

# **Supporting Information to “Tannic Acid-Thioctic Acid Hydrogel: A Novel Injectable Supramolecular Adhesive Gel for Wound Healing”**

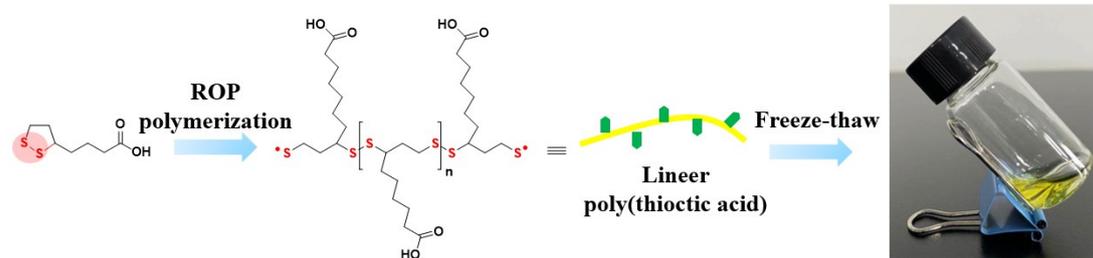
**Chen Chen<sup>1</sup>; Xiao Yang<sup>2</sup>; Shu-jing Li<sup>1</sup>; Chao Zhang<sup>1</sup>; Yu-ning Ma<sup>\*1</sup>; Yu-xia Ma<sup>\*1</sup>; Peng Gao<sup>1</sup>; Shu-zhong Gao<sup>\*1</sup>; Xiao-jun Huang<sup>3</sup>**

<sup>1</sup>Key Laboratory of New Material Research Institute, Department of Acupuncture-Moxibustion and Tuina, Shandong University of Traditional Chinese Medicine, Jinan 250355, China

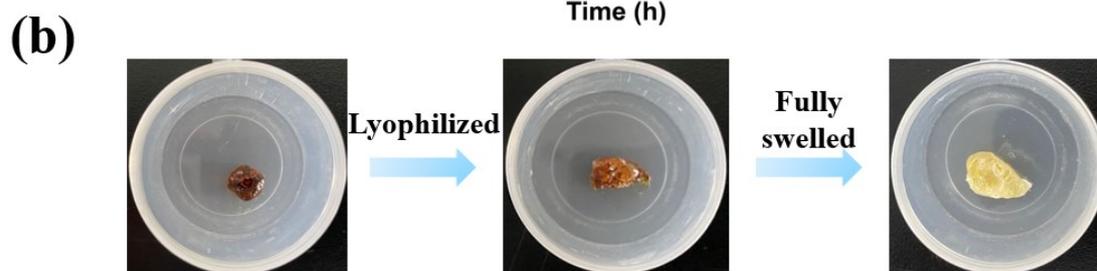
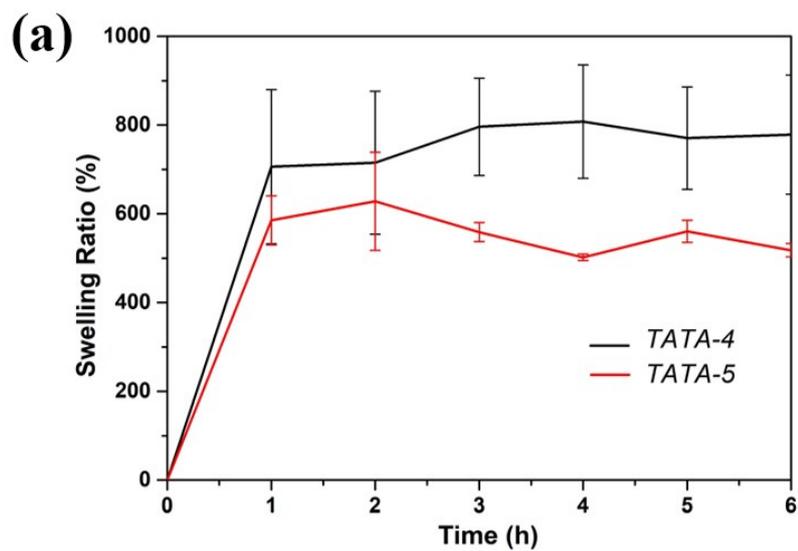
<sup>2</sup>The First Affiliated Hospital of Shandong First Medical University (Shandong Provincial Qianfoshan Hospital), Jinan 250014, China

