



# Northeastern University

## College of Engineering

Please join us for a  
**Special Chemical Engineering & Bioengineering Seminar**

**Wednesday, April 10, 2013**  
108 West Village H  
11:45 a.m. – 1:00 p.m.

### ***“Cell Migration in Confined Spaces”***

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### **ABSTRACT**

Understanding the mechanisms of cell migration is a fundamental question in cell, developmental and cancer biology. Unraveling key, physiologically relevant motility mechanisms is also crucial for developing technologies that can control, manipulate, promote or stop cell migration *in vivo*. Much of what we know about the mechanisms of cell migration stems from *in vitro* studies using two-dimensional (2D) surfaces. Cell locomotion in 2D is driven by cycles of actin protrusion, integrin-mediated adhesion and myosin-dependent contraction. A major pitfall of 2D assays is that they fail to account for the physical confinement that cells encounter within the physiological tissue environment. The seminar will challenge the conventional wisdom regarding cell motility mechanisms, and show that migration through physically constricted spaces does not require  $\beta 1$  integrin-dependent adhesion or myosin contractility. Importantly, confined migration persists even when filamentous actin is disrupted. This seminar will also discuss an alternative mechanism of confined cell migration based on a jet propulsion model.

**BIOGRAPHY:** Prof. Konstantinos Konstantopoulos received the Diploma of Chemical Engineering from the National Technical University of Athens, Greece in 1989 and the Ph.D. degree in Chemical Engineering from Rice University in 1995. From 1995 to 1997 he was a postdoctoral fellow in the Institute of Biosciences and Bioengineering at Rice University. He joined the faculty of Chemical & Biomolecular Engineering at the Johns Hopkins University in 1997, and promoted to the rank of Professor in 2008. He was elected Chair of the Department of Chemical & Biomolecular Engineering in 2008. He is a co-Director of the NCI-funded Johns Hopkins Engineering in Oncology Center (2009-present). He was elected Fellow of the American Institute for Medical and Biological Engineering in 2009 and of the Biomedical Engineering Society in 2012. He serves on the Editorial Board of *The American Journal of Physiology Cell Physiology* (2005-present), as Associate Editor of the *Annals of Biomedical Engineering* (2009-present), and as Chair of the Bioengineering Technology and Surgical Sciences (BTSS) study section of the National Institutes of Health (2011-present). His research is at the interface of engineering and biology pertinent to cancer metastasis. He has published >100 peer-reviewed articles. <http://web1.johnshopkins.edu/kostaslab/>

**Refreshments will be served.**