NEW 3D Bioreactor Systems

Bioreactor for Hollow Organs, Bronchus, Trachea & Blood Vessels

ORGANIZER™ Series Model 100 "In Breath"

For the Development of Tissue-Engineered Hollow Organs

Benefits & Features

- Facilitates cell seeding procedures on both sides of a 3D tubular matrix, ensuring homogeneous plating
- Allow seeding and culturing of different cell types on either side of the tubular scaffold
- Enhance oxygenation of the culture medium and mass transport (oxygen, nutrients and catabolites) between the medium and the adhering cells
- Stimulates the cells with hydrodynamic stimuli, favoring the metabolic activity and the differentiation process
- Allows the achievement and maintenance of sterility and other criteria of Good Laboratory Practice (GLP), simplicity and convenience
- Permits the possibility of automation and scale-up/-out

In Breath is a rotating double-chamber bioreactor designed for cell seeding and culturing on both surfaces of a tubular matrix and includes rotatory movement of the scaffold around its longitudinal axis. A polymeric culture chamber houses the biologic sample and the medium for the whole culture period. Cylindrical scaffold holders are constructed with working ends of different diameter - to house matrices of diverse dimensions - and a central portion of smaller diameter to expose the luminal surface of the matrix for cell seeding and culturing. A co-axial conduit links the inner chamber to the external environment through an appropriate interface at the chamber wall which provides access to seed and feed the luminal surface of the construct. Secondary elements moving with the scaffold holder induce continuous mixing of the culture medium to increase oxygenation and mass transport. The cell/matrix construct is moved by a DC motor (0-5 rpm adjustable) separated from the culture compartments. The connection between the motion unit and the culture chamber allows the first to remain in the incubator for the whole culture period, moving the chamber independently every time is needed (i.e. sampling, medium exchange). An external control unit regulates and monitors rotation. Autoclavability, ease of handling under sterile conditions, reliability and precision ensure the full compatibility of the device with the GLP rules (Good Laboratory Practice).

So Advanced It's Simple

Reactor container and spindle are made of Polysulphone, Teflon and 316 Stainless Steel allowing for:

- Sterilization
- Chemical inertness
- Biological compatible material
- Transparent for excellent visualization

Other Features

- Reactor has quick fit spindle allowing the easy removal of the spindle and associated tubular organ for analysis or to take apart for sterilization
- Rotational spindle assures proper oxygenation
- Spindle has inner flow channels to assure inner tissues oxygenation

Easy-To-Use-Controller

- Easily removable scaffold holder
- Chamber fits in incubation chamber with controller outside
- Offset cover allows for oxygenation of sample by non sheering ambient air contact
- Quick release and disassemble of parts makes sterilization easy

Specifications

Rotational Speed	0 - 5 RPM
Diagnostics	Positional Monitoring
Materials	Polysulphone, Teflon, 318 Sst
Validation	CE
Power	100 - 240 VAC

Order #	Product
PY2 73-4145	ORGANIZER™ Series Model 100

NEW 3D Bioreactor Systems (continued)

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Macchiarini P et al. (2008) Clinical transplantation of a tissue-engineered airway. The Lancet. DOI:10.1016/S0140-6736(08)61598-6

3-D Bio-Reactor System from Hugo Sachs Elektronik/Harvard Apparatus GmbH

Bedirli A et al. (2005) Effects of Ischemic Preconditioning on Regenerative Capacity of Hepatocyte in the Ischemically Damaged Rat Livers. Journal of Surgical Research.125(1): 42-48

Microvascular Clamp from Harvard Apparatus

Shin M et al. (2004) In Vivo Bone Tissue Engineering Using Mesenchymal Stem Cells on a Novel Electrospun Nanofibrous Scaffold. Tissue Engineering 10(1-2): 33-41

PHD 2000 Syringe Pump from Harvard Apparatus

Townsend-Nicholson A and SN Jayasinghe. (2006) Cell Electrospinning: a unique biotechnique for encapsulating living organisms for generating active biological microthreads/scaffolds. Biomacromolecules, 7: 3364-3369

PHD 4400 Syringe Pump from Harvard Apparatus

Lovett M et al. (2007) Silk fibroin microtubes for blood vessel engineering. Biomaterials. 28(35): 5271-5279

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Ahmad A et al. (2009) Engineering a material for biomedical applications with electric field assisted processing. Applied Physics A: Materials Science & Processing. 97(1): 31-37

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Kempski H et al. (2008) Pilot study to investigate the possibility of cytogenetic and physiological changes in bio-electrosprayed human lymphocyte cells. Regenerative Medicine. 3(3): 343-349

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Csaszar E et al. (2009) An automated system for delivery of an unstable transcription factor to hematopoietic stem cell cultures. Biotechnology and Bioengineering. 103(2): 402-412

Model 33 Twin Syringe Pump from Harvard Apparatus

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Jin LH et al. (2009) Substantial detrusor overactivity in conscious spontaneously hypertensive rats with hyperactive behavior. Scandinavian Journal of Urology and Nephrology. 43(1): 3-7

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Plouffe BD et al (2009) Development of microfluidics as endothelial progenitor cell capture technology for cardiovascular tissue engineering and diagnostic medicine. The Federation of American Societies for Experimental Biology. 23: 3309-3314

PHD 2000 Syringe Pump from Harvard Apparatus

Burgess KA et al. (2009). Towards microfabricated biohybrid artificial lung modules for chronic respiratory support. Biomedical Microdevices. 11(1): 117-121

PHD 2000 Syringe Pump from Harvard Apparatus

Rohatgi P et al. (2009) In vivo performance of a microelectrode neural probe with integrated drug delivery. Neurosurgical Focus. 27(1): E8

Artificial CSF from Harvard Apparatus

Pouzet B et al. (2000) Intramyocardial Transplantation of Autologous Myoblasts : Can Tissue Processing Be Optimized? Circulation. 102: III-210-III215

Rodent Ventilator from Harvard Apparatus

Jack GS et al. (2009) Urinary bladder smooth muscle engineered from adipose stem cells and a three dimensional synthetic composite. Biomaterials. 30(19): 3259-3270

Infusion Pump from Harvard Apparatus

Sundararaghavan HG et al. (2009) Neurite growth in 3D collagen gels with gradients of mechanical properties. Biotechnology and Bioengineering. 102(2): 632-643

Syringe Pump from Harvard Apparatus