

# A deeper understanding of widespread multifactorial diseases

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The so-called Copenhagen General Population Study, carried out here in Denmark, is the world's largest single-centre general population study. Over 100 000 people have presently taken part in it, and in addition to approximately 280 000 patient contacts per year, the staff at the Department of Clinical Biochemistry at Copenhagen University Hospital, Herlev, also research this material within an extensive international network. The aim is to be able to prevent the most widespread diseases in the Western world, explains Professor Børge G. Nordestgaard from the University of Copenhagen.

## What is the objective of your work – and how do patients stand to benefit?

- The objective of our work is to better understand the causes of widespread diseases such as heart disease, stroke, various cancers and chronic obstructive pulmonary disease. We hope to become better at diagnosing these diseases at an earlier stage and to gain new tools to combat these diseases with a view to prevention in the future.

## How is your work/cooperation structured and organised?

- Our work is organised in a vast, complex matrix. At the Department we have a number of junior and senior researchers who work locally with e.g. specialists and bioanalysts. They work with each other on different projects, and often together with numerous other partners and colleagues both in Denmark and abroad. We collaborate with 100 or so departments and groups around the world.

In some cases we connect our studies to studies from abroad to create even bigger projects, thus enhancing the scientific value of our results. In other cases researchers from abroad draw on our large collections of data, and in yet other cases we help to organise studies in other places in the world. Our approach varies from time to time.

## What has been your greatest achievement in recent years?

- We have contributed greatly to a study that demonstrated how an increased level of the common fat triglycerides in the blood has an impact on the development of blood clots in the heart and the brain. We have also been involved in studies that have focused on how genetic predisposition to inflammation in the body is significant with regard to the development of many different diseases. Finally, together with others, we have found that a particular lipoprotein in the blood – lipoprotein (a) – causes atherosclerosis in the arteries and increases the risk of heart disease.

## What do you hope will be the next step?

- We will continue along the same lines. Our next big step will be to use the full potential of the Copenhagen General Population Study, in which over 100 000 people have presently participated. It is by far the world's biggest individual study of the general population and we want to continue using the material to achieve a better understanding of major widespread multifactorial diseases. Of course, we hope to go a level deeper and open up further possibilities for treatment and prevention. At the moment we are investigating, for example, the significance of vitamin D deficiency in relation to major widespread multifactorial diseases.

## Why they received the award

Through translational research – which builds bridges between fundamental research and patients – the Department of Clinical Biochemistry at Herlev Hospital, Copenhagen University Hospital, is striving to improve the understanding of diseases, diagnostics and prevention.

As soon as new relevant research results are published, the goal of this specialist environment is to translate and implement them into clinical practice, both nationally and internationally.

The Department of Clinical Biochemistry is particularly visible in an international context and with its impressive scientific level is helping to highlight epidemiology – the focus on the occurrence and distribution of disease among population groups – as an important field in Scandinavia.

## Facts

The Department of Clinical Biochemistry at Herlev Hospital employs a staff of about 100. The Department deals with research and analysis and has contact with approximately 280 000 patients per year.

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