

Doctoral study program: Biomedical Sciences

Form: *doctoral (present)*

Department: Department of Biology

Supervisor: Mgr. Juraj Bosák, Ph.D.

Ph.D. position: **The role of *Escherichia coli* in human health**

Annotation:

Escherichia coli (*E. coli*) is a common, versatile, facultatively anaerobic bacterium that colonizes the vertebrate intestinal tract. Hosts have a limited number of persistent *E. coli* strains alongside a diverse spectrum of transient strains throughout their lifespan. This dynamic equilibrium contributes to host health. Dysbiosis, often involving *E. coli* overgrowth, is frequently observed in the gut microbiome of individuals with conditions such as diabetes and colorectal cancer.

E. coli exhibits a dual nature, functioning as both a commensal and a significant opportunistic pathogen. Pathogenic strains have evolved from commensal ancestors through the acquisition of virulence factors. While *E. coli* is a recognized etiological agent of urogenital infections (ExPEC) and diarrheal diseases (ETEC, EHEC, EPEC, EIEC, EAEC, DAEC), its precise role in other pathologies, including inflammatory bowel disease and colorectal cancer, remains to be elucidated.

This project aims to elucidate the role of *Escherichia coli* in the development and progression of various pathological conditions. Beyond the resources available within the laboratory and hosting department, the project will leverage state-of-the-art instrumentation and services offered by the MUNI University campus core facilities.

Funding of the research:

This project is funded by the Czech Health Research Council (AZV ČR)

Information on funding PGS positions:

The program requires that all PhD students have some means of financial support of min. 25 000 CZK per month. This is often a combination of various sources (grants, scholarship etc.).

Requirements for the student according to the Doctoral Board:

The student's minimum publication activity within the course of study is one first-author publication with an IF value above the median in the field or 2 first-author publications in journals with an IF value in the 3rd quartile in the field (Q3). A condition for successful completion of the studies is also a foreign internship of at least 1 month, which is an inseparable part of the studies. As part of their studies, students will also participate in the teaching.

Information about supervisor: https://www.researchgate.net/profile/Juraj-Bosak?ev=hdr_xprf

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