

**Job announcement No. 43/2019**

The following position is available at the department **Experimental Immunology** of the **Helmholtz Centre for Infection Research (HZI)** in Braunschweig

**PostDoc: Impact of probiotic microbiota modulation on immune system development and susceptibility to infections (f, m, d)**

Within the Cluster of Excellence RESIST ('Resolving Infection Susceptibility') funded by the German Research Foundation we wish to recruit a postdoctoral research associate to study the impact of probiotics on immune system development and susceptibility to infections utilizing samples from a clinical cohort of preterm babies and gnotobiotic animal models. This project will be performed in close collaboration with additional RESIST groups having expertise in neonatal immunology (Viemann, Hannover Medical School) and microbiota research (Strowig, HZI).

Our department studies cellular players and molecular factors controlling the development and functional properties of inflammatory and regulatory T cells with a strong focus on the epigenetic fixation of immune cell fates ([www.helmholtz-hzi.de/exim/](http://www.helmholtz-hzi.de/exim/)). More recently, we became interested in how microbiota and infections influence these processes particularly during the neonatal period (Cording et al., 2014, *Mucosal Immunol* 7:359; Pezoldt et al., 2018, *Nat Commun* 9:3903).

**Project description:**

Preterm birth is the leading cause of neonatal morbidity and mortality worldwide. The most important threats are infections due to the high susceptibility of preterm infants to sepsis and respiratory infections that persists into later childhood. Recent studies provided first evidence that reciprocal host-microbiota interactions particularly at the neonatal phase are crucial for the postnatal immune maturation, life-long immune homeostasis, development of tolerance, colonization resistance against pathogens and overall health. In the present project, *in vivo* experiments in conventional and gnotobiotic mouse models will be carried out to test the hypotheses that *i)* differences in microbiota composition determine neonatal susceptibility to infections and *ii)* probiotic augmentation of the preterm microbiota directly or indirectly promotes the development of a normal immune function. Experimental approaches will include: transfer of microbiota from preterm babies (including probiotic-treated and control individuals) into germfree recipient mice to generate "humanized" mouse lines; analysis of susceptibility to (neonatal) infections; immunophenotyping incl. single-cell RNAseq; epigenetic profiling of immune cell subsets incl. Biseq and ATACseq; lymph node transplantations, and *in vitro* functional assays.

**Qualifications:**

We are looking for a highly motivated, creative and enthusiastic individual, able to do research independently as well as a part of an interdisciplinary and international team

- PhD or equivalent in life sciences, with a strong theoretical and practical background in cellular and molecular immunology
- Experience with *in vivo* model systems
- Strong record of publications in peer-reviewed journals
- Excellent communication skills and proficiency in English

**Desired (non-essential) background:**

- Experience in infection immunology, mucosal immunology and microbiota research
- Familiarity with the establishment of animal models for inflammation and/or infection
- Knowledge of multi-colour flow cytometry and epigenetic profiling of immune cells

Equally well-qualified disabled applicants will be given preference. Equal opportunities are part of our personnel policy. Part time is feasible.

Starting date: 1<sup>st</sup> June, 2019 (or later)  
- 3 years -  
Place of work: Helmholtz Centre for Infection Research (HZI)  
Inhoffenstr. 7, 38124 Braunschweig, Germany  
Salary: TVöD E13  
Probation period: 6 months  
Published: 16.04.2019  
Closing date: 14.05.2019

Please send your complete application with reference to code number 43/2019 to: Helmholtz Centre for Infection Research, Department Human Resources, Inhoffenstr. 7, 38124 Braunschweig or in one (1) single PDF file via E-mail to: [jobsHZI@helmholtz-hzi.de](mailto:jobsHZI@helmholtz-hzi.de)

For more details regarding the project, please contact Prof. Dr. Jochen Huehn via E-mail: [jochen.huehn@helmholtz-hzi.de](mailto:jochen.huehn@helmholtz-hzi.de)