

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

3D Neutrophil Traction in Changing Microenvironments JENNET TOYJANOVA, Graduate Student, School of Engineering, Brown University, Providence, RI, ESTEFANY FLORES, Research Assistant, Department of Surgery, Rhode Island Hospital, Providence, RI, JONATHAN REICHNER, Department of Surgery, Rhode Island Hospital and the Warren Alpert Medical School of Brown University, Providence, RI — Neutrophils are well-known as first responders to defend the body against life threatening bacterial diseases, infections and inflammation. The mechanical properties and the local topography of the surrounding microenvironment play a significant role in the regulating neutrophil behavior including cell adhesion, migration and generation of traction. In navigating to the site of infection, neutrophils are exposed to changing microenvironments that differ in their composition, structure and mechanical properties. Our goal is to investigate neutrophil behavior, specifically migration and cellular traction in a well-controlled 3D in vitro system. By utilizing an interchangeable 2D-3D sandwich gel structure system with tunable mechanical properties neutrophil migration and cell traction can be computed as a function of gel stiffness and geometric dimensionality.

Jennet Toyjanova
Graduate Student, Brown University

Date submitted: 10 Nov 2011

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