

# *Staphylococcus aureus* adhesion on hydrophobin coatings: adhesion forces and the influence of surface charge

Friederike Nolle,<sup>†,‡,#</sup> Ben Wieland,<sup>¶,#</sup> Kirstin Kochems,<sup>†</sup> Hannah Heintz,<sup>†</sup> Michael Lienemann,<sup>§,||</sup> Philipp Jung,<sup>¶</sup> Hendrik Hähl,<sup>†</sup> Markus Bischoff,<sup>¶</sup> and Karin Jacobs<sup>\*,†,⊥</sup>

<sup>†</sup>*Experimental Physics, Saarland University, Center for Biophysics, 66123 Saarbrücken, Germany*

<sup>‡</sup>*Department of Electrical Engineering, Trier University of Applied Science, 54293 Trier, Germany*

<sup>¶</sup>*Institute of Medical Microbiology and Hygiene, Saarland University, 66421 Homburg, Germany*

<sup>§</sup>*VTT Technical Research Centre of Finland Ltd., 02150 Espoo, Finland*

<sup>||</sup>*Medix Biochemica Group, Headquarter, 02180 Espoo, Finland*

<sup>⊥</sup>*Max Planck School, Matter to Life, 69120 Heidelberg, Germany*

<sup>#</sup>*These authors contributed equally to this work.*

E-mail: k.jacobs@physik.uni-saarland.de

# Supporting Information

The bacterial strains were grown and prepared for SCFS, and the surfaces were coated as described in S1. SCFS data recorded with SA113 or SA113  $\Delta dltA$  cells on an HSA-coated surface were analyzed by normalizing to the mean force of the same cell determined on an HFBI-coated surface (Fig. S1a or S1c). Histograms and box-and-whisker plots show the distribution of the recorded adhesion forces, either with non-adhesion events included in box-and-whisker plots or separated in the histograms (Fig. S1b or S1d).

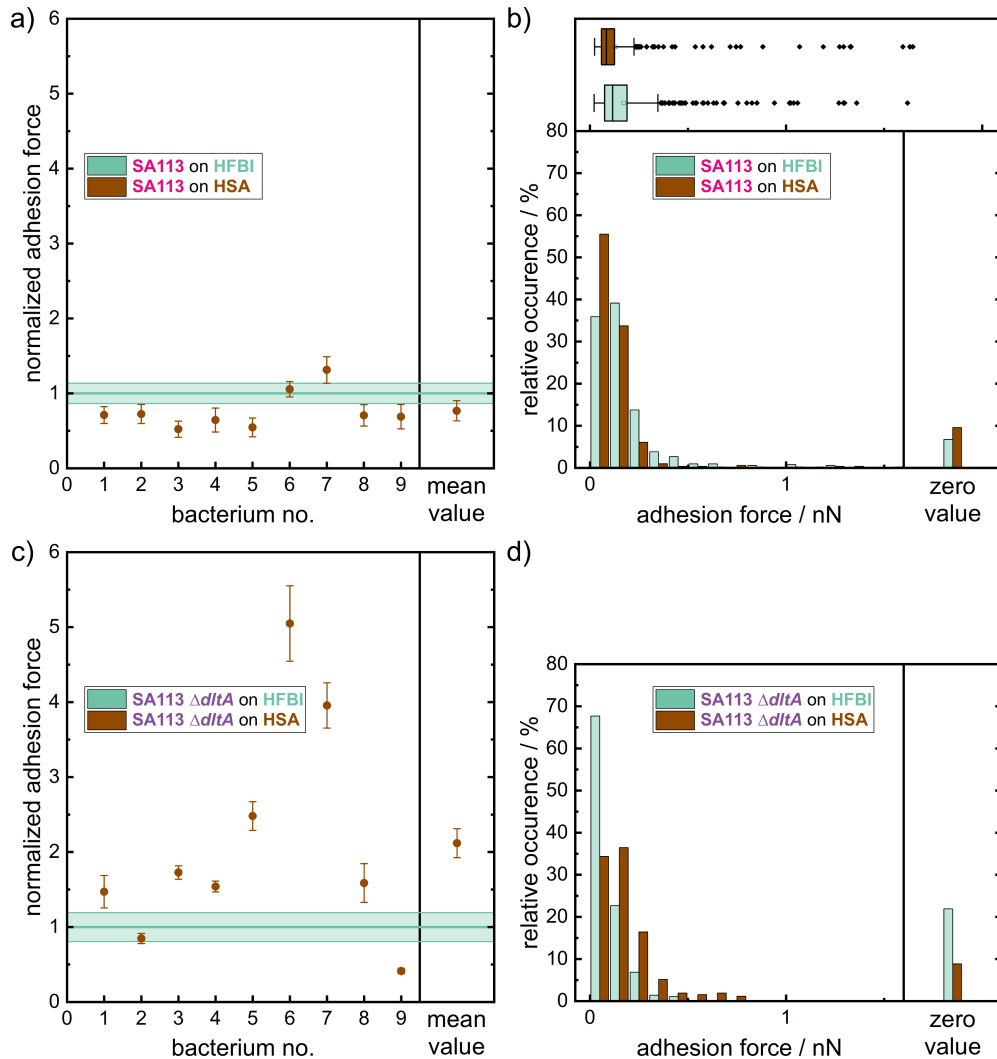


Figure S1: Adhesion forces of nine *S. aureus* SA113 (a,b) and SA113  $\Delta dltA$  (c,d) cells on HFBI or HSA coated surfaces. (a,c) Mean adhesion forces of single *S. aureus* cells normalized to the adhesion value of each cell on the HFBI surfaces (HFBI: pale green line, HSA: brown measurement points). Error bars depict the standard error of the mean. (b,d) Histograms and box-and-whisker plots of all adhesion force values measured for *S. aureus* cells. Display also the non-adhesion events (adhesion force < 40 pN) excluded from the main histogram, included in the box-and-whisker plots. (b,d) The box-and-whisker plots display the mean adhesion forces of SA113 (HFBI: 172.8 pN, HSA 129.5 pN) and the median adhesion forces (HFBI: 116.1 pN, HSA 84.1 pN), as well as the mean adhesion forces of SA113  $\Delta dltA$  (HFBI: 97.8 pN, HSA 182.1 pN) and median adhesion forces (HFBI: 69.0 pN, HSA 139.3 pN).