

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**External stimulation strength controls actin response dynamics in Dictyostelium cells** HSIN-FANG HSU, Max Planck Institute for Dynamics and Self-Organization, CHRISTIAN WESTENDORF, Institut für Pflanzenwissenschaften, Universität Graz, MARCO TARANTOLA, VLADIMIR ZYKOV, EBERHARD BODENSCHATZ, Max Planck Institute for Dynamics and Self-Organization, CARSTEN BETA, Institute of Physics and Astronomy, University of Potsdam — Self-sustained oscillation and the resonance frequency of the cytoskeletal actin polymerization/depolymerization have recently been observed in Dictyostelium, a model system for studying chemotaxis. Here we report that the resonance frequency is not constant but rather varies with the strength of external stimuli. To understand the underlying mechanism, we analyzed the polymerization and depolymerization time at different levels of external stimulation. We found that polymerization time is independent of external stimuli but the depolymerization time is prolonged as the stimulation increases. These observations can be successfully reproduced in the frame work of our time delayed differential equation model.

Hsin-Fang Hsu  
Max Planck Institute for Dynamics and Self-Organization

Date submitted: 14 Nov 2014

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