

Campus Klinische Forschung: Arbeitsbereich Bildgebung Neuroradiologie

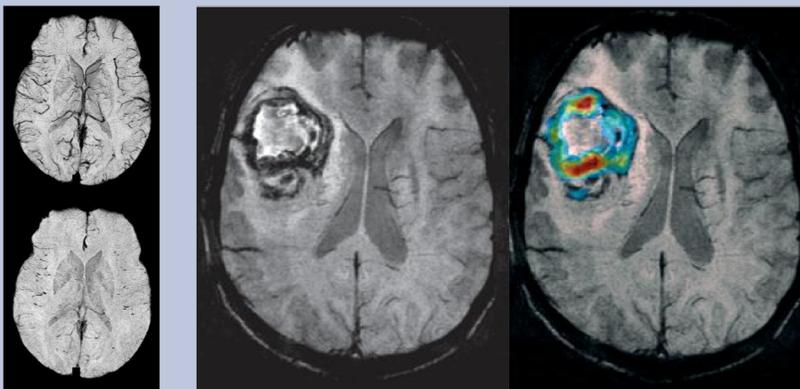
Siemens 3T Skyra



Bruker 7T ClinScan



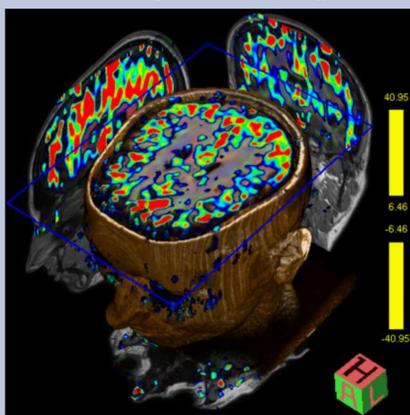
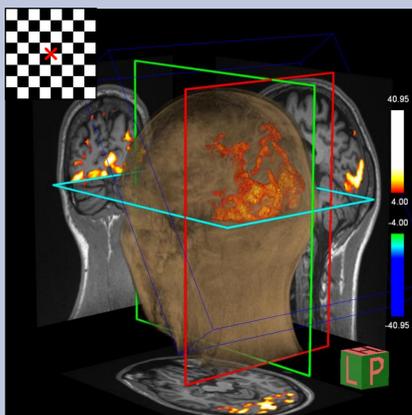
Translational Research in Tumor Imaging



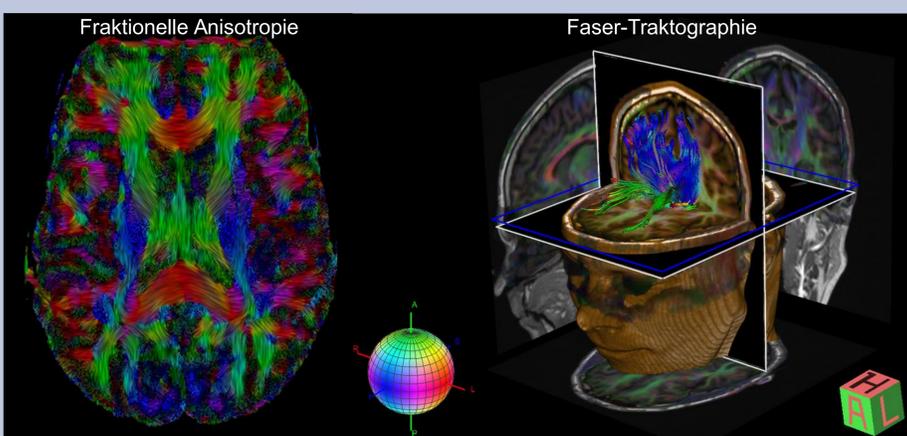
Links: Detailed representation of the venous vessel structure using susceptibility-weighted imaging – SWI (top). Venous contrast is dependent on the cerebral oxygen extraction rate and disappears with carbogen stimulation (bottom).
Mitte: Metabolically highly active areas in the tumor periphery appear dark in SWI due to the high oxygen extraction rate.
Rechts: Color overlay of the signal change in the SWI with carbogen stimulation. Vital tumor periphery shows very high changes (red). In cooperation with PD Dr. Nils Ole Schmidt, UKE, Neurosurgery and Prof. Jürgen Reichenbach, Arbeitsgruppe Medizinische Physik, IDIR, UKJ, Jena.

