LumeGen | Pressure Stimulation Bioreactor

BiSS bioreactors provide a controllable, 3D environment for stimulating physiological conditions in vitro. The LumeGen imparts mechanical pulsatile pressure 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

The LumeGen bioreactor chamber facilitates pulsatile and shear stress stimulation to a single vascular construct. Standard construct sizes may range from 2 - 6 mm inner diameter and from 10 to 60 mm long. The modular design allows installation of the scaffold and cell seeding independently of the stimulation system. Multiple ports are available for media access, catheter probe insertion, sample collection, or further customization. This autoclavable chamber has a volume of 60 mL.

Chamber Options

LumeGen chambers use a stainless steel barb with an o-ring clamp to immobilize constructs or tissue explants. Standard barb sizes include 2, 3, 4, 5, and 6 mm outside diameters and can be interchanged with a universal grip housing.

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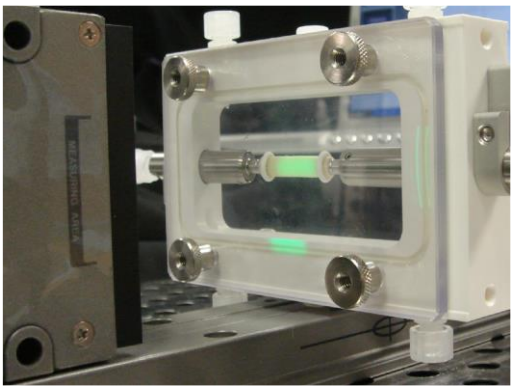
Grip Options

The LumeGen bioreactor system includes the 6Vr pulsatile pressure mechanical stimulator. The 6Vr stimulator features a 200 N servo electric motor that is lightweight, compact, corrosion resistant, and compatible with most standard incubators. This stimulator employs pressure control to deliver user-defined sine pressure waveforms of physiological magnitude, with a maximum pressure of 200 mmHg. The 6Vr is integrated with a computer-controlled mean flow pump and is capable of low or high-flow configurations. Low-flow



LumeGen Bioreactor Chamber with Laser Micrometer

configurations (1-100 mL/min) can accommodate up to six chambers with a single stimulator. Standard high-flow configurations (100 - 800 mL/min) can stimulate a single chamber, but can be adapted to accommodate multiple chambers.

GrowthWorks Control System

The GrowthWorks Software and Control plat form includes advanced capabilities, such as multiple waveform control, data acquisition, and multi-motor operation. The intuitive software runs on Windows® OS and features a simple user interface. User-defined stimulation profiles are controlled by the software and readily monitored using graphical displays. Integrated data acquisition routines capture and record data at user prescribed intervals. Featuring a 32-bit Intel based CPU and integrated motor drives, the control hardware communicates with the laptop using a network cable. GrowthWorks can be configured to run four stimulators and simultaneously monitor up to 8 transducers, allowing the

LumeGen Bioreactor System with Six Chambers

Stimulator Specifications

Dimensions (H× W × D)	in	6 × 4 × 4
Weight	lbs	4.6

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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