

Press release**Leibniz-Institut für Alternsforschung – Fritz-Lipmann-Institut e.V. (FLI)****Sylvia Kreysse-Minar**

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<http://idw-online.de/en/news844368>Contests / awards, Research projects
Biology, Medicine
transregional, national**FLI Team Achieves Success in International DREAM Challenge on Placental Aging**

Team ANTS from the Leibniz Institute on Aging – Fritz Lipmann Institute (FLI) in Jena achieved second place in the global Placental Clock DREAM Challenge. Their model predicted gestational age with a remarkable accuracy of 1.3 weeks using DNA methylation data, highlighting FLI's strength in computational biology. The team earned a \$2,000 travel grant and an invitation to present their findings at an international conference. This achievement underscores the potential of interdisciplinary research to advance understanding of placental aging and complex biological clocks. Their work offers valuable insights into pregnancy outcomes and the broader field of aging research.

Jena. A remarkable achievement by Team ANTS from the Leibniz Institute on Aging – Fritz Lipmann Institute (FLI) in Jena: Alena van Bömmel, Tushar Patel, and research group leader Prof. Dr. Steve Hoffmann secured an impressive second place at this year's Placental Clock DREAM Challenge. This global competition, organized by a collaborative network of researchers from Wayne State University, Sage Bionetworks, Stanford University, the University of California – San Francisco, and the Pregnancy/Perinatology Research Branch of NICHD, sought to advance understanding of placental aging through computational approaches.

The FLI team's model achieved an extraordinary accuracy of 1.3 weeks in predicting gestational age using DNA methylation data from human samples. This landmark achievement underscores the institute's expertise in computational biology and its commitment to addressing critical biological questions. As recognition for this achievement, the team was awarded a travel grant of 2,000 USD and invited to present their methodology and results to an international audience at the 16th annual RECOMB/ISCB Conference on Regulatory and Systems Genomics with DREAM Challenges in Madison, USA.

The ANTS team's success reflects the power of interdisciplinary approaches at FLI, where expertise in computational biology, machine learning, and aging research converge. Their modeling framework not only demonstrated high accuracy but also provided novel insights in DNA methylation patterns evolving in the placenta during pregnancy.

"We are thrilled to have performed so well in such a competitive challenge," says Alena van Bömmel. "This recognition highlights the innovative work being conducted at FLI and our commitment to contributing to global scientific efforts addressing critical health challenges."

The team's achievement also highlights the potential of DNA methylation analysis as a tool for understanding complex biological clocks. Their findings pave the way for future research into the mechanisms of placental function and aging, with broader implications for pregnancy outcomes and aging research.

Background

The DREAM (Dialogue for Reverse Engineering Assessments and Methods) Challenges are highly respected global competitions that focus on solving some of the most complex problems in biomedical science. These challenges

emphasize collaboration, transparency, and reproducibility in scientific research. By leveraging cutting-edge computational techniques and large-scale datasets, participants aim to push the boundaries of our understanding in fields such as genomics, molecular biology, and aging research.

This year's Placental Clock DREAM Challenge centered on uncovering the biological mechanisms of placental aging through analysis of DNA methylation data. The placenta plays a vital role during pregnancy, and disruptions in its function are linked to complications such as preterm birth and fetal growth restrictions. By accurately modeling placental age, researchers hope to develop better diagnostic tools and interventions to improve maternal and fetal health.