

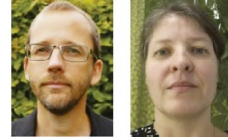
## National 7T facility Lund Sweden

### Institutions

The national 7T facility in Lund, Sweden is part of the Lund University Biomedicine Center (LBIC), Lund University (LU), Sweden and the scanner is located at the Department of medical imaging and function (BoF), Skane University Hospital (SUS), Lund, Sweden. LBIC and BoF offer preclinical and clinical research imaging infrastructures. Imaging efforts are closely linked to all faculties at LU and clinical services provided by SUS. The 7T facility is a national core facility offering access to researchers from all Universities in Sweden.

Principal Investigators Prof. Oskar Hansson, Clinical Memory Research Unit, Lund University and Hospital; Assoc. Prof. Isabella Björkman-Burtscher, Clinical 7T responsibility, Neuroradiologist; Lund University and Hospital.

Research groups affiliated to EUFIND Pis, the national 7T facility and Swedish Universities provide a network covering clinical scientists, physicians, MR physicists, radiographers, statisticians supporting research in the field.



7T equipment Actively shielded whole body 7T MR (Philips) - research and clinical availability (32ch head coil, two or eight eh transmission, third order shim), operational since 2015

Other equipment for human clinic and research and animal research: 3T MR (Siemens Skyra and Prisma, GE Optima 750), 1.5T MR (Siemens Aera, Philips Intera, GE Optima 450), CT-PET (multiple), animal facilities: Brucker 9.4T small bore MR and Varian 11.7 vertical MR; CT-Pet and CT-SPECT.

### IT Methods (as relevant for EUFIND)

#### Acquisition

- High resolution morphologic MRI incl volumetrics
- Task-fMRI & resting state fMRI, HR fMRI
- MRS  
QSM  
Diffusion including microFA, DTI, DTT, Kurtosis  
Perfusion including ASL  
CEST
- TOF Imaging  
Quantitative 4D flow mapping  
MR-safety (implants, short term effects)

#### Analysis

- Development of brain segmentation protocols
- Automated brain segmentation of MTL structures
- High-resolution functional parcellation of MTL
- fMRI hyperalignment
- Decoding of representations
- High precision co-registration, movement correction, distortion correction
- High resolution visualization of small vessels (i.e. hippocampal vascular supply patterns)
- QSM-based vascular plasticity

### Research in neurodegeneration

#### Clinical and basic research topics

- Multi-center studies in preclinical and manifest AD, PD, FTD, stroke, movement disorders
- Intervention studies on structural, vascular and functional plasticity
- Functional imaging of cognitive circuits
- Imaging pathology (i.e. iron deposition)  
Multimodal imaging of MR, PET, CT, SPECT

#### Cohorts

- Healthy young and older controls
- Subjective memory complainers (could be part of DELCODE cohort)
- Preclinical and prodromal AD (could be part of DELCODE cohort)
- AD, PD, FTD, ALS
- Vascular dementia (could be part of DEMDAS cohort)

Ethics Procedures Approval for healthy research persons and patients for a variety of clinical indications in place (age: adults without upper limit and for epilepsy also paediatric patients).