Supporting Information for:

Focal Infection Treatment using Laser-Mediated Heating of Injectable Silk Hydrogels with Gold Nanoparticles

By *Nikola Kojic**, *Eleanor M. Pritchard**, *Hu Tao**, *Mark A. Brenckle**, *Jessica P. Mondia*, *Bruce Panilaitis*, *Fiorenzo Omenetto*[†], and *David L. Kaplan*[†]

Department for Biomedical Engineering, Tufts University, Medford, MA 02155, USA

*Authors contributed equally to this study
[†] Corresponding authors:
Fiorenzo Omenetto, David L. Kaplan
Tufts University
Department of Biomedical Engineering
4 Colby St., Medford, Massachusetts 02155 U.S.A.
Tel: 617-627-3251, Fax: 617-627-3231,
fiorenzo.omenetto@tufts.edu, david.kaplan@tufts.edu

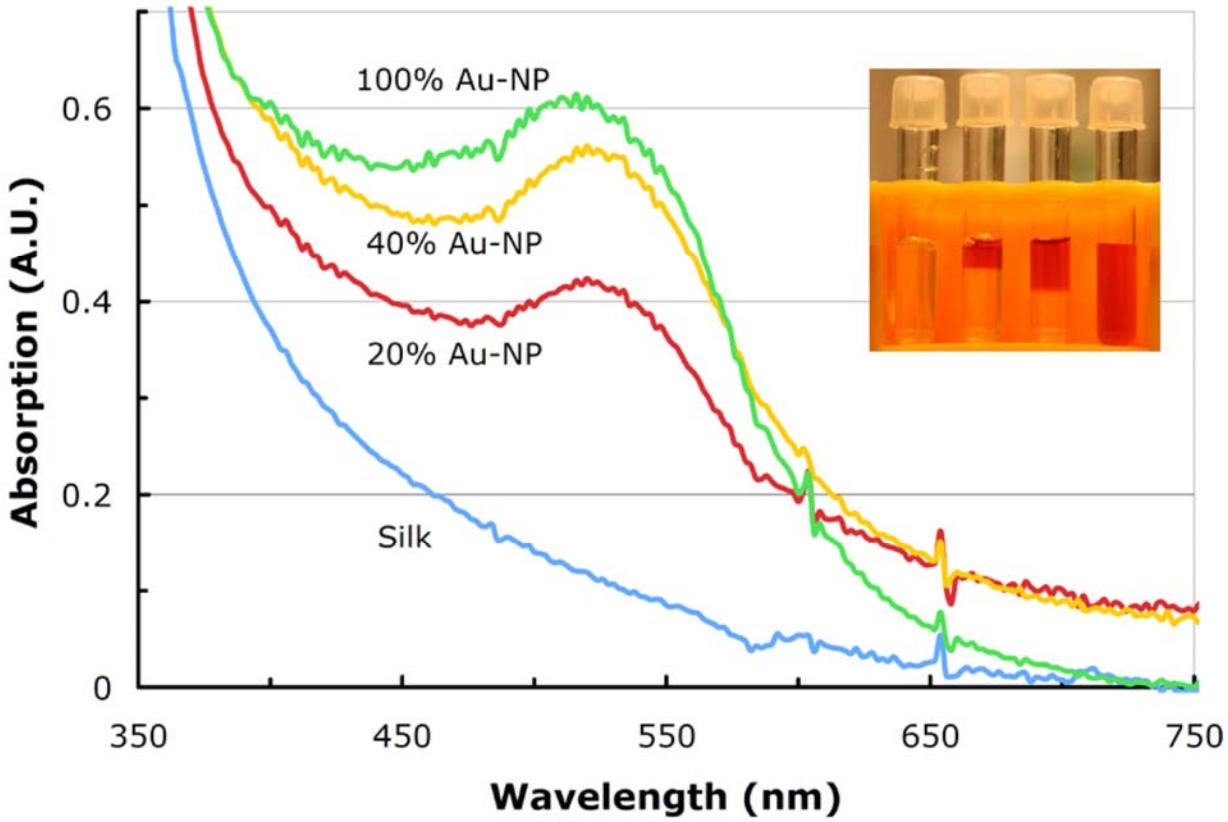

Figure S1. Characteristic UV-Vis spectra between 350 and 750 nm for different nm increases with the increasing concentrations of Au NPs doped silk. The absorption of the sample at a wavelength of ~ 530 nm increases with increasing concentration of Au NPs, which are visible to the naked eye. Inset shows the different Au-NP concentrations prior to mixing, ranging from 0% (pure silk solution) on the left to 100% Au-NP on the right (no silk solution present).

