BIO ENGINEERING

SEMINAR

At 3:30 pm on June 21, 2013 (Friday)

MRDG Seminar Hall, 1st floor, Biological Sciences Building

Engineering: the *sine qua non* for Systems Biology and Medicine

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The advent of high throughput technologies in biology has a significant challenge and a unique set of opportunities. The challenge lies in the integrative processing of the deluge of data in the context of functional biology. The opportunities are the ability to bring strong systems engineering approaches to bear on deciphering biological mechanisms and function and most importantly the ability to develop quantitative models of biological processes. Engineering has essentially become the harbinger for next generation biology in every aspect ranging from development of innovative technologies and devices to building systems-level quantitative models.

In this talk, I will highlight,

- Aspects of new technology, especially one that is associated with next generation sequencing to obtain transcriptional parts lists and mass spectrometric methods for identifying metabolites in physiology.
- Novel statistical learning approaches that transform data from measurements in knowledge in biology.
- Insights into mechanisms in physiology that lead to normal and pathophysiology from applying engineering methods.
- Building quantitative models of biological mechanisms and phenotypes and the implications for experimental biology.
- I will also outline some engineering challenges in biology for the next coming decade involving the essential paradigms of analysis, design and modeling to biological systems.

Acknowledgements: Funding from the National Institutes of Health and the National Science Foundation.

Citations relating to the talk:

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