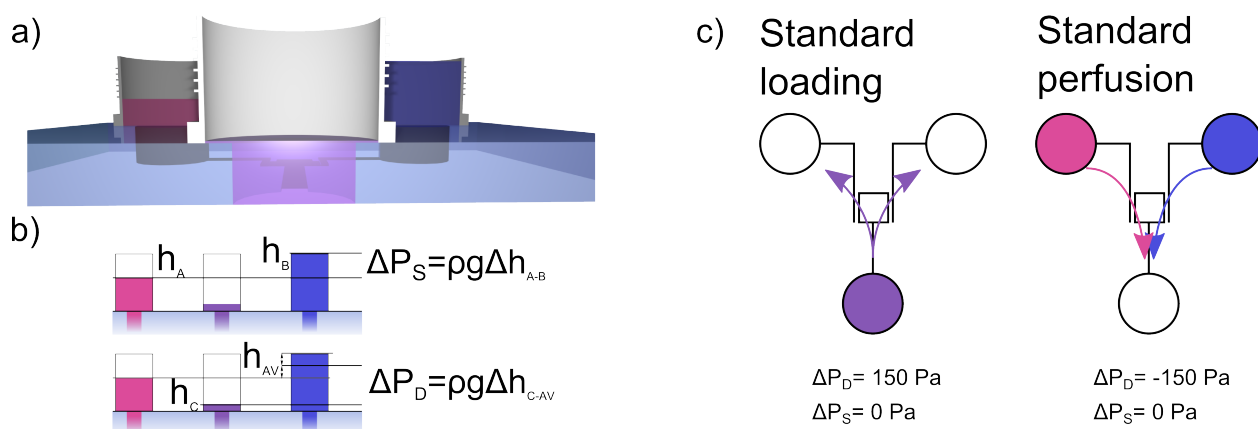
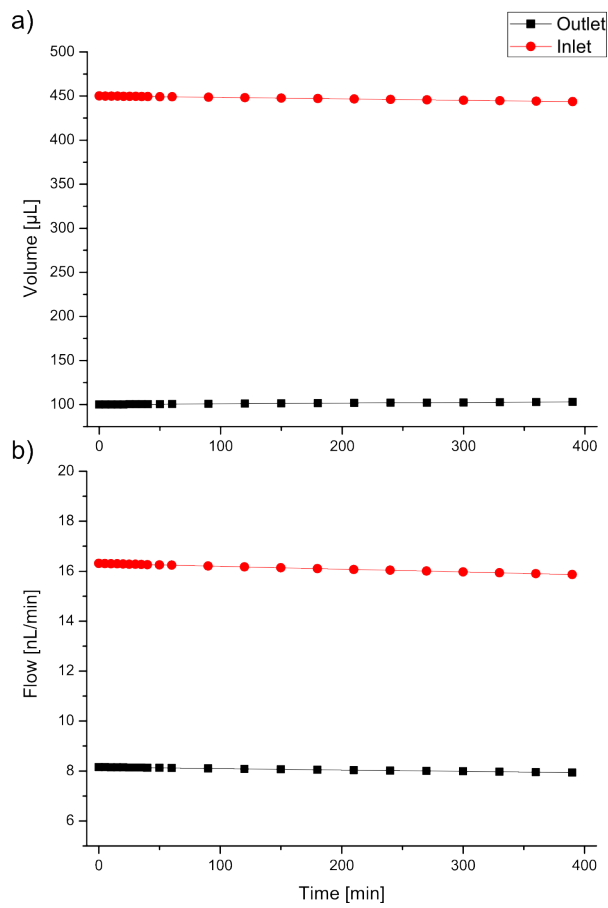


Supplementary material

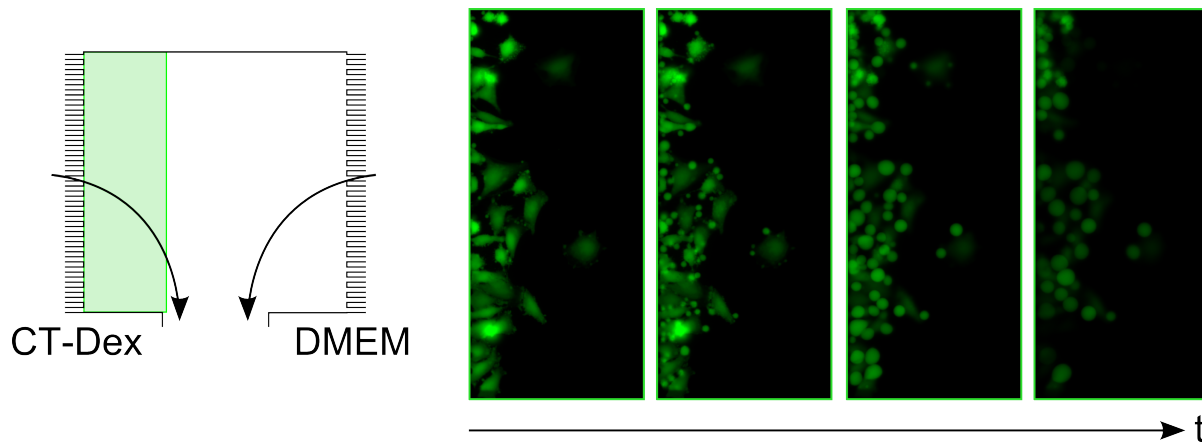


Supplementary Figure 1. Open liquid reservoirs and gravity-driven pressurization. a) Schematics of the liquid-reservoir architecture and b) graphical representation of input pressures configurations. c) Pressure configurations used for cell loading and perfusion.

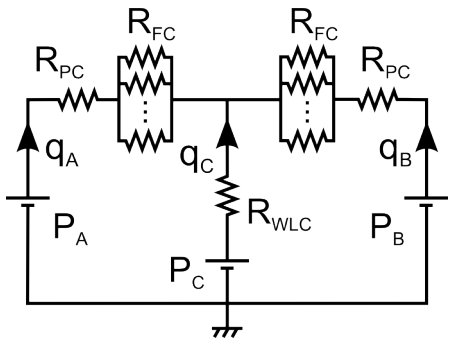


Supplementary Figure 2: Fluidic stability during symmetric perfusion ($\Delta P_D = 150$ Pa, $\Delta P_S = 0$ Pa).

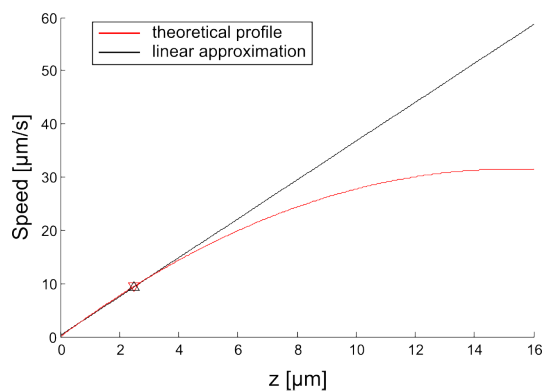
a) Calculated liquid reservoir volume (a) and flow rate (b) as a function of time.



Supplementary Figure 3: Time-lapse microscopy of the Calcein AM fluorescence signal from the MC area close to the CT-Dex administration side (green rectangle on the left). $100 < t < 240$ min. $t = 0$ corresponds to the onset of CT-Dex administration.



Supplementary Figure 4. Equivalent electrical circuit.



Supplementary Figure 5: Speed profile (red line) in the MC as a function of the distance from the bottom layer (z). Black line represents the linear approximation of the speed profile. The difference between the two curves at $z = 2.5 \mu\text{m}$ (diamonds) is lower than 1%.