Supporting Information

Injectable Crosslinked Recombinant Collagen Nanofiber Implants Enable Robust Regenerative Repair of Photoaged Skin

Nannan Wei,[a,b‡] Yuchen Zhang,[a,b‡] Xinyu Tian, [a,b] Linyan Yao,[b,c] Jianxi Xiao[a,b]*

[a] State Key Laboratory of Natural Product Chemistry, College of Chemistry and Chemical Engineering, Lanzhou University, Lanzhou 730000, P. R. China

[b] Gansu Engineering Research Center of Medical Collagen

[c] State Key Laboratory of Animal Disease Control and Prevention, College of Veterinary Medicine, Lanzhou University, Lanzhou 730000, P. R. China

[‡]Equal contribution.

*Corresponding Author.

***Email: xiaojx@lzu.edu.cn**

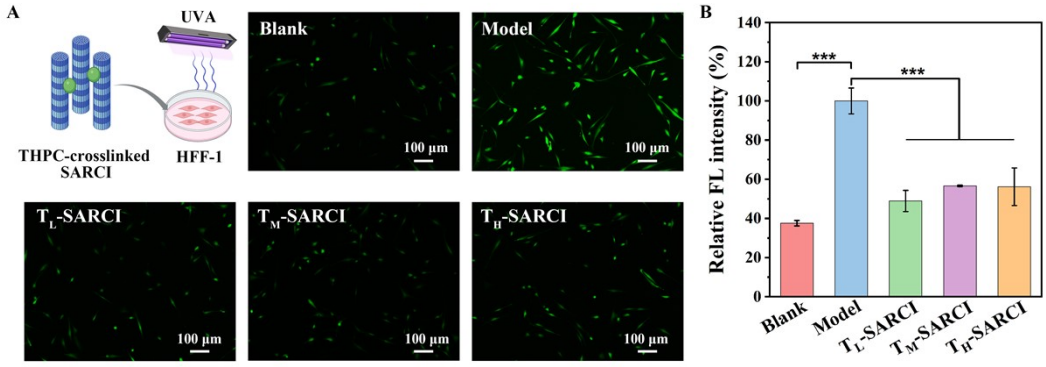

Fig. S1 Intracellular ROS assay in UVA-irradiated HFF-1 cells treated with THPC-crosslinked SARCI. (A) Schematic illustration of the in *vitro* oxidative-stress assay and representative DCFH-DA fluorescence images of HFF-1 cells following UVA irradiation. (B) Quantification of intracellular ROS-associated fluorescence, expressed as relative fluorescence intensity with the model group normalized to 100%. Data are presented as mean ± SD. ***P < 0.001.

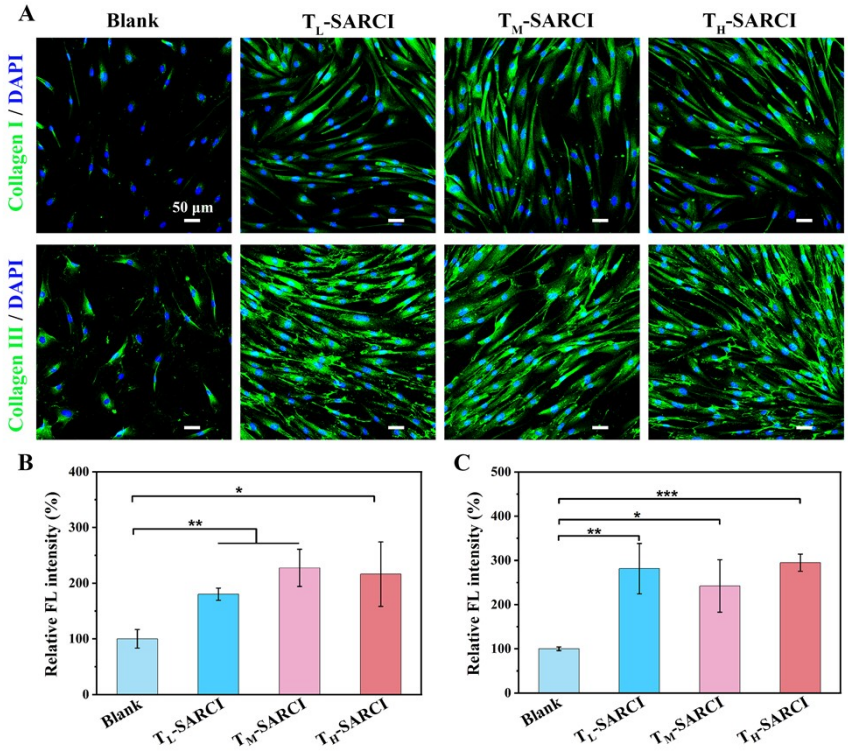

Fig. S2 Immunofluorescence validation of collagen production in HFF-1 cells following treatment with THPC-crosslinked SARCI. (A) Representative immunofluorescence

staining images of Collagen I and Collagen III. Quantification of the relative fluorescence intensity of (B) Collagen I and (C) Collagen III, normalized to the blank group (set to 100%). Data are presented as mean ± SD. *P < 0.05, **P < 0.01, ***P < 0.001.

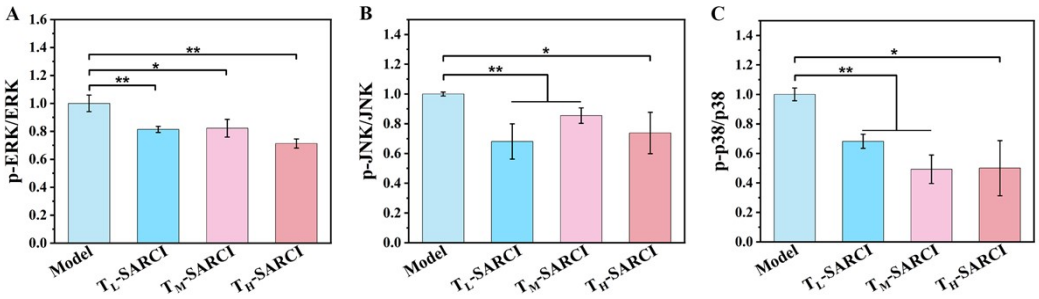

Fig. S3 Quantification of MAPK-related proteins in skin tissues by ELISA. (A) p-ERK/ERK, (B) p-JNK/JNK, and (C) p-p38/p38 ratios. Data are presented as mean ± SD. *P < 0.05, **P < 0.01.

Table S1. The amino acid sequence of RCI.

Recombinant collagen	Sequence
RCI	MHHHHHHADEQEEKAKVRTELIQELAQGLGGFEKKNFPTLGDEDLDHTYMT KLLTYLQEREQAENSWRKRLLKGIQDHALDLVPRGPPGPPGPPGPPGPPGPP GPPGPPGPPGPPGERGPPGPQGARGLPGAPGQMGPRGLPGERGRPGAPG PAGARGEPGAPGSKGDTGAKGEPGPVGVQGPPGPAGEEGKRGARGEPGPT GPAGPKGSPGEAGRPGEAGLPGERGPPGPQGARGLPGAPGQMGPRGLPG ERGRPGAPGPAGARGEPGAPGSKGDTGAKGEPGPVGVQGPPGPAGEEGKR GARGEPGPTGPAGPKGSPGEAGRPGEAGLPGPPGPPGPPGPPGPPGPPGPP GPPGPPGPP