

## PRESS RELEASE

### Two million Euro for research in Immunology at the University Hospital Bonn

Nanobodies can help understand inflammation

**Bonn, November 23, 2023 - Bonn immunologist Prof. Florian I. Schmidt, who conducts research at the Institute of Innate Immunity at the University Hospital Bonn (UKB), has been awarded a Consolidator Grant from the European Research Council to fund his research project DEFLAMMATION with two million Euro. In the study, which is due to start in 2024, Prof. Schmidt wants to investigate how distinct cellular signaling pathways control the termination or even suppression of inflammation in the body. If it is possible to control the proteins involved, autoinflammatory diseases could be treated more effectively.**

Inflammation is the immune system's response to pathogens or damage. The innate immune system is crucial to initiate inflammation and serves as a first line of defense against invaders. Inflammation activates the cell's own defense systems and ultimately also triggers the more specific (but slower) immune response by antibody-producing B cells and T cells. To prevent the immune system from overshooting the mark and causing unnecessary damage to the body, the inflammatory response must be well-controlled. Uncontrolled inflammation can lead to autoinflammatory diseases such as ulcerative colitis, or even promote the development of colon cancer.

Precisely these mechanism of negative regulation are the subject of research by Prof. Schmidt, who is a member of the Cluster of Excellence ImmunoSensation2 and the Transdisciplinary Research Unit "Life & Health" at the University of Bonn. "So far, we only have a poor understanding of how different cell types interpret external and internal cues to actively shut down inflammation under certain conditions. My hypothesis is that two specific proteins, namely NLRC3 and NLRX1, could act as signaling hubs that control the innate immune response and the activity of T cells." To this end, the researcher wants to use nanobodies developed by his team as well as CRISPR/Cas9 and cDNA screens. Nanobodies are small proteins derived from special alpaca antibodies. They can be selected to bind to relevant proteins of the immune system with high specificity. In this way, they can precisely disrupt their function or mark targets in microscopy experiments. This helps to determine their exact role in the immune response. In certain cases, nanobodies can also be used therapeutically, as they can specifically switch target proteins on or off. It is also possible to discover new target structures in the course of this research project, allowing new points of attack with simpler drugs.

**Image material:**

**Medical Director and  
Chairman of the Board**

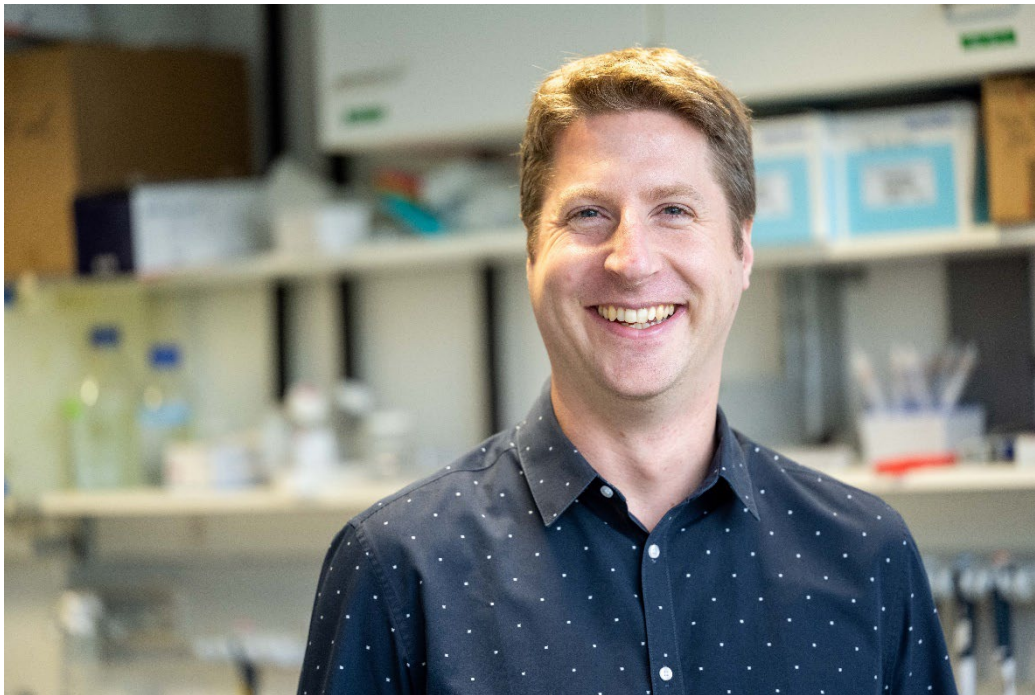
Tel: +49 228 287-10900  
Fax: +49 228 287-9010900  
wolfgang.holzgreve@ukbonn.de

**Communication and media**

Viola Röser  
Management

Tel: +49 228 287-10469  
viola.roeser@ukbonn.de

Bonn University Hospital  
Communication and media  
Venusberg Campus 1  
Geb. 02  
53127 Bonn



**Caption: Nanobodies can help understand inflammation:**

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Picture credits: University Hospital Bonn (UKB)/ Alessandro Winkler

**Press contact:**

Daria Siverina

Deputy Press Spokeswoman at the University Hospital Bonn (UKB)

Communications and Media Office at Bonn University Hospital

Phone: (+49) 228 287-14416

E-mail: [daria.siverina@ukbonn.de](mailto:daria.siverina@ukbonn.de)

**About Bonn University Hospital:** The UKB treats around 500,000 patients per year, employs around 9,000 staff and has total assets of 1.6 billion euros. In addition to over 3,300 medical and dental students, a further 585 people are trained in numerous healthcare professions each year. The UKB is ranked first among university hospitals in NRW in the science ranking and in the Focus clinic list and has the third highest case mix index (case severity) in Germany. In 2022 and 2023, the F.A.Z. Institute recognized the UKB as Germany's most desirable employer and training champion among public hospitals in Germany.