



Open PhD positions for the Academic Year 2021/2022

Faculty of Science BIOCEV

Laboratory:	Laboratory of Cancer Cell Invasion
Group Leader:	Doc. Jan Brábek + Doc. Daniel Rosel
Website:	http://web.natur.cuni.cz/cellbiol/invalab/

Project summary	Supervisor: Doc. Daniel Rosel
Project title:	Src signaling in regulation of cellular adhesion and mechanotransduction.
<i>Project description:</i> <p>Src kinase plays an important role in a multitude of fundamental cellular processes and is often found deregulated in tumors. Despite the scattered nature of the data, growing body of evidence emerges indicating the importance of Src kinase also in mechanotransduction. In this context, Src, in tight cooperation with primary sensors and the cytoskeleton, functions as an effector molecule necessary for transformation of mechanical stimuli into biochemical outputs executing cellular response and adaptation to mechanical cues.</p> <p>The project aims to analyze the role of Src-p130Cas-Crk signaling axis in cellular adhesion and mechanotransduction. Within the project the role of Src will be analyzed within the podosome-type adhesion structures and mechanosensory properties of Src and p130Cas will be evaluated taking advantage of in lab prepared Src and p130Cas biosensors. Further, mutagenesis and newly designed specific inhibitors will be used to affect the Src-p130Cas-Crk signaling axis and thus the invasive properties of cancer cells.</p> <i>Candidate profile:</i> <p>The PGS candidate should have experience in mammalian cell cultivation techniques and basic fluorescence microscopy. Experience with live-cell microscopy, FRET and biophysical methods analyzing mechanical properties of cells are of further advantage.</p> <i>Suggested reading:</i> <p>Koudelková L, Brábek J, Rosel D. Src kinase: Key effector in mechanosignalling. Int J Biochem Cell Biol. 2021. doi: 10.1016/j.biocel.2020.105908</p> <p>Koudelková L, Pataki AC, Tolde O, Pavlik V, Nobis M, Gemperle J, Anderson K, Brábek J, Rosel D. Novel FRET-Based Src Biosensor Reveals Mechanisms of Src Activation and Its Dynamics in Focal Adhesions. Cell Chem Biol. 2019 Feb 21;26(2):255-268.e4. doi: 10.1016/j.chembiol.2018.10.024.</p> <p>Braniš J, Pataki C, Spörrer M, Gerum RC, Mainka A, Cermak V, Goldmann WH, Fabry B, Brábek J, Rosel D. The role of focal adhesion anchoring domains of CAS in mechanotransduction. Sci Rep. 2017 Apr 13;7:46233</p>	

