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Quantitative Systems Biology Seminar Series

Anticipators and Procrastinators, Synthetic Biology and Big Data

By Hana El-Samad

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Date:

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Time:

1:30pm

Location:

COB 267

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Abstract:

Understanding how cellular programs process multiple simultaneous environmental inputs is a century old problem. A classical example is that of the Monod Model, in which microorganisms that are presented with two carbon sources first consume the carbon substrate that supports the highest growth rate and then switch to the secondary carbon source. In this talk, we revisit this problem and present an interesting new twist to this classical dogma. We also discuss how progress in this project required us to formulate and study a new mathematical problem related to genomic profiling and build some synthetic circuits along the way.

Bio:

Hana El-Samad is a faculty member in the department of Biochemistry and Biophysics at the University of California, San Francisco and the California Institute for Quantitative Biosciences (QB3), where she holds the Grace Boyer Junior Endowed Chair in Biophysics. She holds many awards and honors, including a 2010 Packard Fellow, an Allen Distinguished Investigator and the 2011 Donald P. Eckman Award. Dr. El-Samad joined UCSF after obtaining a doctorate degree in Mechanical Engineering from the University of California, Santa Barbara. Her research group emphasizes the role of control theory and dynamical systems in the study of biological networks. Her research interests include the investigation of stress responses, synthetic biology, and biological stochastic phenomena, in addition to the establishment of computational and technological infrastructures that allow for their quantitative probing in single cells.