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GRK 2576 Guest Lecture

Title: **Coupling membrane transport to metabolic control**

Speaker: **Anja Zeigerer, PhD**
Head “Basic Principles of Metabolic Diseases”, European Center for Angioscience, Medical Faculty Mannheim of the University of Heidelberg, 68167 Mannheim, Germany

Date: **22. November 2023**
Time: **14:00 h CET**
Location: **Oskar Minkowski-Hall & Paul Langerhans-Hall, DDZ**

Zoom:
https://us06web.zoom.us/j/85095282513?pwd=4Vgsj9b8YeBKhQWlZGLsRIXxt0wC51.1
Meeting-ID: 850 9528 2513; Kenncode: 592915

Biography

Prof. Dr. Anja Zeigerer conducted her PhD work on the intersection of insulin signaling and cellular membrane trafficking in fat cells with Prof. Tim McGraw at the Weill Cornell Medical College, New York after which she obtained her PhD from the University of Heidelberg in 2004. She continued her training with Prof. Jeff Friedman at Rockefeller University for her first postdoc, studying leptin secretion from adipocytes, before moving back to Germany in 2007 to the Max Planck Institute for Cell Biology and Genetics in Dresden to the lab of Marino Zerial. Here, she discovered a pivotal role of the endo-lysosomal system in liver metabolism and established this new research direction. In 2015, she joined the Institute for Diabetes and Cancer at Helmholtz Munich, as a research group leader, heading the division "Endocytosis and Metabolism", where she elucidated the underlying mechanisms, how endosomal transport regulates glucose and lipid metabolism in the liver. Anja was recently appointed as a full professor to the ECAS at the Medical Faculty Mannheim, University of Heidelberg, where she continues to investigate the basic cellular principles of metabolic control.
Her work has been published in Nature, Nature Biotechnology, Nature Metabolism, Cell Metabolism, among others. She is a guest editor for Molecular Metabolism and serves as reviewer for journals such as Cell, Science, Nature Metabolism, etc. as well as for national and international funding agencies. Her work on understanding the connection between endosomal membrane trafficking and metabolic regulation has won several prestigious grants, most recently the H2020-MSCA-ITN 2020 Network Grant. Anja has dedicated her career to identify novel functions of endosomal trafficking regulators in liver and systemic metabolism with impact on metabolic disease such as obesity, type-2 diabetes and fatty liver disease.

Selected recent publications

Gilleron J, **Zeigerer A**. Endosomal trafficking in metabolic homeostasis and diseases. Nat Rev Endocrinol. 2023 Jan;19(1):28-45. Erratum in: ***Nat Rev Endocrinol.*** 2022 Oct 31;: PMID: 36216881.

Sekar R, … **Zeigerer A**. Vps37a regulates hepatic glucose production by controlling glucagon receptor localization to endosomes. ***Cell Metab.*** 2022 Dec 6;34(12):2047. Erratum for: Cell Metab. 2022 Nov 1;34(11):1824-1842.e9. PMID: 36476936.

Loft A, … **Zeigerer A**, Tuckermann J, Herzig S. A macrophage-hepatocyte glucocorticoid receptor axis coordinates fasting ketogenesis. ***Cell Metab***. 2022 Mar 1;34(3):473-486.e9.

Zeigerer A, Sekar R, Kleinert M, Nason S, Habegger KM, Müller TD. Glucagon's Metabolic Action in Health and Disease. ***Compr Physiol.*** 2021 Apr 1;11(2):1759-1783.

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Talk teaser

Guest lecture with Prof. Dr. Anja Zeigerer

Coupling membrane transport to metabolic control

The global prevalence of obesity and type-2 diabetes has reached a qualified epidemic stage. This presents a heavy burden on the society and thus it is essential to find novel mechanisms and targets that could be utilized for potential treatment strategies. In light of this demand, recent evidence has begun to support a role for intracellular membrane trafficking in metabolic homeostasis. Membrane transport is an essential physiological process responsible for the sorting and distribution of signaling receptors, membrane transporters and hormones or other ligands between different intracellular compartments and the plasma membrane. Dysregulation of intracellular transport is connected with many human diseases, including cancer, neurodegeneration, immune deficiencies, and recently metabolic diseases, such as type-2 diabetes and its associated complications. Thus, my talk will shed light on this new connection with recent examples, how regulators of membrane trafficking can alter cellular signaling and function with immediate impact on metabolic outcomes.