<sup>3</sup>MOE Key Laboratory of Macromolecular Synthesis and Functionalization, Department of Polymer Science and Engineering, Zhejiang University, Hangzhou 310027, China

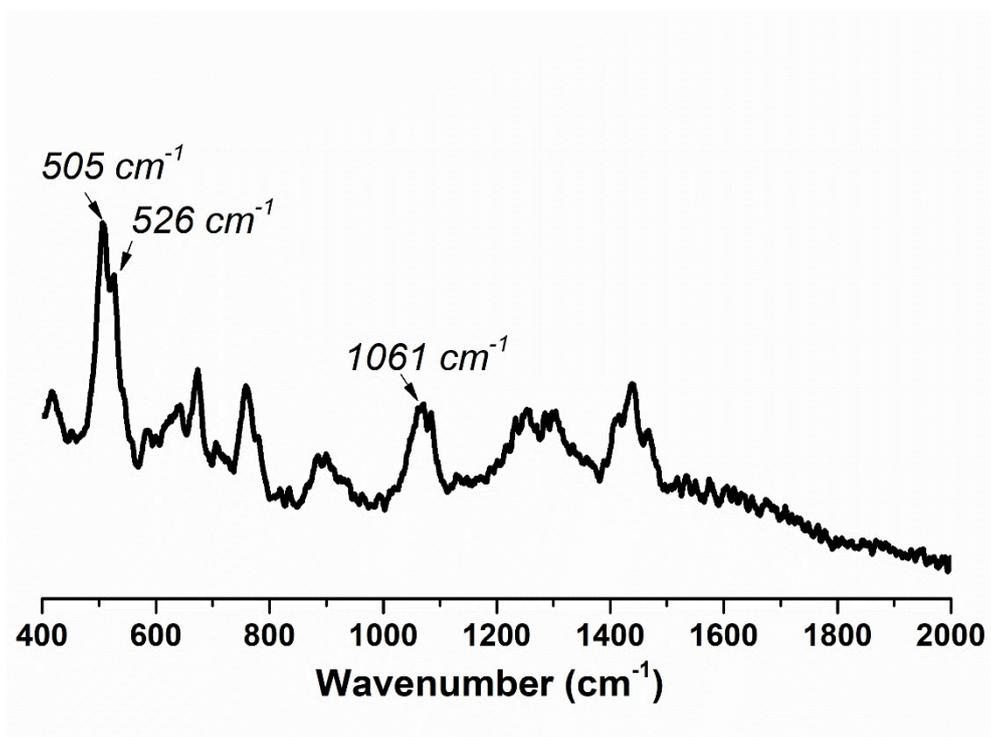
Correspondence to: Y. N. Ma and Y. X. Ma (E-mail: [myning0405@163.com](mailto:myning0405@163.com); [myxia1976@163.com](mailto:myxia1976@163.com) and [gaoshuzhong@163.com](mailto:gaoshuzhong@163.com))



