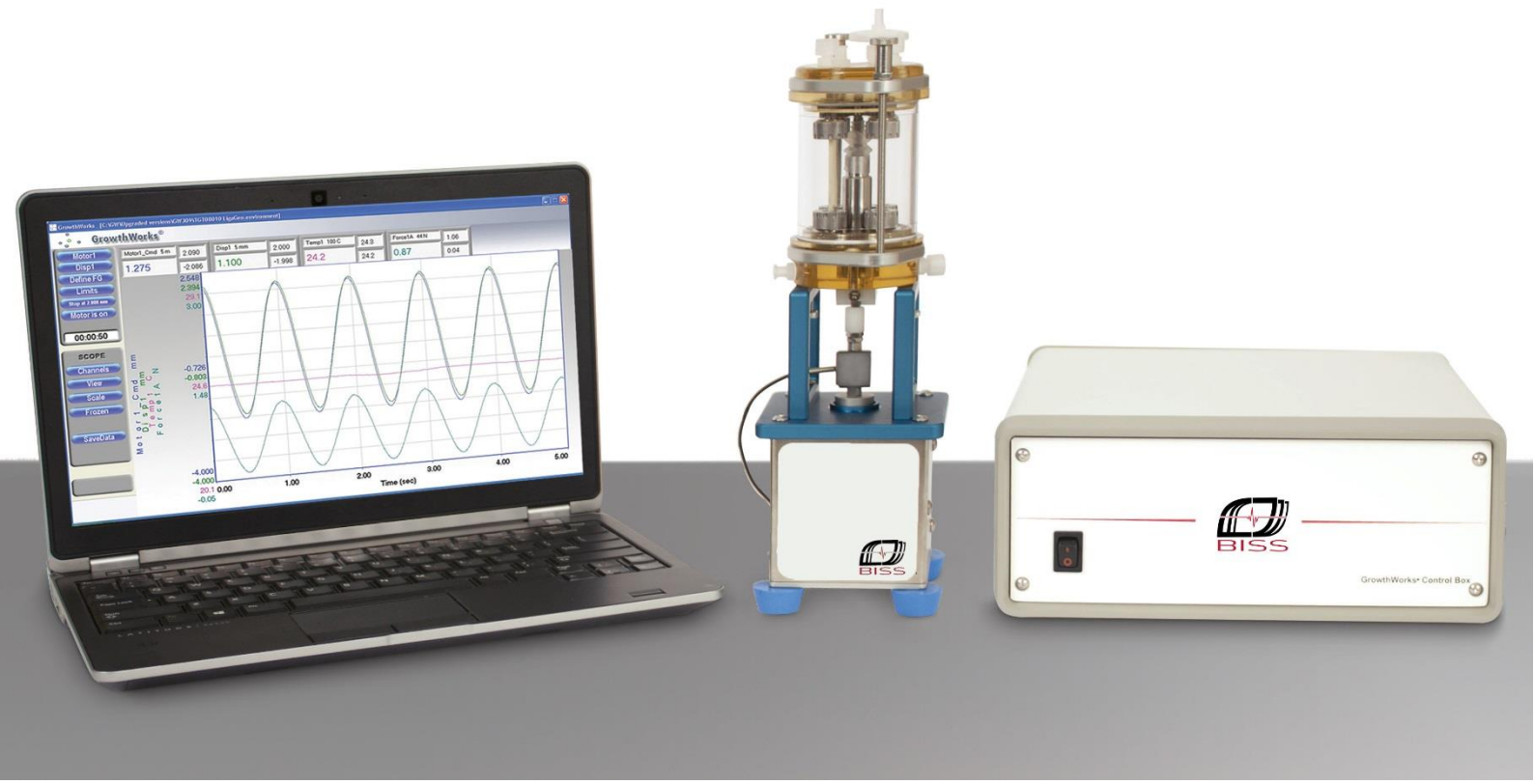
LigaGen A Tension Bioreactor System



BiSS bioreactors provide a controllable, 3D environment for stimulating physiological conditions in vitro. The LigaGen system imparts mechanical tension/compression to a 3D sample. Applications include investigating cell function, modulating the growth and development of engineered tissues, or acting as a test bed for drug and regenerative medicine technologies.

Chambers

Fabricated out of bioinert, autoclavable materials, the LigaGen bioreactor chamber facilitates oscillatory compressive/tensile axial stimulation to samples with a large aspect ratio. The chambers can be used with a variety of construct materials from decellularized tendons and ligaments to polymerized hydrogels. The chamber accommodates samples up to 30 × 3 mm. Multiple grip styles allow for a wide range of constructs with different material characteristics to be stimulated. A unique seal provides a mechanical feed-through to the chamber, while facilitating axial motion in a sterile environment with minimal resistance. Three different chamber designs allow either single sample or multi-sample stimulation. All chambers can be used with a perfusion system to provide convective media transport around the sample.

Chamber Options

- L30-1X: Single sample per chamber, 30 mm long with 23 mL compartment volume
- L30-4C: Either 2 or 4 samples per chamber with 80 mL compartment volume
- L150-1C: Single sample per chamber, 150 mm long with 71 mL compartment volume

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Grip Options

• Clamp: mechanical clamp vice grips with screw locking mechanism; allows sample to be installed in grips outside of chamber
• In Situ Integrated construct mold and porous Polymerization: grips to enable mechanical stimulation of hydrogel scaffolds
• Custom Grips: custom designed for specific scaffold textures or geometries

LigaGen L30-1C Bioreactor Chamber

GrowthWorks Control System

The controller with integrated motor drives, communicates with the laptop using a network cable. GrowthWorks can be configured to run four stimulators and monitor up to 8 transducers, allowing the researcher to customize the system functionality. The controller can be customized with additional modules for applications requiring automation features or additional axes of mechanical stimulation. Simple and adaptable, the GrowthWorks provides an ideal control platform for mechanically stimulated tissue growth.

Mechanical Stimulator

The LigaGen bioreactor system includes the tension/compression (T/C) mechanical stimulator. Featuring a 200 N linear motor, the stimulator is lightweight, compact, corrosion resistant, and compatible with most standard incubators. The TC stimulator controls both load and displacement, and can be used with any of the LigaGen bioreactor chambers.

200N Mechanical stimulator with LigaGen L30-1C Bioreactor System

Stimulator Specifications

		L30-1X	L30-4C
Footprint	in	15 × 5 × 7	13 × 4 × 4
Weight	lbs	6.5	5.0

Tissue Growth Technologies (TGT), a premier supplier of commercial bioreactors to grow and stimulate developing tissues is now part of BiSS. With this, BiSS will be providing solutions for tissue engineering and regenerative medicine fields.

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