Electronic Supplementary Material (ESI) for Lab on a Chip.

Supplemental Information for:

Small-molecule axon-polarization studies enabled by a shear-free microfluidic gradient generator

Hui Xu, Meghaan M. Ferreira, and Sarah C. Heilshorn*

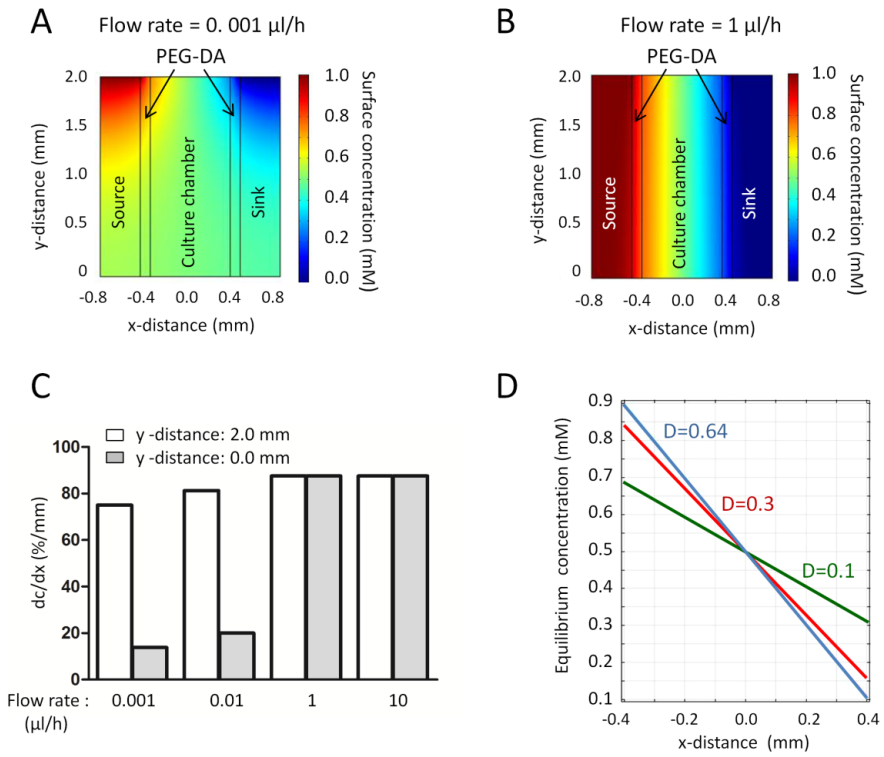

Figure S1. Mathematical simulation of equilibrium gradients in the device. A. With slow fluid perfusion (0.001 µl/h) in the side channels, the chemical concentration in the center cell culture chamber decreases along the direction of the flow, causing the concentration gradient (dC/dx) to decrease along the y-distance. **B.** A high fluid perfusion rate (1 µl/h) in the side channels results in a constant chemical concentration along the direction of the flow and a uniform concentration gradient (dC/dx) in the culture chamber. **C.** Equilibrium gradient (dC/dx) at two positions along the y-distance (y = 0 and 2 mm), for several different perfusion rates. **D.** Increasing diffusivity across the PEG hydrogel barrier (i.e., smaller molecules or hydrogels with larger mesh sizes) results in steeper equilibrium gradient slopes across the cell culture chamber.