

## PTB and Charite (Group Cognitive Neurology) Berlin

### Institutions

Physikalisch-Technische Bundesanstalt (PTB) is the National Metrology Institute of Germany. MR research in the Department of Medical Metrology focuses on both technical issues like coil development and safety, and novel quantitative methods and their application in neuroimaging and spectroscopy. The research group of Agnes Flöel "Cognitive Neurology", Charite – University Medicine Berlin, is specifically interested in healthy aging, early diagnosis of neurodegenerative diseases, i.e. Alzheimer's disease and its precursors, and the development of novel strategies at early disease stages. AF is also head of the memory clinic (Charite Campus Mitte), providing the clinical service for patients with memory complaints, MCI and dementia.

### Principal investigators



Florian Schubert Bernd Ittermann Agnes Flöel

### 7T equipment

**Hardware** 7T Siemens Magnetern whole body at B.U.F.F. - research only (32ch head coil, inhouse-built 8ch pTx head coil, 8ch transmit array)

**Operational since** 2009

**Other equipment (human imaging):** 3T MR (Siemens Verio)- research only, 8ch transmit array, Very High Order Shimming system (RRI), several 3T Siemens scanners at Charite

### 7T Methods (as relevant for EUFIND)

#### Acquisition

Highresolution T1 (MP2RAGE 0.7 mm iso)  
Short echotime MRS (SPECIAL)  
Resting-state/Task-fMRI  
QSM  
DTI

#### Analysis

Standard brain segmentation (SPM, FS, FSL)  
Automated brain segmentation of hippocampus  
MRS postprocessing and analysis (inhouse workflow, LCModel); metabolite quantification  
Analysis of resting state fMRI

### Research in neurodegeneration

#### Clinical and basic research topics

Lifestyle, electrical brain stimulation and drug interventional studies with healthy older adults and patients (preclinical and manifest AD, stroke)  
Examination of potential disease-related mechanisms and biomarkers, based on CSF and blood analysis (incl. genetics), MRI and PET  
European multimodal study on AD, MCI and controls including 7T imaging and spectroscopy- NeuroMet (start 7/2016, see poster)

#### Cohorts

Healthy older adults  
Subjective cognitive decliners (SCD, part of SmartAge cohort) in cross-sectional and interventional studies  
Several ongoing cross-sectional and interventional studies on MCI patients  
Patients with early and moderate AD

### Ethics Procedures

Approval for NeuroMet study in place (age 55-90). New ethics approval required for EUFIND activity.