

# μCollaFibR™ Additive for Bioinks and Hydrogels

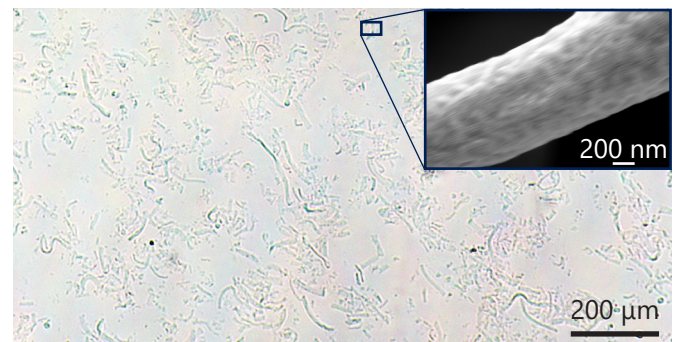
## Hydrogel additive for increased durability and biological relevance

3D Bioprinting is the future of personalized tissue engineering. However, bioprinted constructs require improved mechanical durability and biological relevance to have clinical utility.

3D BioFibR's patented dry-spinning technology produces μCollaFibR™; 50 μm collagen fibers that increase the shape fidelity and biological relevance of bioprinted constructs. With excellent chemical stability and 1-2 μm diameters, μCollaFibR™ is universally compatible with bioprinting materials and modalities.

### μCollaFibR™ Additive:

- Produced using GMP type I collagen, and resembles natural collagen fiber structures
- Can be resuspended in any aqueous environment, including acidic environments (pH ≥ 2)
- Increases mechanical strength and modulus of hydrogels in extension and compression
- Improves shape retention/durability for at least 28 days in bioprinted cellular constructs
- Acts as a physiologically relevant site for cell attachment within the constructs
- Improves shape fidelity without compromising bioink viscosity/printability
- Aligns with printhead flow, avoiding clogging



μCollaFibR™ dispersed at 7.5 mg/mL in PBS

### Shape Retention

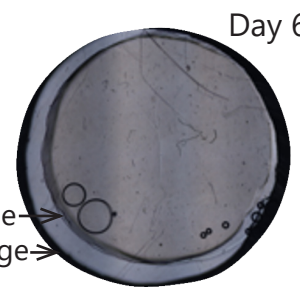
5%<sub>wt</sub> GelMA constructs with HEK293 kidney cells

μCollaFibR™ - 1.25 mg/mL

without fibers



Day 28



Day 6

92% shape retention

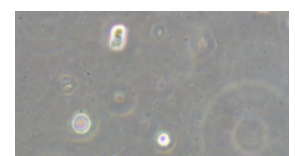
75% shape retention

### Cell Functionality

3%<sub>wt</sub> alginate constructs with fibroblasts (MEFs)

μCollaFibR™ - 2.5 mg/mL

without fibers



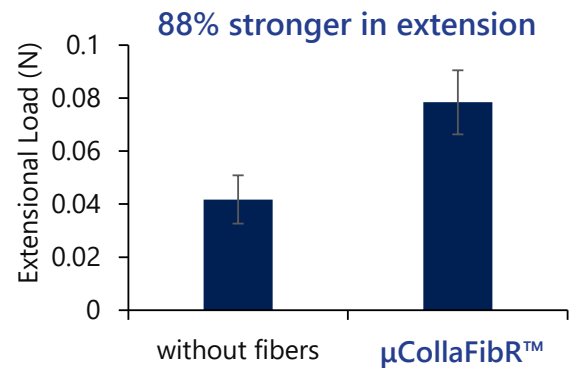
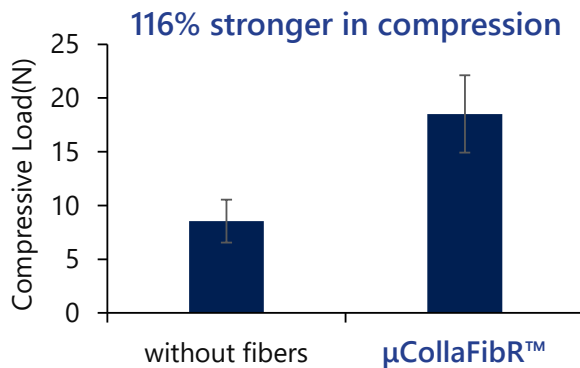
μCollaFibR™ drives cell attachment and function

# CollaFibR™ for Bioinks and Hydrogels

## Mechanical Performance

Compression: 5%<sub>wt</sub> GelMA with 1.25 mg/mL μCollaFibR™

Extension: 7.5%<sub>wt</sub> GelMA with 2.5 mg/mL μCollaFibR™



Error bars show standard error of the mean

## Product Specifications

**Collagen** Bovine Type I

**Length** 44 ± 13 μm

**Diameter** 1 – 2 μm

**\*\*Stability in Solution** ≥ 3 months at pH 2 – 7.4

**Temperature Stability** ≤ 60 °C

**Hydrated Young's Modulus** 50 ± 16 kPa

**Storage** 4 °C short term  
-20 °C long term

**Degrading Enzyme** Collagenase I/IV

\*\*Stability testing is ongoing for longer time points

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