Master Thesis in Gastrointestinal Biology (m/f/d)

Apply now

*We are recruiting an ambitious **Master student** who wants to pursue groundbreaking research in the areas of gastrointestinal biology. Your thesis work will be performed in the laboratory of Georg Busslinger at **the Medical University of Vienna** and, due to the lab's adjunct affiliation, also at **CeMM Research Center for Molecular Medicine of the Austrian Academy of Sciences**.*

The project

The gastrointestinal tract consists of different organs that act together in a coordinated manner to facilitate processes such as food digestion and nutrient absorption. Each organ is lined by a highly specialized epithelial cell layer that mediates organ-specific functions while collectively forming a barrier against the gut microbiome. We are particularly interested in understanding how distinct epithelial cell types within the human stomach differentiate, acquire their specialized functions, and interact with their surrounding environment.

Using human gastric organoid cultures, we have recently identified molecular mechanisms regulating the differentiation of foveolar cells, a specialized epithelial cell type responsible for producing the protective mucus layer of the stomach. Building on these findings, our ongoing research focuses on understanding the differentiation and function of gastric neck cells, another specialized mucus-producing cell population. We employ molecular approaches, including CRISPR-Cas9 genome editing and targeted gene expression, to investigate the regulatory mechanisms controlling epithelial cell differentiation. In addition, we combine organoid cultures with tissue engineering and biomechanical approaches to investigate how tissue architecture and mechanical cues influence epithelial cell differentiation and function.

During your master thesis, you will work alongside a senior PhD student in the lab. Thereby, you will:

- learn how to work with human organoid cultures
- learn how to generate genetic modifications
- get acquainted with biomechanical approaches
- use molecular cloning techniques
- investigate changes in gene expression by RT-qPCR or RNA-sequencing

Your work will provide you with insights into human gastric biology at a molecular level and will shed light on cell type dynamics.

The candidate

We are looking for an outstanding Master student with a strong background in cell biology with a time commitment of 9 to 12 months. Cell culture expertise is required, and experiences with CRISPR-Cas9 or

cloning technologies are highly desirable. We provide the opportunity to work on a cutting-edge research project in a highly supportive environment, with high chances to contribute to an important scientific publication.

The Research Group

We are a highly collaborative team. We enjoy curiosity-driven research and want to shift paradigms in biology. The team includes of one PostDoc, three PhD students, two research technicians and one master student.

Our research focuses on understanding the biology of the human gastrointestinal tract, with a particular interest in epithelial cell differentiation, function, and homeostasis in health and disease. We use human organoid cultures combined with molecular approaches, including CRISPR-Cas9 genome editing, high-throughput sequencing, and tissue engineering, to investigate the mechanisms regulating specialized epithelial cell types and their interactions with the surrounding environment.

Our research covers various aspects of gastrointestinal biology, ranging from epithelial cell differentiation and homeostasis to gastric tumorigenesis, food additive toxicity, and the molecular characterization of inflammatory diseases such as ulcerative colitis. Our overarching goal is to better understand gastrointestinal epithelial biology and develop physiologically relevant human in vitro models to investigate disease mechanisms.

The Principal Investigator

Georg Busslinger established his independent research group in January 2021 at the Medical University of Vienna and, as an Adjunct PI, at CeMM. He studied molecular biology at the University of Vienna and obtained his master's degree from ETH Zurich (Switzerland). He subsequently conducted research in the laboratory of Alexander Tarakhovsky at Rockefeller University in New York (USA), before joining the group of Jan-Michael Peters at the Research Institute of Molecular Pathology (IMP) in Vienna for his PhD, where he investigated the molecular mechanisms regulating cohesin localization in the mammalian genome. For his postdoctoral research, he joined the laboratory of Hans Clevers at the Hubrecht Institute in Utrecht (Netherlands), where he shifted his focus to gastrointestinal biology. His research combined single-cell transcriptomics, human tissue analysis, and organoid cultures to investigate epithelial cell diversity, differentiation, and disease-associated changes across the gastrointestinal tract. This work laid the foundation for his current research on human gastrointestinal epithelial biology in health and disease. His laboratory is currently supported by two FWF Principal Investigator Projects and research collaborations with pharmaceutical companies.

About the Institutes

CeMM

CeMM is an international research institute of the Austrian Academy of Sciences and a founding member of EU-LIFE. The mission of CeMM, the Research Center for Molecular Medicine of the Austrian Academy of Sciences is to achieve maximum scientific innovation in molecular medicine to improve healthcare. At CeMM, an international and creative team of scientists and medical doctors pursues free-minded basic life science research in a large and vibrant hospital environment of outstanding medical tradition and practice. At CeMM, an international and creative team of scientists and medical doctors pursues free-minded basic life science research in a large and vibrant hospital environment of outstanding medical tradition and practice. CeMM's research is based on post-genomic technologies and focuses on societally important diseases, such as

immune disorders and infections, cancer, aging and metabolic disorders. CeMM operates in a unique mode of super-cooperation, connecting biology with medicine, experiments with computation, discovery with translation, and science with society and the arts. CeMM discovers and develops technologies to explore human biology with the purpose of defeating disease at its roots. Because Science is our Medicine! CeMM trains a modern blend of biomedical scientists and is located at the campus of the General Hospital and the Medical University of Vienna. CeMM is a proud recipient of the HR Excellence in Research Award (HRS4R). This award indicates that CeMM takes care of the well-being of its employees, that the recruitment process is open, fair, and transparent, and that CeMM offers professional appraisals and career development procedures. More than 150 people from 49 nationalities are working at CeMM. The institute promotes equal opportunity and harbors a mix of different talents, backgrounds, competences, and interests. www.cemm.at

The Medical University of Vienna

The Medical University of Vienna with its affiliated Vienna University Hospital is one of the most traditional medical training and research facilities in Europe. It is the largest medical training institute in the German-speaking area and is among the most important cutting-edge research institutes of Europe in the area of biomedicine. The close contact between clinicians and basic scientists enables a vivid exchange, which is the basis for breakthrough discoveries. The Division of Gastroenterology and Hepatology at the Vienna University Hospital is the largest tertiary referral center for gastrointestinal diseases and endoscopy in Austria, providing ample access to patient material.

We offer

- Work within an experienced, interdisciplinary, and international team at one of Austria's leading research institutes
- Ample opportunities to contribute and gain experience in a key area of biomedical research and precision medicine
- An inspiring workplace with an international setting, strong team spirit, and an excellent work climate
- A wide range of social, cultural, and sports activities organized by the institute
- Excellent employee benefits including full insurance coverage (health, accident, retirement), health care services, subsidized cafeteria
- Monthly gross salary of EUR 1.379,60 for 20 hours/ week (following the recommendations of FWF)

Please apply online(https://cemm.onlyfy.jobs/job/ld7db276) with cover letter, CV, academic transcripts, proof of master's enrollment, and contact details of two referees. Applications will be reviewed on a rolling basis. Any application received by 6 January 2027 will be considered. Start date is flexible.

Additional information

City	**Vienna**
Position type	**Part-time employee**

Start of work	01.03.2027

Responsible

Memo Mokhles

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