

Supplement Materials

A Biocompatible and Biodegradable Protein Hydrogel with Green and Red Autofluorescence: Preparation, Characterization and *In Vivo* Biodegradation Tracking and Modeling

Xiaoyu Ma¹, Xiancheng Sun², Derek Hargrove³, Jun Chen¹, Donghui Song³, Qiuchen Dong¹, Xiuling Lu³, Tai-Hsi Fan⁴, Youjun Fu⁵, Yu Lei^{1,2*}

¹Department of Biomedical Engineering, University of Connecticut, Storrs, CT 06269, USA

²Department of Chemical and Biomolecular Engineering, University of Connecticut, Storrs, CT 06269, USA

³Department of Pharmaceutical Sciences, University of Connecticut, Storrs, CT 06269, USA

⁴Department of Mechanical Engineering, University of Connecticut, Storrs, CT 06269, USA

⁵Department of Chemistry, University of Connecticut, Storrs, CT 06269, USA

* To whom correspondence should be addressed:

Email: ylei@engr.uconn.edu

Tel: 1-860-486-4554 Fax : 1-860-486-2959

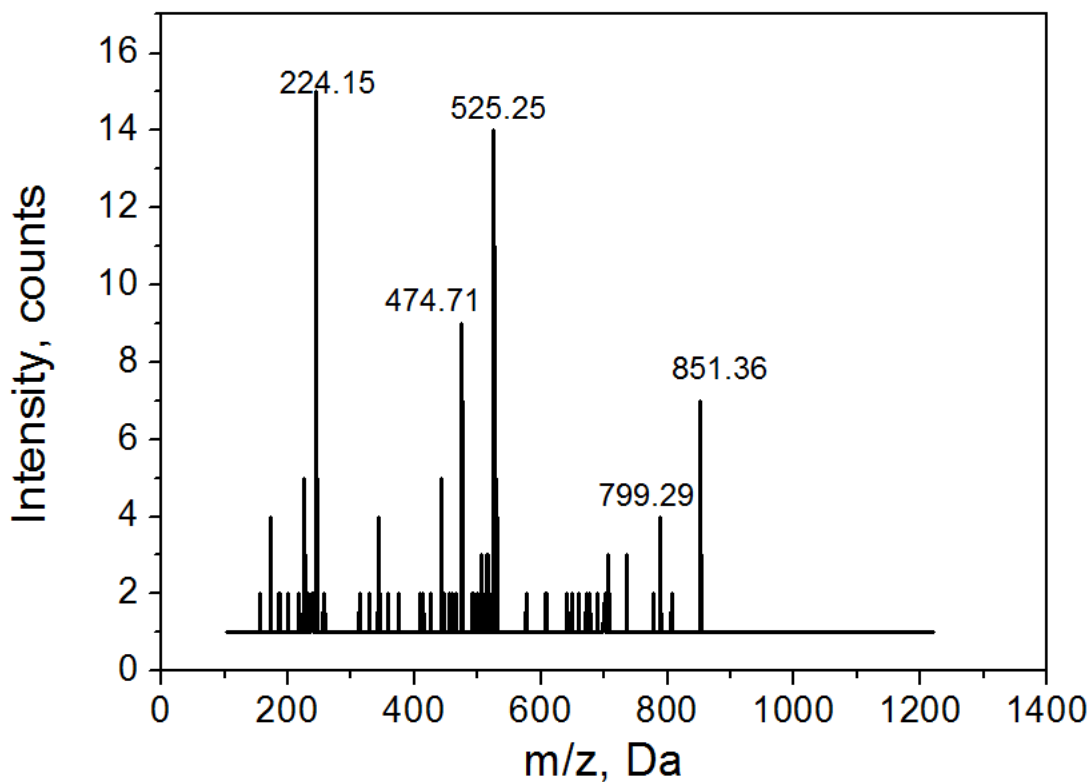


Figure S1| LC-MS result for GA cross-linked BSA hydrogel digested by Proteinase K.

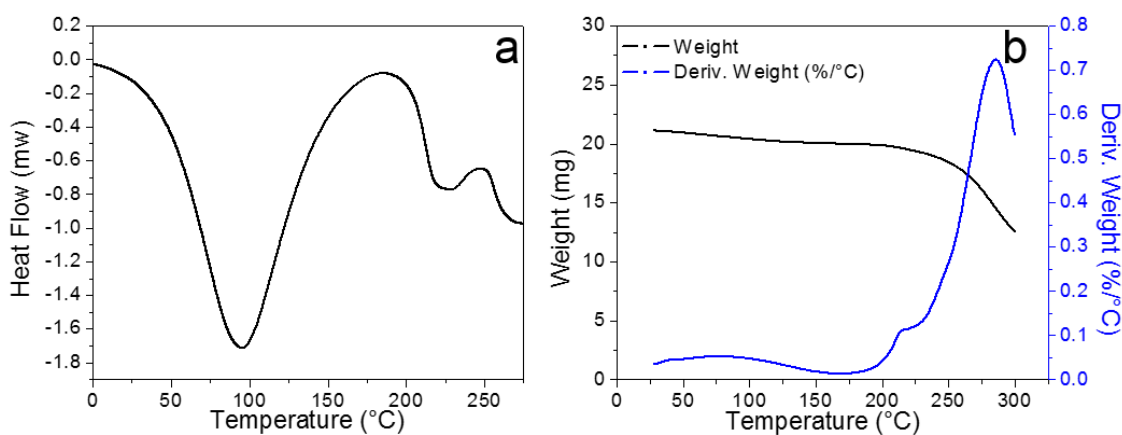


Figure S2| Thermal stability results. (a) DSC thermogram of the cross-linked BSA hydrogel; (b) TGA result of the cross-linked BSA hydrogel.

