



Preclinical Imaging

What we do

When pain really matters

It is estimated that about 10-30% of adult population in Europe is suffering from the chronic pain. To study brain circuits involved in sensory and emotional components of the chronic pain we utilize resting state functional MR imaging approach in combination with genetically modified mice and stereotaxic brain surgeries.

Beating the breast cancer

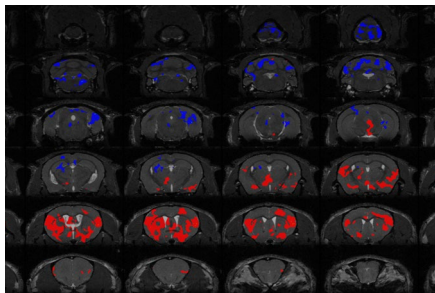
According to the world health organization, every 7th woman will develop invasive breast cancer over the course of her lifetime. We are focusing our efforts toward understanding how vascular remodelling in the early stage of mammary tumors will determine invasiveness and the treatment outcome. Magnetic resonance imaging plays a crucial role, as it allows non-invasive monitoring of the mammary tumors and vasculature over the period of time, before they become establish until the treatment response. This permits evaluation of therapeutic response in individual tumors.

Brains of mice and men

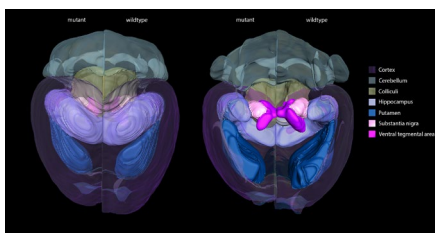
Hac1 is an e3 ubiquitin ligase whose main target is Rac1. It is highly expressed in the brain and when mutated in humans, it causes a neurodevelopmental disorder. This disorder is characterized by improper brain development, ataxia and intellectual disability. We use combination of MRI volumetric measurement and histology to determine what brain regions are affected with Hac1 mutation.



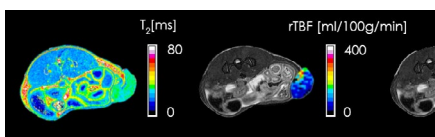
15.2 T Bruker BioSpec 152/II



Resting state fMRI
showing brain regions activated in mouse model of chronic pain at rest



MRI volumetric analysis
showing brain of the wild type mouse and substantia nigra conditional Hccl knockout mouse



Quantitative parametric mapping
allows for myriad of quantitative MR imaging parameters to be determined non-invasively and repetitively over the period of time

Services and Methodologies Provided

The mission of the facility is to help researchers gain insight into the physiological and pathological processes in vivo using non-invasive magnetic resonance (MRI) imaging technology. The MRI is a powerful tool to track disease progress to test effects of drug treatment, and to monitor functional and pathological changes. Special areas of investigation include functional magnetic resonance imaging, developmental neuroscience, cardiac MRI, imaging strategies for monitoring the anti-tumor therapies. Currently, due to size limitation of the scanner bore, mice and smaller organisms are being investigated.

- **Ultra-high resolution MRI data acquisition (state of the art 15.2 T)**
- **^1H Magnetic resonance spectroscopy (state of the art 15.2 T)**
- **Image analysis and data processing**
 - Anatomical characterization of organ systems (from development to adulthood)
 - Axonal tract tracing and myelin imaging
 - Preclinical disease models (stroke, neurodegenerative and metabolic disorders)
 - Quantitative perfusion/MTT/Blood Volume and Angiography
 - Cardiac imaging
 - Functional MRI and resting state MRI
 - Cell labelling and tracking

Equipment

The facility features state of the art 15.2 T Bruker Biospin scanner, unique in Europe.

Specialized imaging probes are offered for mouse head and body imaging, as well as ^1H and ^{19}F imaging.

- 15.2 T Bruker Biospin
- 15.2 T Bruker BioSpec 152/II

Contact and Location

Preclinical Imaging

Vienna Biocenter Core Facilities (VBCF)

Dr. Bohr-Gasse 3, 1030 Vienna, Austria

Vienna Biocenter campus

www.vbcf.ac.at/facilities/preclinical-imaging

jelena.zinnanti@vbcf.ac.at

