

Imperial College London



Facility for Imaging  
by Light Microscopy

Observing Life As It Happens

QUICKSTART  
GUIDE:  
**CELLASICS ONIX**  
MICROFLUIDICS  
SYSTEM

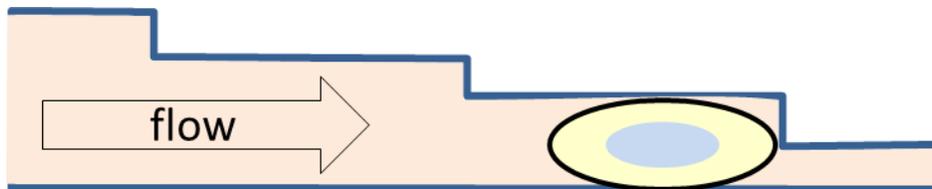


## Overview

- Microfluidic device allowing immobilisation of cells and automated precise perfusion with multiple different buffers / substances
- Software controlled sequence of channels, duration and speed of perfusion
- Multi-well format, i.e. compatible with all FILM microscopes

## Usage instructions

- Fresh plates come filled with sterile PBS (used to have a rather short shelf life, Millipore are now trying to improve this)
- The volume in the channel between reservoir and sample (imaging) area is only a few nanolitres, so very little volume is wasted.
- The bottom of each plate is a 170 $\mu$ m glass coverslip
- Different sections of the imaging area have different height, so each cell / sample is trapped in their respective space, dependent on their size
- during loading, the ceiling of the plate is slightly pushed up due to the pressure; after loading, when the pressure is released, it comes back down and slightly pushes on the trapped cells  $\rightarrow$  holds them in place, but can also exert a mechanical stress on the cell.



## Connectors:

- 1 (white) = gas (e.g. for hypoxia), can also be connected to CO<sub>2</sub> (but the plates are gas-permeable, so normal CO<sub>2</sub> incubation is fine)
- 2-9 (transparent) = pressure, to control perfusion
- 10 (black) = vacuum



## Instructions

- 1) Put lid with silicone gasket on top of the plate,
- 2) Hold down with fingers
- 3) Switch pump on

4) Keep holding down until green READY light comes on (indicating vacuum)

## **Software**

### Automated mode

- Protocol e.g. for bacteria: protocol B... (see instruction PDF for each plate)
- Set flow rate to 5-6psi, corresponding to ~10fl/hr (might be different for other plates, see instructions)

### Manual mode

- to perfuse with a certain channel, simply click on the channel (more than one can be selected at once) and select flow rate with the slider
- switching times between channels are in the range of ~10-20sec