Electronic Supplementary Material (ESI) for Integrative Biology

Mechanisms of tumor cell extravasation in an *in vitro* microvascular network platform

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Supplementary Figures

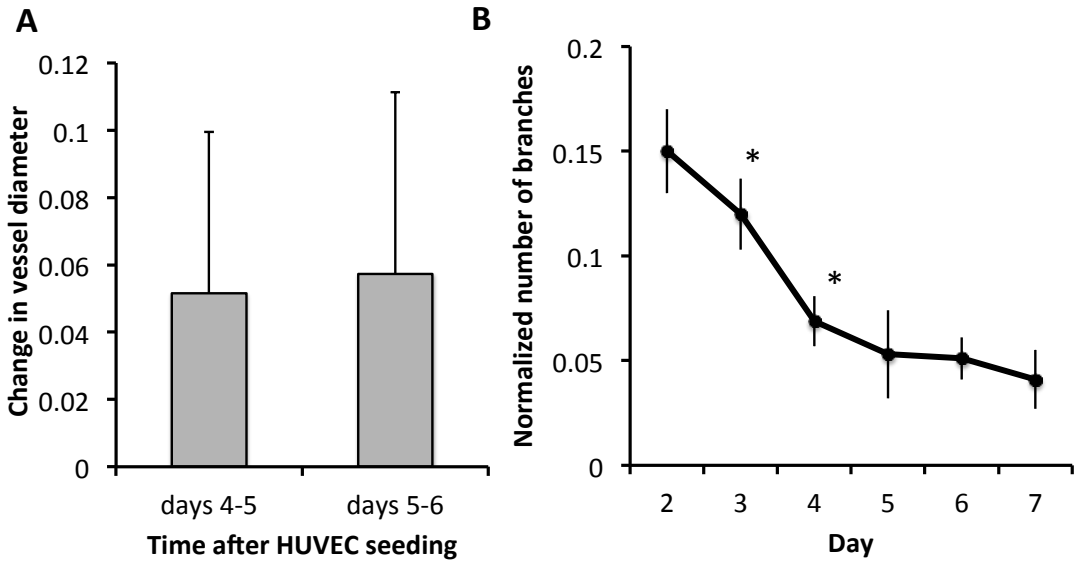

Figure S1. Formation of microvascular networks in microfluidic devices. (A) Change in individual vessel diameters (n=40 vessels) during time frame of extravasation experiments (days 4 to 6). (B) Changes in total vessel branches normalized by the total number of cells over time (6 ROI/device, 3 devices). Data are presented as mean ±SD, with *p<0.05.

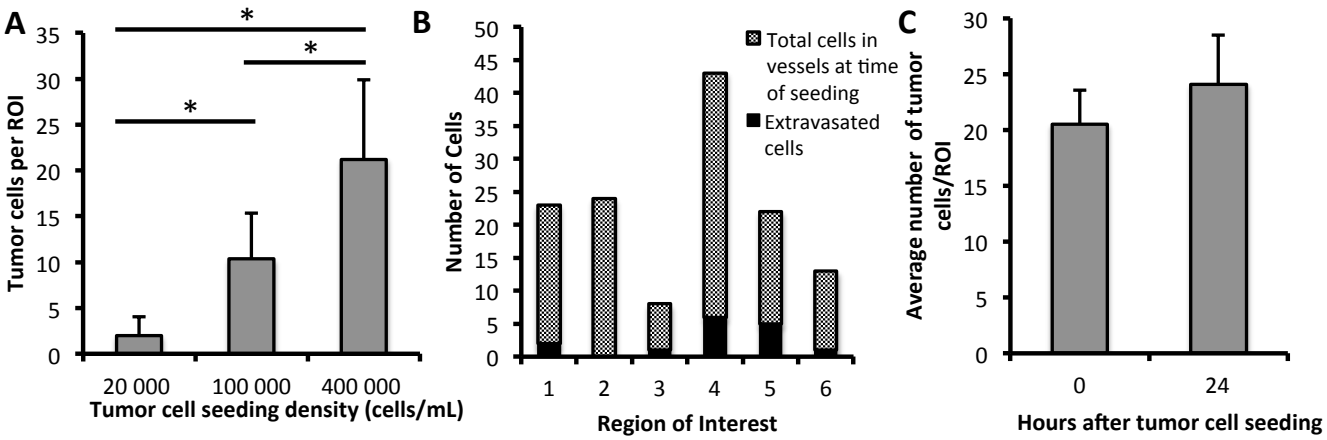

Figure S2. Extravasation in µVNs. (A) Tumor cell seeding density versus the number of tumor cells found per ROI (n=18 ROI over 3 devices). (B) Example of the distribution of the number of extravasated cells in different ROIs in a single device. (C) No significant increase in the number of tumor cells from 0 to 24 h is found. Data are presented as mean ±SD, with *p<0.05.

