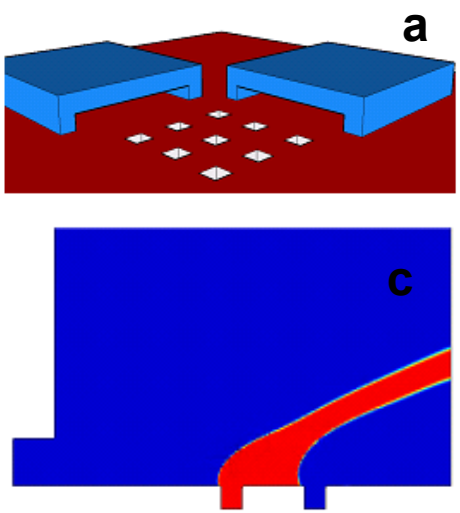
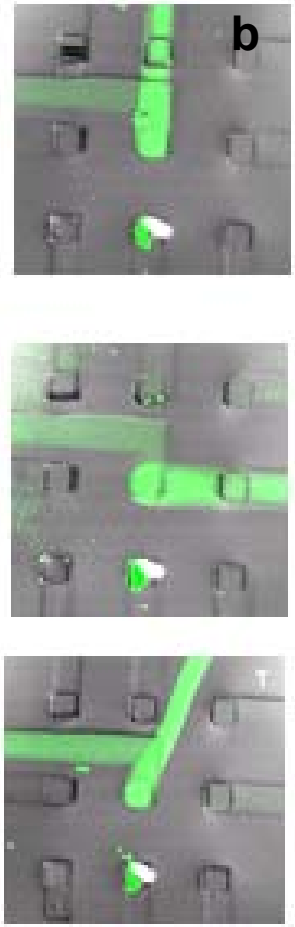
Microfluidics for Cellular Bioassays

Mike Santillo and Andrew Ewing,
Penn State University, University Park, PA





(a) Diagram of the device. In future studies, cells will be patterned in between the nine outlet holes. (b) Fluorescence images showing control of fluid flow direction. (c) Simulation showing the control of fluid stream height.

Microfluidic devices have emerged as popular platforms for performing assays on biological cells. These devices offer several advantages over conventional cellular assays including the ability to control fluid flow and automation. Here we are developing a microfluidic device for studying cell-to-cell communication in a patterned neural network. The device has been designed such that the direction and height of fluid flow can be accurately controlled. This will allow specific regions of the network to be exposed to various pharmacological agents so changes in the network communication pathways can be monitored.

PSU NNIN

Microfluidic devices enable fundamental studies involving cell-to-cell communication in a patterned neural network