

**Affiliation:** Masaryk University, Faculty of Medicine

**Study program:** Ph.D. program Biomedical Sciences

**Specialization:** Biochemistry and Molecular Biology

**Workplace:** Department of Histology and Embryology

**Mode:** Full-time

**Supervisor:** Lukáš Čajánek, Ph.D.

**Lab web:** <https://www.cajaneklab.com/>

**Funding:** Czech Science Foundation

**Title:** Mechanisms of primary cilia formation

Brief annotation:

The primary cilium is an antenna-like organelle that has emerged as a fundamental regulator of embryonic development as well as tissue homeostasis. Consequently, the deregulation of its assembly, maintenance, or function leads to numerous human diseases, collectively termed ciliopathies. It has been estimated that cilia dysfunctions are responsible for as many as 100 human diseases. However, the mechanistic explanation of primary cilia assembly and function, crucial for the understanding of cilia-related defects and their therapeutic targeting, is insufficient.

Cilia-associated kinase termed TTBK2 has recently come up as a master regulator of primary cilia across vertebrates. The selected PhD student will pursue a project intended to investigate the molecular mechanisms governing the formation and maintenance of primary cilia, with focus on the role of TTBK2 and its downstream effectors.

Student pursuing this project will be a part of enthusiastic research team headed by Dr. Lukáš Čajánek. The student will have access to unique research tools, state-of-the-art methodology, and advanced instrumentation (cellular and animal models, proteomics, gene editing, lentiviral transduction, live cell imaging, super-resolution microscopy, etc.).

**Requirements:** Master's degree in biological sciences or similar.

The selected student should be motivated, curiosity-driven, eager to learn, and capable of critical thinking. Experience with cell biology techniques will be an advantage.