Supplemental material

DNA Containment

To determine the ability of the cell mimic devices to contain DNA template during the continuous protein synthesis experiments, DNA containment and labeling experiments were carried out by filling reaction vessels that have undergone 7 min PECVD with 90 ng/µl DNA template. A glass capillary with a 2 µm orifice (World Precision Instruments, TIP2TW1) was used to fill the containers. The chip was covered with PDMS and a labeling solution consisting of ethidium bromide (EtBr) at a concentration of 100 µg/mL was injected into the microchannel at a flow rate of 5 µl/h. Ethidium bromide and other reagents were purchased from Sigma Aldrich.

Images were captured every 5 minutes for the duration of 25 hours using a Zeiss Axioskop 2 FS Plus epifluorescent microscope equipped with a 200 W mercury arc lamp and a 40x objective. Programs to calculate and plot image intensity values were written using ImageJ and MATLAB (V7.2, MathWorks). To allow quantitative comparisons between experiments, the microscope, binning, exposure times and camera settings were kept the same.

Figure 1: DNA containment in cell mimic device. Each point represents the normalized DNA concentration, corresponding to the observed fluorescence intensity, from three DNA containment experiments (3 individual devices on 3 separate chips). Error bars represent +/- one standard deviation.