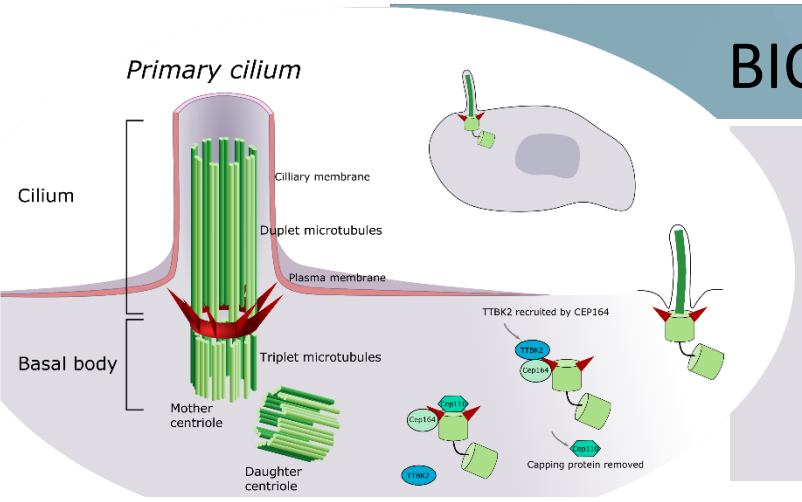
PhD student wanted - 2020

Department of Histology and Embryology



BIOLOGY OF THE CILIUM

We are seeking a talented and motivated candidate to join a research team headed by **Lukáš Čajánek** at **Masaryk University** in Brno. The lab is interested in **biology of primary cilia and centrioles.**

WE EXPECT THE CANDIDATE …

- Be interested and motivated to tackle scientific problems, formulate hypothesis and ways how to address them
- Be self-driven, collaborative, eager to learn, able to analyze & solve problems
- Have an experience in molecular and cell biology

WE OFFER…

- Dynamic and informal research environment of young enthusiastic research group with international collaborations and sufficient grant support
- Challenging and interdisciplinary projects combining cell, molecular and developmental biology
- Access to state-of-the-art methodology and instrumentation (proteomics, human embryonic stem cells, gene editing, live imaging and high-resolution microscopy, etc.)

WHY TO STUDY PRIMARY CILIUM?

Enigmatic, relevant, and interesting organelle with crucial function in both development and human disease !!

Contact for inquiries:

Dr. Lukáš Čajánek | SNF PROMYS grantee & FEBS Distinguished Young Investigator

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PhD **s**tudent **w**anted – **2**020

Annotation:

Primary cilium is an antenna – like organelle present on a surface of most cells. Whilst it was originally described as vestigial organelle and hence largely neglected, recent years have indisputably proven its status as a seminal structure for sensing various extracellular stimuli. In vertebrates, primary cilium governs many important aspects of embryonic development as well as tissue homeostasis in adulthood. Given that, it is not surprising that a numerous human diseases, known as ciliopathies, have been directly related to defects in assembly of primary cilia. Thus, full understanding of the biology of primary cilia is of interest for basic as well as more clinically oriented research.

The research under this theme is centered on investigation of relationship between primary cilia formation and defects related to that. The project will focus investigation of regulators controlling crucial processes of ciliogenesis and their mutual interactions, with emphasis on kinases and kinesins, respectively. Human cell lines will serve as prime models. Moreover, key findings may be further explored using more functional approaches utilizing cells of embryonic origin such a human embryonic stem cells (hESCs) or induced pluripotent stem cells (hiPSCs).
The successful candidate will have access to state-of-the-art methodology and instrumentation (proteomics, gene editing, lentiviral transduction, live imaging and high-resolution microscopy, etc.). In addition, the student pursuing this project will be a part of young and dynamics research team headed by Dr. Lukas Cajanek, with extensive national and international funding and collaborations. They will have an access to state of the art methodology and instrumentation, including classical biochemical and cell biology approaches, proteomics, gene editing using CRISPR/Cas9, and advanced microscopy techniques.

Relevant literature:

Bernatik O, Pejskova P, Vyslouzil D, Hanakova K, Zdrahal Z, Cajanek L. *Phosphorylation of multiple proteins involved in ciliogenesis by Tau Tubulin kinase 2*. ***bioRxiv*** 676338; doi: https://doi.org/10.1101/676338.

Bryja V, Cervenka I, Cajanek L. *The connections of Wnt pathway components with cell cycle and centrosome: side effects or a hidden logic?* **Crit Rev Biochem Mol Biol**. 2017.

Cajanek L, Nigg EA. *Cep164 triggers ciliogenesis by recruiting Tau tubulin kinase 2 to the mother centriole*. **Proc Natl Acad Sci U S A**. 2014.

Bhogaraju S, Cajanek L, Fort C, Blisnick T, Weber K, Taschner M, Mizuno N, Lamla S, Bastin P, Nigg EA, Lorentzen E. *Molecular basis of tubulin transport within the cilium by IFT74 and IFT81.* **Science**. 2013.