National Neuroimaging Network

Modern technology makes it possible to visualize memory processes within the brain and to create high-resolution images of its structure and function. Imaging techniques are essential for understanding memory formation and cognition and the development of new therapies for brain diseases. The German Center for Neurodegenerative Diseases (DZNE) is now focusing its nationwide expertise in the field under the umbrella of the “National Neuroimaging Network”. The network is coordinated by the site speaker of Magdeburg: Prof. Emrah Düzel. The coordination group also includes Peter Nestor (DZNE Magdeburg) and Prof. Tony Stöcker (DZNE Bonn).

Brain scans, as provided by magnetic resonance imaging (MRI) or positron emission tomography (PET), allow to explore the structure and function of the brain. Therefore these methods do not only deliver impressive images, but also quantifiable research data.

The DZNE applies state-of-the-art imaging methods at its different sites and clinical research. Besides molecular imaging, the DZNE also conducts human imaging on a large scale. By means of the National Neuroimaging Network our imaging activities will be matched even more closely.

Nationwide Infrastructure of Brain Scanners

Magnetic resonance imaging is pioneering the process. The clinical study centers are distributed across Germany. Therefore, standard operating procedures and quality checks for MRI have been developed. Imaging data that was obtained by different brain scanners can be compared directly. In addition, this standardization allows a continuous innovation of MR imaging. Hence newly developed imaging methods can be made seamlessly available nationwide for clinical research through the National Neuroimaging Network. At present, more than 800 participants are involved in our innovative studies on a nationwide scale.

All DZNE sites that run clinical studies, including Magdeburg, München, and other locations, are a part of this network. DZNE is operating its own brain scanners at some of these sites and benefiting from devices run by other institutions.

In addition to conventional MRI scanners, so-called 7-Tesla scanners are available in Bonn and Magdeburg. Less than ten of these scanners, which are certified for human studies, exist in Germany. Such high-field scanners reveal even more brain details.
than conventional MRI machines. Furthermore, a brain scanner that combines MRI and PET methodology operates in Magdeburg.

**Objective: Better Medical Options**

The aim of the National Neuroimaging Network is to join forces in order to pave the way for better diagnostic methods and new therapies. With its various sites and nationwide partners, particularly in the field of university hospitals, the network presents an ideal platform for this. In addition, the DZNE is open for further cooperations.

Blood vessels of the human brain (MRI image recorded at 7 Tesla). Source: DZNE