“The biomechanics of tumor growth”

Kristen Mills, Ph.D.
Assistant Professor
Department of Mechanical, Aerospace, and Nuclear Engineering (MANE)
Center for Biotechnology and Interdisciplinary Studies (CBIS)
Rensselaer Polytechnic Institute

Abstract:
We are an experimental cell and tissue biomechanics laboratory focused on understanding the role of mechanics in disease initiation and progression. We are currently involved in studies utilizing in vitro models of tumor growth in order to probe the relationship between tumor cells and their biomechanical environment. What forces do tumor cells produce and exert on their surroundings and how do they differ from healthy cells? We engineer 3D in vitro environments that mimic healthy and cancerous tissue. We measure the mechanical properties of the components of these environments as well as cells and tissues using various methods such as indentation and compression testing. Observing cellular behavior in these environments provides us a window into the biomechanical functioning of the disease.
http://homepages.rpi.edu/~millsk2/index.html

Bio:
Education
2008 Ph.D., University of Michigan, Mechanical Engineering
1999 B.S., University of California, San Diego, Mechanical Engineering

Awards
2009 Alexander von Humboldt Foundation, Research Fellowship for Postdoctoral Researchers
2002 National Science Foundation, Graduate Research Fellowship

Experience
2015-Present Assistant Professor, MANE, Rensselaer Polytechnic Institute
2008-2014 Postdoctoral Researcher, Department of New Materials and Biosystems, Max Planck Institute for Intelligent Systems
2010-2014 Lecturer, Advanced Materials Program, University of Ulm