Equipment

- **9.4 T MRI** (Bruker Biospec 94/20)
- **1 T nanoScan PET/MRI** (Mediso)
- **nanoScan SPECT/CT** (Mediso)
- **quadHIDAC PET** (Oxford Positrons Ltd.)
- **Inveon CT** (Siemens)
- Fluorescence Reflectance Imaging (**FRI**) Systems **FX PRO** (Bruker), **IVIS Spectrum** (Perkin Elmer)
- Fluorescence Mediated Tomography (**FMT**) System (Perkin Elmer)

Contact

MRI

Cornelius Faber
faberc@uni-muenster.de
83-57608

Lydia Wachsmuth
lydia.wachsmuth@uni-muenster.de
83-56146

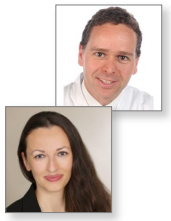
PET/SPECT/CT

Sven Hermann
shermann@uni-muenster.de
83-49300/49303

Michael Schäfers
schafmi@uni-muenster.de
83-49300

Katrin Schwegmann
k.schwegmann@uni-muenster.de
83-49309

Optical Imaging



Moritz Wildgruber
moritz.wildgruber@ukmuenster.de
83-45651

Christiane Geyer
christiane.geyer@uni-muenster.de
83-57646

Interdisciplinary Training

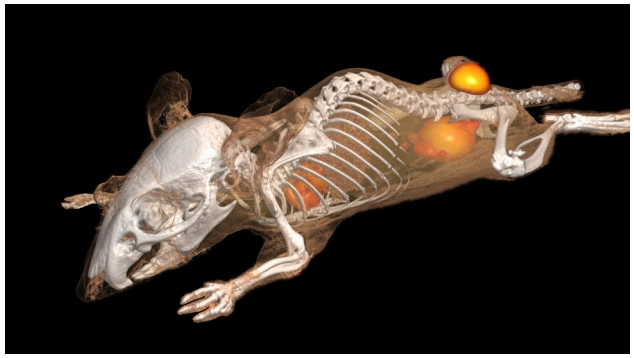
10th Mouse Imaging Academy

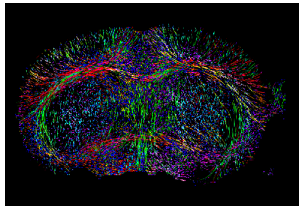
11–15 November 2019

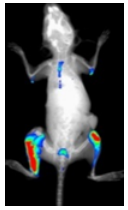
Topics

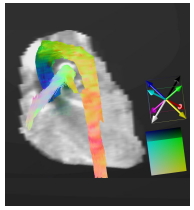
- **Animal handling:** i.v./i.p. injection, tail vein catheter, anesthesia, surgery
- **PET/SPECT:** static and dynamic scanning, CT fusion
- **CT:** *in vivo* scans +/- contrast agents, respiratory gating
- **MRI:** *in vivo* scans +/- contrast agents, cardiac & respiratory gating
- **Ultrasound:** hands-on scanning +/- contrast agents
- **Optical imaging:** fluorescence, bioluminescence, photoacoustic
- **Multimodal imaging:** PET/CT, PET/MRI, SPECT/CT
- **Image analysis:** methods, coregistration, quantification

PIX
Preclinical Imaging eXperts









Preclinical Imaging eXperts - PIX

Integrated core unit for preclinical imaging

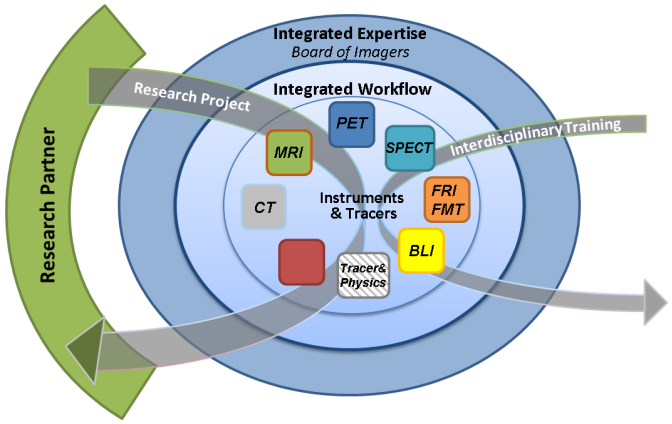
S. Hermann, C. Faber, M. Schäfers, M. Wildgruber

IZKF MÜNSTER

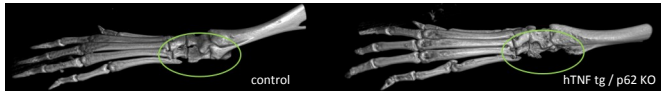
Concept

The IZKF Core Unit PIX provides access to multimodal imaging technologies for cooperative research.

PIX is based on proven expertise for single preclinical imaging tools, namely **MRI** (magnetic resonance imaging), **PET** (positron emission tomography), **SPECT** (single photon emission computed tomography, **CT** (X-ray computed tomography), **FRI** (near-infrared fluorescence reflectance imaging), and **BLI** (bioluminescence imaging). The Core Unit is strongly convinced that only an integrated optimal preclinical imaging workflow in connection with access to state-of-the-art instrumentation, tracers and imaging technology can promote both biomedical research and clinical translation.

