ACCSCIENCE PUBLISHING

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RESEARCH ARTICLE

3D-bioprinted gelatin methacryloyl hydrogel culture system emulating the oviduct environment for enhanced preimplantation embryo development

Supplementary file

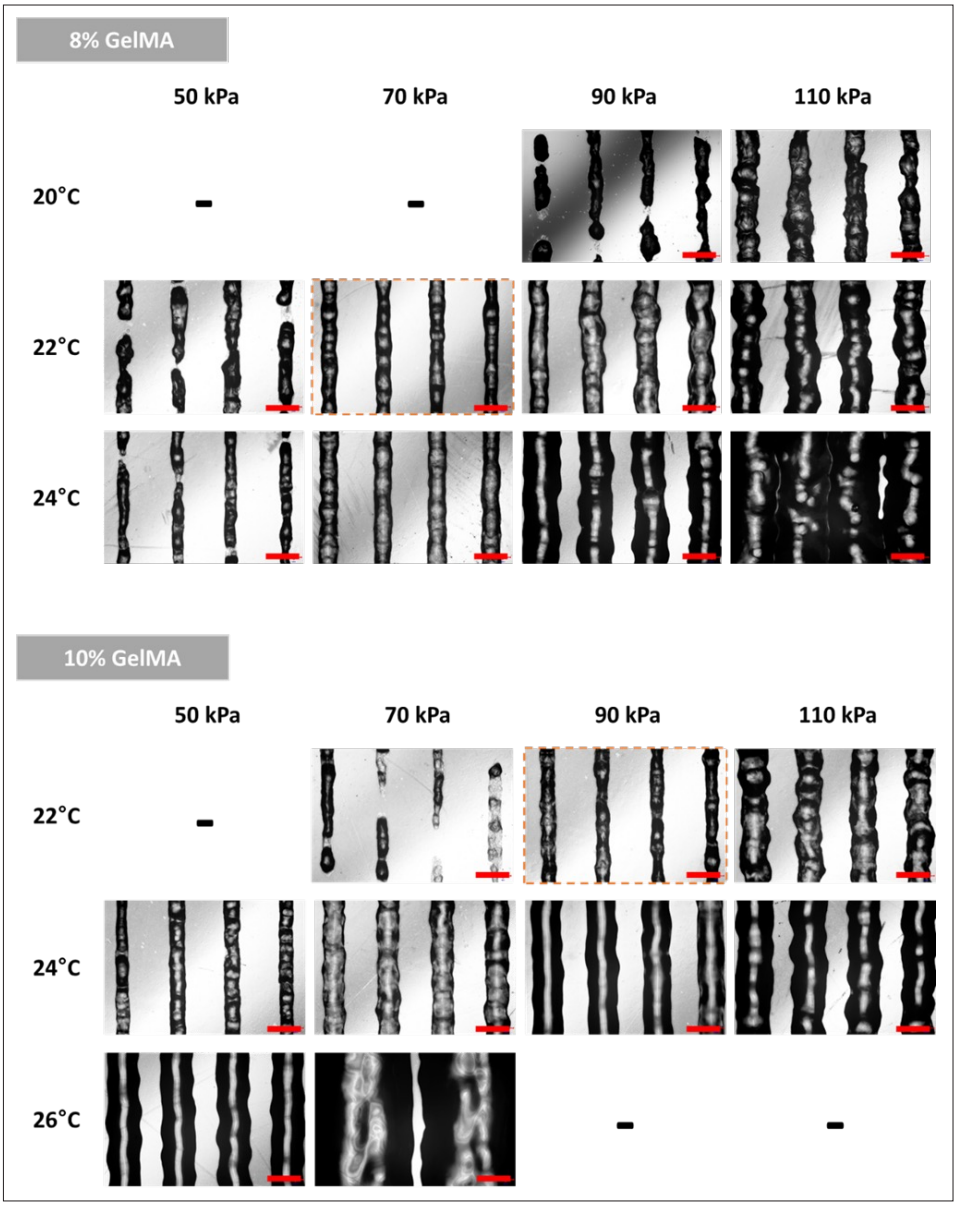

Figure S1. Representative images of 8% and 10% gelatin methacryloyl (GelMA) printability test under varying temperatures and pressures. The printability tests used a standard of 400 μm to identify the most similar conditions for printing. Among the samples, 8% GelMA was printed at 22°C with a pressure of 70 kPa, while 10% GelMA was printed at the same temperature but at a higher pressure of 90 kPa. Scale bars: 1 μm.