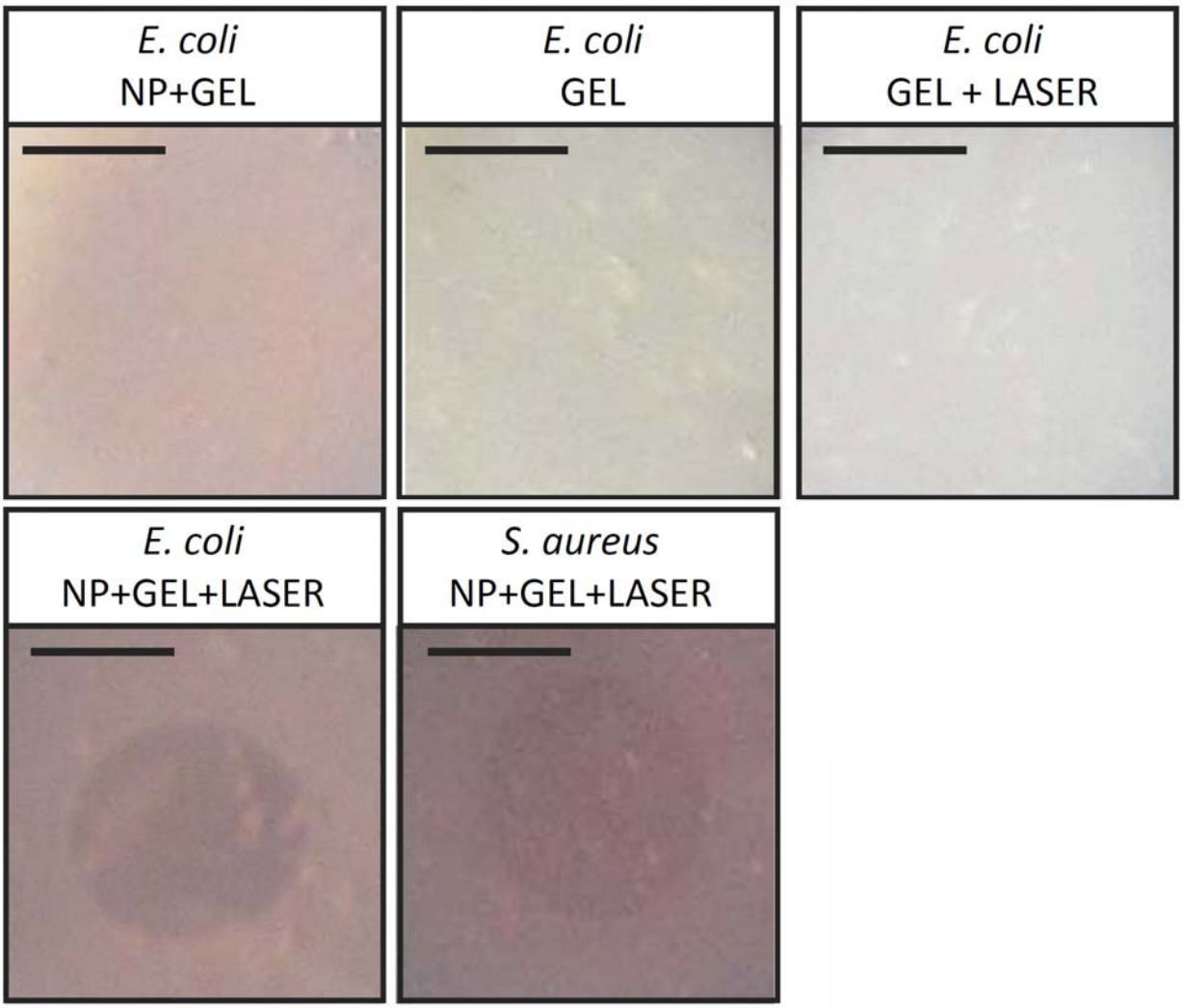

Figure S2. Representative images of *E.coli* and *S.aureus* lawn plates for varied hydrogel compositions and treatment groups. All samples were inoculated with liquid bacterial cultures while the silk was in the liquid phase prior to the onset of gelation, producing turbid lawns of growth after incubation overnight at 37^{o}C. Clear regions form where a bactericidal effect was achieved prior to lawn growth. NP= Gold nanoparticles suspended in hydrogel, GEL = vortex-induced silk hydrogel; LASER = exposure to laser. Hydrogels containing Au-NP are tinted