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MPI-NAT SEMINAR SERIES

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Investigating cellular complexity at the nanoscale by super-resolution microscopy

Super-resolution optical microscopy has become a powerful tool to study the nanoscale spatial distribution of molecules of interest in biological cells and tissues over the last years. Imaging these distributions in the context of other molecules or the general structural context is, however, still challenging. I will present two recent developments from my lab that tackle this challenge: pan-Expansion Microscopy expands a fixed cell or tissue sample physically by about a factor of 20 in all three dimensions, thereby making small structures resolvable with just a standard confocal microscope. Since most proteins are retained in our expansion process, proteins and other cellular components can be labeled in bulk. This provides ultrastructural context to the nanoscale organization of proteins and thereby presents an all-optical imaging alternative to complex correlative light/electron microscopy. Second, FLASH-PAINT introduces with transiently binding adapters a novel approach that allow for spectrally unlimited multiplexed imaging (super-resolution or conventional) in a rapid, highly efficient, and gentle way without any need for washing steps. Super-resolution imaging of more than 10 labels in the same sample can now easily be achieved. Financial Interest Disclosure: J.B. is co-founder of panluminate, a startup company related to Expansion Microscopy.

Monday, 30.09.2024, 10:30 am

Host: Stefan Jakobs

Large Seminar Room
Faßberg-Campus

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