Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Surface-attachment sequence in Vibrio Cholerae ANDREW UTADA, Bioengineering Dept, UCLA, MAXSIM GIBIANSKY, Bioengineering Department, UCLA, GERARD WONG, Bioengineering Dept, Chem. and Biochem. Dept, CNSI, UCLA — Vibrio cholerae is a gram-negative bacterium that causes the human disease cholera. It is found natively in brackish costal waters in temperate climates, where it attaches to the surfaces of a variety of different aquatic life. V. cholerae has a single polar flagellum making it highly motile, as well as a number of different pili types, enabling it to attach to both biotic and abiotic surfaces. Using in-house built tracking software we track all surface-attaching bacteria from high-speed movies to examine the early-time attachment profile of v. cholerae onto a smooth glass surface. Similar to previous work,[1] we observe right-handed circular swimming trajectories near surfaces; however, in addition we see a host of distinct motility mechanisms that enable rapid exploration of the surface before forming a more permanent attachment. Using isogenic mutants we show that the motility mechanisms observed are due to a complex combination of hydrodynamics and pili-surface interactions.

[1]Lauga, E., DiLuzio, W. R., Whitesides, G. M., Stone, H. A. Biophys. J. 90, 400 (2006).

Andrew Utada
Bioengineering Dept, UCLA

Date submitted: 26 Nov 2012 Electronic form version 1.4