

## **Description of Additional Supplementary Files**

File Name: Supplementary Movie 1

Description: Video of microCT dynamic scanning of representative membranous ECM-C scaffolds

File Name: Supplementary Movie 2

Description: Video of microCT dynamic scanning of representative control membranous scaffolds

File Name: Supplementary Movie 3

Description: Video of microCT dynamic scanning of representative ECM-C nerve scaffolds

File Name: Supplementary Movie 4

Description: Video of microCT dynamic scanning of representative control nerve scaffolds

File Name: Supplementary Movie 5

Description: Video of microCT dynamic scanning of representative ECM-C vascular scaffolds

File Name: Supplementary Movie 6

Description: Video of microCT dynamic scanning of representative control vascular scaffolds

File Name: Supplementary Movie 7

Description: Doppler ultrasound showing synchronous pulsation of ECM-C guided neoartery.

File Name: Supplementary Movie 8

Description: Video of ECM-C guided neoartery integration with the host artery