

# DBMR Research Conference

Seminar room EG050  
Murtenstrasse 24, 3008 Bern

**Date:** Monday, May 4, 2026, 5pm – 6pm

**Title:** High throughput retina models for therapy development

**Speaker:** Madgalena Renner, PhD, Institute of Molecular and Clinical Ophthalmology (IOB), Basel, Switzerland

**Bio:** Dr. Renner is Austrian and studied Molecular Biology at the University of Vienna. From 2012 - 2016 she did her PHD at the Institute of Molecular Biotechnology in Vienna. There, in the lab of Jürgen Knoblich, she co-developed and thoroughly characterized human brain organoids. She moved to Basel in 2016 to join the Novartis Postdoctoral program. Her academic supervisor was Botond Roska, and she carried out most of her experimental work on retinal organoids in his laboratory at FMI. There, she developed a method for high-throughput generation of retinal organoids. For this work, Dr. Renner and her close collaborator Cameron Cowan, received several research prizes (e.g. Pfizer Research Prize, Pro Retina Award, Swiss OphtAward, Arvo Bert M. Glaser award, etc). When Botond Roska founded the Institute of Molecular and Clinical Ophthalmology in Basel, Dr. Renner established the human organoid platform, which she's leading until today. The platform collaborates with IOB scientists to develop novel in vitro models for eye research.

**Abstract:** Retinal organoids are a 3D *in vitro* model of the human retina, modeling its cell type diversity, arrangement, transcriptome, and functional aspects. Although human retinal organoids take 30 weeks to mature, Dr. Renner and her team have established methods to use them for high content screening. They use them both, for small molecule screening, and for screening of adeno associated viral vectors (AAV). The goal is to identify regulatory elements leading to AAV-driven gene expression only in specific cell types of the human retina. Cell-type specific gene expression is important to minimize toxicity caused by off-target expression of gene therapy vectors. Furthermore, cell type specific transgene expression enables access to specific cells for basic research in various model systems. Beyond the retina, the methodologies Dr. Renner and her team have developed are broadly applicable across the organoid research field: They use affordable lab automation for high throughput organoid generation, maintenance, and screening, and they increased the throughput of organoid cryosectioning and histology with the HistoBrick array mold.

**Host:** Prof. Volker Enzmann, Department of Ophthalmology, Inselspital, University Hospital of Bern and Regenerative Neuroscience, Department for BioMedical Research, University of Bern.

Next DBMR Research Conference: Monday, June 1, 2026, 5pm-6pm

Speaker: Aline Bozec, PhD, Professor for Experimental Immunotherapy, Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Erlangen, Germany

Title: How eosinophils regulate inflammation and bone homeostasis via eosinophil peroxidase in rheumatoid arthritis



Department for BioMedical Research (DBMR)

[www.dbmr.unibe.ch](http://www.dbmr.unibe.ch)



**u<sup>b</sup>**

**UNIVERSITÄT  
BERN**