

## PhD thesis in bacterial genetics, cellular microbiology and immunology

The recently established Ernst Lab at the University of Cologne is looking for an outstanding PhD candidate to study molecular mechanisms of persistent bacterial infections in the context of urinary tract infection. Intracellular infection stages in UTIs are part of a complex infection cycle that promote acute and persistent, antibiotic tolerant infection. It is unclear how dominant uropathogens such as uropathogenic *Escherichia coli* and closely related *Klebsiella pneumoniae* can survive intracellularly and tolerate lethal concentrations of antibiotics. The project will focus on multidrug-resistant *Klebsiella pneumoniae*, which are a major public health threat due to strains that have become resistant to antibiotics of last resort. Previous work in the lab has established various tools and methods to conduct the PhD thesis with *Klebsiella pneumoniae* and investigate *Klebsiella*-containing vacuoles in epithelial cells. The PhD candidate will generate mutant libraries, conduct a high-throughput phenotypic screen, validate findings with isogenic mutants and conduct detailed mechanistic experiments involving immunofluorescence confocal microscopy, genetic engineering, chemical biology, and protein-protein interactions to characterize novel pathways of persistent infection.

This is a DFG funded project that can be carried out in a structured PhD program at the Center for Molecular Medicine of the University of Cologne to obtain a PhD in Molecular Sciences. Alternatively, the PhD student may be eligible to take part in the Graduate School for Biological Sciences to obtain a PhD in Basic Sciences. The PhD candidate will have access to state-of-the-art facilities at a thriving research campus and will be part of an emerging lab located in the new Translational Research for Infectious Diseases and Oncology (TRIO) research building (Robert-Koch-Str. 21).

Please contact Prof. Dr. rer. nat. Christoph Ernst ([christoph.ernst@uni-koeln.de](mailto:christoph.ernst@uni-koeln.de)) directly to apply for the position and for any inquiries. General information on the lab can be found here: <https://www.dzif.de/en/working-group/host-pathogen-interactions-antibiotic-resistant-and-persistent-infections> . Applications will be reviewed continuously until the position is filled.