

Since 2006 almost 1,250 Danes along with 3,600 Americans have been participating in a research project on longevity and healthy aging

The members of the families participating in the study live long and in good health. The overall purpose of the study is to gain insight into the mechanisms behind this phenomenon so that more people can experience healthy aging.

With the initiation of a new investigation we hope to obtain more valuable information on the importance of genes and environment for a long and healthy life.

The investigation includes all families – also those in which the oldest members are no longer alive

The parent generation was initially chosen among groups of siblings where at least one survived past 90 years of age. This enabled us to examine whether there are special genetic factors of importance for healthy aging. It would of course have been better if we could have followed the siblings from the age of 40-50 years in order to examine the actual aging processes. As this is not possible, we examine other people with great chances of having a long life in good health – namely the children of these old siblings.

Also the spouses in both generations are essential for the study. They do not share genes with the family, but environment, and by including them in the study we can examine the influences of a healthy environment on successful aging. When combining information about the aging of the parents, the children and the spouses of the participants, we can gain knowledge about how to enhance our chances of living long and in good health.

The aging processes are slow, and changes are best identified over a period of several years. So, we have contacted the participants by telephone or letter once a year since the beginning of the study. In the period 2014-16, the participants will be invited to participate in yet another investigation wave with the purpose of collecting new and updated information. The University of Southern Denmark will carry out this research project in collaboration with universities in Washington, Boston, Pittsburgh, Colombia and Minnesota.

What have we discovered so far?

Based on data from the investigation, a number of studies have been carried out, and the findings from these have (by March 2015) resulted in 20 articles published in international, scientific journals.

Below we have described some of our findings in detail:

LLFS families including spouses have better health

The study has shown that the LLFS-families and their spouses are healthier, have lower mortality, and, in average, have fewer chronic diseases than people the same age from other families. We have been able to demonstrate that the LLFS-families have lower incidence of tobacco-related cancers.

This is in accordance with information from the LLFS-family members, who reported less smoking both now and previously compared with the Danish background population. The extraordinary survival among the Danish LLFS-families can thus in part be attributed to their health-related behavior.

Memory and aging

We investigated the ability of the old members of the LLFS-families to maintain their intellectual capacity and also whether they have less risk of intellectual decline and of developing, for instance, Alzheimer's disease. Our results suggest that the intellectual capacity is maintained better in persons from families where the members survived to very high ages, which indicates that genes play a role.

Personality

Can the nature of our personality contribute positively to a long lifespan? The "children generation" is generally less worried and more extrovert than the background population, but they do not differ from other people with regard to other personality traits. Overall, the results suggest that worrying less and having an extrovert personality can be of importance for obtaining a very long life.

The importance of genes

Based on the blood samples that we collected during our first visit to the participants, we have carried our comprehensive investigations on the importance of genes for a long and healthy life. It seems that the genetic variants of importance differ among the families. Therefore, in this investigation, we will focus on whether there are particular genetic variants within each family that have an influence on a long life.

Why do we want to continue the investigation?

The changes that occur in humans as we age are of great importance. A long and healthy life can be characterized by an aging process that entails only minor declines in abilities.

We therefore want to replicate the investigation in order to follow the development both in those who have maintained their good health and in those who have been less fortunate.

It is important to us that both groups are included so that we can get a better understanding of the mechanisms behind a long and healthy life.

Additional information about the study, which is funded by the American funding agency "The National Institute on Aging", can be found on our website www.sdu.dk/LLFS or by contacting research nurse Gitte Bay Christensen, phone: +45 6550 3040).