High Shear BioFlux Plate

Enables shear flow experiments in the pathological range

All the benefits of a BioFlux Plate, with added shear range:

Higher biological relevance: The BioFlux System delivers controlled shear flow for simulating physiological and environmental conditions. Fully programmable changes to shear flow in real time offer the widest range of assay possibilities.

Expanded shear flow: Shear flow range up to 200 dyne/cm^2 provides a physiological simulation of pathological vascular conditions critical for drug screening and disease mechanism research.

Higher throughput and data reliability: The High Shear BioFlux Plate runs up to 24 simultaneous flow experiments on a single plate, enabling hundreds of assays per day. Allows you to run many assays from the same blood donor or cell passage and test multiple coating conditions.

Ease of use: Like all BioFlux Plates, the High Shear Plate comes pre-sterilized and ready for use. Eliminates long setup and cleanup procedures and allows for quick processing of experiments.

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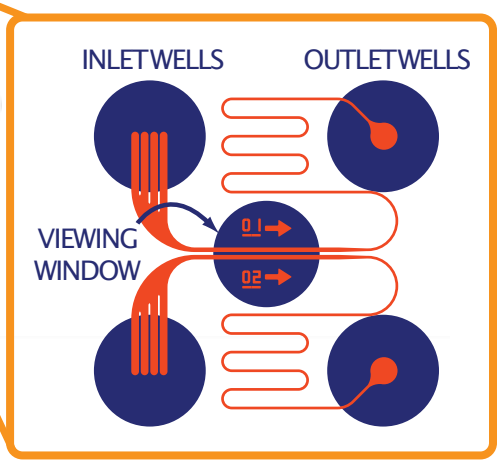
The High Shear BioFlux Plate offers an expanded flow range up to 200 dyne/cm^2. This opens the door to a wide variety of physiologically-relevant shear flow assays. Typical applications include thrombosis and platelet studies, cardiovascular and immunological drug screening, and cell/bacterial adhesion.

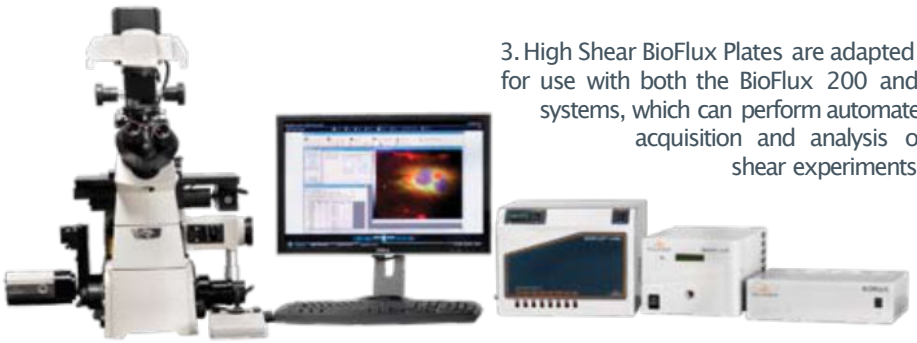
The High Shear BioFlux Plate uses Well Plate Microfluidic™ technology for higher throughput shear flow assays. It offers the biological relevance of a laminar flow cell, with the throughput and convenience of standard microplates. The expanded shear flow range enables experiments to be run at pathological conditions typically found in diseased vasculature. It also provides additional shear stress capability for running cell and bacterial adhesion assays.

High Shear BioFlux Plate

1. The High Shear Plate comes in an SBS-standard, pre-sterilized, 48-well plate format.



2. Each experimental channel runs between a pair of wells on the plate. Reagents and cells are pipetted into the wells and flow through the microfluidic channels on the bottom layer of the well plate using the BioFlux Pressure Controller. Experiments are observed in a dedicated Viewing Window, each of which has two independent channels running through it.



3. High Shear BioFlux Plates are adapted for use with both the BioFlux 200 and 1000 systems, which can perform automated data acquisition and analysis of high shear experiments.

