

Supporting Information

Vascular transplantation with dual-biofunctional ePTFE vascular grafts in a porcine model

**Zheng Xing^{a,1}, Shuting Wu^{b,1}, Chen Zhao^c, Yating Bai^a, Dawei Jin^b, Meng Yin^{b*},
Haifeng Liu^{a*}, Yubo Fan^a**

^a Key Laboratory for Biomechanics and Mechanobiology of Ministry of Education, Beijing Advanced Innovation Centre for Biomedical Engineering, School of Biological Science and Medical Engineering, Beihang University, Beijing 100191, P. R. China.

^b Department of Cardiothoracic Surgery, Shanghai Children's Medical Center, School of Medicine, Shanghai Jiao Tong University, Shanghai 200127, P. R. China.

^c School of Pharmaceutical Sciences, Tsinghua University, Beijing, 100084, P. R. China.

*Corresponding author: Haifeng Liu

Tel.: 86-10-82338456; Fax: 86-10-82338456

Email address: haifengliu@buaa.edu.cn

Address: School of Biological Science and Medical Engineering, Beihang University, Xue Yuan Road No. 37, Haidian District, Beijing 100191, P.R. China.

*Co-corresponding author: Meng Yin

Tel.: 86-21-38087200; Fax: 86-21-38087200

Email address: yinmengmdphd@163.com

Address: Department of Cardiothoracic Surgery, Shanghai Children's Medical Center, School of Medicine, Shanghai Jiao Tong University, Shanghai 200127, P. R. China.

¹ The authors contribute equally to this work.

Supplemental figure and legends

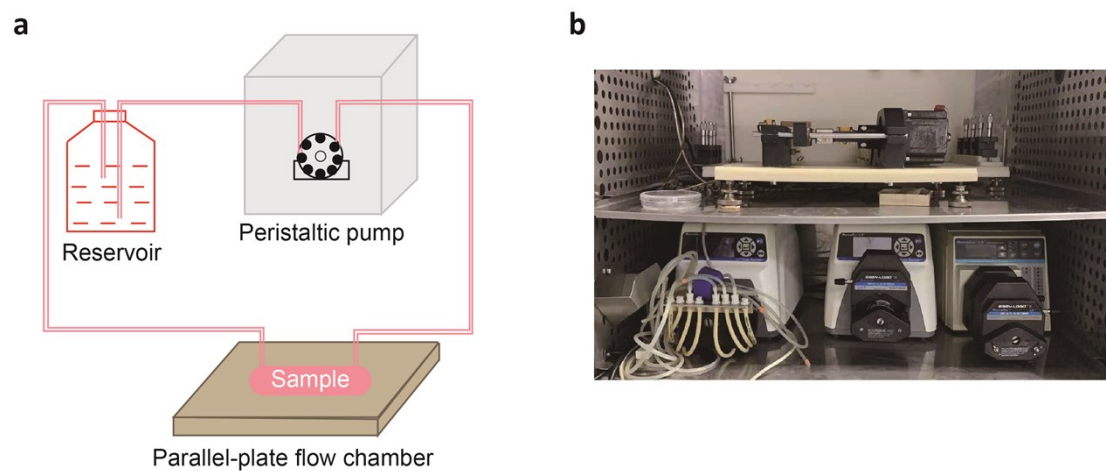


Figure S1. The self-designed device to mimic the arterial environment *in vitro*. (a) Schematic diagram of the device. (b) The device used in this study.

