FAQ : CollaFibR™ Scaffold

1. What is the difference between 3DBioFibR's dry-spinning technology vs wet-spinning and electrospinning?

Strength profile – With our patented dry-spinning technology we can make fibers that have an ultimate tensile strength of about 248 megapascals, which is 2 to 3 times stronger than a native tendon. In electrospinning the use of volatile solvents and high shear forces denature the collagen proteins, limiting the mechanical and bioactivity features of the final fiber.

Scale – Wet spinning can only produce about 19m of a single fiber per hour and requires several square meters in the lab. In electrospinning the production rates are about 1000m per hour. With our dry spinning technology, we can readily produce 1000m a second in collagen fiber production.

Fiber Diameter – In the human body, collagen fibers typically measure between 1 and 5 microns in diameter. This dimension is critical for cell attachment, enabling the cell to wrap around the fiber and take directional cues. In wet spinning, the fibers have a diameter of 60 microns or more, diminishing the ability for cells to completely wrap around the material and take directional cues. Electrospinning produces fibers that are 0.2 microns or smaller, which is too fine for cells to rely on for their main structural environment. With our dry spinning technology, we can adjust the fiber diameter within the range of 0.2 to 20 microns. For tissue engineering applications, we have optimized the process to make fibers that are 1-5 microns in diameter, where we see excellent cell attachment, alignment, elongation, and migration.

2. What is the form-factor of CollaFibR™ scaffold?

CollaFibR™ scaffolds are supplied as individually packaged ring inserts which fit inside the wells of a standard 12-well cell culture plate.

3. What is the surface area of a CollaFibR™ scaffold and how much cell culture media should be used?

The imageable surface area is 0.79cm^2. Each insert holds up to 500µL of cell culture media.

4. How should CollaFibR™ scaffolds be stored?

CollaFibR™ scaffolds can be stored at room temperature (20-25C) for up to 12 months in their original packaging.

5. Which CollaFibR™ scaffolds format should be used for microscopy?

The "basic" CollaFibR™ scaffold is non-fluorescent and housed in a clear medical grade polystyrene for standard optical microscopy. The "advanced" format can be bought with or without a fluorescent tag and has a glass bottom for confocal microscopy and other forms of light microscopy.

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6. What fluorescent tags are available on CollaFibR™ scaffold?
Currently the fibers can be bought with a FITC tag.

7. Can cells be recovered from the CollaFibR™ scaffold?
Collagenase IV enzymatic degradation of the CollaFibR scaffold will release cultured cells for downstream applications. Please see (Collagenase_Degradation) Collagenase protocol on the website for recommendations.

8 .Are the CollaFibR™ scaffolds sterile?
CollaFibR scaffold inserts are pre-sterilized and single packaged for ease of use. Re-sterilization is not recommended.

9. What analytical modalities are compatible with CollaFibR™ scaffolds?
CollaFibR™ scaffold is compatible with live cell imaging, immunofluorescence for regular and high-resolution microscopy and minimally invasive cell recovery using Collagenase IV enzymatic degradation of the scaffold.

10. What is the source of collagen used in CollafibR™ scaffolds?
Type I Collagen obtained from Bovine hide (skin) manufactured in a GMP facility.