Laboratory of Cell Signaling is seeking for a PhD student(s). The research projects of the laboratory concern two interrelated topics - the role of the ERK signaling pathway and its downstream targets in oncogenic transformation, and the role of actin cytoskeleton in the defining cell shape and cell polarity. We are seeking a highly motivated and ambitious candidate(s) to join the lab with the following projects:

1. The oncogenic role of the ERK signaling pathway in Head and Neck cancer (HNSCC).
   The aim of this project is to investigate the role of the ERK signaling pathway in the development and progression of HNSCC. Research project includes the analysis of the patients’ tumor samples (gene expression analysis, the identification of genomic mutations) in order to identify novel oncogenic events in the HNSCC. The role of the ERK pathway will be further explored in vitro in cell lines derived from the HNSCC.

2. The role of actin stress fibers in the establishment of migratory polarity and shape.
   The focus here is on different types of actin stress fibers existing in cells – conventional stress fibers, dorsal fiber, transverse arcs and perinuclear actin fibers. During the cell polarization these stress fibers are transiently interconnected. Research project aims to understand the signaling mechanism that controls the assembly of this actin network, the role this network plays in the defining cell shape, and how it influences cell migration and invasion.

We are looking for motivated PhD students with interest in molecular biology, cell biology or related fields. The methodology will include the work with mammalian cell culture, gene editing using CRISPR/Cas9 system, RNA interference, and life-cell and immunofluorescence microscopy including superresolution microscopy. Standard molecular biology techniques such as DNA cloning, protein expression, SDS-PAGE and western blotting will be also utilized. Good knowledge of English is anticipated.

For more information, contact Tomas Vomastek vomy@biomed.cas.cz