Biozentrum Lectures

Navigating the cellular landscape with new imaging approaches

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Emerging visualization technologies are playing an increasingly important role in the study of numerous aspects of cell biology, capturing processes at the level of whole organisms down to single molecules. While developments in probes and microscopes are dramatically expanding the areas of productive imaging, there are still significant roadblocks. Primary challenges include fluorophore bleed-through, which limits the number of fluorophores that can be simultaneously imagined, as well as imaging speeds that are too slow, and finally labeling densities that are too low for deciphering fine subcellular architecture. New imaging methods can overcome these roadblocks and help clarifying subcellular organelle dynamics.

We combine cutting edge microscopy techniques to visualize several organelles such as the endoplasmatic reticulum (ER), the lysosome or the mitochondria simultaneously within cells. This allows us to track these organelles through time and analyze their inter-organelle contacts. Furthermore, we employ different imaging technologies to visualize organelle dynamics at very high temporal-spatial resolution. Examining the ER, we could observe that the peripheral ER sheets represent a complex meshwork of tightly cross-linked ER tubules.

In the Biozentrum Lecture Jennifer Lippincott-Schwartz will focus on new imaging approaches and on possible roles of the complex ER structural organization for diverse cellular functions.
Biozentrum Lectures series: last five speakers

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