Supplementary Material (ESI) for Lab on a Chip
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# *In vitro* formation and characterization of a perfusable three-dimensional tubular capillary network in microfluidic devices

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**Fig. S1** The movie clip about the capillary tube formation on the device shows the whole process of vascular fusion since 48 h. The capillary tube formed from one side of gel wall contacted to the other blood vessel sprout from the opposite side of gel wall and they met in the middle of the fibrin/collagen. Those capillary tubes were fused and a complete perfusable blood vessel was formed.

**Fig. S2** The formation of tubular and perfusable blood vessels was captured in a movie clip. The movie showed a vivid inner space of blood vessel including nucleus, microfilament, and tight junction between HUVECs in detail.

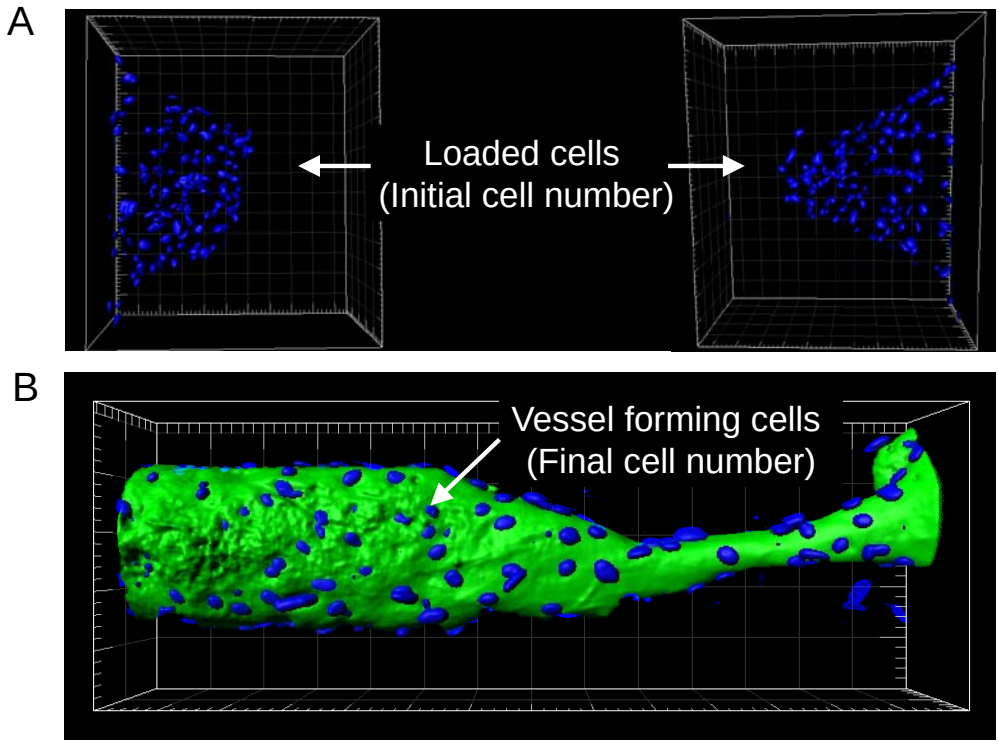


**Fig. S3** Method for counting loaded cells and vessel-forming cells. The cells were stained with DAPI after loading cells on a concave sidewall of gel and loaded cells were counted automatically using a

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computer program. To count the number of vessel-forming cells, first FITC-dextran was perfused into blood vessel to confirm whether the blood vessel was entirely formed or not and then the cells counted by staining them with DAPI and using the computer program.

**Fig. S4** Flow of FITC-dextran through blood vessel was captured in a movie clip. We added FITC-dextran into the blood vessel filled with PBS and FITC-dextran was diffused and filled inside of blood vessel

**Fig. S5** Flow of RBCs which is stained with CellTracker™ red through the blood vessel.