

## **Description of Additional Supplementary Files**

File Name: Supplementary Movie 1

Description: Quantification of adhesion forces between *S. aureus* and micropatterned IEC-6 cell monolayers based on the FluidFM-based SCFS.

File Name: Supplementary Movie 2

Description: Monte Carlo simulations of spatiotemporal adhesion between *S. aureus* and micropatterned IEC-6 cell monolayers.

File Name: Supplementary Movie 3

Description: Monte Carlo simulations of spatiotemporal adhesion between latex beads and micropatterned IEC-6 cell monolayers.

File Name: Supplementary Movie 4

Description: Monte Carlo simulations of spatiotemporal adhesion between *S. aureus* and micropatterned IEC-6 cell monolayers cultured on substrates with different rigidities.