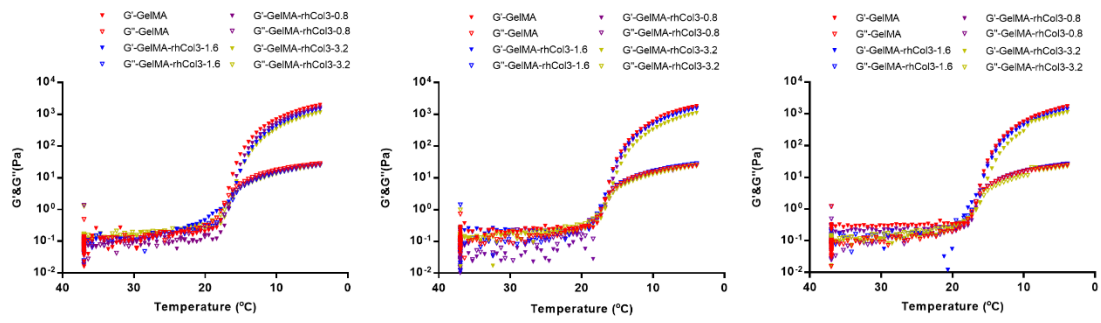


Figure S4. Storage and loss moduli of the bioinks determined by an oscillatory temperature sweep from 37 to 4 °C, shown in three repeats.

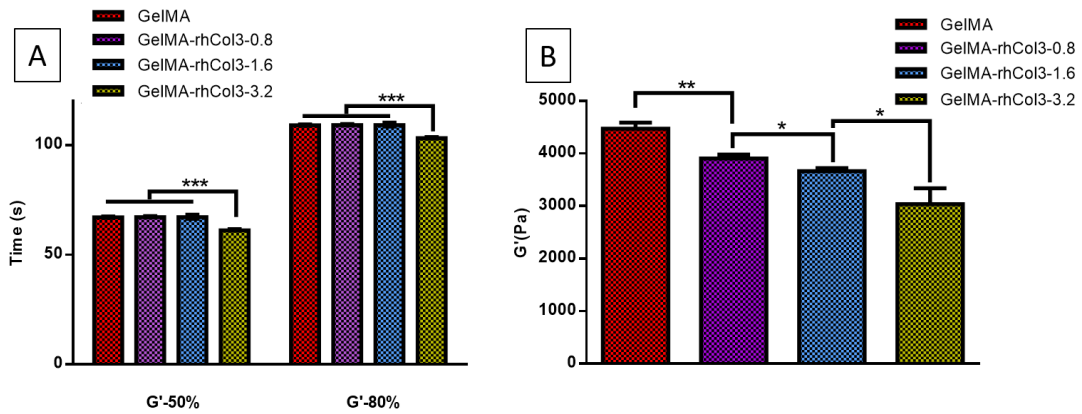


Figure S5. A) The UV exposure time durations of G' reach to 50% and 80% of its plateaued modulus. Significance is indicated with *** $P < 0.0001$, ($n=3$). B) Plateaued G' of the different samples in photorheology test. Significant is indicated with * $P < 0.05$, ** $P < 0.001$, ($n=3$).

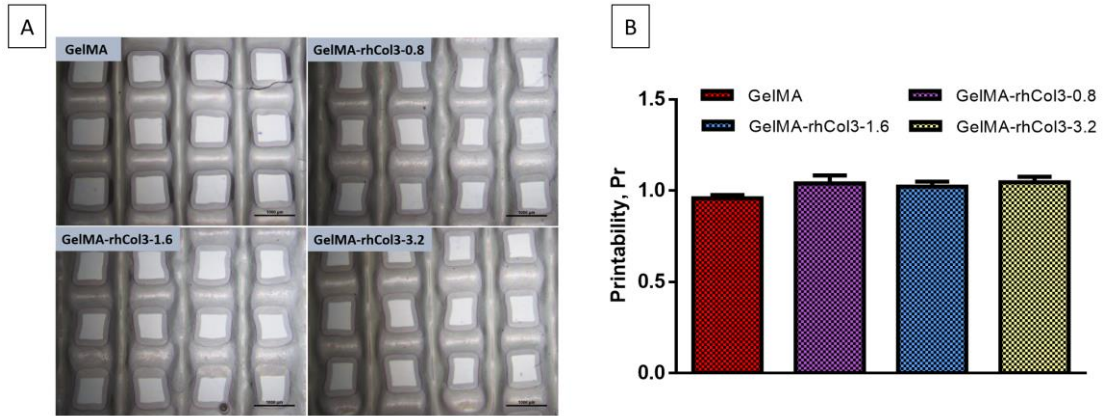


Figure S6. A) Optical microscope images of the printed lattices. Scale bars: 1000 μm. B) Printability (Pr value) of different bioinks under optimized printing temperatures, (n=3).

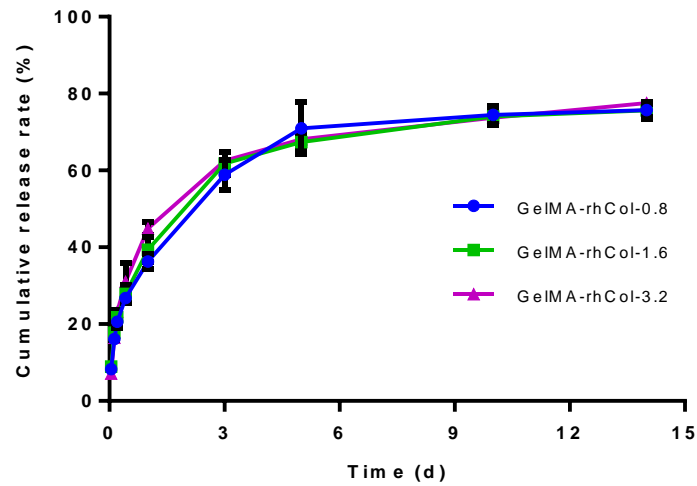


Figure S7. Dissolution of the rhCol3 from UV crosslinked bioinks.

