

# CollaFibR™ Collagen I

3D Cell Culture – Scaffolds – Bioprinting

Are you looking for a collagen scaffold for tissue model engineering?

Do you need a physiological relevant tissue culture environment?

Are you looking to enhance your 3D bioprinting towards clinical applications?



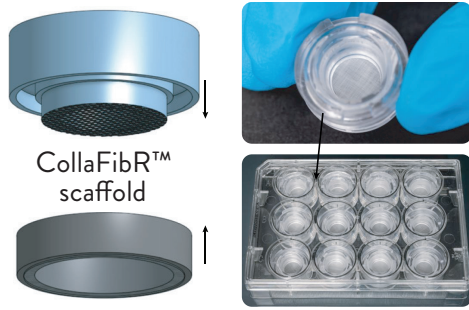
## KEY POINTS

- MIMICS NATURAL TISSUE ARCHITECTURE
- **QUALITY – STRENGTH – EASY SCALE-UP**
- **(BASED ON DRY SPINNING TECHNOLOGY)**

*Image: Primary tenocytes (red-tdtomato) grown in CollaFibR™ scaffold, stained with anti-collagen (green)*



# CollaFibR™ SCAFFOLD FOR CELL CULTURE



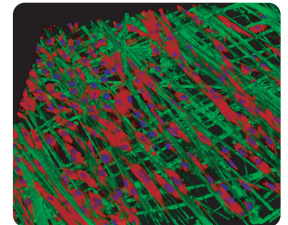
3D cell cultures offer a more accurate representation of in-vivo conditions when studying cell and tissue models. Harnessing the power of a patented dry-spinning technology, CollaFibR™ scaffolds are made of highly uniform and regulatory-friendly collagen fibers. These matrices closely mimic the biomechanical and biochemical characteristics of natural collagen ECM, providing researchers with a more comprehensive understanding of cellular biology.

## Features:

- A highly consistent GMP collagen I fiber matrix
- Recapitulates the properties of natural collagen structures
- User-friendly 12-well plate inserts
- Compatible with brightfield, epifluorescence, confocal and live cell microscopy
- Degradable with collagenase for minimally invasive cell extraction/recovery
- UV sterilised and available with fluorescent tag

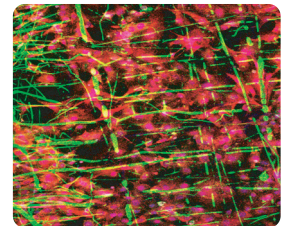
Fluorescent CollaFibR™ Scaffold for 3D Cell Culture has been seeded with fibroblasts (MEF DR4) which have infiltrated the collagen fiber scaffold. The cells are attached to the scaffold showing elongation and alignment with the collagen fibers. Imaged using epifluorescence microscopy, where the cells are stained with Hoechst and phalloidin.

CollaFibR™ scaffold (green) with MEF DR4 cells, stained with Hoechst and phalloidin.



CollaFibR™ Scaffold for 3D Cell Culture is easily used in live cell confocal imaging. Tdtomato expressing primary tenocytes are seeded into the scaffold, which is stained using anti-collagen antibodies.

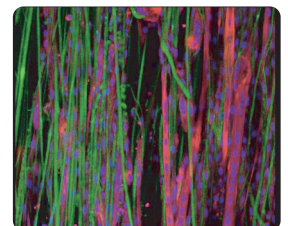
Primary tenocytes (red-tdtomato) grown in CollaFibR™ scaffold, stained with anti-collagen (green).



## PARALLEL CollaFibR™ FOR ALIGNED CELL GROWTH AND ELONGATED MORPHOLOGIES

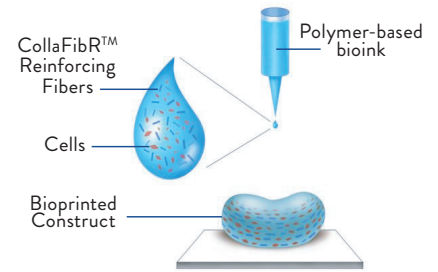
Try out the parallel CollaFibR™ scaffold with our Skeletal Muscle Differentiation kit. The kit uses a simple 3 step process of media change and passaging to differentiate human pluripotent stem cells to skeletal muscle with high yields and without cell sorting or genetic manipulation.

Aligned myotubes on parallel CollaFibR scaffold.



## **μCollaFibR™** - ADDITIVE FOR BIOINKS AND HYDROGELS

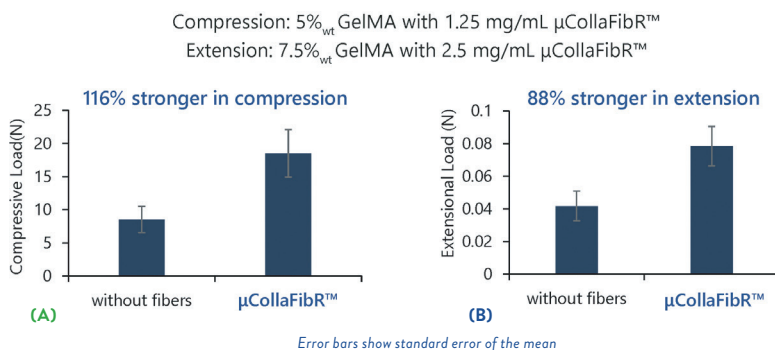
3D bioprinting holds immense promise for personalized tissue engineering, but the challenge lies in achieving both mechanical durability and biological relevance in the printed constructs. μCollaFibR™ are engineered dry-spun 50 μm collagen fibers that increase the shape fidelity and biological relevance of bioprinted constructs. With exceptional chemical stability and ultra-fine 1-2 μm diameters, μCollaFibR™ is universally compatible with bioprinting materials and modalities, unlocking boundless possibilities in biomedical research and clinical applications.



