**PRESENTER:** Dr. Li-Qun Andrew Gu  
MU Bioengineering Associate Professor

**TITLE:** Nanopore in Personalized Medicine: single molecule epigenetic study

**ABSTRACT:**
Dr. Li-Qun (Andrew) Gu, an Associate Professor of Bioengineering and Dalton Cardiovascular Research Center, is leading an interdisciplinary laboratory that has a long term vision: integrating biomolecular engineering with nanobiotechnology to explore life science problems and to develop sophisticated molecular diagnostic tools for personalized medicine. Dr. Gu is an awardee of NSF CAREER. Supported by the NIH grant and Coulter Translational Program, he is developing ultrasensitive single molecule technology for disease biomarker detection. His lab is working on nanopore-based single-molecule technology for rapid, label-free and low-cost DNA sequencing and various genetic, epigenetic, and proteomic detections. The new generation of programmable nanopore biosensors is being combined with smart polymers and microfluidics to create a robust chip device for medical diagnosis, treatment, and high-throughput screening at the molecular level. Recently, His lab proposed a robust nanopore sensor for differentiating and quantifying cancer-associated microRNAs in human blood samples, an approach with the potential in non-invasive and cost-effective cancer detection. MicroRNAs and a series of epigenetically modified gene are potential biomarkers for molecular diagnostic of cancers.

**BIOGRAPHICAL:**
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**DATE • TIME • LOCATION:**
Tuesday, April 15, 2014, 4:00 PM, 105 Agricultural Engineering Building