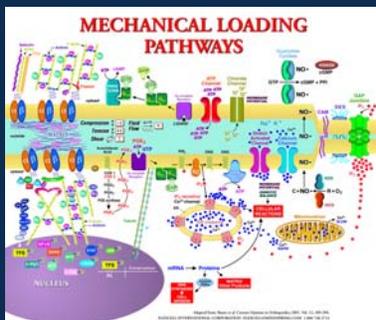


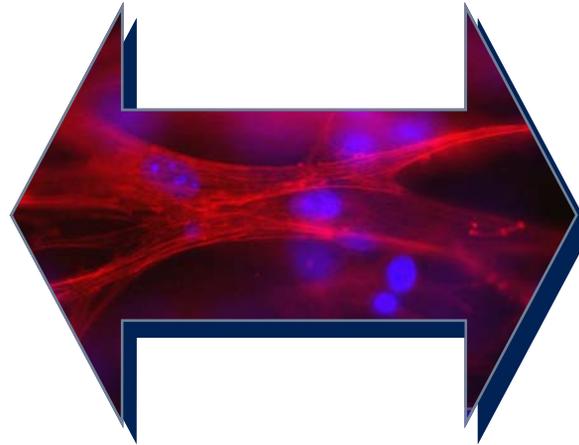
Why fluid shear stress?

Fluid-induced shear stress occurs in every tissue in the body as a result of interstitial fluid movement. Tissue deformation by compression, tension or shear forces results in the movement of interstitial fluid around cells. Fluid movement acts as a transport vehicle for ions, proteins, carbohydrates and other molecules capable of movement within the matrix. As the fluid moves past cell membranes, a shear stress, τ , is generated. Applying stresses to cells in culture simulates the in vivo environment causing dramatic morphologic and biochemical responses.



Pathways activated in response to applied mechanical load.

Culturing cells



in a mechanically active environment

Flexcell®
International Corporation

2730 Tucker Street, Suite 200
Burlington, NC 27215

Phone: 919-732-1591
Toll-Free: 800-728-3714
Fax: 919-732-5196
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FLUID SHEAR SYSTEMS

Apply fluid shear to cells with laminar, pulsatile, or oscillating flow

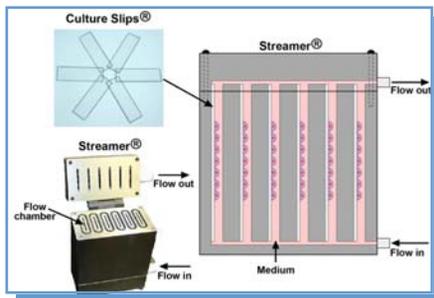


Flexcell® Fluid Shear Systems

Streamer®

The Streamer® is a parallel-plate flow system that is used to apply fluid-induced shear stress to cells grown in a monolayer. The system includes a six-chamber laminar flow device designed to hold 75 x 25 x 1 mm Culture Slips®. The Streamer® system can be used to apply laminar, pulsatile*, or oscillating* flow to cells. A computer-controlled peristaltic pump is used to regulate shear stress from 0-35 dynes/cm². This six place flow chamber can be used for various biological assays including, but not limited to, the assessment of RNA and protein expression by cells in response to fluid-induced shear stress and production of secreted molecules into the perfusate.

*When used in conjunction with the Osci-Flow® Flow Controller.



Streamer® Fluid Shear Stress Device

Osci-Flow®

The Osci-Flow® is a software-controlled valve-operated device designed to provide oscillatory or start-stop flow patterns to cells cultured in the Streamer®, FlexFlow™ or other perfusion devices. The Osci-Flow® device is able to regulate flow both in an oscillatory (flow reversal) manner and in a pulsatile (square wave) mode, where the flow is stopped and then restarted after a designated period of time. The StreamSoft™ software allows the user to regulate frequency of oscillation or pulsatile patterns, as well as shear stress levels applied to cells.



Osci-Flow® Flow Controller

Culture Slips®

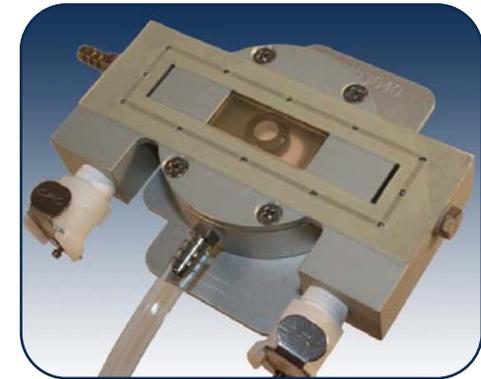
Microscope slides and cover slips surface treated for cell attachment

Rimmed with a 1.0 mm wide PTFE polymer border to help limit cell culture growth to the portion of the slip exposed to fluid flow

Available in two sizes: 75 mm x 25 mm x 1.0 mm (for Streamer® or FlexFlow™), 75 mm x 24 mm x 0.2 mm (for FlexFlow™ only)



Culture Slips®

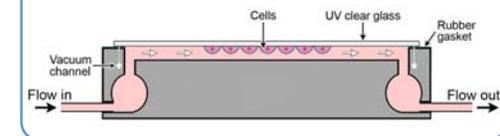


FlexFlow™ Flow Device

FlexFlow™

The FlexFlow™ is a parallel plate laminar flow device designed to apply fluid shear stress and/or cyclic strain to cells in culture while providing a means for viewing cell activity under a microscope in real time. The FlexFlow™ fits on the stage of a standard upright microscope and holds both Flexcell® Culture Slips® and StageFlexer® membranes.

Schematic of FlexFlow™



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