

## 1 **Supplementary Material and Methods**

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### 3 *Growth curves and biofilm assays*

4 Growth curves were performed as describe in (1), and biofilm assays were  
5 performed as describe in (2).

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### 7 *Microscopy and Image analysis*

8 Images for root colonization (supplementary figure S2) and for swimming  
9 behavior (supplementary figure S5) were taken using a Zeiss AxioObserver  
10 Z1 equipped with a Zeiss AxioCam 506 mono. A 63X/1.4 Plan Apo oil  
11 objective was used for the root colonization experiment and the YFP was  
12 detected using a bandpass filter set (Zeiss filter set 46). Images pre-  
13 processing, segmentation and analysis were performed using the software  
14 CellProfiler (cellprofiler.org) (2). To measure the tumbling rate of the cells, 10  
15 seconds time lapse were made at 35 frames per second using a 20x/0.3  
16 phase contrast objective. The trajectories of the cells were found and  
17 characterized using the TrackMate plugin in Fiji (Fiji.sc) (3). For each strain,  
18 20 bacteria trajectories of at least 5 seconds were examined and the number  
19 of tumbling event were counted.

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