

## **Description of Additional Supplementary Files**

File Name: Supplementary Movie 1

Description: A large piece of HUVEC mesh (5×5 cm) is being lifted up from micropillar substrate and microvascular mesh can be easily transferred to other devices or substrates.

File Name: Supplementary Movie 2

Description: A microvascular mesh of HUVEC is being poked using a glass pipette.

File Name: Supplementary Movie 3

Description: 3D structure of several re-vascularized rat islets and anastomoses with host mouse vasculatures in a retrieved HUVEC “Mesh” device after 42 days of transplantation.

File Name: Supplementary Movie 4

Description: 3D structure of a re-vascularized rat islet in a retrieved iPSC-EC Mesh device.