Supplementary Data

Captions of supplementary movies and figure

Movie S 1: Thick HMM windows fabricated with long UV exposure (∼2.6 s). 1 µm diameter fluorescent beads, imaged in the central channel while buffer solution flowed through the side channels. We started to record the distribution of tracer beads about 1 min after buffer started flowing in the side channels. The walls were 40 µm high, with 50x100 µm² opening windows and all three channels 150 µm wide.

Movie S 2: Thin HMM windows fabricated with short UV exposure (∼1.3 s). 1 µm diameter fluorescent beads, imaged in the closed central channel while buffer solution flowed through the side channels. The distribution of tracer beads clearly changed after buffer from side channels passed through HMM windows. The walls were 40 µm high, with 50x100 µm² opening windows and all three channels 150 µm wide.

Movie S 3: Diffusion of fluorescein dye through HMM windows. Spreading pattern of fluorescein in the central channel after diffusion from the side channels through the (closed-) central channel over time. The walls were 40 µm high, with 50x100 µm² windows and all three channels 150 µm wide.

Movie S 4: Intensity profiles of fluorescein dye along the dashed line in Fig. 5-A (S 3 video). Fluorescein solution with high intensity was kept running through side channels. Diffusion through HMM windows increased the intensity of the central channel.

Movie S 5: Rapid exchanging of the solution flowing through side channels changes osmotic conditions for the cells in the central channel. Single cells can be identified and followed over time. 3T3 fibroblast cells were tracked over time while swelling or shrinkage corresponding to the osmotic conditions.

Fig S 6: Myosin labelled 3T3 fibroblast cells, suspended in the microfluidic device (sticker made of NOA-81), and intensity profile including background. Fluorescence emission of the cells was substantially higher than NOA background fluorescence from the chamber roof with a thickness of 70 µm above the cells.