Functional Imaging (fMRT)

Arterial-Spin-Labeling (ASL) Perfusion Quantification



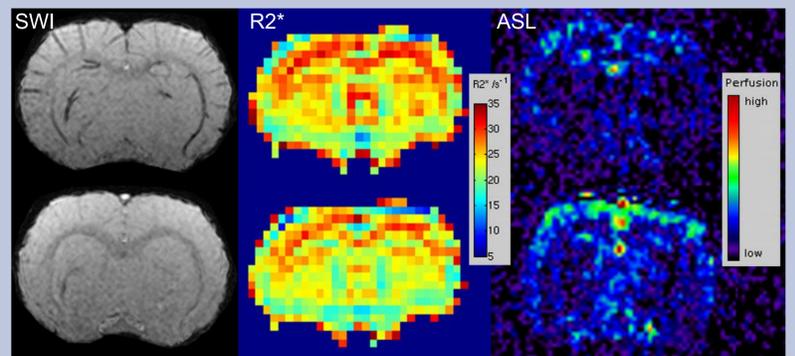
Diffusion Tensor Imaging (DTI)



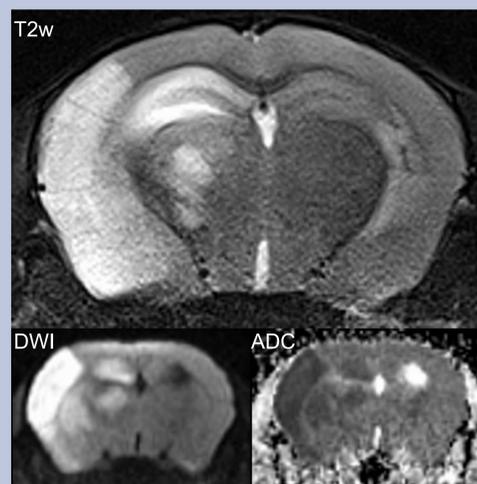
Links: Textured and direction-color-coded representation of the Fractional Anisotropy (FA).
Rechts: Direction-color-coded tractography of individual fiber tracts.

Research in Tumor Diagnosis with metabolically sensitive MRT methods.

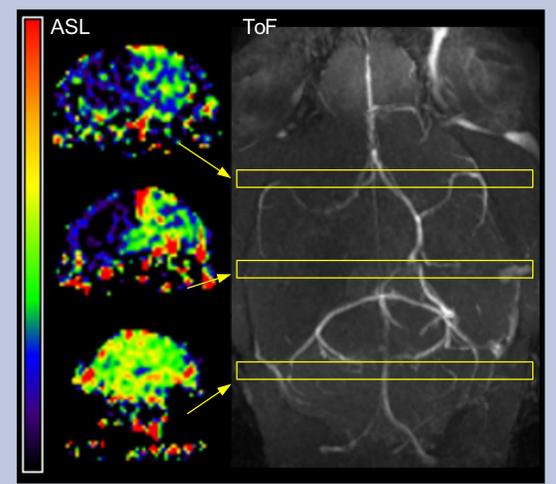
Susceptibility-weighted imaging – SWI (left), effective transverse relaxation rate ($R2^*$)-maps (middle) and perfusion-weighted imaging (Arterial Spin Labeling – ASL) (right) recorded during anesthesia with 1% Isoflurane (top row) and 3% Isoflurane (bottom row). In cooperation with PD Dr. Nils Ole Schmidt (UKE, Neurosurgery).



Stroke Research



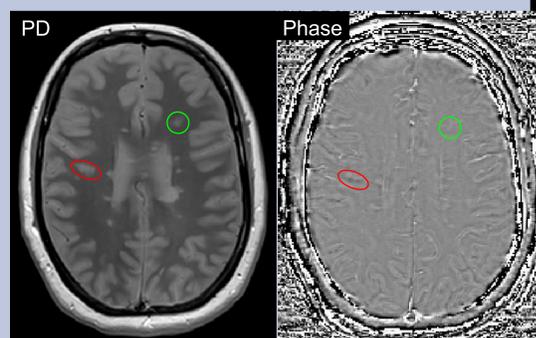
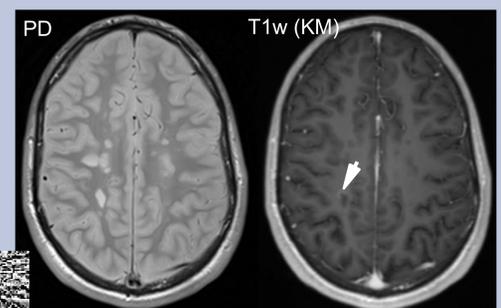
Anatomical (T2w), Diffusion-weighted imaging (DWI) and Apparent Diffusion Coefficient (ADC) to illustrate the infarct area 3 days after stroke in the mouse. In cooperation with PD Dr. Tim Magnus (UKE, Neurology).



Perfusion-weighted imaging (Arterial Spin Labeling – ASL) of various axial slices and representation of the arterial vessels (Time of Flight – ToF) to illustrate the perfusion-impaired brain areas in the mouse with acute stroke. In cooperation with PD Dr. Tim Magnus (UKE, Neurology).

Research: MS Imaging

Rechts: Proton-weighted (PD) and T1-weighted (T1w) imaging after contrast agent administration. Contrast agent enhancement in lesion with inflammatory component (arrow). In cooperation with Institute for Neuroimmunology and Clinical Multiple Sclerosis (inims).



Links: Proton-weighted (PD) and phase image (Phase) of the susceptibility-weighted imaging. Lesions can be seen in the phase image more (red) or less (green) due to different macrophage activity or iron deposition. In cooperation with Institute for Neuroimmunology and Clinical Multiple Sclerosis (inims).