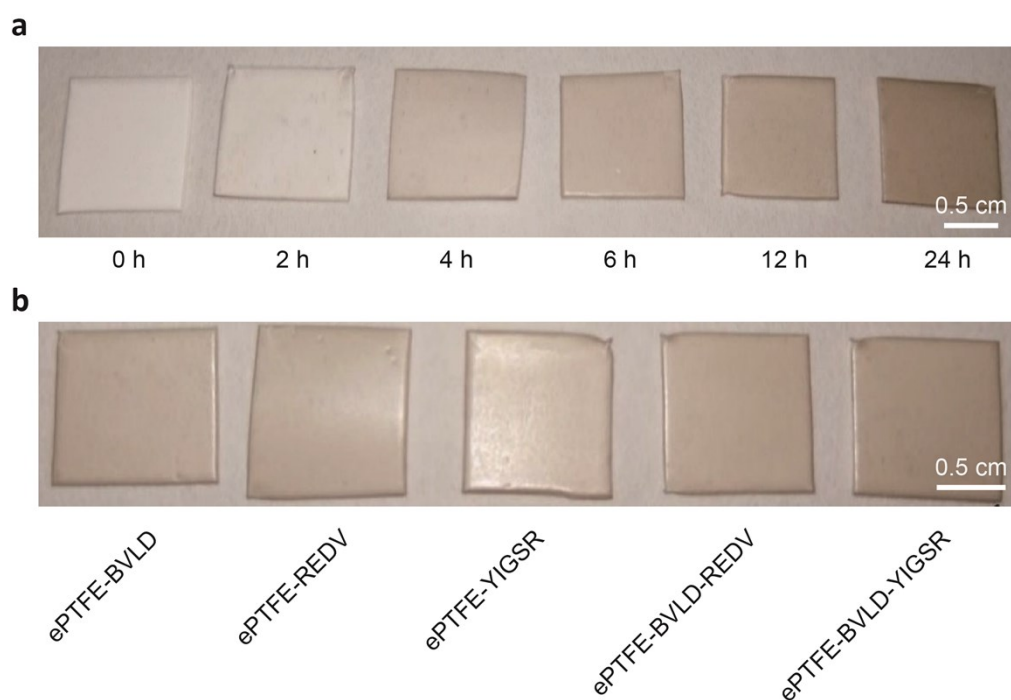


Figure S2. Optical images of different modified ePTFE vascular grafts. (a) PDA modified ePTFE, the reaction time of samples from 0 h to 24 h. (b) Different modified ePTFE vascular grafts using the 12 h reaction ePTFE as the backbone materials.

Table S1 XPS atomic percent (mol%)

Sample	C	N	O	F
ePTFE	34.43	0.31	1.1	64.15
ePTFE-BVLD	58.05	7.29	12.92	21.74
ePTFE-REDV	65.26	6.05	12.5	16.19
ePTFE-YIGSR	62.8	5.63	11.77	19.8
ePTFE-BVLD-REDV	60.22	7.91	16.92	14.96
ePTFE-BVLD-YIGSR	61.66	10.11	16.48	11.76

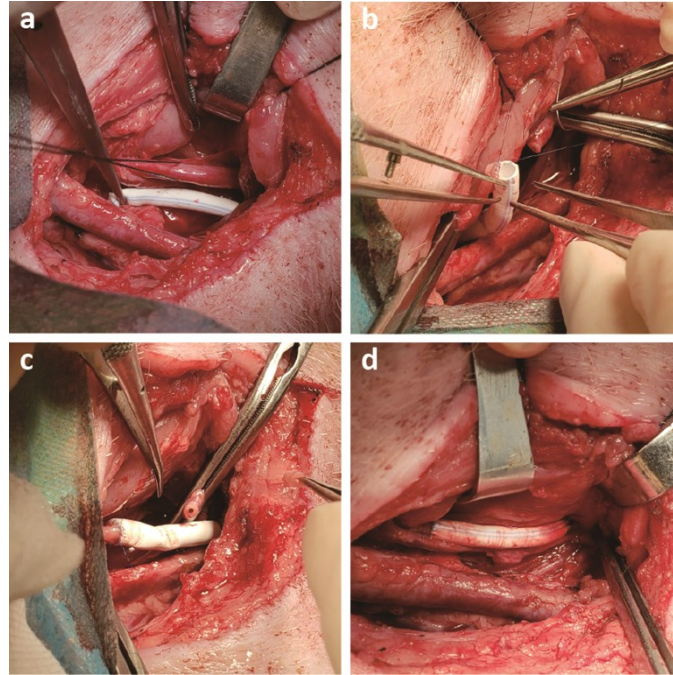


Figure S3. Procedures of the graft transplantation surgery. (a) Comparison of grafts with porcine native artery before implantation. (b, c) End-to-end continuous suturing anastomosis. (d) The implanted grafts after anastomosis.

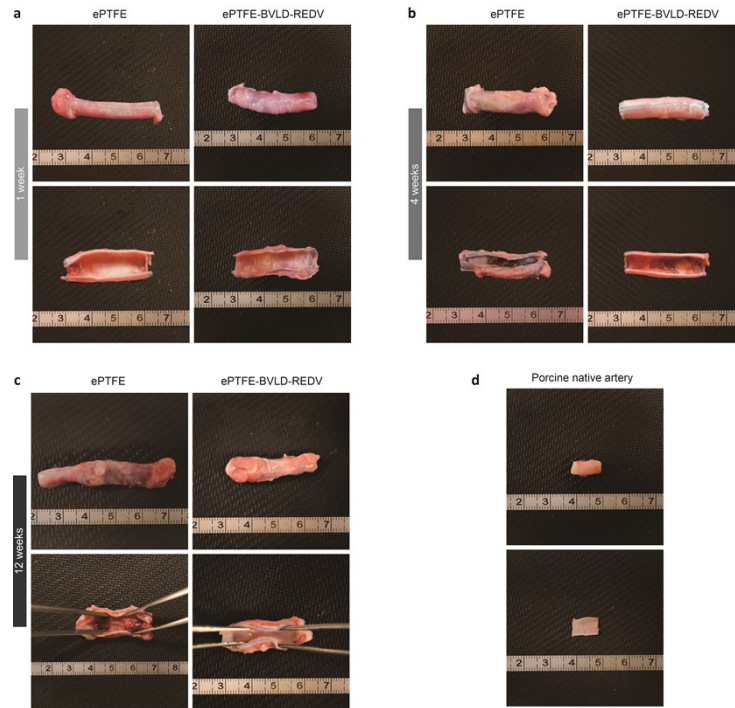


Figure S4. The gross view and luminal surface of harvested grafts. (a-c) The ePTFE vascular graft and ePTFE-BVLD-REDV at 1, 4, and 12 weeks after transplantation. (d) Porcine native artery.