

## Supplementary Information

### Electrochemical detection of *Pseudomonas* in wound exudate samples from patients with chronic wounds

Hunter J. Sismaet, BS<sup>1</sup>, Anirban Banerjee, PhD<sup>2</sup>, Sean McNish, MS<sup>2</sup>, Yongwook Choi, PhD<sup>3</sup>, Manolito Torralba, BS<sup>3</sup>, Sarah Lucas, BS<sup>3</sup>, Agnes Chan, PhD<sup>3</sup>, Victoria K. Shanmugam, MD<sup>2\*</sup>, Edgar D. Goluch, PhD<sup>1\*</sup>

<sup>1</sup>Department of Chemical Engineering, Northeastern University, 360 Huntington Ave, 313 Snell Engineering, Boston, MA 02115 USA

<sup>2</sup>Division of Rheumatology, Ideas to Health Laboratory, The George Washington University, School of Medicine and Health Sciences, 701 Ross Hall, 2300 Eye Street, NW, Washington, DC 20037

<sup>3</sup>The J. Craig Venter Institute, 9704 Medical Center Drive, Rockville, MD, 20850

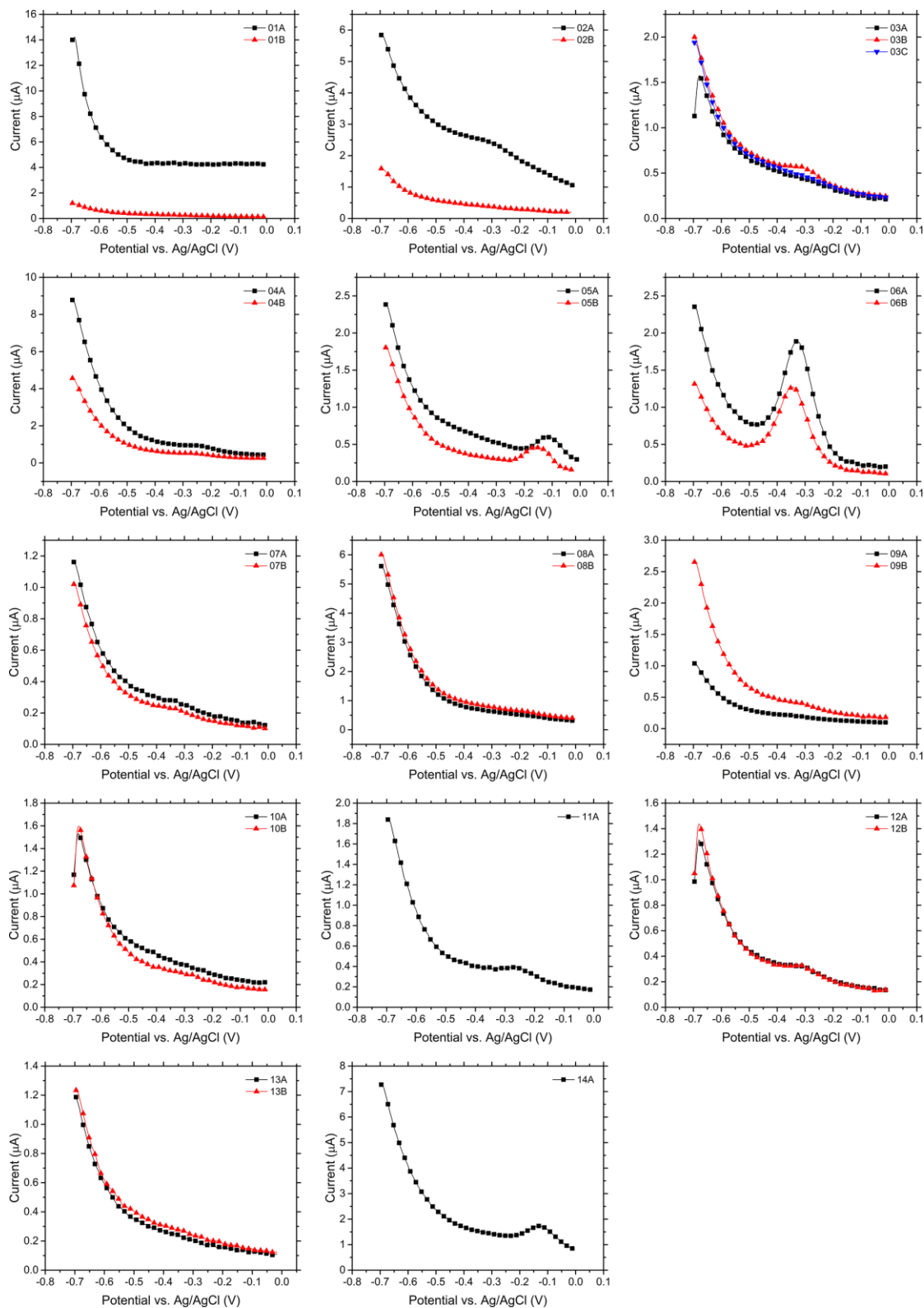
\*Corresponding authors:

