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The role of adhesins in bacteria motility modification JACINTA CONRAD, Univ. of Houston, MAXSIM GIBIANSKY, FAN JIN, UCLA, VERNITA GORDON, UIUC, DOMINICK MOTTO, JOSHUA SHROUT, Univ. of Notre Dame, MATTHEW PARSEK, Univ. of Washington, GERARD WONG, UCLA — Bacterial biofilms are multicellular communities responsible for a broad range of infections. To investigate the early-stage formation of biofilms, we have developed high-throughput techniques to quantify the motility of surface-associated bacteria. We translate microscopy movies of bacteria into a searchable database of trajectories using tracking algorithms adapted from colloidal physics. By analyzing the motion of both wild-type (WT) and isogenic knockout mutants, we have previously characterized fundamental motility mechanisms in *P. aeruginosa*. Here, we develop biometric routines to recognize signatures of adhesion and trapping. We find that newly attached bacteria move faster than previously adherent bacteria, and are more likely to be oriented out-of-plane. Motility appendages influence the bacterium's ability to become trapped: WT bacteria exhibit two types of trapped trajectories, whereas flagella-deficient bacteria rarely become trapped. These results suggest that flagella play a key role in adhesion.

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