

Press release
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Microbiome research in Jena strengthened by new professorship

At the Leibniz Institute on Aging - Fritz Lipmann Institute (FLI) in Jena, in a joint appointment with the Friedrich Schiller University Jena (Medical Faculty), Prof. Dr. Dario R. Valenzano has taken up a professorship and the leadership of the senior research group "Evolutionary Biology / Microbiome-Host Interactions in Aging". With the new research focus "Microbiota and Aging" at the FLI, the changing composition of the microbiome of an aging organism and its influence on the development of age-associated diseases is in focus, thus expanding and additionally strengthening aging research in Jena.

Jena. In March 2018, the "Gemeinsame Wissenschaftskonferenz" (GWK, Joint Science Conference) approved the establishment of a new research focus "Microbiota and Aging" at the Leibniz Institute on Aging - Fritz Lipmann Institute (FLI). The approved funding of two junior research groups will be strengthened by the FLI through the additional provision of a new senior research group. The latter will be installed as a W3 professorship in a joint appointment with the Friedrich Schiller University Jena (Faculty of Medicine). Dr. Dario R. Valenzano from the Max Planck Institute for Biology of Ageing in Cologne has accepted the professorship in Jena and has initiated his senior research group "Evolutionary Biology / Microbiome-Host Interactions in Aging" at the FLI in July 2021.

With the new research focus, the changing composition of the microbiome of an aging organism is the center of interest. The aim is to clarify the contribution of an organism's microbiota (i.e., the microbiome) in the onset and prevention of age-associated diseases and dysfunctions. This new focus on the role of the microbiome during aging is an important addition to existing research projects at FLI, which are investigating, among other things, the ability of organ maintenance (homeostasis) as well as regenerative capacity during aging in different models.

"I am very excited to establish my group at FLI," reports Prof. Dario R. Valenzano. "Here we will be able to investigate the influence of crosstalk between the host and the microbiome - the totality of all its associated microorganisms - on the aging process. I very much look forward to my future interactions with students at the FSU, as well with my new colleagues and other partners at the university. So I'm really looking forward to my future interactions with students at the FSU, as well with my new colleagues and other partners at the university."

To study the dynamics of host-microbiome interactions, the Valenzano group links ecology (host-microbiome interactions) with evolutionary genomics. "We are particularly interested in how microbial dynamics unfold throughout the host life cycle and how novel microbial strains evolve in the time scale of host life. Additionally, we study whether the host itself plays an active role in establishing and maintaining a healthy microbiome and how aging in the host leads to host-microbial disbalance."

"Prof. Valenzano is a world-renowned pioneer in aging research, using the genetic model organism of the turquoise killifish. The addition of Prof. Valenzano to the FLI not only significantly strengthens our institute's existing expertise in the use of the killifish as a model

organism, but also allows the FLI to become a leading international center for the use of the killifish model in aging research," emphasized FLI Scientific Director Prof. Alfred Nordheim. "Furthermore, Prof. Valenzano's broad scientific expertise promises to stimulate sustainable research in the fields of immunobiology and genome evolution beyond aging-related microbiomics, together with our collaborative partners at the Jena research site."

In addition to Prof. Valenzano's W3 appointment, two new junior groups are to be established at FLI in the near future, thematically expanding the FLI research focus "Microbiota and Aging". The junior groups will work on the topics "Microbiome-induced epigenetic changes in the host organism" and "Metabolite signaling in the microbiome-host interaction". The appointment process for this position is already underway and is expected to be completed before the end of 2021.

The person

Dario Riccardo Valenzano, born in 1977 in Bari, Italy, studied neuroscience at the Scuola Normale Superiore in Pisa, Italy. From 2006 to 2013, Dr. Valenzano worked in the research group of Dr. Anne Brunet (Department of Genetics) at Stanford University in Stanford, USA; first as a Postdoctoral Research Fellow and then as a Research Associate.

From 2013, Dr. Valenzano led the research group "Evolutionary and Experimental Biology of Aging" at the Max Planck Institute for Biology of Ageing in Cologne, Germany, and has been Principal Investigator in the Cluster of Excellence CECAD at the University of Cologne since 2016. Since July 2021, he is Professor at Friedrich Schiller University Jena (Faculty of Medicine) and group leader of the research group "Evolutionary Biology / Microbiome-Host Interactions in Aging" at the Leibniz Institute on Aging - Fritz Lipmann Institute (FLI) in Jena.

His research team studies the genomic basis of short and long lifespan across various animal species and investigates the role of gut microbes during the aging process. His most important model system is the naturally short-lived turquoise killifish (*Nothobranchius furzeri*), which he studies both in the laboratory and in its natural habitat in the African savannah.

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Picture



Dr. Dario R. Valenzano, Professor at Friedrich Schiller University Jena and head of the research group "Evolutionary Biology / Microbiome-Host Interactions in Aging" at the Leibniz Institute on Aging - Fritz Lipmann Institute (FLI) in Jena. (Source: FSU / Anne Günther)



With a lifespan of 3-4 months, the Turquoise killifish (*Nothobranchius furzeri*) is the shortest-lived vertebrate that can be kept under laboratory conditions. (Source: FLI / Nadine Grimm)

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.

The **Friedrich Schiller University Jena** is the only traditional university in the German state of Thuringia with 10 faculties covering all disciplines. It was founded in 1558 and today offers a broad range of over 200 different study programmes ranging from archaeology to Studies in Economics. The student body comprises about 18,000 students who, in various rankings and studies, have time and again born testimony to the good academic and study conditions at their university.

The Friedrich Schiller University is characterized by high and strong research dynamics. It has been a long tradition at the university to work interdisciplinarily, and close cooperation with non-university research institutions and the industry have always had great importance. Research at the Friedrich Schiller University focuses around the three keywords “Light – Life – Liberty”.

Special attention and support is given to young scientists and academics at the University of Jena. With its nationwide recognized Graduate Academy, the Friedrich Schiller University puts great emphasis on optimal qualifications and the highest possible quality standards. The more than 120 cooperation agreements with universities around the world underline the international orientation of the Friedrich Schiller University who has also been able to build up a reputation of preserving culture thanks to its 42 collections and museums. For more information, please visit www.uni-jena.de/en.

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 20,500 individuals, nearly half of whom are researchers. The entire budget of all the institutes is approximately 2 billion EUR. See www.leibniz-gemeinschaft.de/en/ for more information.