

1. **Research Unit:** Laboratory of Intracellular Immunity
2. **Supervisor:** Dr hab. Roman Szczęsny
3. **Supervisor (email):** rszczesny@ibb.waw.pl
4. **Auxiliary supervisor:** Dr Michal Wandel (mwandel@ibb.waw.pl)
5. **Project title (English):** Intracellular mechanisms of innate immunity
6. **Tytuł projektu w języku polskim:** Wewnątrzkomórkowe mechanizmy odporności wrodzonej
7. **Description of the project (up to 500 words):**

The laboratory led by Dr Michał Wandel endeavours to understand intracellular mechanisms of anti-microbial immunity. You will be offered the opportunity to participate in cutting edge research programme aiming to understand the molecular details of how cell-autonomous and cytokine-enhanced immunity protects interior of the host cell against bacterial and fungal invasion, and how pathogens evade the intracellular immune system.

We are seeking an open-minded, independent and highly motivated PhD student who will endeavour to drive a deeper understanding of how core immunological processes are regulated in favour of the host, or pathogen, and how these new mechanisms might be harnessed to treat diverse diseases. You will employ state-of-the-art screening approaches to identify host restriction factors required for defence against pathogenic microorganisms. Using a combination of molecular biology, cell biology, genetics, proteomics, biochemistry and microbiology, you will determine the specific mechanism of action of novel immunity factors, understand their effector functions, downstream signalling and pro-inflammatory potential. Candidates with interests in mammalian mechanisms of pathogen recognition and/or microbial pathogenesis are encouraged to apply.

Our primary experimental models are mammalian cells infected with pathogens in a safe environment of modern BSL2 cell culture laboratory. We have extensive experience in cell manipulation (e.g., transfection, retroviral/lentiviral transduction, RNAi gene silencing, and CRISPR/Cas9 technology). Amongst many techniques, we routinely use standard techniques of molecular biology (e.g. cloning and mutagenesis of DNA, large scale recombinant protein expression and purification from bacterial systems, Western blotting), and cell biology of infection (e.g. fluorescent microscopy).

The project will start with loss-of-function screening supervised by Dr Roman Szczęsny and then functional studies of candidates will be pursued in the Laboratory of Intracellular Immunity. The laboratory is led by Dr Michal Wandel, who for the previous 12 years carried out research in Cambridge, UK at the MRC Laboratory of Molecular Biology and University of Cambridge. The laboratory implements the scientific culture and research practices established in those world-leading institutes, is integrated into the EMBO Young Investigator Network (offering networking and development opportunities), and well-funded by NAWA, NCN (Polish science foundations) and EMBO. We strive for gender and diversity equality and welcome applications from all backgrounds. Informal enquires are welcome to Dr Michal Wandel mwandel@ibb.waw.pl (please send your CV including the list of publications with a short description of your key achievements, conducted research projects and used methodology).

8. References related to conducted /planned research (maximum 3):

- Guanylate-binding proteins convert cytosolic bacteria into caspase-4 signaling platforms. **Wandel MP#**, Kim B-H, Park E-S, Boyle KB, Nayak K, Lagrange B, Herod A, Henry T, Zilbauer M, Rohde J, MacMicking JD, Randow F# (#corresponding authors). **Nature Immunology**. 2020. doi: 10.1038/s41590-020-0697-2.
- GBPs Inhibit Motility of *Shigella flexneri* but Are Targeted for Degradation by the Bacterial Ubiquitin Ligase IpaH9.8. **Wandel MP***, Pathe C*, Werner EI, Ellison CJ, Boyle KB, von der Malsburg A, Rohde J, Randow F (*equal contribution). **Cell Host and Microbe**. 2017. doi: 10.1016/j.chom.2017.09.007.
- Galectin 8 targets damaged vesicles for autophagy to defend cells against bacterial invasion. Thurston TLM, **Wandel MP**, Muhlinen Von N, Foeglein Á, and Randow F. **Nature**. 2012. doi: 10.1038/nature10744.

9. **Scholarship amount (net):** please contact the project auxiliary supervisor: Dr Michal Wandel
mwandel@ibb.waw.pl