

## SUPPORTING INFORMATION

# Versatile Vessel-On-A-Chip Platform for Studying Key Features of Blood Vascular Tumors

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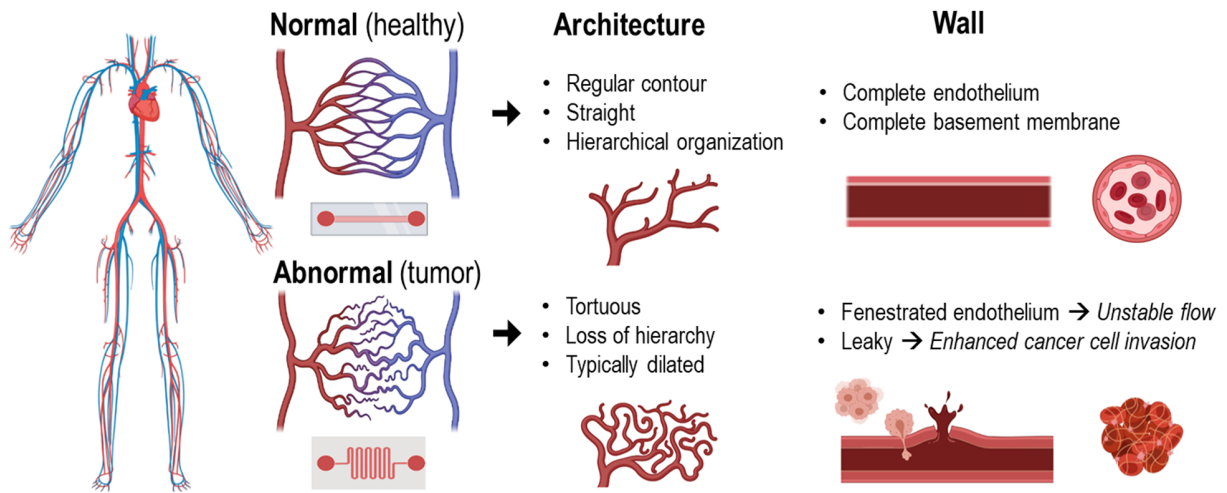
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## Supplementary Tables

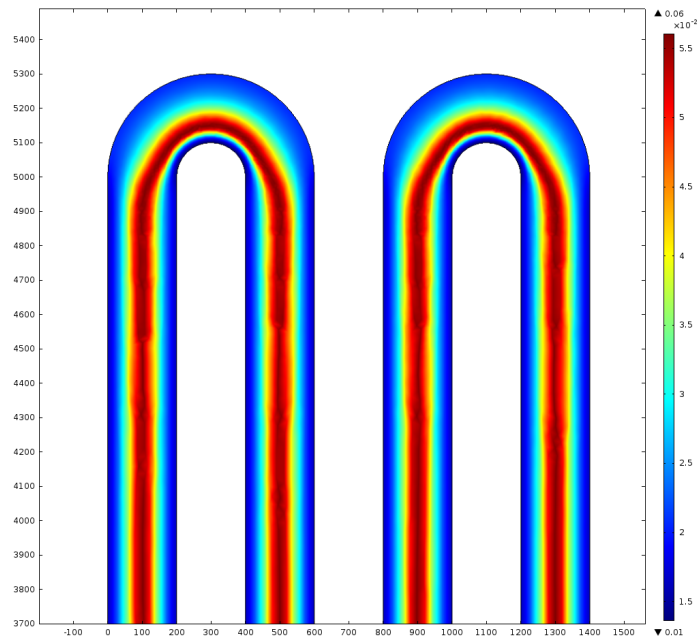
**Table S1.** Velocity values (simulated vs. experimental).

$Q$ ( $\mu\text{L min}^{-1}$ )	PBS / Serum <i>simulated</i> ( $\text{mm s}^{-1}$ )	PBS <i>experimental</i> ( $\text{mm s}^{-1}$ )	Serum <i>experimental</i> ( $\text{mm s}^{-1}$ )	Blood <i>simulated</i> ( $\text{mm s}^{-1}$ )	Blood <i>experimental</i> ( $\text{mm s}^{-1}$ )
0.5	1.39	$1.38 \pm 0.07$	$1.34 \pm 0.25$	1.21	$1.27 \pm 0.17$
1.0	2.76	$2.71 \pm 0.27$	$2.64 \pm 0.12$	2.10	$2.27 \pm 0.12$

