

Combating common diseases

The Copenhagen General Population Study is an internationally renowned prospective study with a biobank that has led to major breakthroughs in the understanding of the most widespread diseases in the Western world. The study was initiated by the Department of Clinical Biochemistry at Herlev Hospital, University of Copenhagen, where the work continues for better prevention and treatment of illnesses such as cancer, heart disease and chronic obstructive pulmonary disease (COPD).

Every year countless research institutions throughout the world approach the Department of Clinical Biochemistry at Herlev Hospital about initiating joint research projects. The department is home to the now internationally renowned Copenhagen General Population Study and conducts frontline research focusing on the hereditary and environmental factors which play a role in the most widespread diseases such as heart disease, cancer, depression and COPD.

“We’re involved in a wide range of international collaborations, often initiated when other research institutions approach us with a request to work with our large biobanks and data from Danish registries. This material with 100,000 participants is unique in the world, and international joint projects are important for us here at the department because they provide inspiration and insight into other leading research environments elsewhere in the world,” explains Professor Børge Nordestgaard, chief physician at the Department of Clinical Biochemistry.

A step towards better prevention

The researchers at the department have examined the link between particular fat or cholesterol particles and heart disease. And they have detected a link between coronary diseases and two particular types of particles – new, key knowledge that can be used, among other things, to improve prevention.

“We’ve worked in a similar fashion on cancer genetics – especially in relation to breast cancer and prostate cancer, where our research has shed light on the hereditary causes of these diseases,” says Børge Nordestgaard, who also mentions COPD research as one of the department’s key research contributions in recent years.

Studies of how inflammation influences COPD patients have helped doctors today to better predict who is likely to benefit from medical treatment and who is not. This in turn improves the quality of life for many patients suffering from the disease.

Numerous lifestyle and environment studies in the pipeline

The department’s researchers will continue in the future to develop our understanding of the causes of common diseases through further research into genetic factors combined with environmental and lifestyle factors, explains Børge Nordestgaard, and he gives an example:

“We’re looking into the significance of high coffee consumption for the development of various diseases. People in the West consume large quantities of coffee and we know that this may have health implications. Positive or negative – the question is which.”

Likewise, researchers from the Department of Clinical Biochemistry are investigating other factors, such as low vitamin D levels and obesity to see if there is any link with cancer, diabetes and so forth. The ultimate goal is for doctors to be better at preventing some common diseases completely.

The Department of Clinical Biochemistry at a glance

Situated at Herlev Hospital, Copenhagen University Hospital, the department services the entire hospital as well as the Mental Health Centre in Ballerup by providing all kinds of diagnostic tests such as blood tests and genetic analyses. With a staff of approximately 100, including 10 medical doctors and a large number of laboratory technicians, the department has a particularly high research output and the highest research productivity of all the departments at the hospital, producing between 40 and 50 scientific publications a year. One third of these are published in internationally leading journals with an impact factor of over 10. Every year, the department turns out two to five PhD students. The Department of Clinical Biochemistry won a Global Excellence award in 2011.



Professor Børge Nordestgaard, Department of Clinical Biochemistry, Herlev Hospital

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)