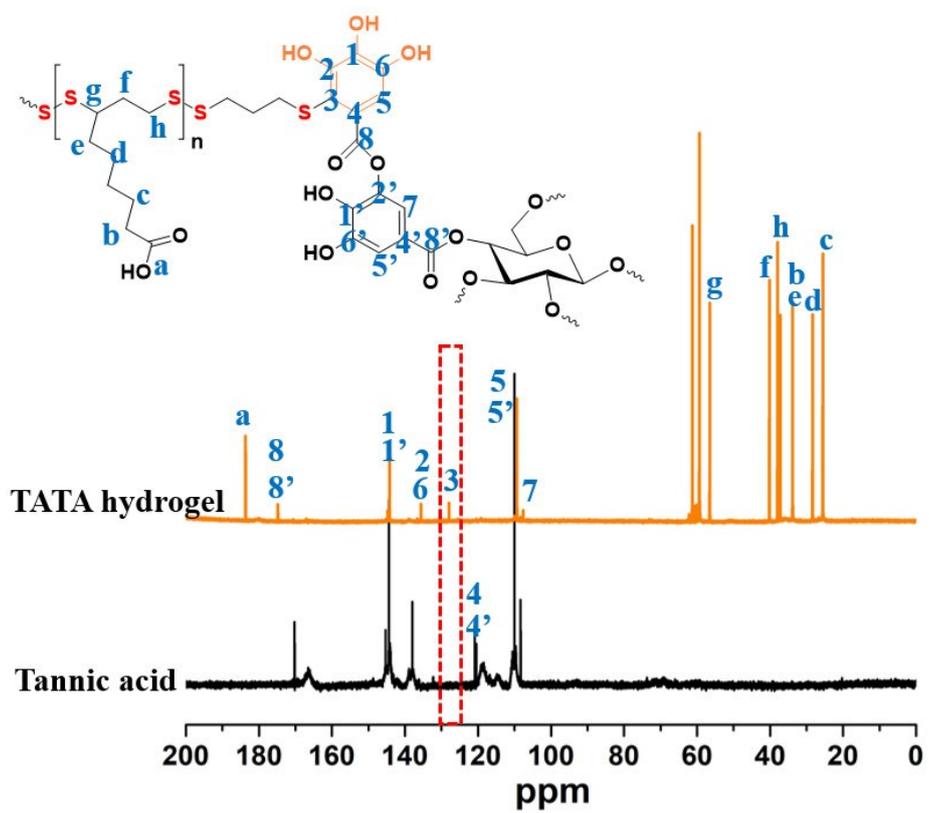
**Scheme S1** Synthesis of poly(TA) in aqueous medium.



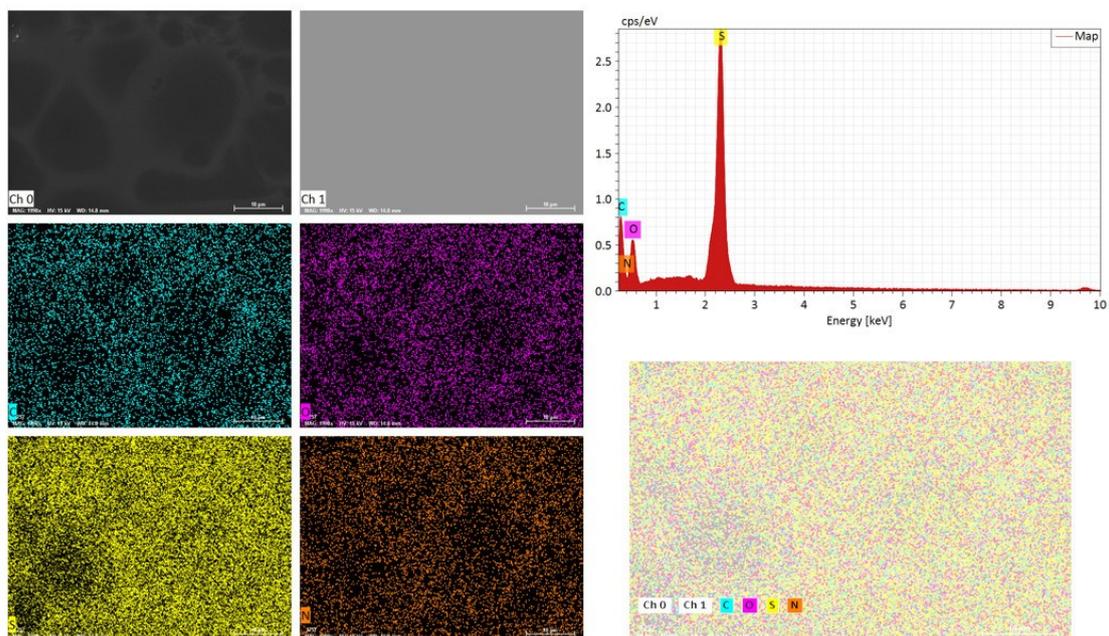
**Figure S1** (a) Swelling ratio of the TATA hydrogel; (b) Photographs of the plain, lyophilized and swelled TATA hydrogel.