Differential Scanning Calorimetry (DSC) and Thermogravimetric Analysis (TGA) techniques were employed to study the thermal properties of the cross-linked BSA hydrogel. Unlike BSA particle whose melting point is ~ 68 °C, the DSC data of the as-prepared cross-linked BSA hydrogel shows a big peak centered at ~ 95 °C (Fig. S2a), which can be attributed to the fact that

chemical crosslinking of BSA increases the melting point of the hydrogel. TGA study indicates that the as-prepared hydrogel starts to decompose from ~ 180 °C (Fig. S2b).

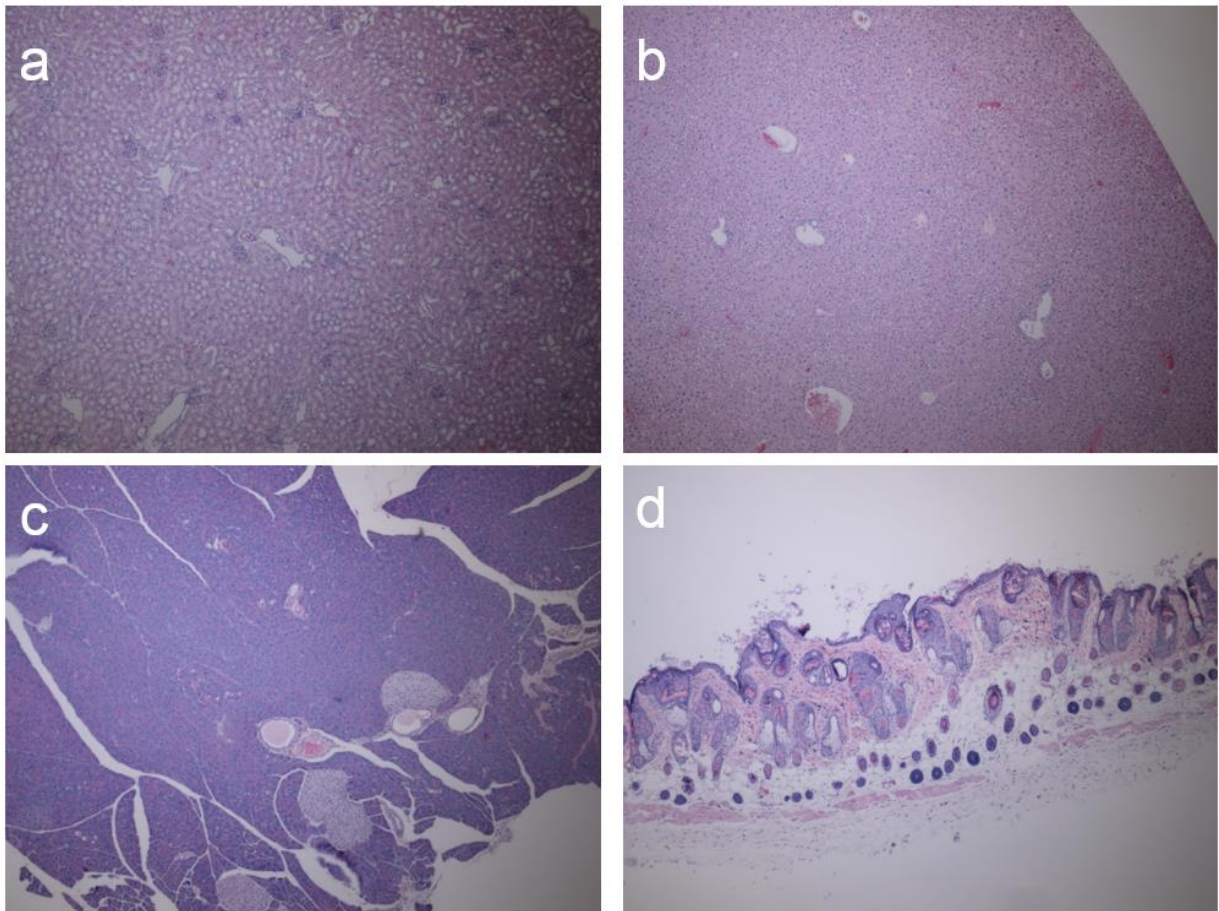


Figure S3| Histology study. (a) Kidney tissue images (40 \times); (b) Liver tissue image (40 \times); (c) Pancreas tissue image (40 \times); (d) Skin tissue image (40 \times).