Table S1. Number of two-pronuclear (2PN) embryos and *in vitro* development rates in the control, 8%, and 10% GelMA hydrogel culture embryo groups.

Group	Total (2PN stage)	Two-cell Stage (12 h)	Two-cell Stage (22 h)	Four-cell stage (38 h)	Eight-cell stage (43 h)	Morula (50 h)	Early Blasto-cyst (62 h)	Late Blastocyst (78 h)
Control	136	93.38% (127/136)	95.59% (130/136)	93.38% (127/136)	89.71% (122/136)	90.44% (123/136)	86.76% (118/136)	89.71% (122/136)
6%, 8%	124	92.74% (115/124)	98.39% (122/124)	96.77% (120/124)	96.77% (120/124)	93.55% (116/124)	92.74% (115/124)	95.97% (119/124)
10%	123	90.24% (111/123)	97.56% (120/123)	93.50% (115/123)	95.12% (117/123)	96.75% (119/123)	95.12% (117/123)	98.37% (121/123)

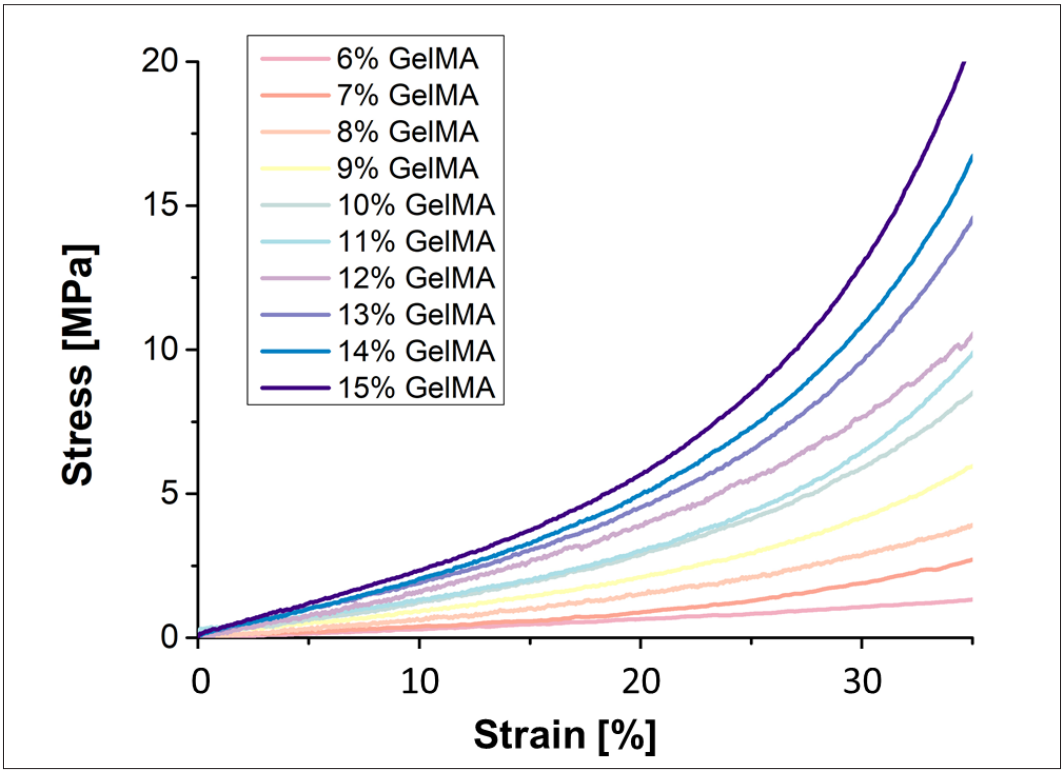

Figure S2. Stress–strain curve of varying concentrations of gelatin methacryloyl (GelMA). As the concentration of GelMA increases, it can be observed that the slope value (i.e., Young's modulus) also increases.