VERSION 1

APR 21, 2023

OPEN ACCESS

DOI:
dx.doi.org/10.17504/protocols.io.6qpvr47q2gmk/v1

Protocol Citation: Quyen Do, Jimena Baleriola, Nora Bengoa-Vergniory, Richard Wade-Martins 2023. Custom open-chamber microfluidic fabrication. **protocols.io** https://dx.doi.org/10.17504/protocols.io.6qpvr47q2gmk/v1 Version created by Cláudia C. Mendes

Protocol status: Working
We use this protocol and it's working

Created: Feb 22, 2023

Last Modified: Apr 21, 2023

PROTOCOL integer ID:
77446

Custom open-chamber microfluidic fabrication V.1

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ABSTRACT

This protocol described the fabrication of two- and three-open chambered microfluidics suitable for cell culturing using commercially acquired master mould.

MATERIALS

Reagents:

- SYLGARD™ 184 Silicone Elastomer Kit (Dow, CAT# 1673921)
- Geltrex™ LDEV-Free Reduced Growth Factor Basement Membrane Matrix (ThermoFisher Scientific, CAT# A1413202)
- Poly-D-Lysine (ThermoFisher Scientific, CAT# A3890401)

Equipment:

- Custom master mould containing both duo- and trio-chambers (manufactured in Microliquid, Spain).
- Fisherbrand™ Glass Circle Coverslips (ThermoFisher Scientific, CAT# 12323138)

Keywords: Open microfluidic, co-culture, microcircuit

BEFORE START INSTRUCTIONS

Always store cut-out devices in ethanol.

Avoid exposing microfluidic devices, particularly the cell-adherent side, to open air and unnecessary contact. Once sterilised, devices should be handled with care following sterile working techniques.

Casting of microfluidic devices

1 A custom master mould containing both duo- and trio-chambers (**Figure 1**) is manufactured by and obtained from Microliquid (Spain).

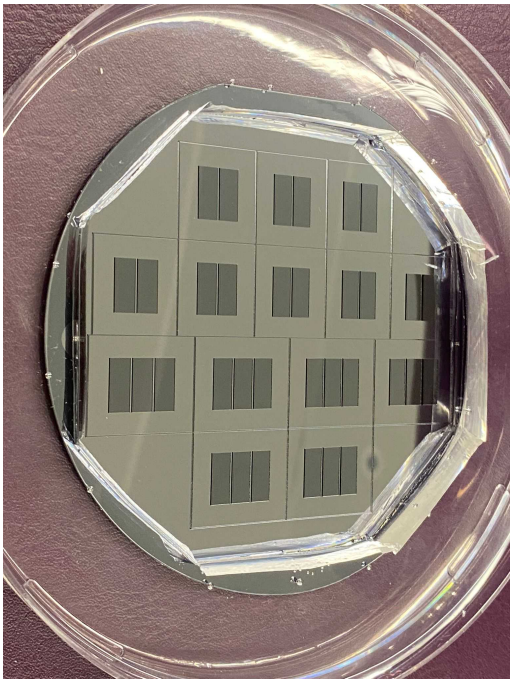

Figure 1: Custom master mould.

2 Mix 46 ml of silicon elastomer SylGARD 184, Dow Corning © with 4 mL of its curing agent (supplied in the same pack), i.e. the 1:10 ratio in a 50 ml falcon.

3 Mix well by inverting the falcon multiple times till a homogenous solution is seen by eye.

4 Slowly pour the mixture into the master mould and incubate for 2-2.5 hours at 60ºC.

Note

Varying incubation time can alter the device stiffness.

Device preparation

5 Manually remove the final cast from the mould using a sharp blade.

6 Manually cut out individual devices and immediately wash them with 100% ethanol.

7 Air-dry cut-out devices in tissue culture hood.

8 Place dry and sterile devices on ethanol – sterilised 19 mm-diameter coverslips to form an instantaneously tight seal.

9 Coat both chambers and microchannel area with Poly-D-Lysin (0.1 mg/ml) overnight followed by Geltrex™ prior to cell culturing.