

GelMA A Bioprinting Protocol

Note: This protocol has been optimized for CELLINK GelMA A and the INKREDIBLE series or BIO X series printers

Note: Room temperature assumes 22 °C, times and printing parameters may vary at a different room temperature

Materials Recommended

Item	Quantity	Storage
CELLINK GelMA A	3 mL	4-8 °C, protected from light
Conical Nozzles 27 G - Sterile	10	Room Temperature

Protocol

1. Preset printhead temperature to 32 °C and cool printbed (if Bio X), allow stabilization.
2. Remove CELLINK GelMA A Cartridge from storage.
3. Cap with sterile nozzle and place in INKREDIBLE+ or Bio-X bioprinter printhead. If using an INKREDIBLE printer, place in a waterbath at 37 °C
4. Allow cartridge to heat for 10 minutes to liquidfy.
5. Verify the GelMA A has achieved a liquid state by removing cartridge from printhead and tilting to observe if airbubbles move.
6. If airbubbles move, recap cartridge. At this point mix in cells
7. Place cartridge on counter at room temperature for 20 minutes to cool down. You can place in ice or the refrigerator briefly to cool it faster at this point.
8. Return cartridge to printhead and cap with nozzle.
9. Set pressure to 20-30 kPa.
10. Print test lines
11. If filament characteristics are sufficient, replace nozzle, and print as planned
12. If filament characteristics are non-ideal due to too low of a viscosity (high temperature) wait another minute for additional cooling and retest.
13. If filament characteristics are non-ideal due to too high of a viscosity (low temperature), increase pressure or reheat and repeat steps 1-10. Adjust cooling time as necessary.

Note: If performed correctly, an approximate 15-20 minute bioprinting window exists where viscosity will be ideal.

Note: Extended pauses may result in nozzle clogging due to drying. Replace nozzle if printing is paused for more than 10 minutes.

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