

Light Microscopy Platform

Molecular Immunology and Cell Biology
LIMES Institute
Director: Prof. Waldemar Kolanus

Expertise

The microscopy platform provides state-of-the-art light microscopical technologies. This comprises the localization of specific molecules/proteins as well as the analyses of dynamic processes.

We have established and developed in the past a number of analytical live cell imaging techniques in the area of cell adhesion, cell migration and immune cell activation. On the basis of this we have established numerous collaborations with other investigators to analyze immune cell migration, interaction times of T cells with dendritic cells and high-resolution intracellular protein localization.

Technologically, the platform is based on several standard as well as advanced confocal systems which allow both high-resolution and ultra-fast image acquisition. In a collaborative mode of action, the "microscopy" platform will provide a wide range of high-end imaging technologies and experimental/scientific expertise relevant to many groups.

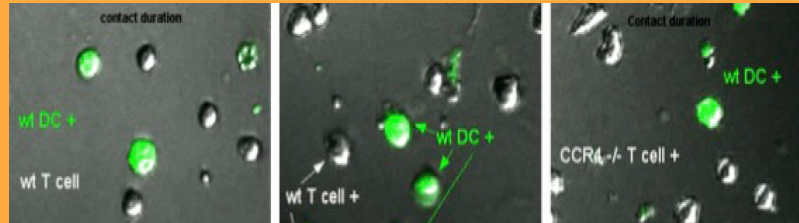
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Cluster members can find detailed information on the Intranet: immunosensation.net

Collaborative Infrastructure



Instrumentation

➤ Nikon Eclipse TE 2000-E Inverted Research Microscope System

This microscope is equipped with phase contrast and wide-field fluorescence filter cubes (DAPI, FITC, TRITC, Cy5). It is used for routine epi-fluorescence detection and video-microscopic analysis.

➤ Olympus FluoView™ FV1000 confocal laser scanning microscope

This confocal laser scanning system is based on an inverted Olympus IX81 microscope and incorporates two independent, synchronized laser scanners for simultaneous laser-based stimulation and confocal observation (e.g. FRAP). The system is equipped with 405 nm diode laser, multi-line argon laser (457, 488, 515 nm) and 543/633 nm HeNe lasers. Four photomultiplier tube detectors allow the simultaneous detection of three fluorescent dyes and differential interference contrast.

➤ Zeiss LSM 5 Live confocal laser scanning microscope

This high-speed confocal laser scanning system is based on an inverted Zeiss Axiovert 200 microscope. The laser scanner unit uses a laser beam with a rectangular cross-section to illuminate a line in the sample, instead of a single point. The system is equipped with 405 nm diode laser, 488 nm diode laser, 532 nm diode-pumped solid-state laser and 635 nm diode laser. The system is used for the analysis of very fast dynamic processes.

➤ VisiTech-Infinity 3 confocal Imaging System

This system combines ultra high speed confocal imaging with 2500 adjustable pinholes to produce high resolution. The system is equipped with 488 and 532 nm solid state lasers and a high sensitivity Hamamatsu Orca R2 CCD Camera equipped with cooled peltier for low noise performance. The Infinity system is fully integrated in the Nikon Eclipse TE 2000-E Microscope and used for ultra-fast image acquisition (e.g. analysis of intracellular calcium mobilization)..