

# National Academies Keck *Futures Initiative* Conference

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

### ***Detailed Local Models of Signaling Pathways***

#### *NF-kb Isoforms and Switching Functions in Gene Regulation* 🗣️

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#### ***Abstract:***

Signal transduction serves as a means for a cell to partially process information about its environment and send this information for further processing to other cellular sub-systems, including gene regulation networks, locomotion apparatus and metabolic networks. Here, I present a tightly integrated combination of experimental and theoretical studies of an important developmental and stress response pathway: the NF-kappaB pathway. I will describe the pathway in detail, showing how the internal dynamics of the pathway activity might be tightly integrated with gene response to diverse stimuli. I will also discuss other properties of the pathway, focusing on robustness and information processing.