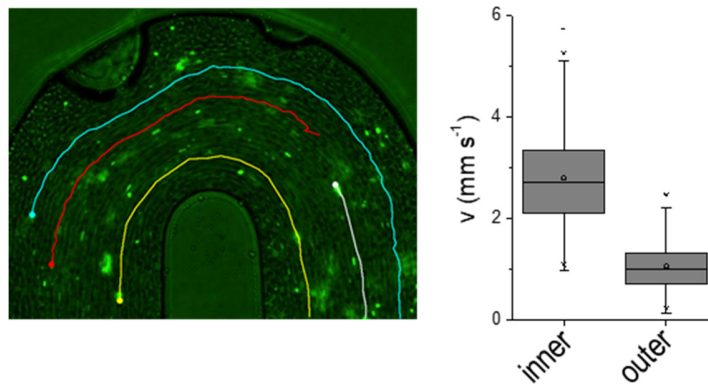
## Supplementary Figures



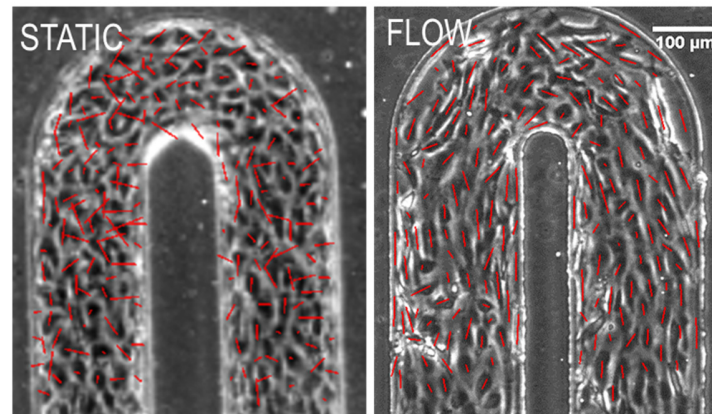
**Figure S1. The human vasculature in healthy and tumor conditions.** (Left) Illustration of the human body vasculature (arteries and veins), and detailed scheme of normal (healthy) and abnormal (tumor) capillary bed and associated microfluidic chip models. (Right) Summary of the main characteristics (vessel architecture and wall) of healthy vs. tumor vasculature. Created with Biorender.com.



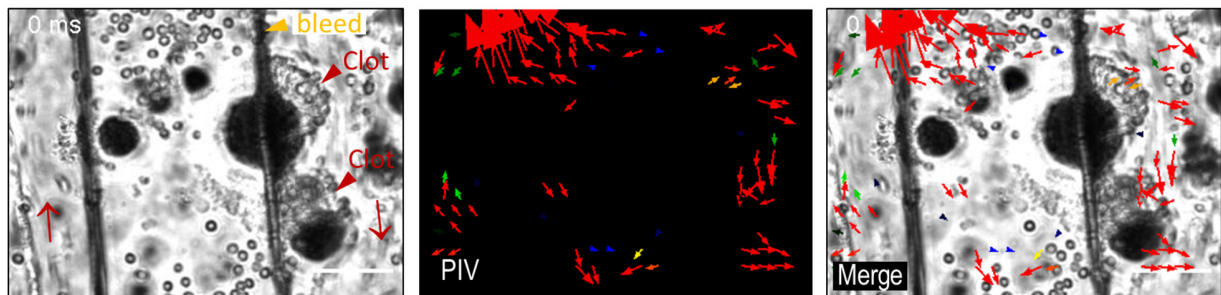
**Figure S2. Dynamic viscosity simulation (in [Pa s]).**



**Figure S3. Characterization of the hydrodynamics at the serpentine bend.** (Left) Tracking of tracer beads within the microchannel bend containing RBCs. (Right) Average velocity at the inner and outer side of the channel bend.



**Figure S4. Cell alignment.** (*Left*) static; (*Right*) flow conditions.



**Figure S5. Formation of coagulation in a hemorrhage-on-a-chip model.** (*Left*) Microfluidic chip highlighting the bleeding (in yellow) and coagulation (clot; in red) regions. (*Mid and Right*) PIV analysis (see also Movie S4). Scale bars: 100  $\mu\text{m}$ .

### **Supplementary Movie Legends**

**Movie S1** – Hemodynamics of fluorescent-labelled tracer beads and RBCs in the vessel-like channel. Acquisition rate: 1 image/2 ms. Scale bar: 100  $\mu\text{m}$ .

**Movie S2** – Hemodynamics in curved channel. Acquisition rate: 1 image/2 ms. Scale bar: 100  $\mu\text{m}$ .

**Movie S3** – Thrombus-on-a-chip model. Acquisition rate: 1 image/2 ms. Scale bar: 100  $\mu\text{m}$ .

**Movie S4** – Hemorrhage-on-a-chip model. Acquisition rate: 1 image/2 ms. Scale bar: 100  $\mu\text{m}$ .

**Movie S5** – Combined thrombus and hemorrhage-on-a-chip model. Acquisition rate: 1 image/2 ms. Scale bar: 100  $\mu\text{m}$ .