

Press Release  
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## Tracking biological age – Funding by the Thüringer Aufbaubank for Researchers from Jena

**Genetic heterogeneity and the impact of environmental factors play a major role during aging. Our biological age depends not only on your years of life, but also on individual health and vitality. Specific markers help to detect age-related physical changes and disease risks early on. Researchers of the Leibniz Institute on Aging (FLI) and the Friedrich Schiller University Jena (FSU) want to establish nucleoli as biomarkers for healthy aging in a new project. The project is funded by the Thüringer Aufbaubank with 700,000 euro until 2022.**

**Jena.** We are getting older and older. This positive fact is associated with increasing age-related diseases. The overall aim of aging research is to gain a better understanding of the aging process, to enable growing older in good health and maintaining a good quality of life. To initiate preventive and therapeutic interventions for healthy aging it is necessary to be able to determine the biological age. Special biomarkers for aging are able to assess the individual health status, risk for disease in the elderly and to enable prevention.

Researchers of the Leibniz Institute on Aging – Fritz Lipmann Institute (FLI) and the Friedrich Schiller University Jena (FSU) applied for funding to the Thüringer Aufbaubank (TAB), which has now been approved for the next two years. The project of Dr. Maria Ermolaeva from FLI (junior research group “Stress Tolerance and Homeostasis”) and Dr. Holger Bierhoff from FSU (junior research group “Epigenetics of Aging”) is dedicated to establish nucleoli as new biomarkers for healthy aging.

The nucleolus is the site of ribosome biogenesis in a cell nucleus. Age-dependent changes in the structure and activity of the nucleolus affect cellular energy consumption and its ability to synthesize proteins. The project will investigate novel nucleolus-dependent biomarkers for aging and metabolic health in the nematode *Caenorhabditis elegans*. Furthermore, it will be investigated to what extent the results are transferable to humans and how they can be used to improve healthy aging.

“In the context of an ever aging population, our project is dedicated to an important problem of our time”, says Dr. Ermolaeva. “Our project lays the basis for the development of easily applicable biomarkers and can contribute to the development of new anti-aging interventions”, adds Dr. Bierhoff. Due to this great potential for commercial applications, the project is supported by several Thuringian biotech companies that form an industry advisory board.

“The expected research results will provide innovative impulses for medical technology and biotechnology in Thuringia and will open up interesting links to research and development activities at microfluidic ChipShop, e.g. the development of fluidic diagnostic platforms or the

microfluidic handling of *C. elegans*”, says Dr. Holger Becker (CSO, microfluidic ChipShop, Jena), who is accompanying the project as industrial consultant.

### SPARK@FLI

The project has already been funded within the internal SPARK@FLI program at FLI. Thanks to an established industrial advisory board, it was possible to quickly get in contact with the already existing network of industrial consultants. SPARK@FLI helps to transfer fundamental scientific findings from biomedical research into application-oriented drugs or diagnostics and ensures that government-funded research translates into improved health of our society. This increases the chances of supported projects, while at the same time reducing costs and time required to achieve the research goal.

The Thüringer Aufbaubank promotes scientific research projects and the establishment of research infrastructures that support the sustainable development of research foci at scientific research institutions in Thuringia. The projects have to be dedicated to the regional innovation strategy for smart specialisation (RIS 3 Thuringia).

*The project is supported by the Free State of Thuringia and the European Social Fund.*

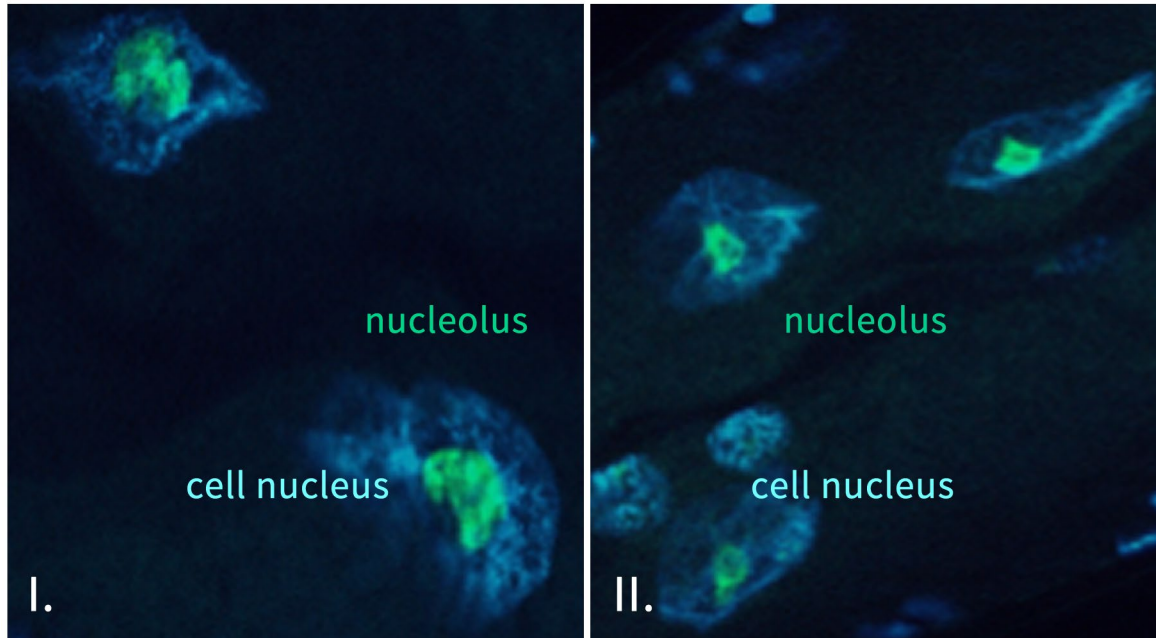


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control

RNA interference



#### Picture:

Size of the nucleolus is a marker for aging in the nematode *C. elegans*. RNA interference reduces the size of the nucleoli (II), which correlates with a longer life span. (Source: FSU / Holger Bierhoff)

#### Background information

The **Leibniz Institute on Aging – Fritz Lipmann Institute (FLI)** – upon its inauguration in 2004 – was the first German research organization dedicated to research on the process of aging. More than 350 employees from around 40 nations explore the molecular mechanisms underlying aging processes and age-associated diseases. For more information, please visit [www.leibniz-fli.de](http://www.leibniz-fli.de).

The **Leibniz Association** connects 96 independent research institutions that range in focus from the natural, engineering and environmental sciences via economics, spatial and social sciences to the humanities. Leibniz Institutes address issues of social, economic and ecological relevance. They conduct knowledge-driven and applied basic research, maintain scientific infrastructure and provide research-based services. The Leibniz Association identifies focus areas for knowledge transfer to policy-makers, academia, business and the public. Leibniz Institutes collaborate intensively with universities – in the form of “WissenschaftsCampi” (thematic partnerships between university and non-university research institutes), for example – as well as with industry and other partners at home and abroad. They are subject to an independent evaluation procedure that is unparalleled in its transparency. Due to the institutes’ importance for the country as a whole they are funded jointly by the Federation and the Länder, employing some 20,000 individuals, nearly half of whom are researchers. The entire budget of all the institutes is approximately 2.1 billion EUR. See <https://www.leibniz-gemeinschaft.de/en/> for more information.