

**Reg. No: 2015/19/P/NZ1/03859; Principal Investigator: dr Paweł Zawadzki**

The growing resistance of pathogenic bacteria towards existing antibiotics poses the large threat to public health. Recent discoveries of microorganisms resistant to all available antibiotics urges the development of new therapeutics and better understanding of existing ones. In the proposed project I will investigate the role and activity of bacterial protein frequently targeted by antimicrobial drugs. DNA gyrase is an essential bacterial enzyme, which is not present in human cells, making it an attractive target for antibacterials. To understand how gyrase works, I will use cutting-edge super-resolution microscopy. This novel approach is revolutionizing our understanding of biological processes taking place inside living cell. The importance of its development is reflected in the 2014 Nobel Prize in Chemistry. I will provide an understanding of the activity of bacterial gyrase, which in the future might help to develop better antibiotics against a broad spectrum of pathogenic bacteria.