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Mathematical Models in Signaling Systems - June 16-18, 2004

Detailed Local Models of Signaling Pathways

Multivariate Cue/Signal/Response Analysis of Cell Decision Processes 🗣️

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Abstract:

Cell behavioral functions are governed by biomolecular networks which translate stimulatory cues (e.g., ligand/receptor binding interactions, mechanical stresses, other chemical or physical insults) into intracellular signals which then influence transcriptional and post-transcriptional, metabolic, and cytoskeletal processes that integrate to effect proximal and ultimate cell responses. While there is an increasingly effective body of work enhancing our understanding of how intracellular signals are generated by stimulatory cues, an exceptionally difficult challenge is to understand how these signals operate to influence cell behavioral responses. We are undertaking an effort address this question by means of a combination of quantitative, dynamic protein-centric experimental manipulations and measurement with a spectrum of computational mining and modeling approaches. Particular application problems include cell migration, differentiation, and death. This talk will present some overview and a specific example vignette outlining our efforts.