

DBMR Research Conference

Seminar room EG050
Murtenstrasse 24, 3008 Bern

Date: Monday, November 3, 2025, 5pm – 6pm

Title: Mitochondrial dysfunction rewires adrenal steroidogenesis: from cortisol deficiency to androgen excess

Speaker: Recipient of the Johanna Dürmüller-Bol DBMR Research Award 2024
Dr. Andrea Felser, Department of Pediatrics, Pediatric Endocrinology, Diabetology and Metabolism, Inselspital, University Children's Hospital, Bern

Bio: Dr. Andrea Felser, MD PhD, is a Clinical Fellow in Pediatric Endocrinology, Diabetology, and Metabolism at the University Children's Hospital Bern. She obtained her PhD in Pharmaceutical Sciences from the University of Basel (2014) and completed a postdoctoral fellowship at the Karolinska Institute, Stockholm (2015), where she investigated drug-induced mitochondrial toxicity. She earned her medical degree from the University of Bern in 2020 and has since combined pediatric training with experimental research.

Dr. Felser was awarded the Johanna Dürmüller-Bol DBMR Research Award 2024 for her project on the role of mitochondrial energy metabolism in adrenal steroidogenesis. Her collaborative work links mitochondrial biology to endocrine regulation and aims to uncover underdiagnosed adrenal disorders in patients with inborn errors of metabolism.

Abstract: Mitochondria are essential gatekeepers of adrenal steroidogenesis, supplying both substrates and cofactors for hormone synthesis. Beyond their canonical roles in cholesterol side-chain cleavage and ATP generation, recent findings demonstrate that mitochondrial dysfunction actively reshapes steroid output. Using human adrenocortical H295R cells, we showed that inhibition of oxidative phosphorylation or pyruvate transport rapidly increases dehydroepiandrosterone production, accompanied by truncated tricarboxylic acid cycle signatures that suggest metabolic rerouting as a driver of hyperandrogenism. In parallel, mitochondrial dysfunction impairs forskolin-stimulated cortisol synthesis, revealing a novel mechanism by which mitochondrial state directly controls adrenal hormone balance.

The translational relevance of these mechanisms is currently being tested in pediatric patients with primary mitochondrial disease, where altered adrenal steroid profiles might appear more common than previously recognized. This research aims to advance our understanding of how mitochondrial energy metabolism and adrenal steroidogenesis interact, providing new perspectives on the regulation of adrenal function in health and disease.

Host: Prof. Dr. Carsten Riether, Translational Cancer Research, Department for BioMedical Research, University of Bern & president of the Johanna Dürmüller-Bol DBMR Research Award 2024 committee.

Next DBMR Research Conference:

Monday, December 8, 2025, 5pm-6pm

Speaker: Prof. Daniel Ahmed, Professor of Acoustic Robotics for Life Science and Healthcare, ETH Zurich

Title: From Physics to Medicine: Translating Ultrasound Microrobotics from Preclinical Models toward Clinical Applications



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