

We are currently seeking a highly motivated life science student (f/m/d) for a project on

“Multinucleation in epithelial cells”

Multinucleated cells can naturally occur in the body – in immune cells, osteoclasts, cardiomyocytes, or retinal pigment epithelial (RPE) cells or they can be a sign of aberrant transformation in cancer. The mechanism of how a cell becomes multinucleated is unclear. Cell fusion or nuclear duplication without cytokinesis have been proposed. In the murine RPE, bi- and multinucleation are common and increase with age. In vitro, hiPSCs-derived RPE cells show binucleation, which provides a platform for establishing a model to study the formation of multinucleated cells.

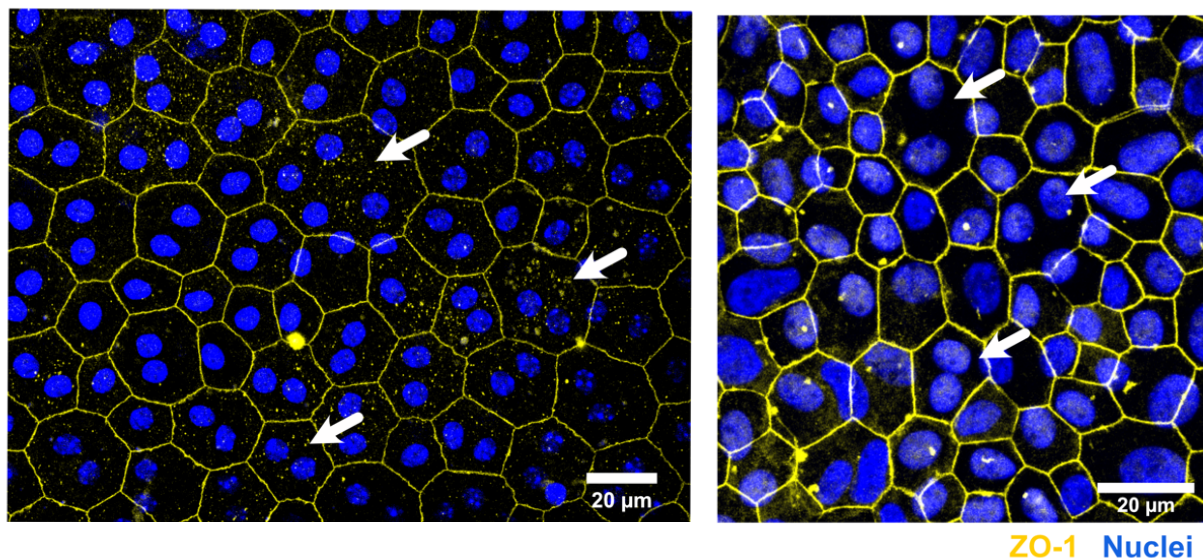


Figure 1: Multinucleation in retinal pigment epithelial cells in vivo (left) and in vitro (right).

Project aim:

This project aims to establish a model to study multinucleation. This includes using common epithelial cell lines (e.g. MDCK) and hiPSCs-derived RPE cells and perturbing them with factors and conditions shown in the literature to induce multinucleation. In these conditions, the cells becoming multinucleated should be visualized by live-cell fluorescent microscopy. This work is novel and risky and, thus, suitable for someone eager to independently research about and design their experiments. The topic is unexplored and holds great potential.

We offer:

- ☐ Interdisciplinary and active research environment
- ☐ Close practical and theoretical supervision
- ☐ Possibility for ending up in publication.

Your tasks:

- ☐ Development of a protocol to induce multinucleation in MDCK and hiPSC-derived RPE
- ☐ Live cell imaging and immunofluorescent labelling, widefield and confocal microscopy
- ☐ Segmentation and image analysis
- ☐ More depending on the development of the project



Your profile:

- ☐ Background in life sciences
- ☐ Motivated, independent, and team-oriented attitude
- ☐ Experience with cell culture, microscopy, hydrogels or image analysis are a plus.

If you are interested, please send a short motivational letter, CV and transcripts at jdirusso@ukaachen.de or tpiskova@ukaachen.de.

