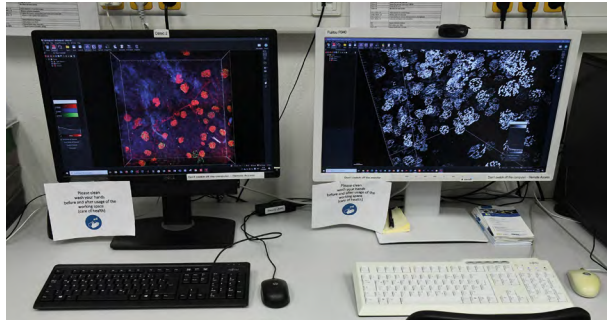


Two workstations for data evaluation

- Bitplane Imaris
- ImagePro Analyzer 3D
- Fiji (ImageJ)
- AutoquantX3
- Leica LasX



In-vivo Optical Imaging

- IVIS Lumina XR (Perkin-Elmer)



IVIS Lumina XR



Dr. Michael Vogt

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Core Facilities – Technologies, equipment and expertise for ambitious research goals

The Interdisciplinary Center for Clinical Research (IZKF) provides valuable resources for a cost-effective, high-quality research environment.

A wide range of technologies and state-of-the-art equipment are available for all RWTH Aachen University researchers. Experienced technology experts provide services at every stage of the research process, including experimental design, method development, sample work-up, and data interpretation, on a partial cost recovery basis.

BIF Brain Imaging Facility

PF Proteomics Facility

CMF Confocal Microscopy Facility

FCF Flow Cytometry Facility

TF Transgenic Facility

2PIF Two-Photon Imaging Facility

IHF Immunohistochemistry Facility

GF Genomics Facility



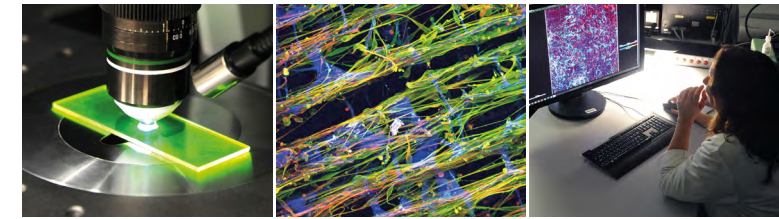
3D SRF Super Resolution Facility



Karen De Bruyne, M.A.

IZKF Scientific Coordinating Office

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2PIF Two-Photon Imaging Facility

IZKF

Fluorescence microscopy in 3D

Visualize structures deep in intact samples

Fluorescence Lifetime Imaging (FLIM)

Non-invasive imaging

Dr. Michael Vogt

Two-Photon Imaging Facility

Institute for Laboratory Animal Science
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Why use Two-Photon Microscopy and how to use it to your advantage?

Two-photon laser scanning microscopy (TPLSM) is based on the principle of two-photon excitation by a pulsed near-infrared (NIR) laser and enables fluorescence imaging of optical slices at subcellular resolution. NIR light penetrates deeper into scattering tissue allowing imaging deep in intact samples. Image stacks of defined depth ranges can be used for spatial reconstruction to visualize fluorescent structures in 3D. These features give TPLSM the edge over other microscopic techniques for visualization structures located deeper in scattering samples (tissues) in three dimensions.

Why use Fluorescence Lifetime Imaging and how to use it to your advantage?

Fluorescence lifetime imaging (FLIM) is based on the photon emission decay rates of fluorophores and provides additional contrast information of the fluorophores. FLIM can be used to follow molecular interactions via FLIM-FRET (Förster Resonance Energy Transfer), to detect changes in metabolic states and the microenvironment of cells and to separate fluorophores with overlapping or similar emission spectra and/or autofluorescence.

Why use In-Vivo Optical Imaging and how to use it to your advantage?

The in-vivo optical imaging systems implemented in the Core Facility allow for the non-invasive “whole body” imaging of fluorescence or bioluminescence signals in overlay with photographs or radiographs. This facilitates the anatomical localization of fluorescent dyes or bioluminescent reporters in living small animals for extended time periods in the same animal. Furthermore, studies of cell cultures and ex-vivo samples are possible.



The Two-Photon Imaging Facility team: Dr. M. Vogt (left) and L. Decker (right)

What services do we offer?

- Pre-experimental advice and support
- Multi-photon microscopy
 - In-vitro, ex-vivo, in-situ, triggered in-vivo and intravital imaging experiments
 - 2- and 3-dimensional imaging (fluorescence, second & third harmonic generation, FLIM)
 - Time-lapse imaging (2D/3D)
 - Fluorescence lifetime imaging (FLIM)
 - Evaluation of imaging data (soft- & hardware)
 - Training image processing software
- In-vivo optical imaging (bioluminescence/fluorescence)
 - Whole-body imaging in small rodents and exvivo/in-vitro samples
- Hands-on training for independent use of the systems

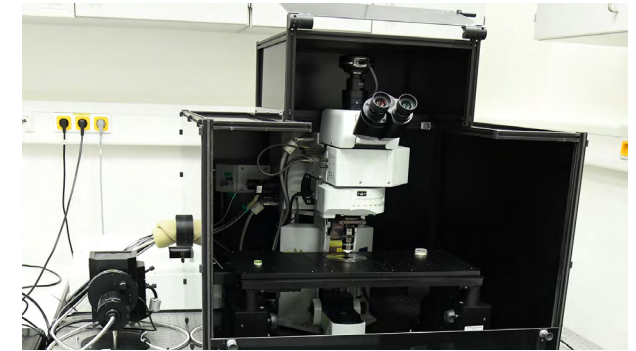
Equipment

Multi-Photon Microscopy

- Leica Stellaris 8 DIVE FALCON (upright)
- Olympus Fluoview FV1000 MPE (upright)



Leica Stellaris 8 DIVE FALCON



FluoView1000MPE

