

Workshop: *Deconstructing Biochemical Networks*
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*Information-theoretic Characterization of
Cellular Signaling Pathways*

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Abstract

Many cellular decisions must be made based on noisy measurements of the cellular environment. In this talk I will show how rate distortion theory, a branch of information theory, can be used to determine the characteristics of these decisions. Our results demonstrate that different observed classes of responses in cells are optimal under varying information assumptions. I will consider one specific example in directed cell migration. Here, cells must interpret an extracellular chemoattractant and use this to guide their movement. Other examples may also be considered depending on time constraints.

This is joint work with Burt Andrews.