Job posting

Type of position
☑️ scientific
☐ administrative

Target group
☐ graduates
☑️ post docs
☐ other

Title
Postdoctoral researcher (f/m/d) - Functional multi-omics analysis of antiviral immunity and interactions of pandemic viruses with primary human lung tissue

Institution
The Helmholtz Zentrum München (HMGU; https://www.helmholtz-muenchen.de) - a research institution within the Helmholtz Association of German Research Centers, is a leading center in health research with a focus on Environmental Health. The Comprehensive Pneumology Center (CPC, www.cpc-munich.org) at HMGU is a translational research center dedicated to respiratory medicine, which is also a partner site of the German Center for Lung Research (DZL; www.dzl.de), an association of the leading university and non-university institutions dedicated to lung research in Germany.

Position
CoViPa (Corona Virus Pathogenesis) is a newly funded, internationally competitive and interdisciplinary network funded by the Helmholtz Association for the duration of 4 years starting on 1st of August 2021. The main focus of the network is to gain knowledge about the virological and immunological drivers of COVID-19 pathogenesis and the parameters of immune protection.

The postdoctoral fellow in the Schiller lab will set up and run several ex-vivo and in-vitro models of human lung, including air-liquid interface culture of primary airway and alveolar epithelial cells, precision cut lung slice cultures, and alveolar organoids. These models will be subjected to virus infections and highly multiplexed biological perturbations (e.g. small molecules targeting pathways, cytokines) coupled to single cell transcriptomic readouts and other omics measurements (see figure below). The postdoc will work in close collaboration with the labs of Prof. Andreas Pichlmair (TUM) and Prof. Fabian Theis (HMGU, ICB). Virus-induced pathology originates from molecular and cellular interactions, which are initiated by the virus in the host tissue. In this project we will combine the (1) virus & proteomics expertise of the Pichlmair laboratory (TUM) with the (2) single cell genomics and lung pathology expertise of the Schiller laboratory (HMGU) and (3) the integrative computational analysis of the Theis laboratories (HMGU) in order to generate pipelines that characterize virus-host interactions in complex tissues. In a data-driven approach we aim at identifying key regulators of antiviral immunity and immunopathology, which will be functionally evaluated. We anticipate that this approach will pinpoint options for antiviral therapies.
Detailed project descriptions: https://covipa.dkfz.de

**Responsibilities**
- Establish and maintain ex vivo models of human lung (organoids, ALI culture and precision cut lung slices)
- Multiplexed single cell multi-omics method development and testing in human organotypic models
- Establish and use multiplexed single molecule FISH / spatial transcriptomics in the ex vivo models
- Integrative bioinformatic analysis of the single cell perturbation omics data from the organotypic models
- Confocal and light sheet microscopy and image analysis

**Requirements**
- PhD degree in biology or related area
- Previous experience with single cell genomics and systems biology
- Previous experience with lung and ex vivo / in vitro models
- Passion for science, innovation and creative and independent work
- Proficient in written and spoken English

**Application procedure (deadline etc.)**
! Deadline: 2\textsuperscript{nd} of July 2021 !
Application documents (CV, list of publications, a letter of motivation, as well as names and email addresses of at least two referees) should be submitted as a single PDF file to herbert.schiller@helmholtz-muenchen.de.

**Contact**
CoViPa Office
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