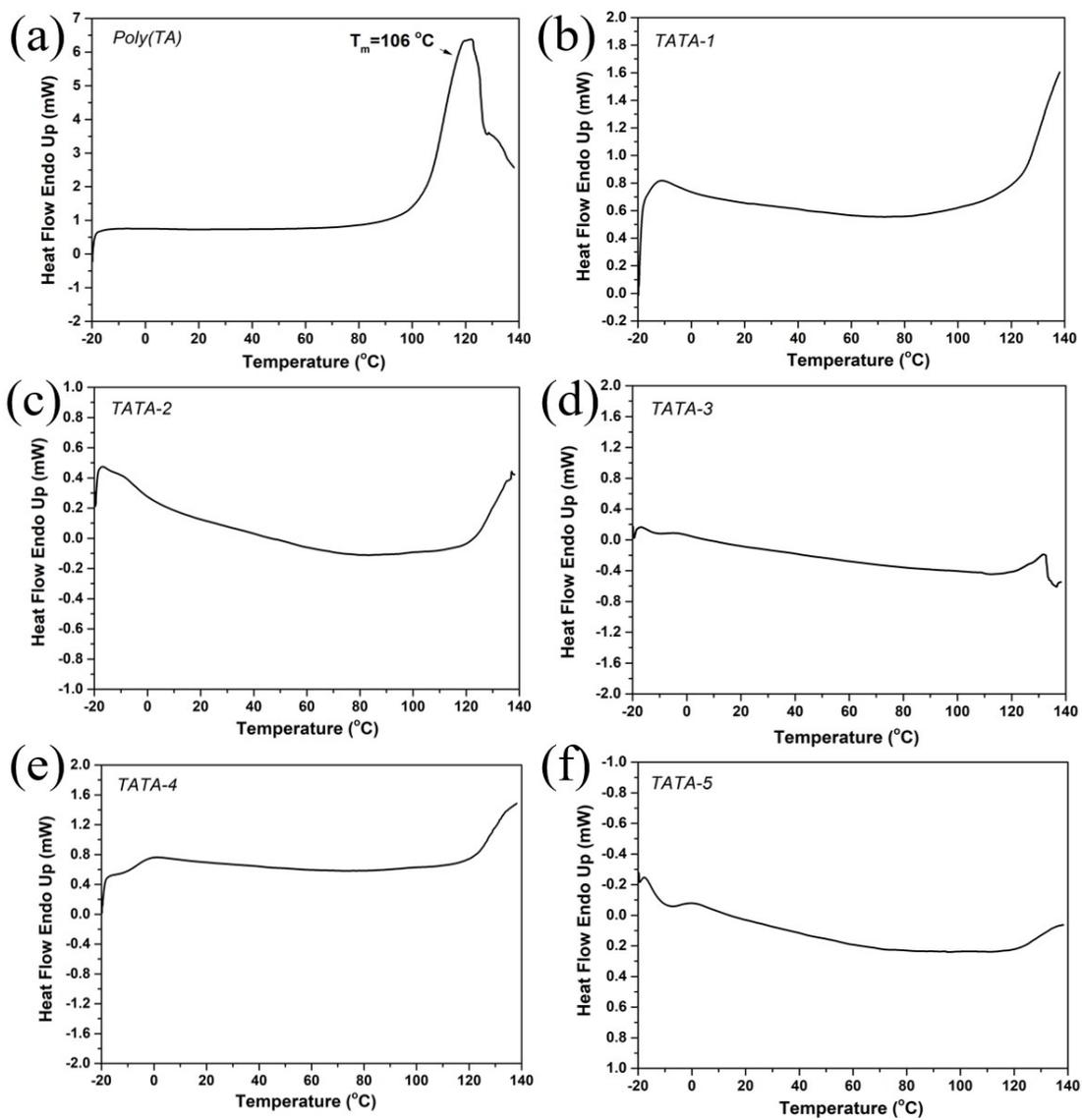
**Figure S2** Raman spectrum of the TATA hydrogel.



