



The Capital Region
of Denmark



World-class brain research

The Danish Research Centre for Magnetic Resonance, Hvidovre Hospital, University of Copenhagen is the home of groundbreaking research on a number of neurological disorders such as Parkinson's disease and multiple sclerosis. The centre has just become a national resource centre for research with the latest generation of magnetic resonance scanners.

"DRCMR has an incredibly flexible structure. The centre has only eight staff members, but over 60 affiliated researchers are pursuing research at DRCMR, including about 25 postdocs and 20 PhD students. The research team is also highly international, including researchers from more than a dozen nations. We have a very wide network of partnerships, nationally and internationally, with research colleagues from universities, hospitals and industry. This open research environment in combination with an excellent research infrastructure, including three 3-Tesla MR scanners, is the key reason behind our high scientific output," explains Head of Research Professor Hartwig Siebner, MD, University of Copenhagen.

Broad research field

DRCMR is a dedicated research centre under the Centre for Functional and Diagnostic Imaging and Research, Hvidovre Hospital, University of Copenhagen. Set to celebrate its 30th anniversary next year, the centre has been at the forefront of its field throughout this period. DRCMR was namely the first recipient of an MR scanner for clinical use in Denmark. Moreover, DRCMR will house the first-ever 7-Tesla MR scanner in Denmark, offering unprecedented opportunities to map brain metabolism and structure with extremely high precision. This ultra-high field scanner will be installed by the end of 2014 and constitute a national resource for advanced brain imaging.

"Our research field is both high-tech and highly specialised. At the same time, however, it requires broader and more cross-disciplinary collaboration. This is why we have an affiliated team of highly specialised IT staff, engineers and physicists who work side by side with the medical and neuroscience experts. This constitutes a unique strongpoint in our research. The brain is an enormously complex organ and we benefit tremendously from working in partnership with colleagues from scientific disciplines and the humanities. I like to say that everybody is welcome at DRCMR - as long as they are skilled enough and enjoy learning from other specialities," says Professor Siebner.

Research with international impact

In recent years, researchers at the centre have delivered several major research findings that have also garnered international recognition and had an international impact, such as a seminal study in cooperation with the Danish Multiple Sclerosis Research Centre, Rigshospitalet, University of Copenhagen that tested the effects of a new drug in patients with progressive multiple sclerosis. That study was one of the first of its kind in the world to examine both the biochemical reaction and micro-structural changes in the brain during and after drug treatment.

Professor Siebner also highlights a study on Parkinson's disease as one of DRCMR's most important results. Here researchers examined what happens in the brains of patients who, because of prolonged medical treatment, develop so-called dyskinesia - an abnormal response causing severe involuntary movements after drug intake. Researchers discovered a biomarker that might help to predict whether a patient is predisposed to dyskinesia or not.

"We are working hard on this specific project, which has shown very promising results. But our work is much broader based than this. For example, we would like to take a strategic step and invest in a new MR scanner for animals, since simultaneous animal and human studies conducted in parallel allow us to develop very precise animal models to test new types of drugs - or to examine genetic mutations that increase the risk of disease. In this way, we can make much greater advances in the development of new therapy methods before testing them on patients. We have always kept multiple avenues open at DRCMR and we will continue this policy, as this is the way forward and will help us to achieve the best results in brain research," concludes Professor Siebner.

DRCMR in brief

Danish Research Centre for Magnetic Resonance (DRCMR) is a research unit under the Centre for Functional and Diagnostic Imaging and Research, Hvidovre Hospital, University of Copenhagen and has a team comprising a physician, psychologist, physicist, engineer, IT manager and bio-analyst, as well as approximately 60 externally funded researchers.

With affiliated researchers from over a dozen countries, the centre is very internationally oriented. They work at national level in partnership with colleagues from the Capital Region of Denmark, University of Copenhagen, Aarhus University, Technical University of Denmark and Copenhagen Business School and internationally with research teams from the US, Britain and many other parts of the world. The centre currently has over 50 active international research partnerships, which also include cooperation with the pharmaceutical and medico-technological industry.

Founded in 1985, DRCMR is currently in the process of installing a 7-Tesla MR scanner for use in humans, which is the latest generation of MR scanners with an extremely high magnetic field strength found in only very few places in Europe. DRCMR won a 2014 Global Excellence - in Health award.



Professor Hartwig Siebner, Centre for Functional and Diagnostic Imaging and Research, Hvidovre Hospital, University of Copenhagen

Facts about Global Excellence – in Health

The Global Excellence programme seeks to recognise and highlight the leading research and therapy environments in the field of healthcare in the hospitals and universities of the Capital Region of Denmark. The programme was established in 2010 in close cooperation with the University of Copenhagen and the Technical University of Denmark (DTU). The purpose of this initiative is to encourage internationalisation of the Region's excellent research and therapy environments with a view to attracting international partners, researchers, talents and both private-sector and public funding for research. The programme comprises the awarding of one or two prizes each year, followed up with focused support in the form of consultancy, tools, website development, conferences, etc.

The Global Excellence award is given to the hospital and university environments in the region that perform first-rate international level research leading to the development and implementation of new, pioneering healthcare services, treatment methods and products for the benefit of patients. The selected Global Excellence environments have been chosen by the executive committee of the Capital Region of Denmark on the basis of evaluations by a specialist review committee of national as well as international experts. The awardees are characterized by unique efforts within one or more areas such as: The extent and quality of their research and development, teaching, examination and treatment of patients, and innovation and dissemination of the new knowledge. In addition to the Global Excellence distinction, which is valid for a period of five years, the awardees each receive a grant of EUR 200,000 to help strengthen and further their international profile.



Facts about the Capital Region of Denmark

The Capital Region of Denmark is one of five regional administrative units in Denmark. The Capital Region of Denmark, provides healthcare, mental healthcare, carries out research and regional development for 1.7 mio. people or approx. 30% of the population in Denmark. In addition to hosting the largest health care system in Denmark, the region is also home to one of the world's strongest life science clusters, and 70% of Denmark's biotech companies are located in the area.

The Capital Region is home to a number of specialist environments at the nine university hospitals in the region that perform world-class health research and have the ability to translate this new, innovative knowledge into pioneering health care services and treatment of the highest international standard. In order to highlight and acknowledge these environments, in 2010 – 2014 the Global Excellence – in Health award has been presented to a total of 24 hospital and university environments.

Denmark is in fourth place among the OECD countries regarding scientific publications per inhabitant and similarly in third place regarding citations. Accordingly health research in the Capital Region ranks among the best in Europe. In close collaboration with the University of Copenhagen, The Technological University of Denmark, the Capital Region of Denmark represents frontline health science and clinical research, together with research of high quality in other areas with relevans for development of future healthcare. Health research is carried out for approx. EUR 250,000,000 annually at the university hospitals in the region (including internal as well as external funds).

Sources: OECD Territorial Reviews: Copenhagen, Denmark (OECD, 2009); Research Barometer 2012 (Danish Agency for Science, Technology and Innovation, 2012)

