



Simvastatin/hydrogel-loaded 3D-printed titanium alloy scaffolds suppress osteosarcoma via TF/NOX2-associated ferroptosis while repairing bone defects

Zehao Jing^{a,b,c,1}, Wanqiong Yuan^{a,b,c,1}, Jiedong Wang^{a,b,c,1}, Renhua Ni^{a,b,c}, Yu Qin^d, Zhinan Mao^d, Feng Wei^{a,b,c}, Chunli Song^{a,b}, Yufeng Zheng^{d,***}, Hong Cai^{a,b,**}, Zhongjun Liu^{a,b,c,*}

^a Department of Orthopedics, Peking University Third Hospital, Beijing, 100191, People's Republic of China

^b Engineering Research Center of Bone and Joint Precision Medicine, Ministry of Education, Beijing, 100191, People's Republic of China

^c Beijing Key Laboratory of Spinal Disease Research, Beijing, 100191, People's Republic of China

^d School of Materials Science and Engineering, Peking University, Beijing, 100871, People's Republic of China

The authors regret to inform that the image in Fig. 8 G was selected by mistake. The correct form of this figure is as below. The authors

apologize for any inconvenience we caused and state that this correction does not change the scientific conclusions of the article.

DOI of original article: <https://doi.org/10.1016/j.bioactmat.2023.11.001>.

* Corresponding author. Department of Orthopedics, Peking University Third Hospital, Beijing, 100191, People's Republic of China.

** Corresponding author. Department of Orthopedics, Peking University Third Hospital, Beijing, 100191, People's Republic of China.

*** Corresponding author. School of Materials Science and Engineering, Peking University, Beijing, 100871, People's Republic of China.

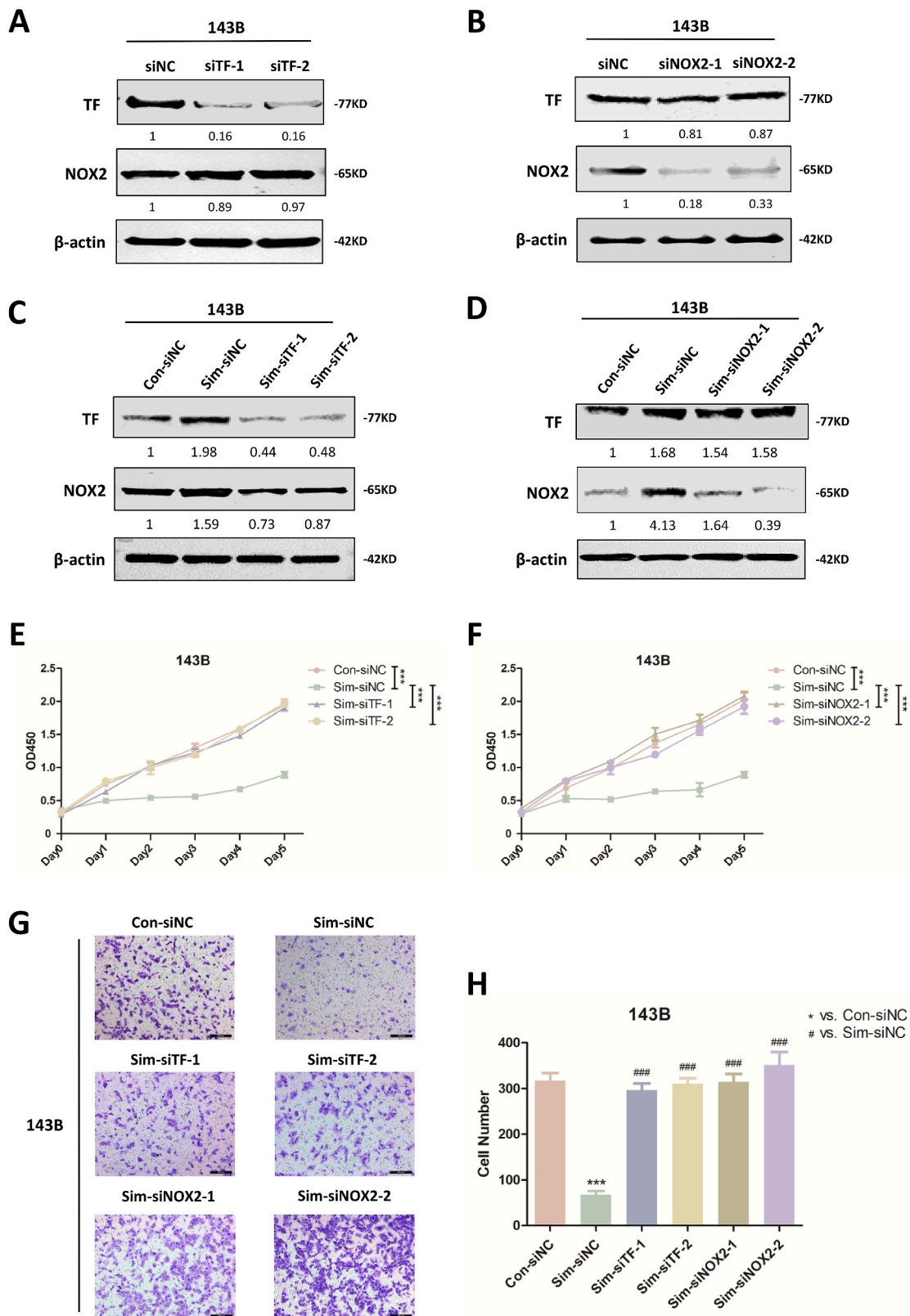
E-mail addresses: 1789081128@qq.com (Z. Jing), yuanwanqiong@bjmu.edu.cn (W. Yuan), xhwangjd@163.com (J. Wang), tiffanyni@126.com (R. Ni), qinyu95@126.com (Y. Qin), zmmao@pku.edu.cn (Z. Mao), weifeng@bjmu.edu.cn (F. Wei), schl@bjmu.edu.cn (C. Song), yfzheng@pku.edu.cn (Y. Zheng), hongcai@bjmu.edu.cn (H. Cai), zjliu@bjmu.edu.cn (Z. Liu).

