



**JOHNS HOPKINS**  
BIOMEDICAL ENGINEERING



**Wednesday, May 21, 3 pm, Clark 110 (Homewood Campus)**



**Of Bacteria, Brains and Hearts: Integrative  
Systems Biology in the New Century**

**Andre Levchenko, Ph.D.**

Associate Professor

Department of Biomedical Engineering  
Johns Hopkins University

**Abstract:** The last decade saw a tremendous change in the philosophy of doing cell biology, with an increasing emphasis on performing iterative research combining computational modeling and experimental analysis. For the first time, the understanding of complex and intertwined molecular networks controlling sophisticated cell decision making is expressed in the form of predictive quantitative models, continuously validated experimentally and progressively refined. In this talk, I will highlight several of the recent advances made in our lab through a tight integration of manipulation of cells and their micro-environment in microfluidic chips with the state of the art model construction and analysis. In addition to providing several research vignettes from disciplines as wide ranging as neuroscience, cardiology and yeast biology, I will focus on the problem of biofilm formation in bacterial infection and the host response to infection. I will particularly emphasize the increase in our understanding of the underlying signal transduction and cell-cell communication events, including activation of the NF-kappaB pathway and quorum sensing. I will also highlight the importance of collaborative environment in performing this research, both extra- and intra-mural.

**A reception to celebrate Dr. Levchenko's promotion to Associate  
Professor will immediately follow**

**For more information call 410-516-7903**

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