Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Quantifying the Dynamics of Bacterial Crowd Surfing ROBERT MOSCARITOLO, University of Guelph, MATT KINLEY, McMaster University, ROBIN WHITE, COREY KELLY, MAXIMILIANO GIULIANI, University of Guelph, LORI BURROWS, McMaster University, JOHN DUTCHER, University of Guelph — Type IV pili (TFP) are thin (several nanometers in diameter) adhesive protein filaments that can be extended and retracted by certain classes of Gram-negative bacteria including *P. aeruginosa* PAO1 [1]. The motion of bacteria on surfaces by TFP is referred to as twitching motility because of its jerky nature, and it leads to complex, collective motion of large numbers of cells [2]. When non-motile mutants of *P. aeruginosa* cells, which do not have pili and therefore cannot twitch, are mixed with motile, wild type cells, we observed the non-motile cells being carried along ("crowd surfing") by the moving wild type cells. Crowd surfing extends to other non-motile species as well as inert particles and can lead to unexpected transport of non-motile, pathogenic bacterial cells, with direct implications for the spread of bacterial infections. We have developed a protocol for tracking and analyzing the trajectories of moving bacterial cells. Using a custom built, temperature and humidity controlled environmental chamber, we characterize the crowd surfing phenomenon under different environmental conditions. [1] Burrows, L.L. (2005) Mol. Microbiol. 57(4): 878-888. [2] Semmler, A.B., Whitchurch, C.B., Mattick, J.S. (1999). Microbiology 145: 2863-2873.

John Dutcher
University of Guelph

Date submitted: 09 Nov 2012 Electronic form version 1.4