

Surface contact stimulates the just-in-time deployment of bacterial adhesins.

Guanglai Li^{*1}, Pamela J.B. Brown^{*2}, Jay X. Tang¹, Jing Xu², Ellen M. Quardokus², Clay Fuqua² and Yves V. Brun^{#2}

¹Physics Department, Brown University, Providence, RI 02912

²Department of Biology, Indiana University, Bloomington, IN 47405

* equal contribution

corresponding author: ybrun@indiana.edu

Supporting Information

Figure S1: Additional fluorescence intensity traces of holdfast in A) *Caulobacter crescentus* and B) *Asticcacaulis biprosthecum*, and the unipolar polysaccharide (UPP) of C) *Agrobacterium tumefaciens* for the experiment in Figure 2.

Figure S2: Darkfield image of attached cells and trajectories of swimming cells observed 1 min and 5 min after cell synchronization. The trajectories of swimming cells are the overlap of three consecutive frames. A) attached cells, 1 min; B) attached cells 5 min; C)

swimming trajectories, 1 min; D) swimming trajectories 5 min. Scale bar represents 50 μm .

Figure S3: Additional fluorescence intensity traces of holdfast of cells exposed to Ficoll for the experiment in Figure 3. A) *Caulobacter crescentus* wild-type, B) *Caulobacter crescentus* $\Delta pilA$.

Movies

Movie S1: Combined light and TIRF image series of *C. crescentus* CB15 wild type (YB135) in the presence of fluorescent WGA-lectin.

Movie S2: Attachment of wild-type swarmer cells to a glass surface. The flagellar motor stops rotation quickly after the cell gets tethered to the surface. One cell gets tethered at 7 sec and another at 1 min 8 sec and their rotation stops within a few seconds. Other swimming cells seen in the movie are too far from the surface to get tethered, as seen by the fact that they appear out of focus, and continue to swim.

Movie S3: Attachment of $\Delta pilA$ mutant swarmer cells to a glass surface. Two cells get tethered at ~ 7 sec but their rotation does not stop. One cell leaves the surface at ~ 15 sec

and the other at ~ 34 sec.

Movie S4: Synchronized wild-type cells 1 min after preparing the slide in PYE with 10% Ficoll.

Movie S5: Synchronized wild-type cells 4 min after preparing the slide in PYE with 10% Ficoll.

Movie S6: Combined light and TIRF image series of *A. biprosthecum* (JH2) in the presence of fluorescent WGA-lectin.

Movie S7: Combined light and TIRF image series of *A. tumefaciens* in the presence of fluorescent WGA-lectin.

Movie S8: Combined DIC and epifluorescence image series of *A. tumefaciens* UPP production as cells attach to an Arabidopsis root. Images were collected every 10 min. The movie corresponds to 240 min and is shown at 10 frames per second.

Movie S9: Combined DIC and epifluorescence image series of a single *A. tumefaciens*

cells attaching to an Arabidopsis root and subsequent UPP production. Images were collected every 10 min. The movie corresponds to 60 min and is shown at 5 frames per second.

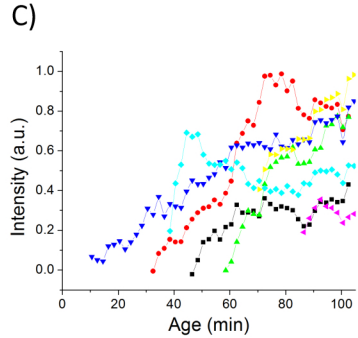
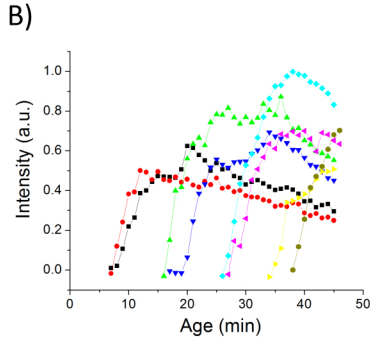
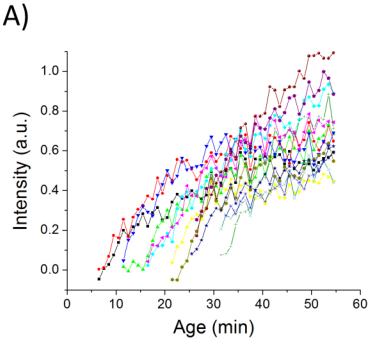


