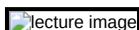




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Special Guest Lectures

Information processing in cellular networks: fuzziness, sloppiness, and the structure of neutral spaces**Chris Myers**

Cornell Theory Center, Cornell University

Johnston Hall 338

August 01, 2006 - 03:30 pm

Abstract:

Regulatory and signaling networks lie at the core of information processing capabilities within living cells, and understanding the structure and function of such networks - as well as their modularity, robustness, and evolvability - are central challenges in the emerging field of systems biology. Robustness derives in part from extended neutral spaces of equivalent functional solutions through which evolution can navigate. I will describe recent research into two problems in cellular regulation and signaling that shed light on such neutral spaces. The first involves competitive binding with fuzzy protein-protein interactions, and exhibits interesting connections to phase transitions and computational complexity in constraint satisfaction problems. The second concerns the dynamics of biomolecular networks, and considers the statistical mechanics of families of models to make constrained biological predictions even when the underlying reaction parameters are sloppy and poorly defined.

Speaker's Bio:

Chris Myers received his B.A. from Yale University in 1984, and his M.S. and Ph.D. in Physics from Cornell University. His research and teaching interests are strewn about the landscape where complex systems meet computation, touching on problems from statistical physics, molecular and cell biology, dynamical systems, computer science, and materials science. In the past, he has worked on problems such as critical phenomena and pattern formation in disordered systems, slip complexity on earthquake faults, defect dynamics and multiscale modeling in materials, and the design and development of software systems for scientific computing. In the past few years, however, he has shifted his focus toward problems in molecular and cell biology (specifically, the functioning of regulatory and signaling networks in cells) and to related questions in the organization and evolution of complex adaptive systems. Chris Myers now works as Senior Research Associate at Cornell Theory Center.

Refreshments will be served.**This lecture has a reception.**