Brainy Days in Jerusalem: 
An interdisciplinary celebration

June 22-25, 2015, Mishkenot Sha'ananim, Jerusalem, Israel

In the Citri Lab for Experience-Dependent Plasticity we study how the nervous system encodes experience at the molecular, synaptic and neural circuit levels. A main focus in the lab is to understand how salient experiences, such as the experience of drugs of abuse, palatable foods and aversive experiences, are encoded in the reward circuitry to modify behavior. We utilize information obtained from studying dynamic gene regulation as an entry point to investigation of neural circuit plasticity. Recently we have identified a nearly perfect correlation between robust and specific patterns of gene expression dynamics (induced in a number of different brain nuclei) and a variety of defined behavioral experiences. The expression dynamics differ between experiences to the extent that the recent behavioral experiences of individual mice can be inferred solely by examining transcriptional dynamics. We believe this approach, which we term “behavioral transcriptomics”, provides an exciting new platform for studying experience-dependent plasticity at the molecular level, and an entry point for identifying specific functions of gene products in encoding features of behavioral experiences.

Other projects in the lab are focused on studying the function of specific gene products in the development of the response to drugs of abuse, as well as in development of preference for palatable foods. Additional projects are focused on identification of potential novel components of the reward circuitry, investigation of the input-output connectivity of these brain regions, and synaptic plasticity within these brain regions following the experience of drugs of abuse.
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