we are cellix

Protocol

Kima™ Pump

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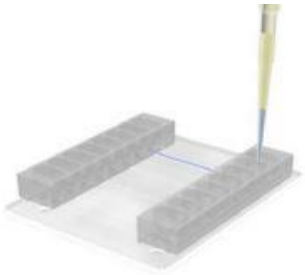
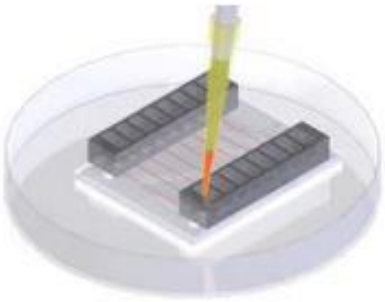
Kima Pump Perfusion Protocol: coating and cell seeding in Vena8 Endothelial+ biochips and perfusion using Kima pump

NOTE: Kima pump is only for exchange of culture media to feed the cells (i.e. pulses of fluid / pulsatile flow) rather than a continuous flow.

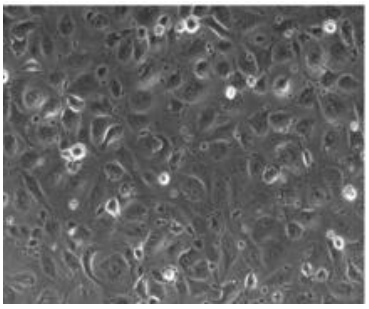


Step 1:
Cellix's Vena8 Endothelial+ biochips are coated using a standard pipette tip. Dispense ~12 µL of protein (e.g. fibronectin) into each microchannel. Note the excess of liquid on the entrance and exit ports.

Step 2:
The Vena8 Endothelial+ biochip is then placed in a humidified sterile petri dish, which should be placed at 4°C for overnight coating.



Step 3:
(a) After the incubation period, add 5 µL of 1.5 x 10^6 /100 µL (≅ 15 x 10^6/mL) of endothelial cells gently into each channel. ***Note:** concentration specified is for primary HUVEC.
(b) The biochip is kept in a sterile petri dish and in the CO_2 incubator for 15–20 minutes. Observe the biochip under microscope and top up all the reservoirs with 50 µL of media. Keep the biochip for 1.5–2 hours in the CO_2 incubator.



HUVEC primary cells seeded in Vena8 Endothelial+ biochip microchannel: 1.5 hrs post-incubation.

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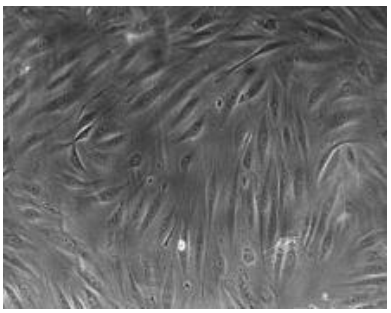
Step 4:
Wash Kima pump with 70% ethanol and then with sterile media using a 5 mL sterile syringe in the biosafety hood.

Step 5:
Connect tubing from media bottle to the inlet port of the pump. Connect tubing from outlet port of the pump (8-way cable with pins) to a sterile petri dish. Wash the pump using iKima app with media for 3 minutes.

Step 6:
(a) Take the biochip from the incubator and place in the biosafety hood. Before connecting to the biochip, start perfusion using iKima app — typically 2 minutes perfusion, followed by 15–20 minutes pause. When media droplets form at the pins, gently connect the 8-way cable to the biochip to avoid air bubbles.



HUVEC primary cells seeded in Vena8 Endothelial+ biochip microchannel: 72 hrs post-perfusion with Kima pump.

(b) Connect the outlet pins to the biochip which is connected to a discard bottle or to the same media bottle for recirculation of the same media. This is done in the biosafety hood. Once connected, transfer Kima platform to a CO_2 incubator.
Note: all tubing and bottles must be autoclaved prior to the experiment.