

June  
16<sup>th</sup>  
2026

4:00PM CET  
VIRTUAL

iPSZÜRICH

A Lecture Series Focused on Induced Pluripotent Stem Cells



Institute of Molecular  
and Clinical  
Ophthalmology Basel

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## HIGH THROUGHPUT RETINA MODELS

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, we have established methods to use them for high content screening. We use them both, for small molecule screening, and for screening of adeno associated viral vectors (AAV). Our 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 we have developed are broadly applicable across the organoid research field: We use affordable lab automation for high throughput organoid generation, maintenance, and screening, and we increased the throughput of organoid cryosectioning and histology with the HistoBrick array mold.

