The role of ParA-like protein in coordination of mycobacterial cell cycle

For successful proliferation, bacteria must coordinate the duplication of genetic material, its separation into progeny cells and cell division. Mechanisms responsible for the synchronisation of these key processes of the cell cycle in mycobacterial are still underexplored. Mycobacteria are mostly known as dangerous pathogens, causing tuberculosis or leprosy. This project focuses on their proliferation. Our preliminary studies indicate that a protein named Soj is responsible for the control of the mycobacterial cell cycle, but molecular mechanism of its function remains unknown. Our project aims to investigate the biochemical properties and biological function of this protein. Biochemical tests will allow us to determine the Soj interactions. To establish the biological function of Soj, we will use modified strains of non-pathogenic mycobacterium species (*Mycobacterium smegmatis*). We will perform microscopy analyses of Soj localisation within the cell and analyses of the consequences of soj knock-out on the progress of the cell cycle. Additionally, we will examine the role of Soj protein during infection – these studies will be performed using zebrafish infection by *Mycobacterium marinum*. We expect that our project will shed light on mycobacterial cell biology and the regulation of their proliferation.