### Features:

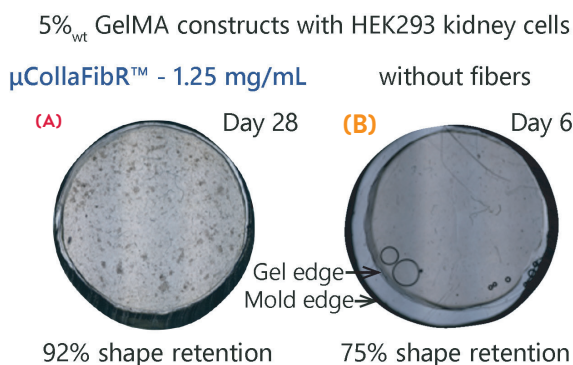
- Short lengths of 50 μm bovine GMP collagen I fibers
- Additive to improve strength and biological relevance in printed construct
- Improves shape retention/durability of printed cells for at least 28 days
- Increases mechanical strength and modulus of hydrogels in extension and compression
- Compatible with bioinks including GelMA, alginate, gelatin and agarose
- Validated with a variety of cell lines including fibroblasts, epithelial cells, and MSCs

## Mechanical Performance – High Strength



**(A)** 1.25 mg/mL of μCollaFibR™ improves the compressive strength of 5%wt GelMA constructs by 116%. **(B)** 2.5 mg/mL of μCollaFibR™ improves the extensional strength of 7.5%wt GelMA constructs by 88%.

## Improved Shape Retention



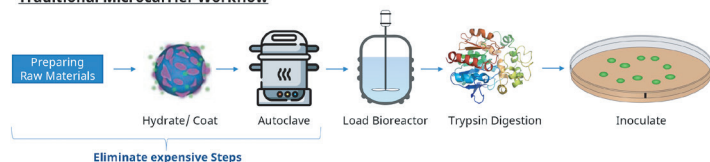
Cellular constructs with **(A)** μCollaFibR™ have over 90% shape retention after 28 days in culture, compared to **(B)** 25% shape loss after only 6 days in culture in the control. The mold diameter is 11 mm.

## μCollaFibR™ AS MICROCARRIER FOR BIOREACTORS

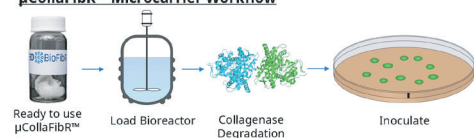
μCollaFibR™ can provide a physiologically relevant attachment site for cell expansion in bioreactors, which can increase yield of cells and/or biologics of interest.

μCollaFibR™ eliminates the need for trypsin in cell recovery, preserving the natural protein structure of cells and potentially reducing costs and time required in cell recovery.

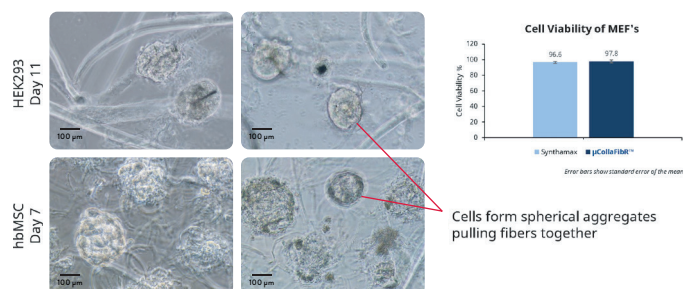
### Traditional Microcarrier Workflow



### μCollaFibR™ Microcarrier Workflow



μCollaFibR™ supports cell attachment in suspension



## ORDERING INFORMATION

Item Name	Pack size	Product Code
Fluorescent CollaFibR™ Scaffold: FITC tag, with coverslip (Cross-hatched Fibers)	1 x 12 well insert*	AMS.CFR.S-FC-1
CollaFibR™ Scaffold: No FITC, with coverslip (Cross-Hatched Fibers)	1 x 12 well insert*	AMS.CFR.S-NC-1
CollaFibR™ Scaffold: No FITC, no coverslip (Cross-Hatched Fibers)	1 x 12 well insert*	AMS.CFR.S-NN-1
Fluorescent μCollaFibR™ Additive for Bioinks and Hydrogels. FITC Tag, short fibers	10 mg 25 mg	AMS.CFR.I-F-10 AMS.CFR.I-F-25
μCollaFibR™ Additive for Bioinks and Hydrogels. No FITC, short fibers	10 mg 25 g	AMS.CFR.I-N-10 AMS.CFR.I-N-25

\*Larger pack sizes also available for inserts



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