phone: (202) 994-8567, fax: (202) 994-8188, vshanmugam@mfa.gwu.edu;

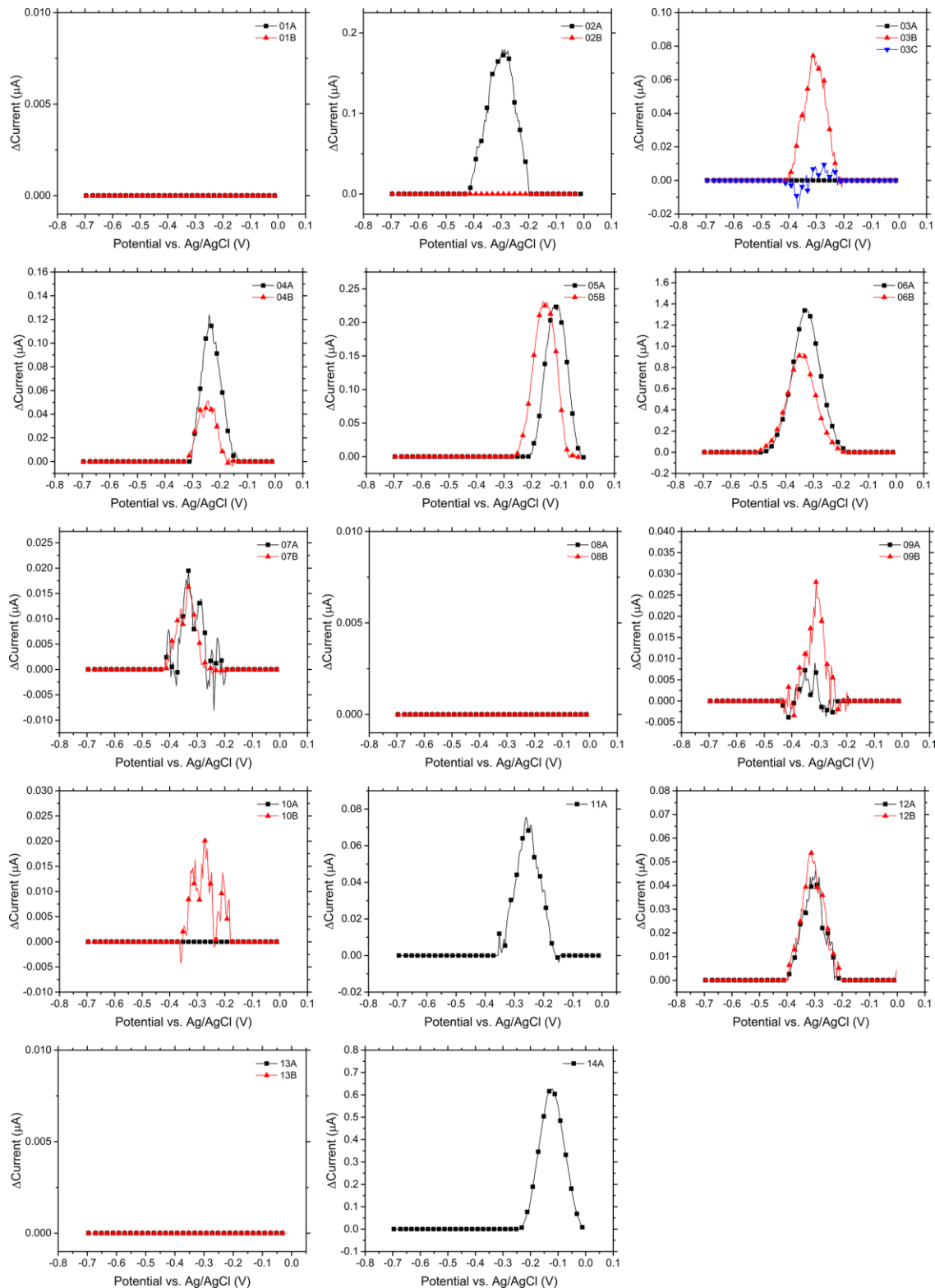
phone: (617) 373-3500, fax: (617) 373-2209, e.goluch@neu.edu