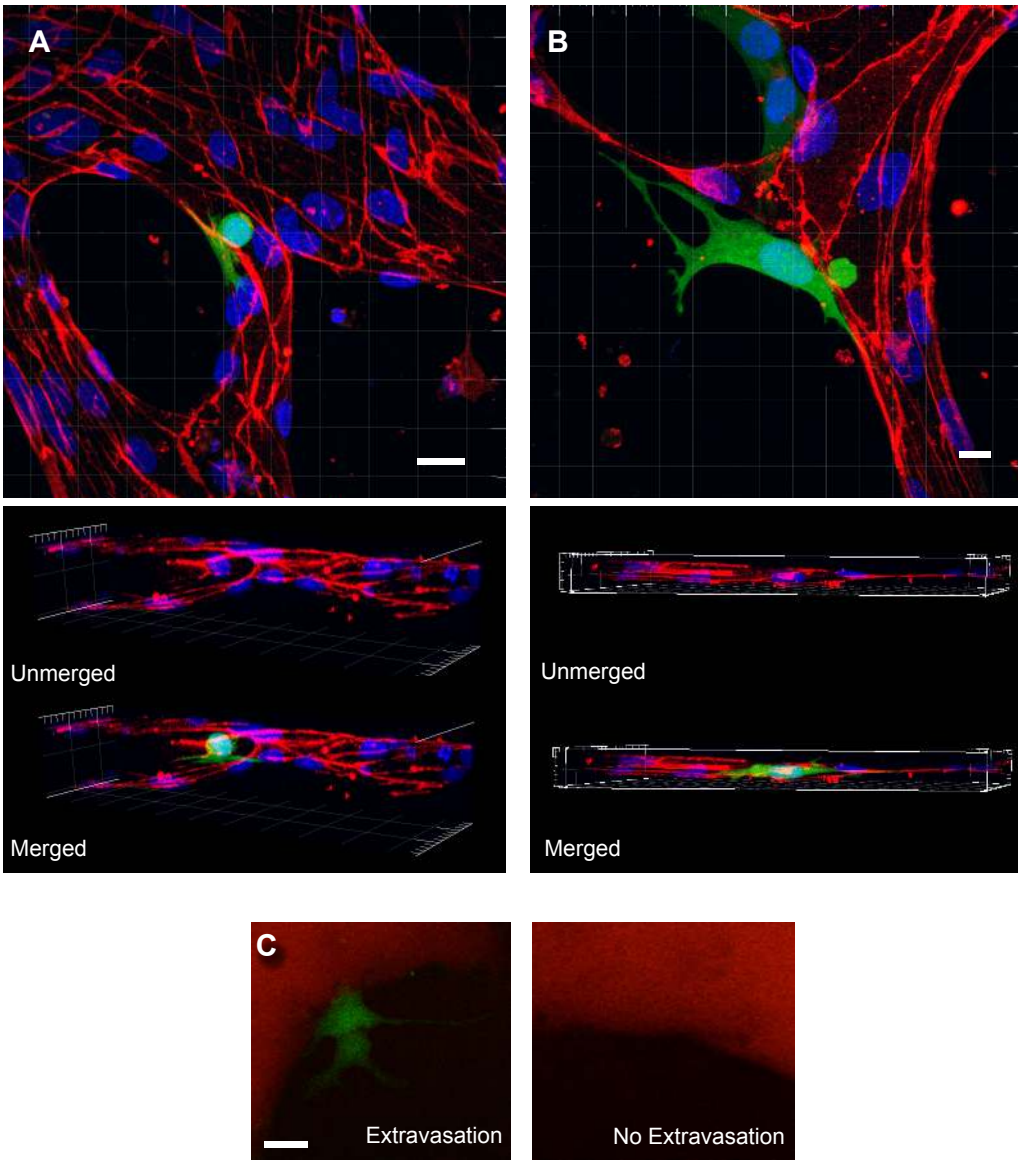

Figure S3. VE-cadherin staining at extravasation sites. (A) An MDA-MB-231 cell that has extended protrusions into the subendothelial matrix, before transmigration of the nucleus. Tumor cell (green) protrusions appear localized at EC cell-cell junctions (red). (B) Tumor cell in mid-TEM, after transmigration of the nucleus. Unmerged and merged images of VE-cadherin and tumor cells in all images show indiscernible delocalization in junctional staining. Scale bars are 10 μm. (C) Perfusion with 70-kDa dextran revealed no leaks at the sites of extravasation (red: dextran, green: MDA-MB-231). Scale bar is 20 μm.

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SI Video 1: Video of MDA-MB-231 being seeded into the microvascular network via a pressure drop of 5.2 mmH_2O across the gel region of a device.

SI Video 2: Bright field-fluorescent overlay time-lapse imaging over a period of 24 hours of MDA-MB-231 (green) extravasating from a microvascular network in one region of interest in a device.