

Job advertisement no. 53/2022

The department Experimental Immunology, led by Prof. Dr. Jochen Hühn, at the Helmholtz Centre for Infection Research (HZI), is offering the position of a

Postdoctoral researcher

Impact of early-life microbiota modulation on immune system development and susceptibility to infections

The Helmholtz Centre for Infection Research GmbH (HZI) is a member of the Helmholtz Association of German Research Centers, the largest scientific organization in Germany.

Scientists at the HZI develop strategies to better combat infectious diseases. Their goal is to develop novel approaches for the prevention, diagnosis and therapy of infectious diseases. To this end, they study bacterial and viral pathogens and their interaction with the immune system and explore new active ingredients.

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 microbiota and 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 ample experimental and clinical expertise in neonatology and microbiota research.

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/). 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; Zou et al., 2020, *Eur J Microbiol Immunol* 10:98; Wiechers et al., 2021, *Cell Mol Immunol* 18:1211).

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. high-dimensional flow cytometry and single-cell RNAseq; epigenetic profiling of immune cell subsets incl. EMseq and ATACseq; lymph node transplantations, and *in vitro* functional assays.

Requirements:

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

Advantageous for this position:

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

People with severe disabilities and equivalent professional qualifications who are suitable for the position are given preference. In order to protect your rights, we ask you to provide us with a clearly recognizable reference to the existence of a degree of severe disability in your cover letter or resume. The position is suitable for full-time employment or part-time work. The HZI strives for professional equality between women and men.

Starting date:	as soon as possible. The contract will initially run for three years
Salary:	E13 TVöD Bund
Working time:	39 hours per week
Place of work:	Braunschweig
Probation period:	6 months
Published:	30.03.2022
Closing date:	27.04.2022

When sending us your application documents, please confirm that you have read our privacy policy and that you agree to the processing of your personal data. Please use the text module in our [privacy policy](#) for this purpose.

Without these declarations we cannot consider or process your application and will immediately delete any application documents already received after the application deadline.

For further information please contact Prof. Dr. Jochen Hühn via email: jochen.huehn@helmholtz-hzi.de

Please send your complete application, quoting the reference number **53/2022**, to the Helmholtz Centre for Infection Research GmbH, Human Resources Department, Inhoffenstr. 7, 38124 Braunschweig, Germany or by e-mail to JobsHZI@helmholtz-hzi.de. If you send your application in electronic form, please provide a **summary in one single (1) pdf document**.