BBB Seminar (BMED380)

SCAN ME

Thursday, April 10. 14:30 at the BBB, Auditorium 4

Strategies for imaging multiple targets using engineered nanobodies with erasable signals

Felipe Opazo
University Medical Center Göttingen, Germany

Fluorescence microscopy has been a pivotal tool in biological sciences for many years. However, its use is typically restricted to detecting a limited number of targets, which are identified using primary antibodies and fluorescently labeled secondary antibodies. Advanced techniques like Exchange-PAINT and the newer SUM-PAINT have expanded multiplexing capabilities, but they demand specialized equipment, software, and expertise. To facilitate multiplexing with any imaging method in any laboratory setting, we developed NanoPlex. This innovative approach uses standard antibodies and engineered secondary nanobodies, enabling a mild and selective removal of fluorescence signals. We created three distinct strategies for signal removal: OptoPlex (light-induced), EnzyPlex (enzymatic), and ChemiPlex (chemical). Here, I present the principles of the NanoPlex method, showcasing its ability to multiplex conventional confocal microscopy as well as STORM and STED super-resolution imaging techniques. NanoPlex could transform multi-target fluorescent imaging techniques, significantly enhancing the multiplexing capacity of any antibody-based assays and opening up new possibilities in biomedical research.

Chairperson: Petri Kursula, Department of Biomedicine