# Supplementary Material

## 1 LINE DENSITY PROFILES

A method to compute line density profiles along the width of a micro-channel has been reported by **?**. The region of interest was divided parallel to the axial direction in 20 subregions (each 1 pixel wide) to count the number of RBCs at a given lateral position. Each RBC was assigned to one of this subregions based on its centroid coordinates computed by the particle-tracking software. Line density profiles were computed by dividing the mean RBC number $N_{RBC}$ at each lateral position by the length $L_{ROI}$ of the ROI. The lateral coordinate was then normalized with respect to the width of the ROI: $y^* = y/W_{ROI}$.

The same method has been used here to compute the line density profiles for all diverging bifurcations of the honeycomb network (Fig. 2). Fig. S1 shows the line density profiles for all diverging bifurcations in the honeycomb network for the baseline, for the pericyte and arteriolar activation. It is possible to observe two distinct types of RBC distributions. In fact, the line density profiles were either skewed toward one side of the parent branch of they presented two almost symmetric lateral peaks.

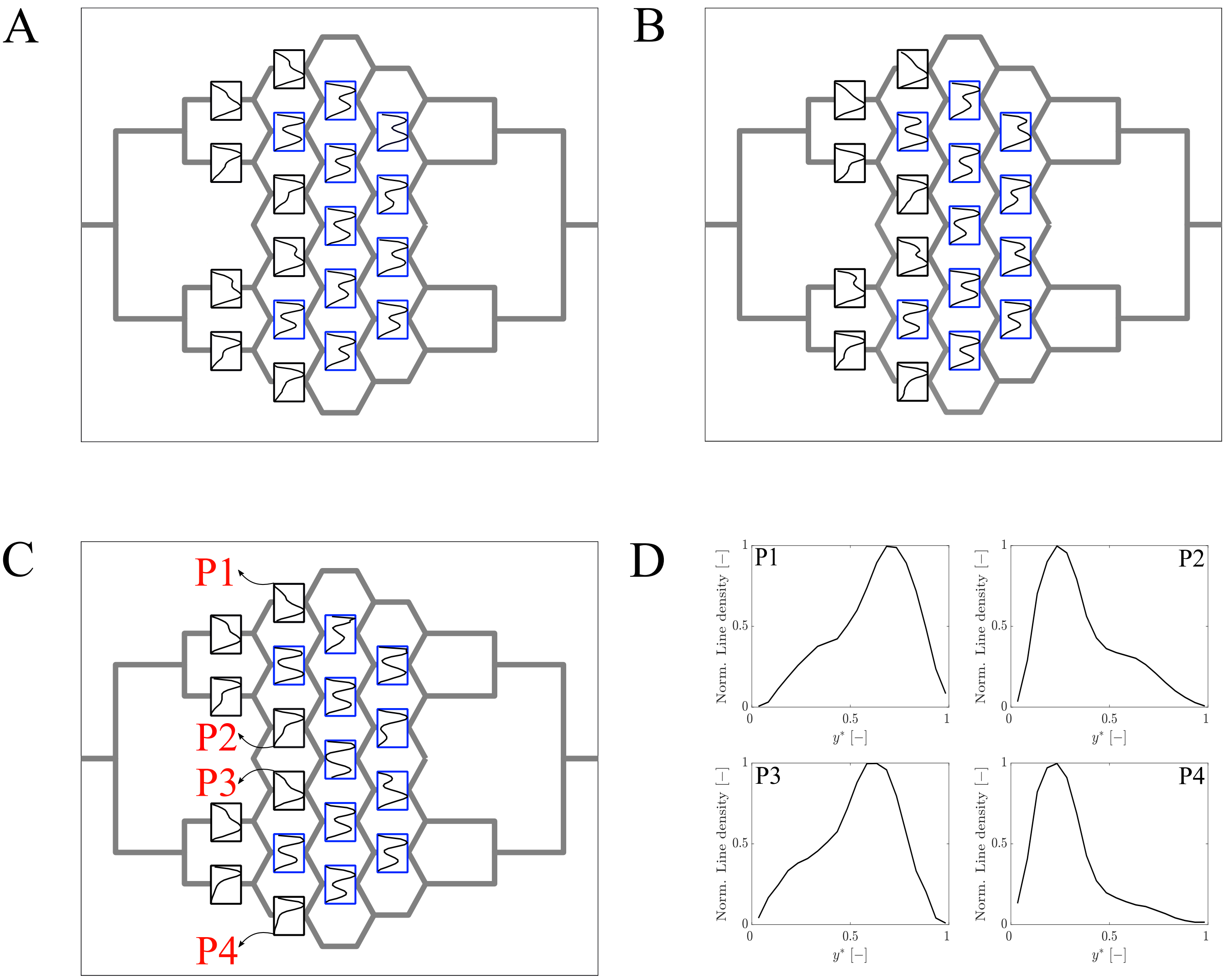


**Figure S1. Honeycomb network: normalized line density profiles.** Normalized line density for all diverging bifurcations considered in this study for the (**A**) baseline (**B**) pericyte activation and (**C**) arteriolar activation. Line density profiles were grouped based on their shape. (**D**) Samples of normalized line density along the normalized width of the micro-channels ($y^* = y/W_{ROI}$) for the parent vessels of bifurcation P1, P2, P3 and P4.