**Figure S3**  $^{13}\text{C}$  NMR spectra of tannic acid and TATA hydrogel.

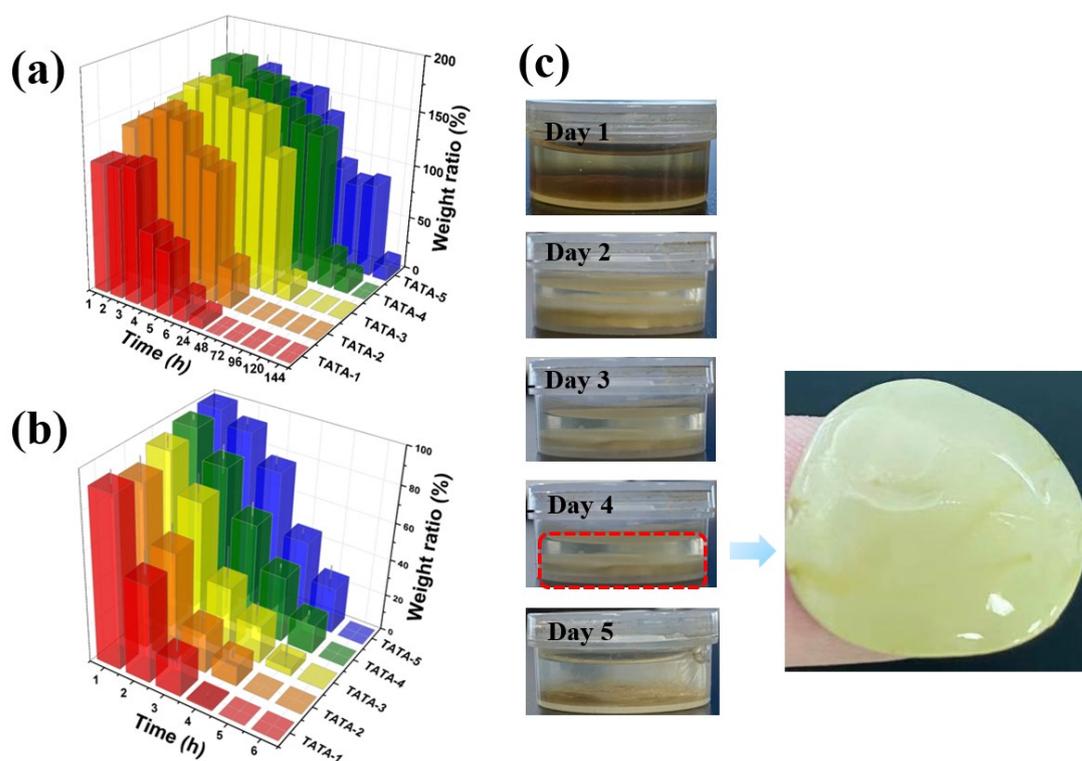


**Figure S4** Energy-dispersive spectroscopy spectrum and elementary mapping images of the TATA hydrogel.

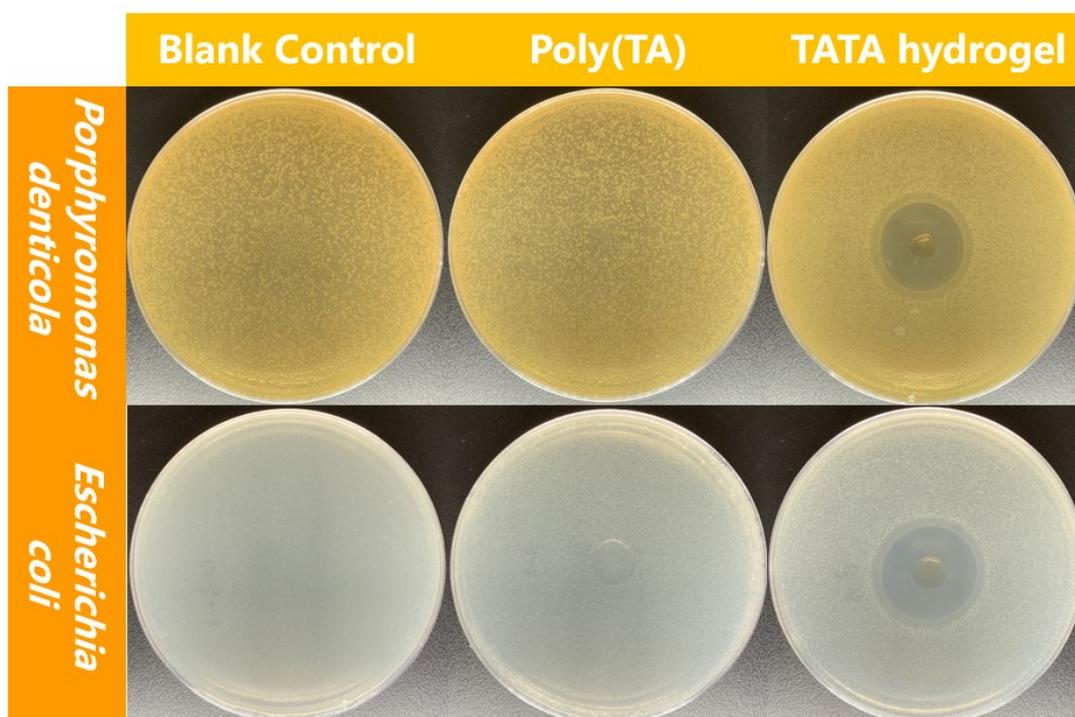


**Figure S5** DSC thermograms of poly(TA) (a) and lyophilized TATA copolymer

with different tannic acid to thiocctic acid mass ratios (b-f).



