Vascularized dental pulp regeneration using cell-laden microfiber aggregates

Qingqing Liang^{*a,b,c*}, *Cheng Liang*^{*a,b,c*}, *Xiaojing Liu*^{*a,b,c*}, *Xiaotao Xing*^{*a,b,c*}, *Shixing Ma*^{*a,b,c*}, *Haisen Huang*^{*a,b,c*}, *Chao Liang*^{*a,b,c*}, *Lei Liu*^{*a, c*}, *Li Liao*^{*a,b,**}, *Weidong Tian*^{*a,b,c,**}

^a State Key Laboratory of Oral Diseases & National Clinical Research Center for Oral Diseases, West China Hospital of Stomatology, Sichuan University, Chengdu, Sichuan 610041, China

^b National Engineering Laboratory for Oral Regenerative Medicine & Engineering Research Center of Oral Translational Medicine, Ministry of Education, West China Hospital of Stomatology, Sichuan University, Chengdu, Sichuan 610041, China.

^c Department of Oral and Maxillofacial Surgery, West China Hospital of Stomatology, Sichuan University, Chengdu 610041, China

*Corresponding authors.

Li Liao

West China Hospital of Stomatology, Sichuan University, No. 14, 3rd Section, Renmin South Road, Chengdu 610041, PR China Tel: +86-28- 85503499 Email: <u>lliao@scu.edu.cn</u>

Weidong Tian

West China Hospital of Stomatology, Sichuan University, No. 14, 3rd Section, Renmin South Road, Chengdu 610041, PR China. Tel: +86-28-85503499 E-mail: drtwd@sina.com



Figure S1. Identification of DPSCs and HUVECs. (A) DPSCs isolated from human pulp tissue. Scale bars, 100 μ m. (B) The expressions of CD73, CD29, CD146, CD34, and CD45 in DPSCs detected by flow cytometry. (C) The curve of DPSCs proliferation measured by cck8 assay from day 1 to day 7. (D) Clone formation assay of DPSCs for evaluating self-renewal capacity. (E) Alizarin red and oil red staining of DPSCs after osteogenic and adipogenic induction for 21 days. Tubulin β III immunofluorescence staining after neurogenic induction of DPSCs for 24 hours. Scale bars, 50 μ m. (F) HUVECs (Passage 5) isolated from human umbilical vein. Scale bars, 200 μ m. (G) Flow cytometry identified expression CD31, CD105, and CD106 in HUVECs. (H) Angiogenesis experiment of HUVECs for 4 hours. Scale bars, 200µm.



Figure S2. Technical diagram of the preparation of microfiber aggregates and implantation of them into the root of a tooth (Figure S2).



Figure S3. Angiogenesis in new pulp-like tissue.