SUPPLEMENTARY MATERIAL

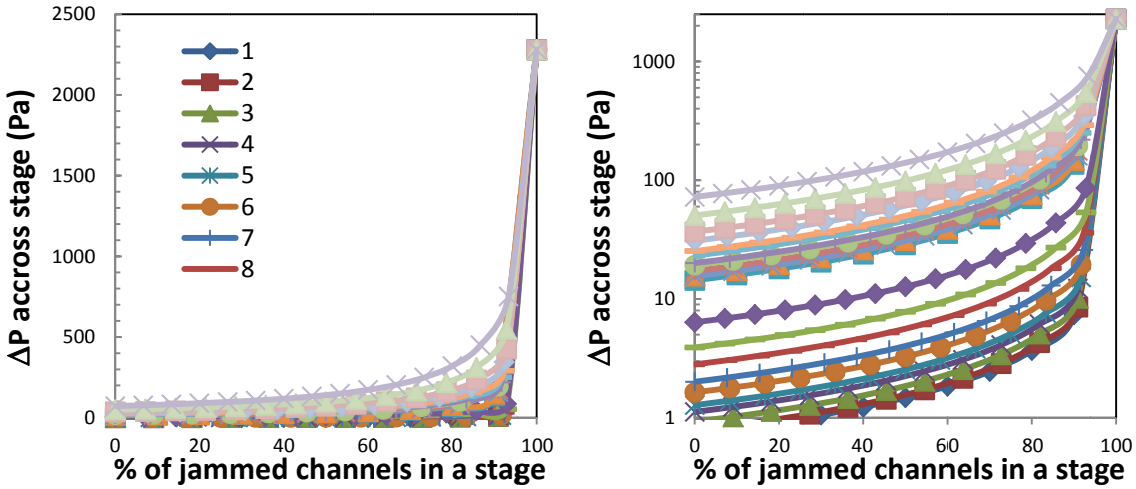

Figure S1 : Effect of channels jamming by cells on the pressure drops across stages. Calculated pressure across each stage of the gradual filter versus the percentage of channels jammed in a stage. The calculation is made for a flow rate of 12.7 mL/h injected in the device and using a model of resistors in parallel. Each curve number "X" correspond to the pressure drop between stage X and X+1, versus the percentage of channels jammed between stages X and X+1, by considering that all other channels of other stages are free flowing. The y-axis has either a linear scale (left) or a logarithmic cell (right).

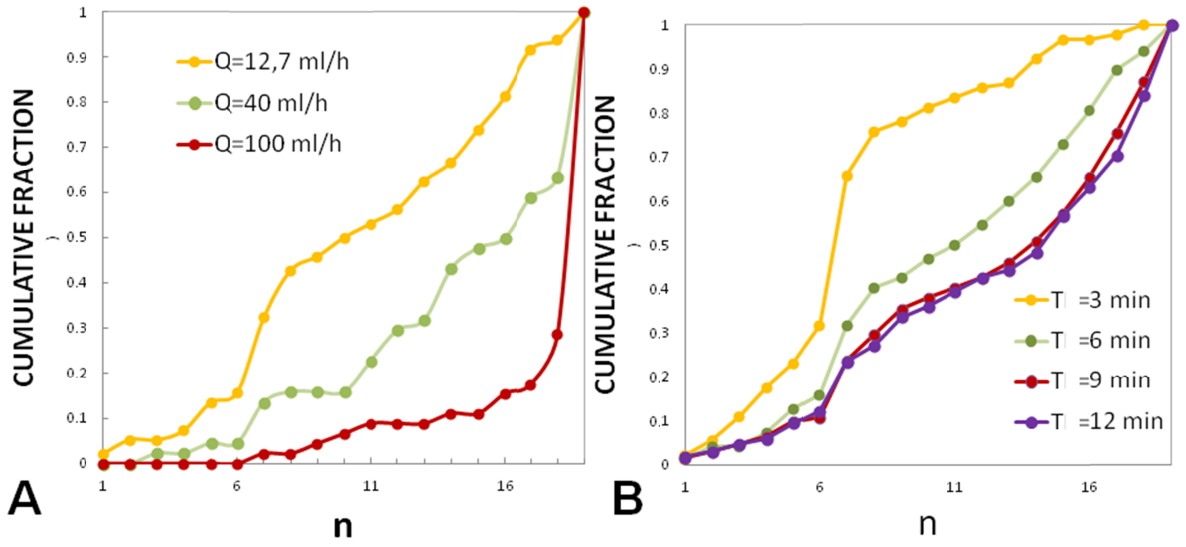

Figure S2 : Testing of different flow rates *Q* and flowing times *T*. (A) Cumulative fraction of cells in the stages of the gradual filter vs position *n* in the filter for normal THP-1 cells. (A) *T*= 6 min and flow rates Q= 12.7, 40, and 100 mL/h. (B) *Q* = 12.7 mL/h and *T* = 3, 6, 9, and 12 min.

Movie S1 : Measurement of cell deformability distribution in a gradual filter. Bright field movie of THP-1 cell suspension flowed in a gradual filter at a concentration of 10^6 cells/mL, under an external flow rate Q = 12.7 mL/h. (taken at 15 frames/min, displayed at 2 frames/s).

Movie S2: Cell separation by deformability in a gradual filter. Movie presenting the superposition of the bright field image of an empty gradual filter and the images taken in fluorescence of a mixture red and stiff THP-1 cells (treated by glutaradehyde and labelled by OR) and grenn and soft THP-1 cells (treated by LatrunculinA and labelled by DIO) at concentration of 10^6 cells/mL under an external flow rate Q = 12.7 mL/h. (Real acquisition rate is 4 frames/min).