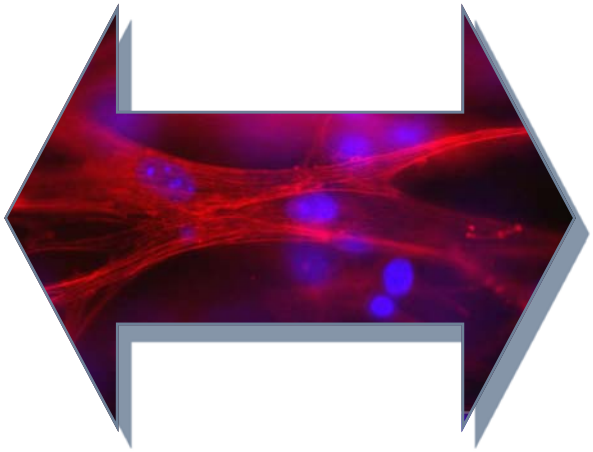
Tissue Engineering

Formation of tissues in vitro that are structurally and functionally viable requires several basic conditions, such as 1) cells 2) matrix 3) media and growth factors and 4) mechanical stimulation. These conditions are linked to each other and act in conjunction to form a structurally robust tissue that can withstand biomechanical forces.

To generate a tissue in vitro that is more or less equivalent to the native tissues, one should create an environment that would mimic the in vivo conditions. Culturing cells in a mechanically active environment increases cell metabolism and alters cell shape and other properties. In addition, culturing cells in a 3D environment more closely simulates the native environment.

Trapezoidal shaped 3D cell-seeded hydrogel made with the Tissue Train® system.

Culturing cells



in a mechanically active environment

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COLLAGEL® AND THERMACOL®

COLLAGEN HYDROGEL KITS

Create 3D cell-seeded collagen constructs for tissue engineering

Flexcell® Collagel®

Highlights

All components in one kit for creating a 3D cell-seeded bioartificial (BAT) collagen gel reproducibly, while decreasing user error.

Temperature controlled gelation (see Fig. 1)

Comparable atelopeptide-containing collagen gel to currently available products.

Can be used to create BATs with the Flexcell® Tissue Train® System (Fig. 2).

Available in three sizes (see table below).

Kit Size	Number of 6-well plates/kit*		
	Linear	Trapezoidal	Circular
Mini	8	2	1
Midi	17	4	3
Maxi	34	9	6

**Quantity based on 10% more than the recommended gel volumes for BATs as stated in the Tissue Train® User's Manual, which are 200 µl/linear, 700 µl/trapezoidal, and 1 ml/circular.*

Flexcell® Thermacol®

Highlights

Collagen gel solution with rapid gelation at 37 °C.

Can vary gelation speed based on amount of telopeptide-containing collagen used (see Fig. 1).

Longer and thicker fibers that more closely mimic *in vivo* collagen fibers.

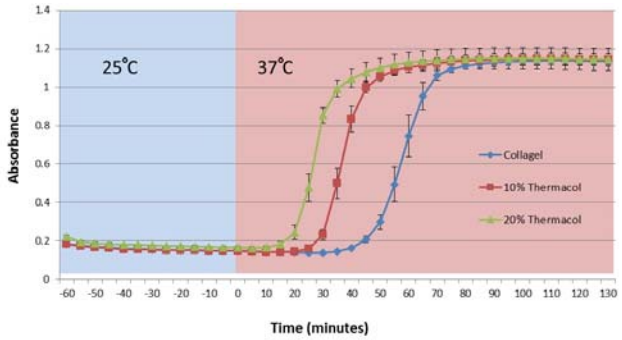

Figure 1. Speed of gelation of Collagel® (0% telo) and Thermacol® (10% and 20% telo) at 37°C.

Kit Size	mL of Collagen/Kit	BAT Shape	mL of Collagen /BAT
Mini	8	Linear	0.14
Midi	16	Trapezoidal	0.49
Maxi	32	Circular	0.7

Figure 2. Cell seeded collagen hydrogel in a trapezoidal Tissue Train® culture plate well.

Collagen Hydrogel Kits include:

- 8 mL Collagel® (Type I Collagen) or 8 mL Collagel® + 0.8 mL ThermaCol®
- 2 mL Reagent A (5X MEM)
- Reagent B (Fetal Bovine Serum, Lyophilized)
- 0.25 mL Reagent C (1 M Hepes)
- 0.5 mL Reagent D (0.1 M NaOH in 5X MEM)

**Volumes vary depending on kit size. Volumes shown are for a mini kit.*

Collagel® and Thermacol® are protected by Patent Nos. 8,663,988; 8,877,500;8,993,325; and 9,018,009.

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