

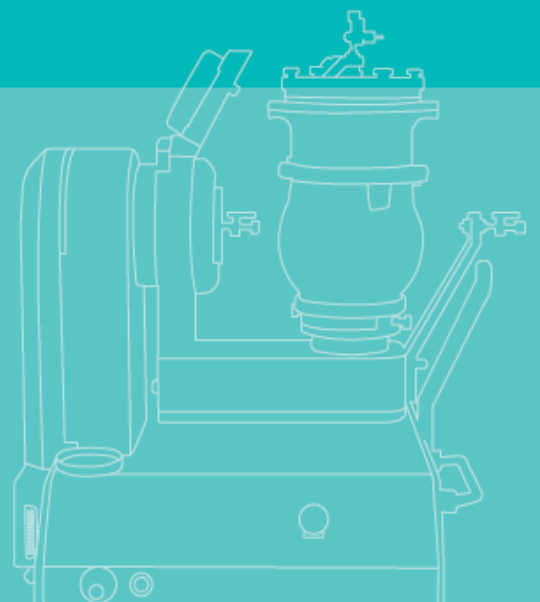
A Renaissance in
Regenerative Medicine
TisXell Regeneration System



A Member Of Quintech Life Sciences

About QuinXell

QuinXell Technologies Pte Ltd was founded in 2011 as a member of Quintech Life Sciences. QuinXell will focus in the emerging field of Regenerative Medicine, through her innovative cell culture-based technologies. Research on the TisXell Regeneration System was initiated as a joint project between the National University of Singapore (NUS) and the Singapore Polytechnic (SP). Scientific papers supporting the benefits of a dual revolution system on functional tissue growth (or tissue engineered constructs) on 3D scaffolds have been illustrated in international journals.



TisXell - A Renaissance in Regenerative Medicine

QuinXell's novel TisXell Regeneration System offers a favourable environment for high growth and high proliferation of cell cultures compared to conventional methods. The biaxial bioreactor controlled environment provides optimal nutrients and gases to growing cells and triggers cellular mechano-transduction signalling

pathways to stimulate tissue remodelling onto a three dimensional (3D) scaffold. Our integrated solution addresses tissue engineering applications with unsurpassed performance especially for slow growing cells like bone cells, stem cells and primary cells.

Application Fields

For research institutes, hospitals, biotechnology and pharmaceutical companies in

- ▶ Regenerative medicine
- ▶ Tissue engineering
- ▶ Translational medicine
- ▶ Tissue and organ transplant

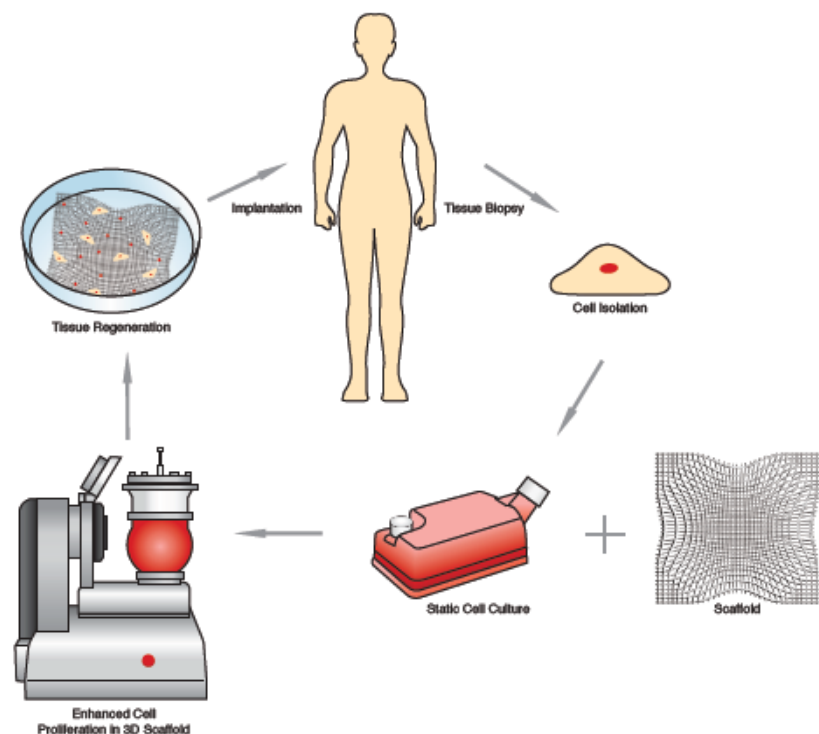


Diagram: Tissue Engineering Process

Unique Features

- ▶ Patented biaxial revolution in two independent orthogonal axes (spin and tumble simultaneously)
- ▶ Flexible operational modes available – biaxial, uniaxial, swing modes
- ▶ Efficient fluid transport within the 3D scaffolds, allowing optimal nutrients and waste exchange to and from the cells, penetrating the deepest core of the scaffolds
- ▶ Spherical design of vessel reduces drag and promotes uniform fluid mixing

