Board of Directors: Dr. Daniele Barthel (Administrative Director, *l.*) and Prof. Dr. Alfred Nordheim (Scientific Director, *r.*)

With its outstanding research results the FLI plays an important role within the cooperative science community of the Leibniz Association, e.g. in the Research Alliance Healthy Ageing.

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Research for better aging.

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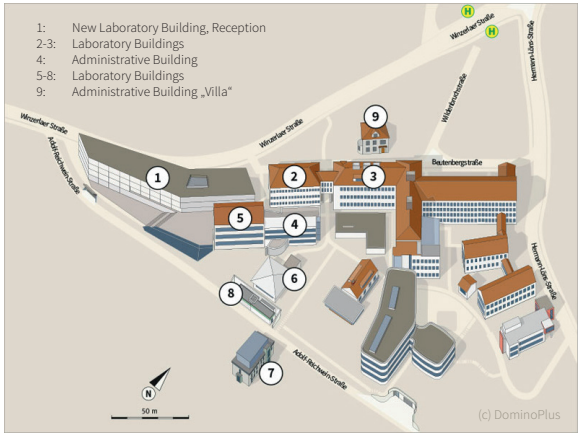
Leibniz Association



fli Leibniz Institute on Aging – Fritz Lipmann Institute

Focus of Research

Aging Research at the FLI in Jena

Our Profile

Research Aim

The German population is growing older – the downside of this happy prospect: more and more people are taken ill. At FLI, we want to understand how aging leads to the development of tissue dysfunction and diseases in the elderly. Through the establishment of international research groups and the provision of state-of-the-art laboratories and innovative technologies, we built a science platform allowing us to determine basic molecular and genetic mechanisms underlying the aging process. Eventually, we aim to create a knowledge basis for the future development of new therapies designed to improve organ maintenance and health during aging.

Age profiles of the German population in 2019 (black line) vs. 2060 (colored).
Source: German Federal Statistical Office 2019

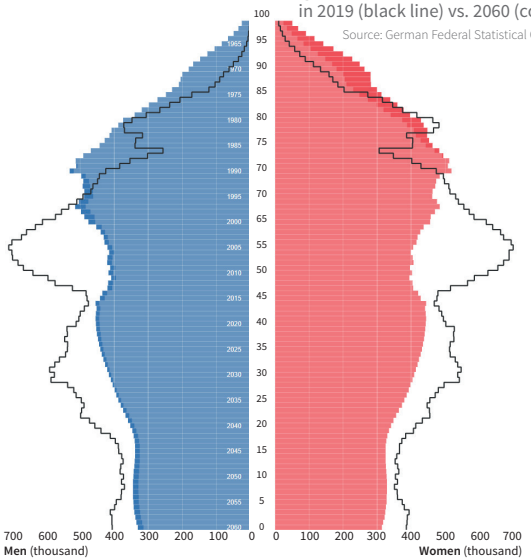


Foto: Colourbox.de

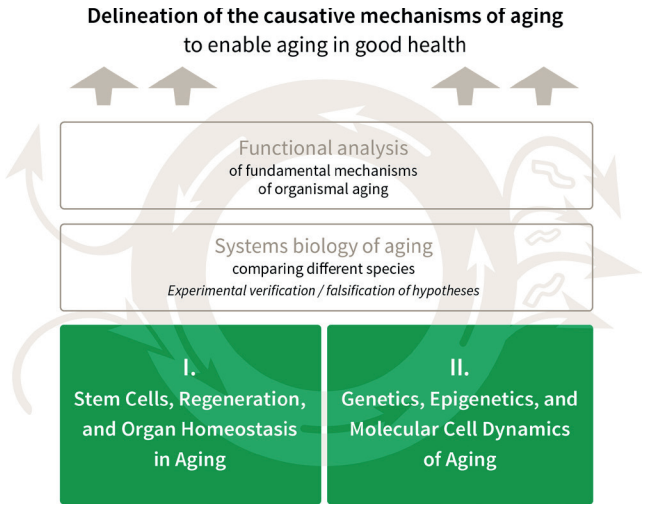
FLI's overall aim is to extend the healthy lifespan.

Our Focus of Research

To provide a rational basis for the development of therapies aiming to improve health in the elderly, research at the Leibniz Institute on Aging – Fritz Lipmann Institute (FLI) in Jena is focused on two research areas:

I. *Stem Cells, Regeneration, and Organ Homeostasis in Aging*

II. *Genetics, Epigenetics, and Molecular Cell Dynamics of Aging*

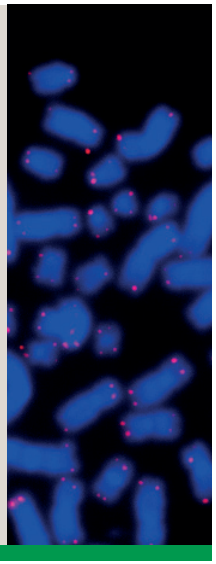


Our research focus on these two research areas is unique at national and international levels. The main aim of our research is to discover the mechanisms that are relevant for human aging and the development of aging-induced dysfunction and diseases. To this end, functional genomic platforms were developed and a variety of model organisms are used spanning from invertebrates to genetic mouse and fish models to human cells. In collaboration with international, national and local partners we aim to transfer our knowledge to the development of new therapies to preserve tissue maintenance and to reduce the risk of aging-induced diseases. This may contribute to a healthy and better aging in the future.

Research Area I

Stem Cells, Regeneration, and Organ Homeostasis in Aging

Organ maintenance (homeostasis) and regenerative capacity decrease during aging. This leads to impairments in organ function and to an increased risk of disease development. One reason for this is the reduced performance of adult stem cells which are responsible for the live-long self-renewal and regeneration of organs and tissues. We investigate the causes of this aging-associated inhibition of stem cell function and its effects on organ maintenance.



Research Area II

Genetics, Epigenetics, and Molecular Cell Dynamics of Aging

A central phenomenon of aging is the accumulation of damages in the cells' molecular components. This also applies to proteins and the genetic information, DNA. There is growing evidence that the impairment of proteins and DNA contributes to malfunctions of stem cells and tissue maintenance. But the causes of the aging-associated accumulation of protein and DNA damages are still largely unknown.
Additionally, the question rises which genetic factors have an influence on the velocity of aging of molecular components. To address these questions, we are conducting comparative analyses and are making selected changes to genomes and transcriptomes in short- and long-lived model organisms to learn more about the genetic factors influencing the aging process also in humans.