

BDR SEMINAR in Osaka

"CDB SEMINAR" and "QBiC SEMINAR" have been renamed "BDR SEMINAR".

Roy Wollman

University of California, Los Angeles



Thursday, July 5, 2018 13:00-14:00

3F Seminar Room, Quantitative Biology Bldg. A, Osaka

Cellular Variability and Information Flow in Signal Transduction Networks

Summary

Signaling networks act as sensors, or measurement devices, that encode information on the extracellular environment that can be decoded by cellular effectors to allow cells to respond to environmental changes appropriately. Experimental single-cell measurements of signaling responses indicated a high level of response variability raising the possibility that cellular responses are limited in their biochemical accuracy. I will discuss our efforts to examine the question of the accuracy of cellular signal transduction networks in the context of the encoding-decoding paradigm. Can cells utilize multivariate encoding to increase accuracy? Is encoding or decoding step is the rate limiting in term of information flow? And to what degree does preexisting cellular state plays a role in how information is transmitted? Gaining a deeper understanding of these questions can help understand how the structure of signaling network plays a role in their functional role to allow cells to respond to changes in their environment.



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