High Shear BioFlux Plate Product Specifications

Plate Configuration

Format: SBS-standard 48-well plate, pre-sterilized

Max Well Volume: 1mL

Experimental channels: 24 channels per plate, can be run individually or simultaneously

Instrument compatibility: BioFlux200 and BioFlux 1000 Systems

Viewing Channel Dimensions:

Height: 75µm

Width in Viewing Area: 250µm

Imaging Surface: 180µm cover slip glass (#1.5)

Experimental Conditions:

Shear range: 20*-200dyne/cm^2 (2,000-20,000 s^{-1} for water, 500-5,000 s^{-1} for whole blood)

*Experiments below 20dyne/cm^2 should use the 0-20 dyne/cm^2 BioFluxPlates.

Run time: 5min at maximum shear (200dyne/cm^2) using whole blood, longer if using lower shear rates

Cell volumes: up to 1mL per experiment, minimum of 50µL for seeding monolayers, minimum of 250µL for experiments

Imaging modes: Brightfield, phase, fluorescence, confocal

Fluorescence stains: Calcein, mepacrine, DiO6, and comparable

Compatible cell types: whole blood, platelet rich plasma, tissue culture lines, bacteria

Compatible channel coatings: cellular monolayers, purified proteins (vWF, collagen, other ECM's), cell adhesion molecules

Coating volume: 25µL per experiment

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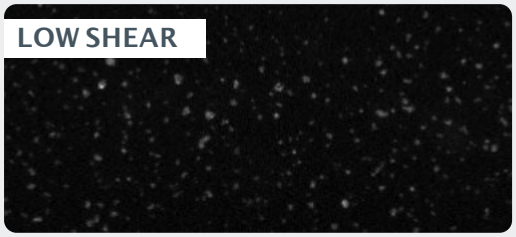
High Shear BioFlux Plate...More Range, More Applications

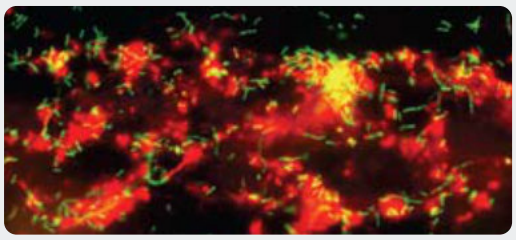
It is well known that shear stress from fluid flow can have a profound impact on cellular behavior. Particularly in vascular biology, the effect of blood flow cannot be overlooked when assessing pharmacological response or the underlying mechanisms of the vasculature. In the presence of cardiovascular disease, where blood vessels can narrow almost to occlusion, the shear stress seen by the vessel wall amplifies considerably. This shear stress level significantly alters platelet and endothelial cell morphology and receptor expression. The High Shear BioFlux Plate provides a well-controlled platform for studying drug and cell response in these high shear conditions.



Shear flow governs the nature of platelet-receptor interactions and influences how platelets behave in the vasculature. At very high shear, platelet aggregation is governed solely by vWF (top).

At lower shear (bottom), a host of other biochemical interactions become important for supporting platelet-surface interactions leading to thrombus formation.

Images shown here were acquired on the High Shear BioFlux Plate with the BioFlux system. Whole human blood was pre-mixed with calcein and exposed to von Willebrand Factor under high shear (100 dyne/cm2, 3125 s-1)(top) and low shear (5 dyne/cm2, 125 s-1)(bottom).



Bacterial and mammalian cell adhesion experiments require sufficient shear stress to dislodge cells from surface coatings and proteins. The BioFlux High Shear Plate provides ample shear range and precise, time-resolved control over shear stress.

Typical Applications:

- Thrombosis assays
- Platelet adhesion
- Anti-platelet and cardiovascular drug screening
- Toxicology drug screening
- Cell/bacteria adhesion
- Dose response / IC_{50} assays

Ordering Information:

To request a quote or place an order:
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High Shear BioFlux Plate, 48-well, Ordering Information	
1 pack	P/N 910-0033
Please inquire about volume pricing	