BRIGHAM AND WOMEN'S HOSPITAL
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Department of Medicine
Channing Division of Network Medicine

Channing Network Science Seminar

Nov 7, 2014, 11am @ 5th-floor Conference Room

Speaker: Sriram Chandrasekaran, Ph.D
Junior Fellow
Harvard University
http://scholar.harvard.edu/sriram
Title: **Predicting Cellular Metabolism using Genome-Scale Metabolic and Regulatory Network Models**

Abstract: Currently there is a critical need for theoretical frameworks that synthesize high-throughput data into predictive models for medicine and bioengineering. I will describe new tools and algorithms - PROM, GEMINI and ASTRIX, which address this challenge through reconstruction and integrated modeling of metabolic and regulatory networks. These algorithms combine genomic, transcriptomic and phenomics data and provide a holistic view of the cell. Using genome-scale network models of E. coli, M. tuberculosis, A. mellifera (honeybee) and S. cerevisiae (baker's yeast), I will demonstrate that these approaches allow us to accurately model the transcriptional and metabolic network states of the cell resulting from genetic and environmental perturbations. Further, inconsistencies between model predictions and experimental data allow us to identify novel regulation of cellular metabolism. These tools can enable model-driven genome engineering and identification of candidate microbial drug targets.

Bio: Dr. Sriram Chandrasekaran is a Junior Fellow at Harvard University and at the Broad Institute. He did his PhD in Biophysics and Computational Biology at the University of Illinois, Urbana-Champaign. Sriram was elected as a Junior Fellow to the Harvard Society of Fellows in 2013, was a recipient of the Howard Hughes Medical Institute (HHMI) International Predoctoral Fellowship, the William Milton Fund, Robert Emerson Fellowship and a finalist for the 2012 Lemelson-MIT Illinois Student Award for innovation.

hosted by: Yang-Yu Liu