#### S1. Square-wave voltammograms of wound exudate from clinical patient samples

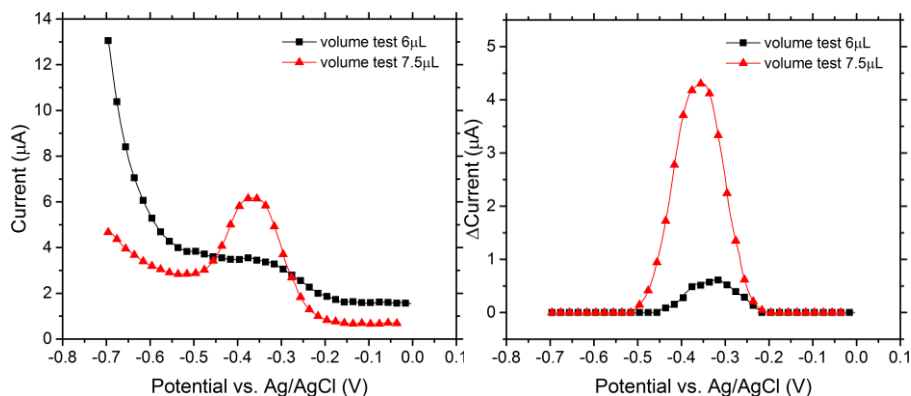
Square-wave voltammetric scans were performed at potentials ranging from -0.7 to 0.0 V at an amplitude voltage of 0.05 V, step voltage of 0.004 V, and a frequency of 15 Hz. Pyocyanin is known to produce an oxidation peak at -0.25 V vs. a Ag/AgCl reference electrode, indicating the presence of *Pseudomonas aeruginosa* in the sample. However, shifts in potential can occur due to differences in the salt and pH concentration of the sample media, as well as the limited stability of the Ag/AgCl quasi-reference of the disposable sensor.



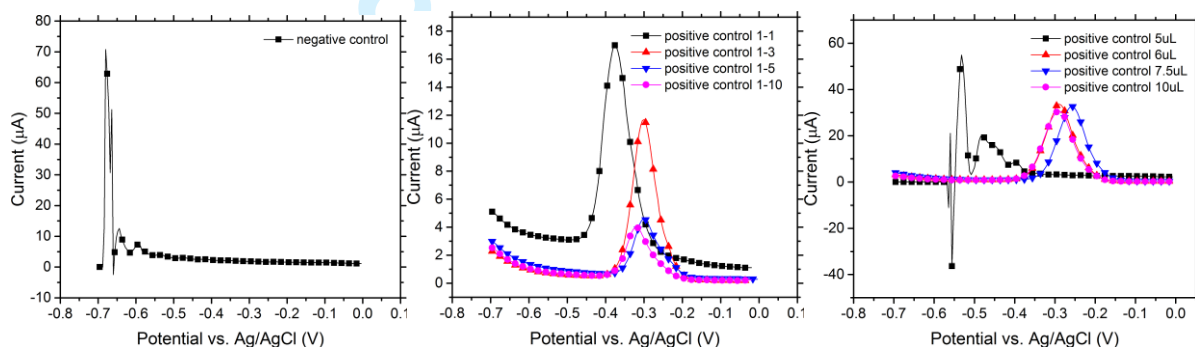
**Figure S1.** Square-wave voltammograms of 14 paired wound fluid and biofilm samples from 12 patients. Each sample is numbered accordingly with repeated scans reported as letters.



