Electronic Supplementary Information

Microfluidic system for efficient molecular delivery to artificial cell membranes

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Figure S1 – Top: Top-view of the microchip with selected dimension parameters (dimensions in Table S1). Bottom: Zoomed-in view of the two areas marked with dashed boxes in the top image.

Dimension parameter	Value (μ <i>m</i>)
а	3093
b	1650
C	3093
d	2326
е	19783
f	880
g	450
h	1831
i	1082
j	750
k	250
I	3119
m	3384
n	550
0	693
Gap distance	75 and 120

 Table S1 – Microchip dimensions (see Figure S1 for dimension parameters)



Figure S2 – COMSOL simulation results for velocity field at the vicinity of the membranes during the delivery phase. Dimensions can be found in the x and y axes, and the colorbar represents the velocity in ms^{-1} .



Figure S3 – COMSOL simulation results for mass transport. Normalized concentration distribution of the drug in the chip, 2 hours after stopping the flow. Dimensions can be found in the x and y axes, and the colorbar represents the drug concentration normalized to the concentration in the inlet.



Figure S4 – Membrane tension and bending rigidity measured after membrane formation, after buffer replacement with the control buffer, and after reversible replacement with the initial buffer. Three separate membranes were tested for this experiment and the error bars represents the standard deviation between each experiment.

Supplementary video S1: The video depicts the online observation of the beads flowing at the vicinity of a freestanding membrane.