In-vivo Optical Imaging
- IVIS Lumina XR (Perkin-Elmer)
- NightOWL (Berthold Tech.)

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

The IZKF provides valuable resources for a cost effective and high-quality research environment by operating:

- Brain Imaging Facility
- Genomics Facility
- Immunohistochemistry Facility and Confocal Microscopy Facility
- Proteomics Facility
- Transgenic Service
- Two-Photon Imaging Facility
- Flow Cytometry Facility

Multiple technologies and state-of-the-art equipment are available for all researchers of the Faculty of Medicine. Experienced technology experts provide services at any stage of the research process, including experimental design, method development, sample work-up and data interpretation on a partly cost recovery basis.

Dr. Michael Vogt
Two-Photon Imaging Facility
Institute for Laboratory Animal Science
elevator D4, floor -1
Pauwelsstrasse 30, 52074 Aachen
Tel.: +49 241 80 37360
mvogt@ukaachen.de, tplsm@ukaachen.de

Karen De Bruyne, M.A.
IZKF Scientific Coordinating Office
Pauwelsstrasse 30 I D-52074 Aachen
Elevator D5 I 4th floor I room 44
+49 (241) 80 80034 I izkf@ukaachen.de
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 make TPLSM advantageous over other microscopic techniques for visualization of structures located deeper in scattering samples (tissues) in three dimensions.

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

The in-vivo optical imaging systems integrated in the Core Facility allow the non-invasive “whole body” imaging of fluorescence or bioluminescence signals in overlay with photographs or radiographs. This allows an 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.

What services do we offer?

- Pre-experimental consulting

- Two-photon microscopy
  - In-vitro, ex-vivo, in-situ, triggered in-vivo and intravital imaging experiments
  - 2-dimensional images (fluorescence, second harmonic generation)
  - 3-dimensional reconstruction of image stacks.
  - Time-lapse imaging (2D/3D)
  - Evaluation of imaging data

- In-vivo optical imaging (bioluminescence/fluorescence)
  - Whole-body imaging in small rodents and ex-vivo/ in-vitro samples

- Hands-on training

Equipment

Two-Photon Microscopy
- LaVision BioTec TrimScope I (upright)
- Olympus Fluoview FV1000 MPE (upright)

Work stations for data evaluation
- Bitplane Imaris
- ImagePro Analyzer 3D
- Fiji (ImageJ)
- Autoquant