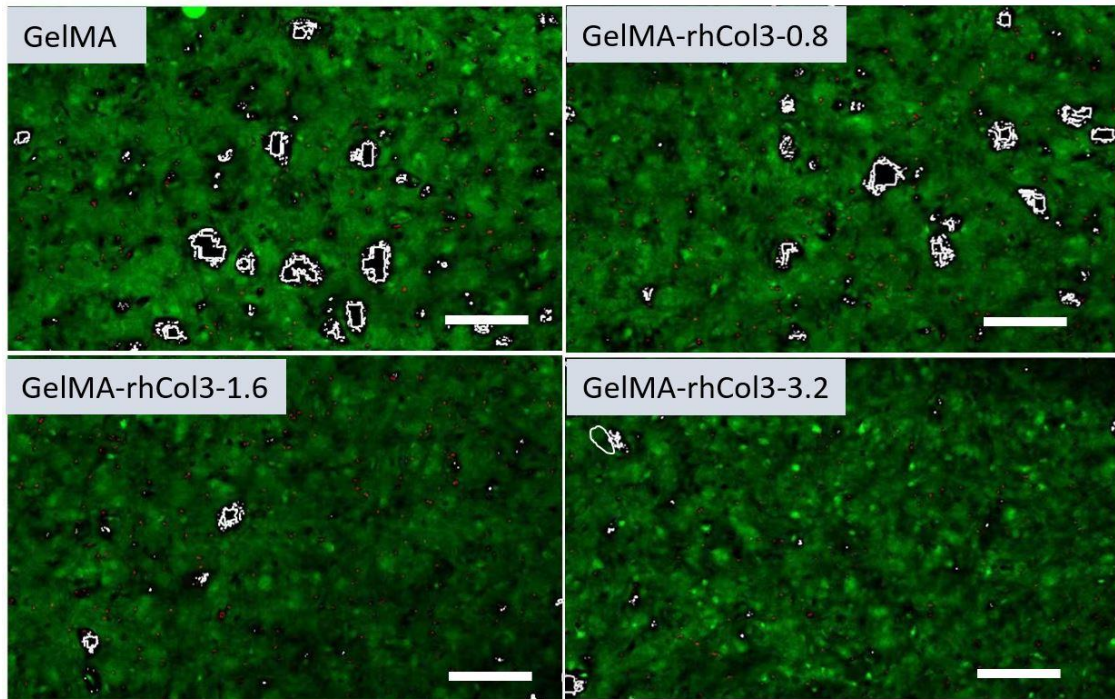


Figure S8. LIVE/DEAD™ fluorescent images of the cell monolayers developed on dermal constructs at day 3 with labelling of the acellular regions. Scale bars: 200 μ m.

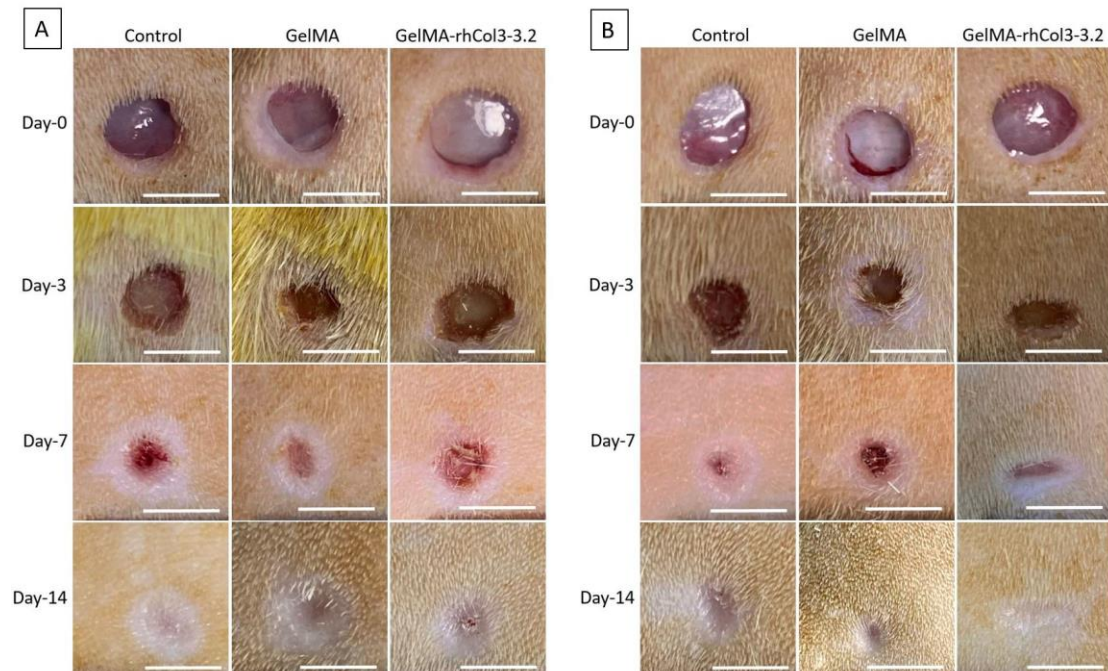


Figure S9. A) and B) Representative photographs of hydrogel-treated wounds at day 0, 3, 7, and 14. These are replicates of data in Figure 6A. Scale bars: 5 mm.