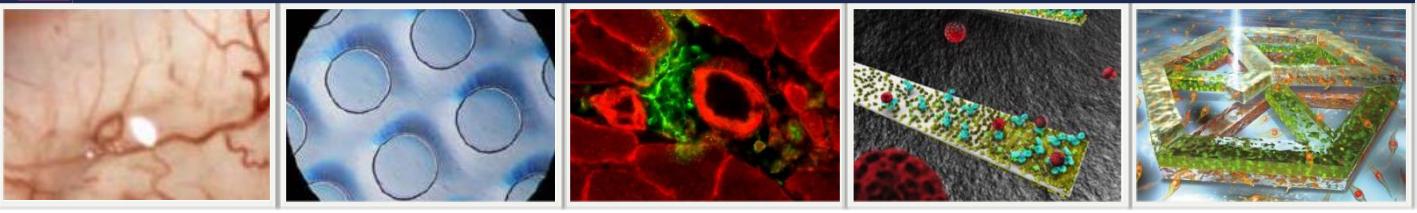
BioNanotechnology Seminar Series

Fall 2014



Using arrays of silicon photonic microring resonators for the multiplexed detection of microRNAs relevant to Glioblastoma multiforme subclassification

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Date: **Wednesday, September 17, 2014**
Time: **12:00 – 12:30 p.m. Central (10:00 – 10:30 a.m. Pacific)**
Location: **1000 MNTL at Illinois (KL 361 at UC Merced)**

Abstract:

The methods used to study microRNAs (miRNAs) involved in cancer have failed to keep pace with our understanding of cancer pathology and are imperfect fits for the clinic. qRT-PCR, the current gold standard, is sensitive, rapid, and cost effective, but only able to quantitate one target per sample volume. Conversely, microarrays can interrogate all known miRNA sequences, but take days to complete. As a result, there is no clinically adopted technology for the multiplexed detection of miRNAs. Here we show that a platform utilizing arrays of silicon photonic microring resonators can fill the void left by current miRNA analysis techniques by simultaneously quantitating 25 miRNAs relevant to Glioblastoma multiforme (GBM) and show that these results correlate well with qRT-PCR.

In these studies, we use GBM, an extremely invasive glioma subtype with a mean survival time of 12-14 months, as a model system. mRNA and protein profiling have helped identify underlying GBM biology and potential targets for new therapies; however, over the past few decades, survival outcomes and therapeutic strategies have not changed. As a result, researchers have begun to investigate miRNAs as a potential solution. In doing so, multiplexed miRNA biopanels have emerged that are predictive of GBM grade, recurrence, and survival. This abstract displays a validated microring resonator technology that is easily translatable to the clinic and facilitates the detection of a GBM-specific meso-plex miRNA biomarker panel.

Seminar Presented by:

Center for Cellular Mechanics
University of Illinois at Urbana-Champaign

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

CNST University of Illinois Center for Nanoscale Science and Technology