

BioPhotonics

Bringing Light to the Life Sciences®

WEBINARS

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Tools for Analyzing, Controlling, and Simulating Biological Systems

Tuesday, September 16, 2025 1:00 PM - 2:00 PM EDT

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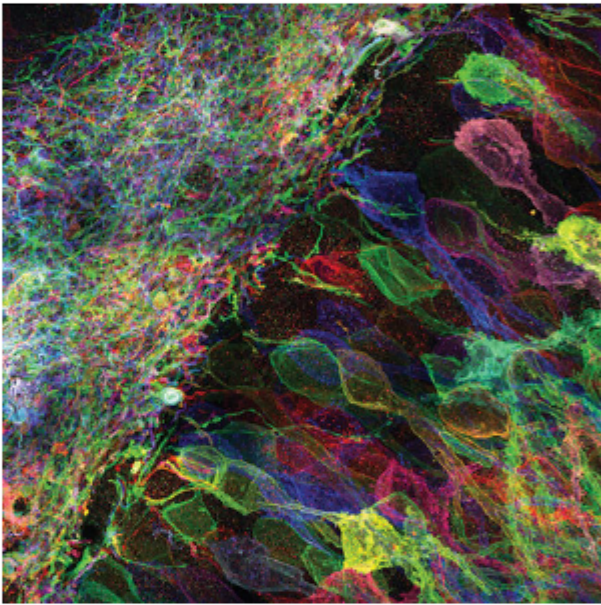
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It was discovered that one can physically magnify biological specimens by synthesizing dense networks of swellable polymer throughout them, and then chemically processing the specimens to isotropically swell them. This method, which is called expansion microscopy, enables ordinary microscopes to do nanoimaging – important for mapping molecules throughout cells, tissues, and organs. As a second example, Ed’s team serendipitously discovered that microbial rhodopsins, genetically expressed in neurons, could enable their electrical activity to be precisely controlled in response to light. These molecules, now called optogenetic tools, enable causal assessment of how neurons contribute to behaviors and pathological states, and are yielding new candidate treatment strategies for brain diseases. Finally, the development of new strategies such as robotic directed evolution, fluorescent reporters enable the precision measurement of signals such as voltage. To reveal relationships between different molecular signals within a cell, there is work of developing spatial and temporal multiplexing strategies that enable many such signals to be imaged at once in the same living cell. Sponsored by [Zaber Technologies Inc.](#), [Jenoptik](#) and [COMSOL Inc.](#)



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