Figure S1

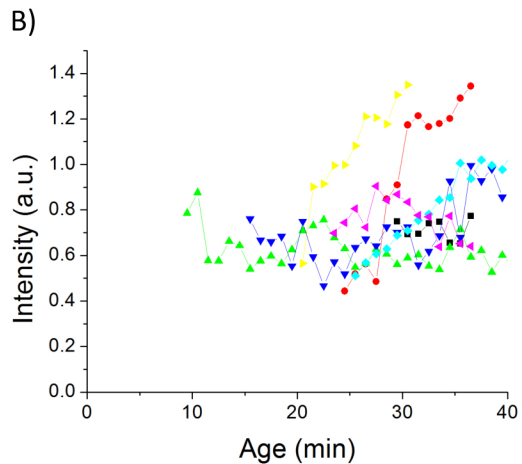
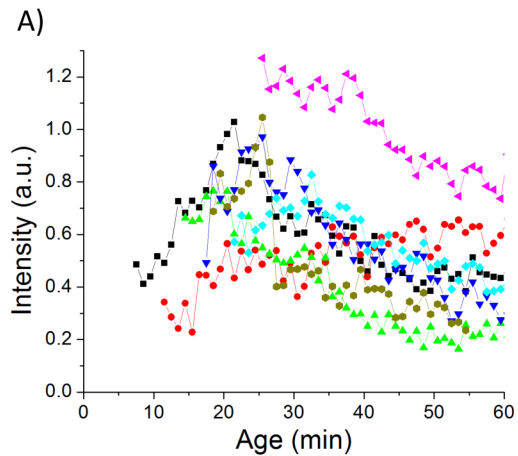
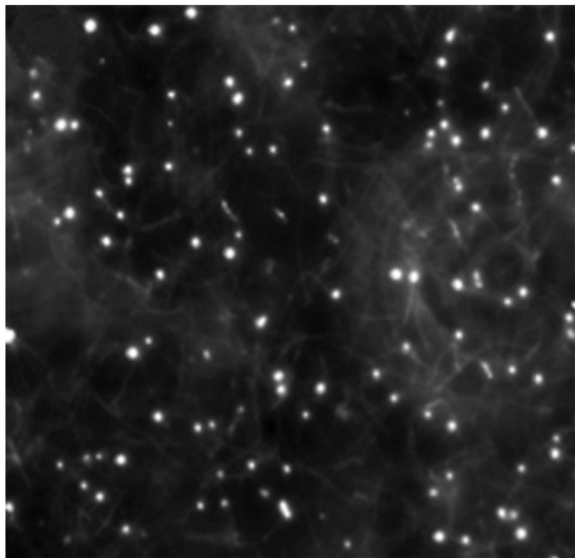
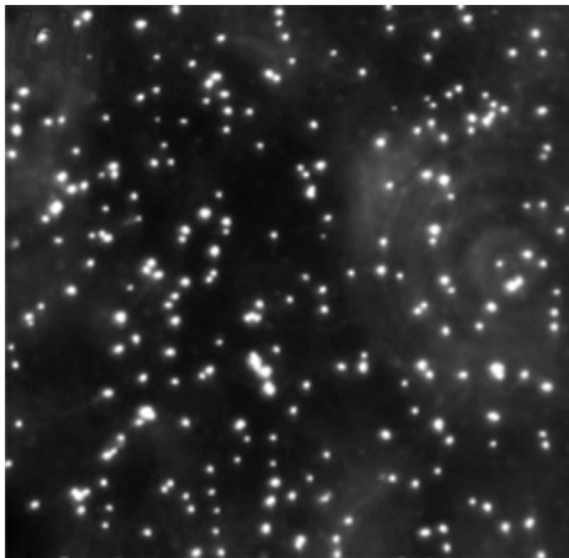


Figure S2

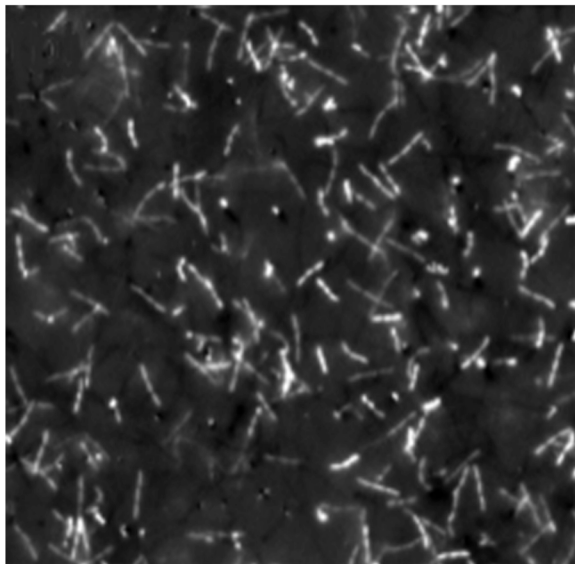
A



B



C



D

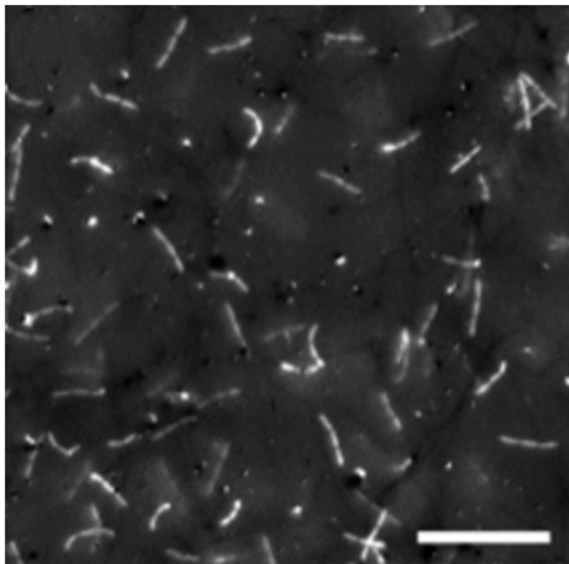


Figure S3