pink, hydrogels without Au-NP are opaque white. Nanoparticles alone (NP+GEL) or laser alone (GEL+LASER) do not produce clearance zones. In combination NP+GEL+LASER produce zones of clearance in both *E. coli* and *S. aureus* lawns. Scale bar = 5mm.

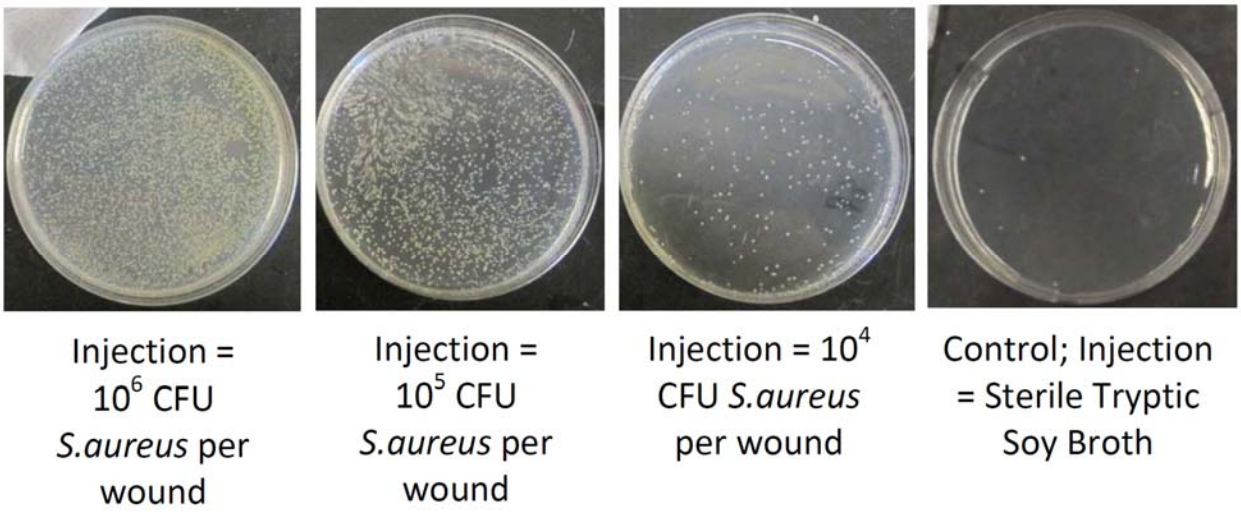

Figure S3. Representative plates from validation of the infected subcutaneous murine wound model used to investigate bactericidal effects *in vivo*. Plating shows CFU recovered from infected subcutaneous wounds scale with initial CFU density in the injection; no CFU are recovered from a site of sterile broth injection.