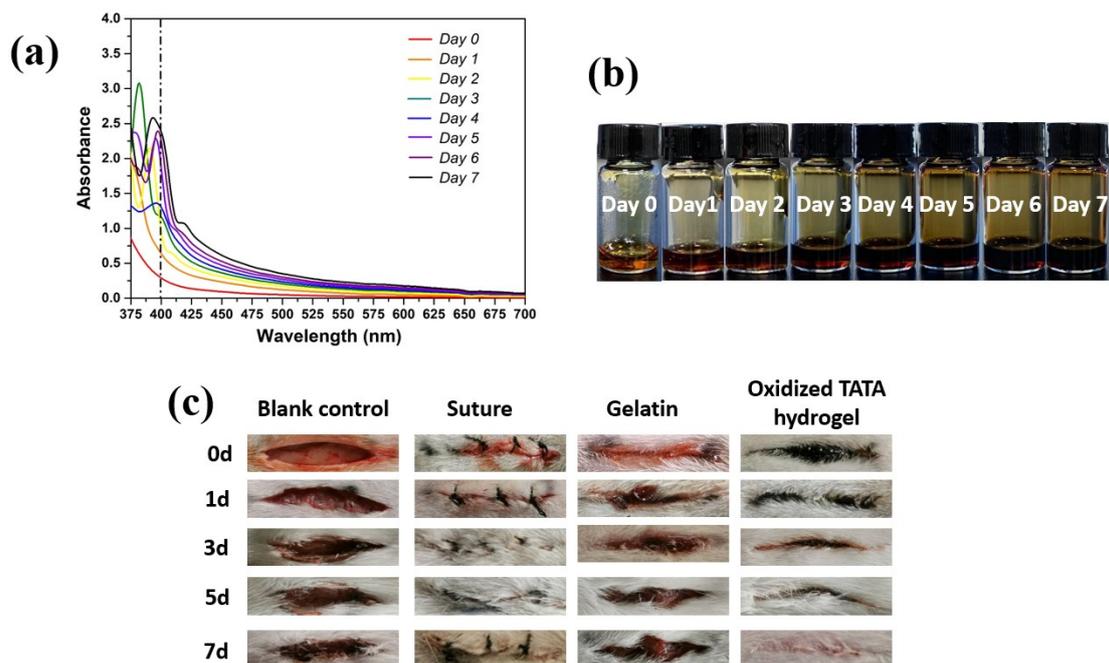
**Figure S6** (a) Degradation process of TATA hydrogels in pure PBS solution; (b) Degradation process of TATA hydrogels in glutathione media; (c) Images on TATA-5 hydrogel during hydrolysis in pure PBS solution.



**Figure S7** Photographs of the inhibition zones of poly(TA) as well as TATA hydrogel against *Porphyromonas denticola* and *Escherichia coli*.

**Table S1.** Antibacterial activity data of poly(TA) and TATA hydrogel against *Porphyromonas denticola* and *Escherichia coli* (\*P<0.05).

<b>Sample name</b>	<b>Inhibition zone(mm)</b>	
	<b><i>Porphyromonas denticola</i></b>	<b><i>Escherichia coli</i></b>
<b>Blank control</b>	<b>0</b>	<b>0</b>
<b>Poly(TA)</b>	<b>0</b>	<b>0</b>
<b>TATA hydrogel</b>	<b>22*</b>	<b>29*</b>



**Figure S8** (a) UV-vis spectra of TATA-3 hydrogel and its oxidative product; (b) Images of TATA-3 hydrogel during gradual oxidation at room temperature; (c) Photographs showing the incision sites from the 4 groups at days 0, 1, 3, 5 and 7.

## **Supporting Movies**

**Movie S1:** Wearable adhesive TATA hydrogel. The movie is real-time.

**Movie S2:** Injectable TATA hydrogel. The movie is real-time.