Key Benefits

- ▶ Accelerates cell growth, differentiation and cell proliferation, mimicking native extracellular matrix (ECM)
- ▶ Supports homogenous cell culture at the surface and core of the 3D scaffolds
- ▶ Maintains functionality and viability of tissue constructs
- ▶ Reduces formation of necrotic neo-tissue that interferes with subsequent implantation process
- ▶ Promotes integration of implants with surrounding tissue and support the structural integrity in regeneration of tissues and/or organs

TisXell Specifications



TisXell Regeneration System

Innovative Design

- ▶ Independently controlled drive axes for biaxial revolution, single axis or swing modes
- ▶ Continuous perfusion with integrated selectable speed peristaltic pump (flow rates from 3 to 500 ml/min)
- ▶ Oxygenator unit to facilitate gaseous exchange
- ▶ 6-port medium reservoir with sensor bank (for optional temperature, pH, oxygen probes)
- ▶ Heat isolated system drivers and controller in a separate console
- ▶ System may be placed in a CO₂ incubator when desired

Arm Assembly Advantages

- ▶ Weight-balanced rotary arm for 500ml (or 1000ml) spherical chamber
- ▶ Built-in sensors to detect arm angle and positions for fully programmable operations
- ▶ Tubing holders to secure excess tubing for obstruction free movement



A. Remote touch screen controller
B. 6-port medium reservoir to house optional probes



500ml and 1000ml spherical glass vessels are available as standard configuration



TisXell in a CO₂ incubator

Modular Chamber

- ▶ 500ml (or 1000ml) spherical chamber with detachable base to double up as a chamber stand
- ▶ Dual chamber-cap design for easy loading and unloading of tissue scaffolds without removing tubing
- ▶ Oxygenator/Gas membrane for gas diffusion
- ▶ Sterile rotary couplings for controlled continuous perfusion of nutrients through the culture chamber
- ▶ Transparent, unobstructed view of tissue constructs during operation

Flexible Operation Modes

- ▶ Biaxial, uniaxial and swing modes are available
- ▶ Auto, jog and manual functions can be pre-set to various speeds, directions and arm angles to optimize cell culture conditions
- ▶ User-friendly remote touch screen controller for complete management of system while unit is inside a laminar flow chamber and a CO₂ incubator

Ordering Information

System Configuration

TisXell Regeneration System QX900-101, Basic Includes:

- ▶ Main revolving stand base and dual axes arm unit with chamber base, 1
- ▶ Remote touch screen controller, 1
- ▶ Console unit, 1
- ▶ Spherical glass vessel of 500ml, 1
- ▶ Spherical glass vessel of 1000ml, 1
- ▶ Integrated peristaltic pump, 1
- ▶ 6-port medium reservoir, 1
- ▶ Tubings and connectors starter kit, 1 set
- ▶ Scaffolds starter kit, 1 set

TisXell Regeneration System QX900-102, Complete Includes:

- ▶ Main revolving stand base and dual axes arm unit with chamber base, 1
- ▶ Remote touch screen controller, 1
- ▶ Console unit, 1
- ▶ Spherical glass vessel of 500ml, 1
- ▶ Spherical glass vessel of 1000ml, 1
- ▶ Integrated peristaltic pump, 1
- ▶ 6-port medium reservoir, 1
- ▶ Tubings and connectors starter kit, 1 set
- ▶ Scaffolds starter kit, 1 set
- ▶ Applikon set of probes (temperature, pH, oxygen), 1
- ▶ Applikon mass flow controller (air, carbon dioxide), 1
- ▶ Applikon controller (includes rotameter, sensors, BioXpert Acquisition Software), 1

Accessories

- ▶ **QX800-101** Spherical glass vessel of 500ml, 1
- ▶ **QX800-102** Spherical glass vessel of 1000ml, 1
- ▶ **QX800-201** Tubings and connectors starter kit, 1 set
- ▶ **QX800-202** Scaffolds starter kit, 1 set