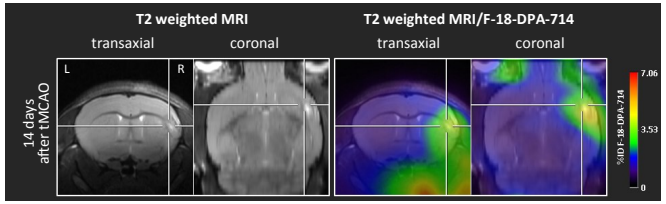


Need anatomical details?

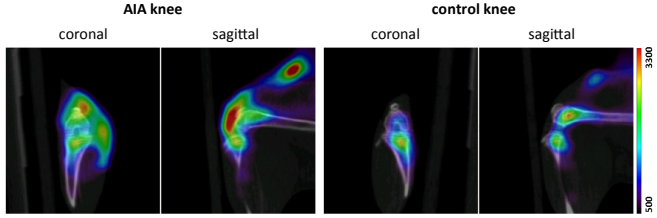


Morphological assessment of the degree of joint destruction in hTNF transgenic mice using **µCT**.

Do you want to monitor inflammatory activity over time?



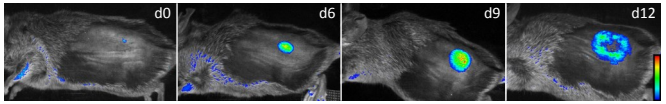
F-18-DPA-714-**PET/MRI** for imaging of neuroinflammatory response after transient middle cerebral artery occlusion (tMCAo).



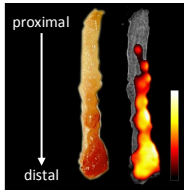
F-18-FDG **PET/CT** in a mouse model of antigen induced arthritis (AIA).

Are you interested in...

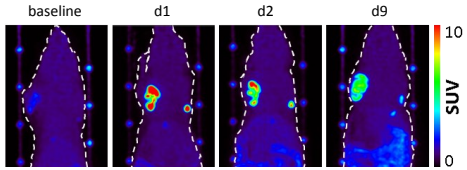
• tumor imaging?



FRI: Time dependent development of a solid leukemic tumor in vivo in a graft vs. tumor model. Visualization and measurement of tumor size and necrosis.

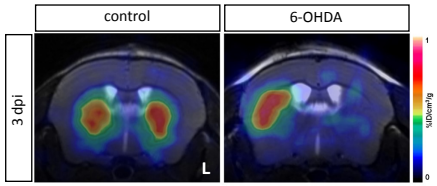


FRI: Imaging of ET_AR in colorectal carcinoma.

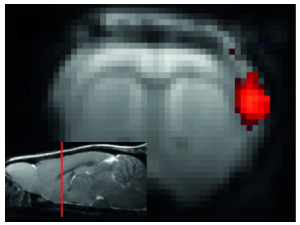


Evaluation of tumor proliferation by F-18-FLT-**PET** imaging showing increased cell proliferation after therapy with FOLFOX.

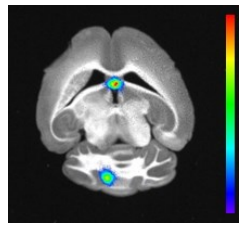
• brain function?



In vivo I-123-Ioflupan-**SPECT**/T2w **MRI** of dopaminergic neurons in a mouse model of neurodegeneration in the left striatum (6-OHDA) vs. control.

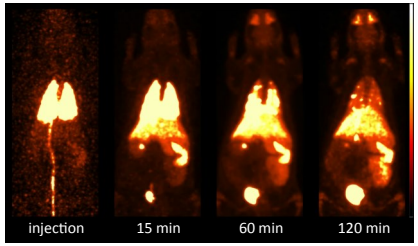


BOLD **fMRI** map of the rat brain upon optogenetic stimulation of the thalamus.

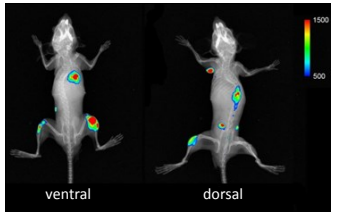


FRI: Optical Imaging of matrix metalloproteinases in a mouse model of multiple sclerosis (EAE).

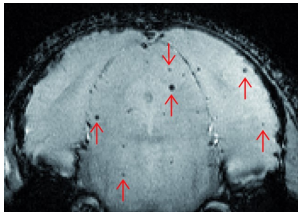
• cell tracking?



PET: Cell tracking of F-18-FDG labeled T-lymphocytes in rats after allogeneic kidney trans-plantation.

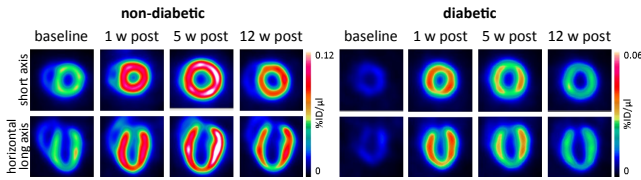


FRI: Cell tracking of mCherry expressing leukemic cells .



MRI cell tracking of iron-labeled mono-cytes (red arrows) in the mouse brain.

• metabolic function?



PET: Myocardial glucose measurement using F-18-FDG in non-diabetic and diabetic mice after transverse aortic constriction (TAC).