



Communication

Aptamers as Novel Binding Molecules on an Antimicrobial Peptide-Armored Composite Hydrogel Wound Dressing for Specific Removal and Efficient Eradication of *Pseudomonas aeruginosa*

Markus Kraemer 1,†, Magali Bellion 1,†, Ann-Kathrin Kissmann 1,2,*, Tilmann Herberger 2, Christopher V. Synatschke 2, Anil Bozdogan 3,4, Jakob Andersson 4, Armando Rodriguez 5,6, Ludger Ständker 6, Sebastien Wiese 6, Steffen Stenger 7, Barbara Spellerberg 7, Kay-Eberhard Gottschalk 8, Ahmet Cetinkaya 9, Joanna Pietrasik 9, Tanja Weil 2 and Frank Rosenau 1,2,*

1 Institute of Pharmaceutical Biotechnology, Ulm University, Albert-Einstein-Allee 11, 89081 Ulm, Germany

2 Max-Planck-Institute for Polymer Research Mainz, Ackermannweg 10, 55128 Mainz, Germany

3 Center for Electrochemical Surface Technology (CEST), Austrian Institute of Technology, 3420 Tulln, Austria

4 Austrian Institute of Technology, Giefinggasse 4, 1210 Vienna, Austria

5 Core Facility for Functional Peptidomics, Ulm Peptide Pharmaceuticals (U-PEP), Faculty of Medicine, Ulm University, 89081 Ulm, Germany

6 Core Unit of Mass Spectrometry and Proteomics, Faculty of Medicine, Ulm University, 89081 Ulm, Germany

7 Institute for Medical Microbiology and Hygiene, University Hospital Ulm, 89081 Ulm, Germany

8 Institute of Experimental Physics, Ulm University, Albert-Einstein-Allee 11, 89081 Ulm, Germany

9 Institute of Polymer and Dye Technology, Lodz University of Technology, Stefanowskiego 16, 90-537 Lodz, Poland

* Correspondence: ann-kathrin.kissmann@uni-ulm.de (A.-K.K.); frank.rosenau@uni-ulm.de (F.R.)

† These authors contributed equally to this work.

Figure S1. Analysis of the specific binding of *P. aeruginosa* PAO1 and *E. coli* to incomplete and fully functionalized BSA hydrogels. 25,000 cells were used on the complete and incomplete BSA hydrogels. (A) Computed cells per mm² for each BSA hydrogel condition for *P. aeruginosa* PAO1 and *E. coli*. The statistical analysis with a Mann-Whitney-U-Test shows significant p-values of $p < 0.001$ between the fully functionalized complexes with *P. aeruginosa* and *E. coli* and all other partially functionalized complexes with *P. aeruginosa*. + denotes presence and – denotes absence of components. (B) Fluorescence microscopy of the functionalized BSA hydrogels with GFP-modified *P. aeruginosa* and *E. coli* cells in comparison to incomplete functionalized BSA hydrogels (magnification 100x). *P* values < 0.05 were considered significant. *** denotes $P < 0.001$.