



Gold Nanorods in the Extracellular Matrix and their Effect of Cancer Cell Migration

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Time: 12:30 – 1:00 p.m. Central (10:30 – 11:00 a.m. Pacific)

Location: 1000 MNTL at Illinois (KL 361 at UC Merced)

Abstract:

Gold nanorods are being studied within biological systems for applications such as drug delivery, imaging, detection and photothermal therapy. These nanoparticles are easily modified in terms of size, shape and surface ligands in order to subsequently modify their unique optical properties and how they interact with cells. Many studies have investigated interactions between gold nanorods and cells, but it is important to know more about how these nanoparticles may affect cellular interactions with their immediate environment. Furthermore, 3D environments may be better suited for mimicking in vivo environments used to study cellular functions, rather than traditional 2D environments.

Using nested collagen gel matrices as models to mimic gold nanorods in the extracellular matrix (ECM) of human cancer cells, the effect of the nanorods on cell migration was investigated. It was observed that gold nanorods in the ECM induce changes in spontaneous cell migration. It is hypothesized that the change in cell behavior upon addition of gold nanorods to the outer collagen gel could be due to differences in mechanical properties, the creation of biochemical gradients, or a combination of both. To begin investigating the mechanism behind the changes, mechanical properties of gels were measured with rheology, images were collected with confocal fluorescence and reflectance microscopy, and matrix metalloproteinase levels were measured by gelatin zymography.

Seminar Presented by:

 Center for Cellular Mechanics <small>University of Illinois at Urbana-Champaign</small>	 IGERT Integrative Graduate Education and Research Traineeship Cellular and Molecular Mechanics and BioNanotechnology	 
	 M-CNTC NCI Alliance for Nanotechnology in Cancer Midwest Cancer Nanotechnology Training Center	 