Offer: PhD student position

Project Title: Neuro-vascular communication in the central nervous system

Research group: Prof. Dr. Carmen Ruiz de Almodóvar

Application Deadline: 30.06.2022

Start of PhD project: as soon as possible

Project Description:

The central nervous system (CNS) (brain and spinal cord) is composed of different neural cell types organized in a very stereotyped pattern and localized in defined compartments. Apart of the neuronal cell types, the CNS is also composed of blood vessels, responsible for providing oxygen and nutrients to the neuronal tissue. Similar to neurons, during development, blood vessels also follow defined pathways to enter and invade the CNS in order to assure proper oxygen and nutrient delivery to all parts of the tissue.

In this project we aim to identify and characterize the molecular mechanisms of the bidirectional communication between neural cells and cells forming the vasculature in development, homeostasis and disease. In disease, the interaction of the vasculature with the immune system will also be explored. We intend to understand how different neuronal populations control CNS vascularization and how the vasculature also actively contributes to the development and maintenance of CNS homeostasis.

References:


Vieira JR, Shah B, Ruiz de Almodovar C. Cellular and molecular mechanisms of spinal cord
vascularization. Front Physiol 2020. Dec 21


**Methods that will be used:**

- Single cell sequencing and spatial transcriptomics
- Mouse genetics
- Micro-dissections
- Ex vivo 3D cell culture
- In vitro cell culture
- Cell Biology
- Biochemistry and Molecular Biology techniques
- Histology
- Immunohistochemistry
- Light and fluorescent microscopy
- Confocal microscopy

**Profile of candidate's qualification:**

The candidate should be an enthusiastic and motivated student willing to join an international research group in a highly dynamic working environment (with English as main language). The ideal candidate should have a biomedicine, neuroscience, biology or a biochemical and molecular biology background.

**Application:** For further details on the application procedure, please send an email with your CV, letter of motivation and contacts for references to:

carmen.ruizdealmodovar@ukbonn.de