

Supplementary Information - Bioinspired scaffold design using a custom Voronoi path generator for Extrusion-based 3D printing

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outputs.

Video S1. Basolateral view of the FDM-based complete scaffold. Nuclei are stained in blue with DAPI and cytoskeleton is stained in green with FITC-phalloidin. In the sequence of focal planes, HUVECs are firstly visible on the Voronoi backbone fibers, then on the membrane. Lastly, in the final frames fluorescence of the A549 cultured on the other side of the membrane can be observed, confirming the thinness of the membrane.

Video S2. Basolateral view of the MEW-based complete scaffold. Nuclei are stained in blue with DAPI and cytoskeleton is stained in green with FITC-phalloidin. In the sequence of focal planes, HUVECs are firstly visible on the Voronoi backbone fibers, then on the membrane. Lastly, in the final frames fluorescence of the A549 cultured on the other side of the membrane can be observed, confirming the thinness of the membrane.

Video S3. 3D reconstruction of the MEW-based complete scaffold. Nuclei are stained in blue with DAPI, cytoskeleton is stained in green with FITC-phalloidin and VE-cadherins are stained in magenta through immunostaining. The rotation of the reconstruction allows the visualization of HUVECs arrangement both on the Voronoi backbone and on the membrane across different focal planes, confirming the morphological influence of the scaffold on the cell culture.

ReportS4. Report example produced by the software.