¹ Zehao Jing, Wanqiong Yuan and Jiedong Wang contributed equally to this study.

<https://doi.org/10.1016/j.bioactmat.2024.01.002>

Received 2 January 2024; Accepted 3 January 2024

2452-199X/© 2024 The Authors. Published by KeAi Communications Co., Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).



Knockdown of TF or NOX2 reversed simvastatin-induced cell viability decrease and migration ability reduction of osteosarcoma cells *in vitro*. (A) Western blot depicting knockdown efficiency of TF siRNA. (B) Western blot depicting knockdown efficiency of NOX2 siRNA. (C) Western blot depicting the effects of simvastatin treatment on TF and NOX2 expression in 143B cells after TF silencing. (D) Western blot depicting the effects of simvastatin treatment on TF and NOX2 expression in 143B cells after NOX2 silencing. The relative integrated gray density of each blot is shown below it. (E) CCK-8 assay results depicting 143B cell proliferation ability after TF silencing. (F) CCK-8 assay results depicting 143B cell proliferation ability after NOX2 silencing. (G–H) Transwell assay results depicting 143B cell migration ability after TF or NOX2 silencing. (Con: control; Sim: simvastatin). (E–F) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. (G–H) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ compared with control group (Con-siNC group). # $p < 0.05$, ## $p < 0.01$, ### $p < 0.001$ compared with simvastatin group (Sim-siNC group).

Funding

This work was supported by National Natural Science Foundation of China (grant number 82272456 and 82202748) and China Postdoctoral Science Foundation (grant number 2022M720297).

CRediT authorship contribution statement

Zehao Jing: Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Software, Visualization, Writing – original draft. **Wanqiong Yuan:** Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Software, Visualization, Writing – original draft. **Jiedong Wang:** Data curation, Formal analysis, Investigation, Methodology, Software, Visualization, Writing – original draft. **Renhua Ni:** Formal analysis, Methodology, Visualization. **Yu Qin:** Data curation, Investigation. **Zhinan Mao:** Investigation, Methodology. **Feng Wei:** Formal analysis, Visualization, Writing – review & editing. **Chunli Song:** Formal analysis, Visualization, Writing – review &

editing. **Yufeng Zheng:** Conceptualization, Writing – review & editing. **Hong Cai:** Conceptualization, Resources, Writing – review & editing, Funding acquisition. **Zhongjun Liu:** Conceptualization, Project administration, Supervision, Writing – review & editing.

Declaration of competing interest

Yufeng Zheng is an editorial board member/editor-in-chief for Bioactive Materials and was not involved in the editorial review or the decision to publish this article. All authors declare that there are no competing interests.

Acknowledgement

The authors would like to acknowledge the research support from Beijing AKEC Medical Co., Ltd. and the guidance of Kuo Zhang for the animal experiments.