

PRESS RELEASE

Understanding and preventing metabolic diseases

Prof. Rudolf Zechner is receiving the 2024 Jung Gold Medal for Medicine for his lifetime's work in researching lipid and energy metabolism

Hamburg, 2nd May 2024. It's what we think we know that keeps us from learning! (Claude Bernard) – Fortunately for human medicine research and many patients, Professor Rudolf Zechner never considered his extensive knowledge of biochemistry to be so complete that he would have stopped researching. As a result, he and his team have made significant discoveries that have fundamentally changed biochemistry and physiology textbooks and revealed promising strategies for treating metabolic disorders. Rudolf Zechner is currently Professor Emeritus at the Institute of Molecular Biosciences at the University of Graz, Austria. For his life's work, in which he has discovered essential components and mechanisms of fat loss in human cells and described their role in the development of metabolic diseases, he has now been awarded the 2024 Jung Gold Medal for Medicine by the Hamburg-based Jung Foundation for Science and Research. The foundation thus honours top researchers who have significantly advanced medical research and practice through their life's work and will continue to do so in the future.

Fats, known as triglycerides, belong to a large group of biomolecules called lipids. They are present in almost all cells of the human body and serve as important stores for fatty acids, which in turn are important suppliers of energy, central components of cell membranes and important cellular messenger substances. If the lipid metabolism is disrupted, this can lead to serious illnesses, including 'lifestyle diseases' such as obesity, type II diabetes, arteriosclerosis and heart attacks. To counteract these disorders,

the clarification and understanding of lipid metabolism is of great medical importance.

Rudolf Zechner made and continues to make important contributions to the understanding of triglyceride metabolism with the discovery of the adipose triglyceride lipase (ATGL) enzyme and its essential co-activator CGI-58. Based on these findings, Zechner, his team and many collaborators have developed highly specific ATGL inhibitors that are now being tested in different disease models for obesity, glucose intolerance, fatty liver, heart failure and cancer-associated cachexia. Promising results in mouse models give hope for a successful application in human medicine. Zechner's discoveries of ATGL and CGI-58 also shed light on the development and possible treatment of genetically induced lipid storage diseases, such as 'neutral lipid storage disease with myopathy' (NLSMD) or 'neutral lipid storage disease with ichthyosis' (NLSDI).

Curiosity and perseverance lead to a breakthrough: the career trajectory of Prof. Rudolf Zechner

The professor's literary and film role model already reveals a lot about him: Henry Fonda, as juror no. 8 (Davis) in '12 Angry Men' (directed by Sidney Lumet), a character who convinces the other jury members of the innocence of a young man through critical analysis, perseverance and curiosity, thus saving him from an unjust execution. 'This thorough approach to a problem has also shaped me as a scientist,' summarises Rudolf Zechner. Even at a young age, he exhibited particular curiosity: 'I was extremely fascinated by nature at an early age, especially the way living organisms and, of course, humans in particular function.' After graduating from high school, the Graz-born researcher studied chemistry and obtained his PhD from Karl Franzens University in his home town in 1980. After a research position at the Institute of Medical Biochemistry at the University of Graz, he was given the opportunity to work at the Laboratory of Biochemical Genetics and

Metabolism at Rockefeller University in New York City in 1985. Nevertheless, he couldn't let go of his home country and returned to Graz in 1987. He took over the management of the SFB Biomembranes special research centre in Graz and became a full university professor and chairman of the Institute of Biochemistry at the University of Graz in 1998. From 2007 to 2016, he also headed the *SFB LIPOTOX* special research centre, in which eleven research groups from three universities in Graz are collaborating. From 2004 to 2013, he was project leader of the large GEN-AU consortium project 'GOLD – Genomics of Lipid-Associated Disorders'. Since 2016, he has been director of the inter-university research association BioTechMed-Graz.

In 2004, he was admitted to the Austrian Academy of Sciences and Humanities as a corresponding member, and in 2008 he was admitted as a full member. Other important honours included the 2007 Wittgenstein Prize, Austria's most important science prize; an ERC Advanced Award in 2013, the Louis Jeantet Prize for Medicine in 2015, the Rolf Luft Award from Karolinska University in 2018 and Foreign Membership of the National Academy of Sciences of the United States of America in 2019. Rudolf Zechner has never lost his enthusiasm for his subject: 'I am fascinated by the complexity and functionality of biological processes,' he summarises, 'and I hope that by discovering fundamental mechanisms of metabolic regulation, I can contribute to the development of new therapeutic options and thus alleviate suffering.'

2024 Jung Gold Medal for fundamental metabolic research

Rudolf Zechner shows his interest in nature in many ways. When the Professor Emeritus at the Institute of Molecular Biosciences at the University of Graz is not performing his current role as director of BioTechMed-Graz, he finds balance in fly fishing, hiking and travelling or collecting and exploring minerals and the related mining history. In addition

to his many interests, he also does not allow himself to neglect his family. Rudolf Zechner spoils them with homemade bread and other delicious dishes from the family kitchen. 'In addition to outstanding scientific role models, I was very fortunate to have a family that supported me in my research,' he says. 'With the Jung Gold Medal for Medicine, the Jung Foundation not only gives me highly visible recognition for our discoveries in fundamental medical research, but also gives me the opportunity to become a supporter myself and give funding to a young colleague.' With the award, Rudolph Zechner is receiving €30,000 euros which he can grant as a scholarship to a junior scientist of his choice.

The Jung Foundation has been committed to the advancement of human medicine since 1975. With its awards and various scholarships, the foundation handles grants worth up to €650,000 each year.

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About the Jung Foundation for Science and Research

The Jung Foundation for Science and Research, based in Hamburg, Germany, annually provides up to three awards in recognition of fundamental and advanced research projects of significant clinical relevance. To date, the foundation has invested more than 15 million euros in supporting researchers whose projects build a bridge between research and the bedside. Under the motto of 'Excellence in human medicine', the foundation makes a significant contribution to the development of new treatment methods. The Jung Prize for Medicine, the Jung Gold Medal for Medicine and the Jung Career Advancement Award for Medical Research are among the most highly endowed medical prizes in Europe. With the additional awarding of fellowships and German scholarships, the foundation provides a total funding of up to 650,000 euros annually.

Further information is available at www.jung-stiftung.de

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