

Hunting for the causes of multiple sclerosis

In close collaboration with colleagues throughout the world, researchers at the Danish Multiple Sclerosis Center are working on improving understanding multiple sclerosis – a dreaded and incurable disease affecting the central nervous system.

Multiple sclerosis is a chronic illness of the central nervous system. No cure has been found yet; however, there are several drugs which reduce symptoms, and institutions all over the world are conducting research to improve understanding of the disease and to find an effective treatment. Rigshospitalet is one of them.

“We have shown, for example that by combining traditional sclerosis treatment with relatively inexpensive supplementary drugs, it is possible to boost the effect of the drugs. In fact, we’re able to reduce the number of episodes by 30 to 50%,” explains Professor Per Soelberg Sørensen, head of the Danish Multiple Sclerosis Center. He adds that this combined treatment is most commonly used today in less affluent countries such as India and countries in Eastern Europe, as there are now new, effective but much more costly drugs on the market.

Genes or environment

Today we do not have a full picture of the causes of multiple sclerosis or the mechanisms of the disease and much of international research – including research at Rigshospitalet – is concentrated on gaining a better understanding of the disorder. At the Danish Multiple Sclerosis Center, researchers and colleagues in, for example, Sweden are collaborating on deciphering the disease’s genetic code. In a joint project they have found about 100 areas on the genome that determine development of multiple sclerosis.

“The disease is multigenetic, but is also largely determined by environmental factors: susceptibility to the disease is related two thirds to environmental factors, while the other third is related to hereditary factors. We’re working together with our Swedish colleagues to identify the factors which can increase the risk. Among these are smoking, excess weight as a child or during adolescence, vitamin D deficiency etc.,” says Per Soelberg Sørensen.

Cooperation is necessary – and also inspiring

The centre also works closely with the pharmaceutical industry to test new drugs. As a result, Danish patients can benefit very early on from the latest treatment methods. Recently, stem cell treatment revealed promising results when tested on animals, and the Danish Multiple Sclerosis Center is one of the main groups in an international collaborative project which will test the new treatment on humans. On the whole, a great deal of the research is on an international scale, explains Per Soelberg Sørensen.

“This is simply necessary. For the large genetic studies, we need about 10,000 patients and a control group of about 10,000 healthy people. This type of testing cannot be done at one single centre or in one single country – we have to collaborate. And it is the same when it comes to examining the effect of new drugs. Here, we need several hundred patients – we just don’t have that many patients in Denmark who need new treatment. Normally, these types of studies are typically run at more than 40 centres throughout the world,” says the professor, who also emphasises the intellectual exchange that takes place within this transnational cooperation.

The Danish Multiple Sclerosis Center at a glance

The Danish Multiple Sclerosis Center is part of the Department of Neurology at Rigshospitalet, University of Copenhagen. The centre treats around 2,000 patients – approximately one fifth of all Danish sclerosis patients. It is very active in research and its staff of 35 includes two professors, four senior consultants and one senior registrar, with most staff dividing their working hours between research and treatment. The centre works in close cooperation with the Danish Multiple Sclerosis Group and the Danish Multiple Sclerosis Register. Its investigation of how antibodies resist biological treatments is on the cutting edge of international research. On the basis of this research, international guidelines for measuring antibodies have been drawn up. The Danish Multiple Sclerosis Center received a Global Excellence in Health award in 2011.



Professor Per Soelberg Sørensen, The Danish Multiple Sclerosis Center, Rigshospitalet

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 – 2013 the Global Excellence – in Health award has been presented to a total of 22 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 185,000,000 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)