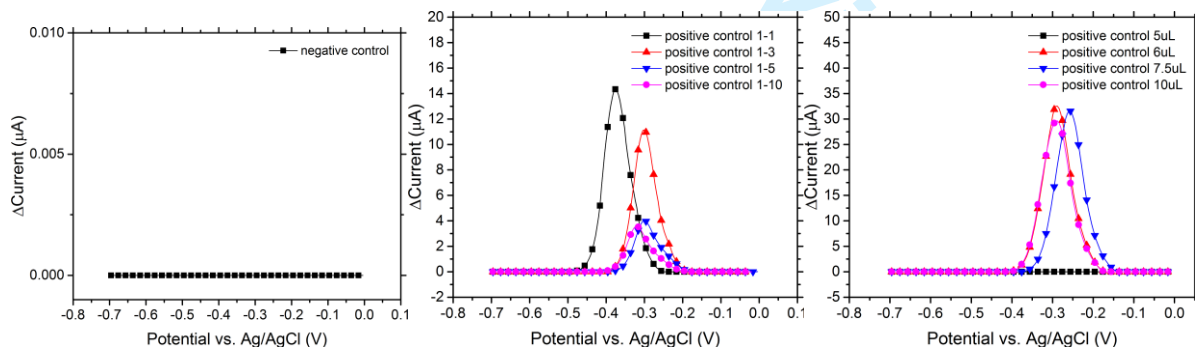
**Figure S2.** Baseline-subtracted square-wave voltammograms of 14 paired wound fluid and biofilm samples from 12 patients. Each sample is numbered accordingly with repeated scans reported as letters.



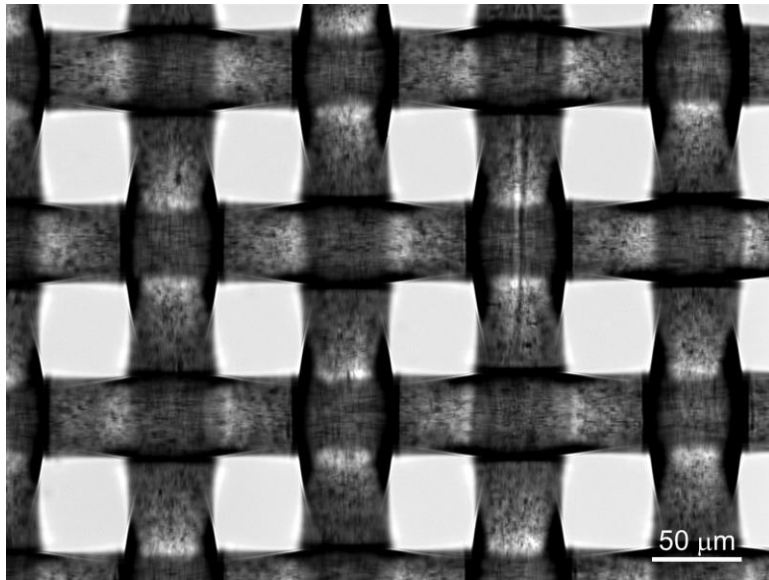
**Figure S3.** Square-wave voltammograms of wound fluid exudate for two different volumes tested before (left) and after (right) baseline subtraction.



**Figure S4.** Square-wave voltammograms of wound fluid exudate of a negative control (left), positive controls (middle), and positive controls with different fluid volumes (right).



**Figure S5.** Baseline-subtracted square-wave voltammograms of wound fluid exudate of the negative control (left), positive controls (middle), and positive controls with different fluid volumes (right).



**Figure S6.** Bright-field image of the membrane mesh placed on top of electrode sensor for small-volume sample analysis.

Peer Review