

Vena8 Endothelial+™ Biochip: For Cell - Primary Endothelial cell studies and mimicking physiological flow



Vena8 Endothelial+™ Biochip

Vena8 Endothelial+™ Biochips contain 8 parallel enclosed microcapillaries for culturing Primary endothelial cells and continuous flow cell based assays. Primary endothelial cells are cultured and cell suspensions may then be injected using the Mirus™ Nanopump which supports a range of shear stresses / shear flow rates for dynamic flow based assays.

Vena8 Endothelial+™ Biochips are supplied in packs of 10, facilitating **80 experiments per pack**.

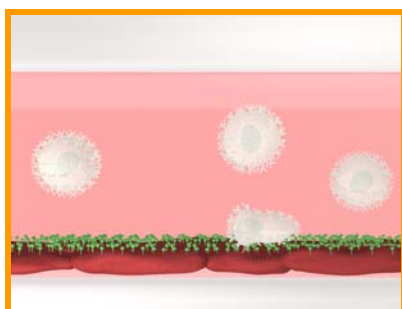
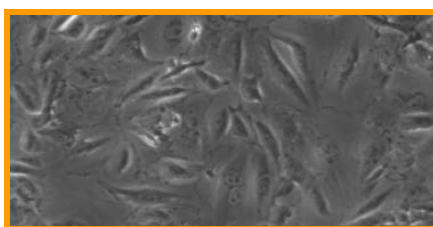
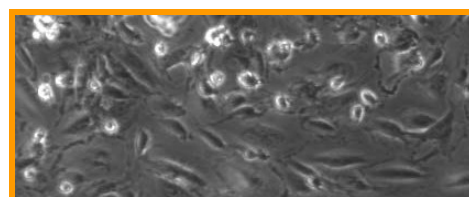


Illustration close-up:
Cell-cell adhesion inside
Vena8 Endothelial+™ Biochip



Example:
Primary HUVECs cultured in
Vena8 Endothelial+™ Biochip



Example: Adhesion of THP-1
monocytes at a shear stress of 0.5
dyne/cm² to Primary HUVEC cultured
in channel.

Features

- **20x, 40x, 60x long working distance** magnification microscopy.
- Wider channels for easy seeding of cells.
- Primary Endothelial cell monolayer obtained in **3 hours**.
- Brightfield / Phase contrast / Fluorescent microscopy.
- Suitable for culturing wide range of Primary Endothelial cells.
- Suitable for whole blood and blood cells analysis (e.g. Leukocytes, platelets)
- Biochip plastic is optically clear permitting detailed microscopy studies.
- 0.05 – 200 dyne/cm² shear stresses / shear flow rates easily obtained and controlled by the **Mirus™ Nanopump** and **FlowAssay™** software.
- Shear stress / Shear flow rate may be preset to be incrementally increased during an assay.
- Real time imaging under flow conditions.

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Performance Specifications	
Range of proteins:	Laminin, VCAM, ICAM, Fibrinogen, Gelatin etc.
Range of primary cells:	HUVEC, HUAEC, HCAEC etc.
Cell Suspension Assay:	
Cell types:	<ul style="list-style-type: none"> • T-cells: primary & cell lines e.g. HUT 78 • Monocytes: primary and cell lines; e.g. THP-1 • Eosinophils • Neutrophils • Platelets • PBMCs, whole blood, etc.
Minimum Sample Volume:	~12 µL
Maximum Sample Volume:	100 µL (Vena8 microwells)
Shear Stress Precision:	<0.5% CV
Shear Stress Range for cell suspension:	0.05 - 10 dyne/cm ² ; steps of 0.05 dyne/cm ² (100 µL syringe)
Shear Stress Range for whole blood *:	2.25 - 200 dyne/cm ² (1 mL syringe)
Volumetric Flow Rates:	100 nL/minute - 20 µL/minute (100 µL syringe); 5 µL/minute – 1 mL/minute (5 mL syringe)
Sample Volume Aspiration Accuracy:	±1%
Shear Stress Accuracy:	±0.5%
Sample Volume Aspiration Precision:	<1% CV

*Considering human whole blood with a viscosity of 4.5 cP

**Given for the flow of distilled water in a microcapillary with dimensions: 400 µm (W) x 100 µm (D) x 28 mm (L).

Technical Specifications	
Material:	Acrylic
Number of channels per biochip:	8
Volume of each channel:	2.69 µL
Dimensions of each channel:	800 µm (W) x 120 µm (D) x 28 mm (L)
Dead volume at input port:	0.1 µL
Thickness of bottom substrate:	0.5 mm