



Call for Applications: Scientific Training Program for MD Fellows @ CPC-M

The Comprehensive Pneumology Center (CPC-M) within the German Center for Lung Research (DZL) offers **fellowships (9 to 12 months) to qualified and motivated medical students** to work on a scientific project under the supervision of one of the [CPC-M lung experts](#) from Medicine and Life Sciences.

Candidates of our structured clinician-scientist program (9-12 months) benefit from a comprehensive curriculum of high international standard and close mentorship while performing cutting-edge research projects in translational medicine. This concept permits the acquisition of a profound interdisciplinary education in both basic and clinical sciences in balance with a broad knowledge of both practical and theoretical laboratory skills. Our program fosters the translation of knowledge between scientists from the life science field and clinician-scientists, and gives them the opportunity to work and learn together and, most importantly, from each other. For more details, please follow this [link](#).

We are currently seeking highly talented and ambitious candidates for the following topics:

1) Enhancing lung regeneration by modulating SFRPs: Chronic lung diseases like COPD and pulmonary fibrosis (PF) are marked by the lungs' reduced ability to repair themselves. Our recent studies have highlighted the roles of SFRP1 and SFRP2 (SFRPs) in regenerative failure and disease progression in chronic lung diseases. Our research aims to explore how targeting SFRPs can restore proper cell communication and promote lung repair. The goal is to develop treatments that can be used in clinical settings. By joining our research, you will contribute to groundbreaking work in treating chronic lung diseases, have hands-on experience with advanced human disease models (precision-cut lung models), work on translating research finding into clinical applications, and be part of a highly motivated team in lung health research and therapy development.

PIs: Dr. Gerald Burgstaller, Prof. Dr. Mareike Lehmann

2) Organoid drug screens for personalized medicine in COPD: Chronic obstructive pulmonary disease (COPD) is characterized by different phenotypes and inconsistent responses to therapy, with no cure currently available. There is a critical need for effective, individualized COPD treatments, similar to the first successful personalized medicine approaches in cancer, using patient-derived organoids. This project aims to establish COPD patient-derived organoids for drug screening as a basis for developing personalized medicine for COPD. To this end, organoid cultures of COPD patients and healthy controls will be established, characterized, and exposed to different drugs to determine their effects on the growth and regenerative capacity of the lung epithelium. In parallel, transcriptome and epigenome analyses of the organoids will link drug responses to specific molecular profiles, potentially identifying biomarkers and improving therapeutic strategies for COPD.

PI: Dr. Maja Funk

3) Investigation of sex-related differences in the lung immune compartment of COPD patients: Chronic Obstructive Pulmonary Disease (COPD) is a chronic respiratory condition with significant morbidity and mortality worldwide. A pivotal aspect of COPD pathogenesis is the dysregulation of immune responses within the lungs. Recent studies have underscored the importance of sex differences in the disease's pathophysiology, revealing that men and women may experience distinct immune responses in both lung and blood compartments. This research project in the Kapellos lab at Helmholtz Center Munich aims to investigate sex-specific immune cell responses in COPD, focusing on the characterization and comparison of immune cell profiles in the bronchoalveolar fluid of male and female patients. The successful candidate will coordinate human bronchoalveolar fluid and peripheral blood collection and processing, analyze retrospective and prospective human samples by multi-color flow cytometry and stimulate immune cells in vitro.

PI: Dr. Theodoros Kapellos

4) Exploring the impact of airborne toxins and viral infections on COPD progression (together with GRK2338 Targets in Toxicology): The incidence of chronic lung diseases, including COPD, increases with age and patients often exhibit chronic inflammation and reduced regenerative capacity of the lung epithelium, which is an important first barrier against pollutants and viruses. COPD patients show an increase in immune-primed basal stem cells, although their role in disease progression is not yet fully understood. This project will use patient-derived organoid models to investigate the response of the COPD airway epithelium to viral infections and toxic exposures, focusing on immune-primed basal stem cells. The results will clarify the role of these cells in COPD and investigate potential preventive and therapeutic targets.

PI: Prof. Dr. A. Önder Yildirim

5) Long COVID patients suffer increased susceptibility to chronic lung disease (together with CoViPa Helmholtz): A large subset of patients recovering from COVID-19 infection experience a range of symptoms together characterized as long COVID. The rise of long COVID is a concerning phenomenon due to limited knowledge about the mechanisms underlying it. This project aims to investigate the mechanism of susceptibility of long COVID patients to develop chronic lung diseases like COPD, using mouse models of Sars-Cov-2 infection and state of the art machine learning tools. scRNA-Seq data from the mice model and patients will be analysed using programming in R to decipher cell subsets and molecular pathways contributing to disease susceptibility. By supplementing this with cutting edge molecular techniques including qPCR, multi-colour flow cytometry and immunofluorescence microscopy we aim to elucidate novel targets and mechanisms for translational applicability to patients.

PIs: Dr. Tom Conlon, Deepesh Dhakad

If you are interested in joining one of our research groups, we invite you to send us your **application**, including the following documents:

- Your CV (in English, max. 2 pages)
- A statement indicating your particular qualification and motivation and summarizing your research interests, ideas, and expectations regarding your future professional career. Special consideration will be given to the integration of your clinical training goals into the research ambitions.
- If you would like to apply for a specific project, please indicate that as well.

Please send your complete application (in ENGLISH) to Dr. Doreen Franke (doreen.franke@helmholtz-munich.de) by **July 31, 2024**.

Eligible candidates will be interviewed and selected by the potential future supervisors and the program directors of the career development program.

Parallel to participating in the structured MD program at CPC-M, candidates will be enrolled in the [Munich Medical Research School \(MMRS\) at the LMU's Medical Faculty](#). The degree and title "Dr. med." will be awarded by the university.

Contact

Please do not hesitate to reach out for questions:

Dr. Doreen Franke

✉ doreen.franke@helmholtz-munich.de

Program Director, Career Development

Institute of Lung Health and Immunity ([LHI](#)), Helmholtz Munich

Comprehensive Pneumology Center ([CPC-M](#)), German Center for Lung Research (DZL)

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