FX-6000™ Tension System (FX-6000T)

Apply equibiaxial or uniaxial tension to cells in 2D or 3D culture.

- Computerized, vacuum-operated instrument that applies a defined controlled, static or variable duration cyclic tension to cells growing *in vitro*.
- Utilizes regulated vacuum **and** positive air pressure to deform cells cultured on flexible-bottomed culture plates.
- Simulate *in vivo* tissue strains and frequencies in cells from muscle, lung, heart, blood vessels, skin, tendon, ligament, cartilage, and bone.
- Contains state-of-the-art digital valve to automatically regulate and maintain vacuum **and** positive air pressure to provide the specified strain regimen.
- Multiple frequency, amplitude and waveform changes can be programmed in one regimen.
- Waveforms available: static, sinusoidal, heart stimulation, triangular, square, custom (Fig. 2).
- Supplied with cylindrical Loading Posts to provide equibiaxial strain, to be used with 6-well **BioFlex® culture plates** (page 20) for 2D cell constructs or with 6-well **Tissue Train® Circular Foam culture plates** (page 22) for 3D cell constructs.
- Optional Arctangle® Loading Posts to provide uniaxial strain, to be used with 6-well **UniFlex™ culture plates** (page 22).
- Optional Baseplate Kits (page 10) to use the FX-6000T with more than one Tension Baseplate, for Tissue Train® applications, for uniaxial strain, or for high-throughput tests.
- Drives up to four independent FlexLink® remote compression and/or tension controllers.
- Works with microscopy devices **StageFlexer®**, **StageFlexer® Jr.** (page 12), **FlexFlow™** (page 14), and **Inverted StageFlexer I®** (page 13).
- FX-6000™ Tension System includes:
  - Laptop computer with FlexSoft FX-6000™ software
  - FX-6K™ Tension FlexLink®
  - BioFlex® baseplate, four gaskets and acrylic Window
  - BioFlex® Loading Stations™ with 25 mm Loading Posts
  - Four BioFlex® culture plates and four Cell Seeders™
  - Drying filter, water trap, vacuum tubing, and grease/lubricant.

Figure 1. FX-6000™ Tension System

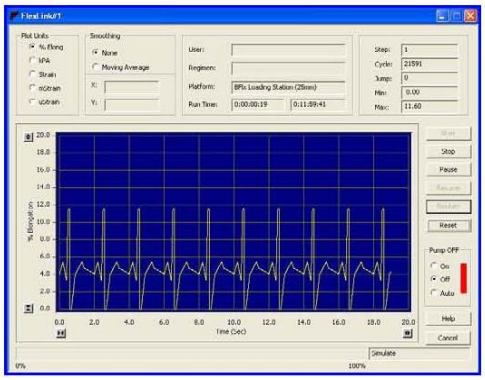

Figure 2. Waveform plot showing typical heart waveform

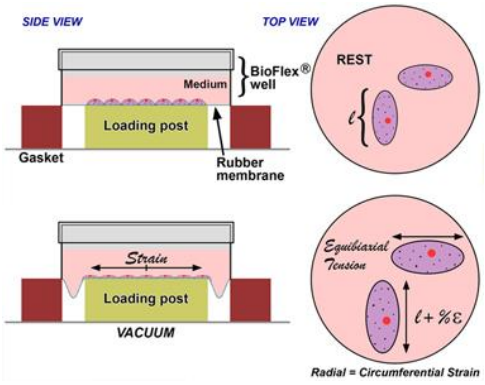

Figure 3. Equibiaxial strain application to cells in a well of a BioFlex® culture plate

Please note: For operation, the FX-6000T requires a vacuum pump, and either a compressor or, if an in-house positive air source is available, a Regulator Kit.

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Advantages of the Flexcell® Tension System

- Stand-alone, computer-controlled instrument that applies a defined, controlled, static or variable duration cyclic tension to cells growing *in vitro*.
- Investigates the equibiaxial biomechanical stress applied to 2D as well as to 3D cell constructs.
- Flexcell® Tension system allows the easy creation of 2D (using the BioFlex® Culture Plates) and 3D (using the Tissue Train® Circular Foam Culture Plates) circular cell constructs without need of further equipment (except a pump delivered with the system).
- Linear cell constructs can be created and used with optionally available accessories.
- Baseplates placed inside an incubator enable a long-term culture of cells under mechanical stress.
- Optionally available FlexStops™ block stretching and offer a convenient negative control for each Flexcell® 6-well culture plate.
- Up to 24 samples can be tested simultaneously. The optionally available HT Baseplate Kit enables up to 96 samples to be tested at the same time.
- Only 3 ml medium per sample required.
- Modular, upgradeable system allows the application of further biomechanical stress investigations, such as compressed cells (requires optionally available Flexcell® Compression FlexLink® and compressor), real-time observation (requires optionally available Microscopy Devices), combination of fluid shear stress and tension stress (requires optionally available FlexFlow™ system), or high-throughput test (requires optionally available HT Baseplate Kit), co-culture assays of stressed and unstressed cultures (requires optionally available Transwell® Holders).
- Quick connect and disconnect fittings for easy connection with accessories (such as further baseplates etc.).
- Simulates *in vivo* tissue strains and frequencies in cells from muscle, lung, heart, blood vessels, skin, tendon, ligament, cartilage, and bone.
- Multiple frequencies, amplitudes and waveforms can be programmed in one regimen. Available waveforms: static, sinusoidal, heart simulation, triangular, and square.
- In addition, Flexcell® FlexSoft™ software allows users to programme their own customized waveforms.
- Wide range of plates uncoated or with different coatings (Amino, Collagen I, Collagen IV, Laminin) available to comply with users' test requirements.
- Flexcell® Tension system supplied with FlexSoft™ software includes all programmes and parameters for all optionally available accessories, upgrades, and culture plates from Flexcell® International.
- User-friendly software and handling allow simple control of tests.
- Allows elongations of up to 30 %.
- FlexSoft™ software updates free of charge.
- Requires no regular maintenance.
- Allows reliable and reproducible tests for publications.
- Established worldwide used system for high-ranking publications.

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