Michaela Kunová Bosáková, Ph.D., 1 place
Regulation of primary cilia by cellular kinases

Assoc. prof. Lumír Krejčí, Ph.D., 1 – 2 places
Molecular mechanism of DSB repair and protection of stalled replication forks and their clinical relevance

Pavel Krejčí, Ph.D., 2 places
Non-canonical signaling of human receptor tyrosine kinases

Mouse model for determination of precise spatiotemporal RTK/ERK signaling activity

Dr. Stjepan Uldrijan, 1 place
Regulation of signaling pathways affecting growth of malignant melanoma

Vladimír Rotrekl, Ph.D., 1 place
Modeling the cardiac progenitor depletion induced heart failure in patients suffering Duchenne muscular dystrophy using human induced pluripotent stem cells

Prof. David Šmajs, Ph.D. (2 places)

Single cell techniques in whole genome sequencing of uncultivable pathogenic treponemes

Sequence analysis of *Treponema pallidum* ssp. *pallidum* genomes isolated from clinical material

Jaeyoung Shing (1 place)

MAPK signalin molecular in cancer therapy

Research topic : The analysis of signalling complexes responsible for resistance mechanisms in tumorigenesis.

Summary : RAS-RAF-MEK-MAPK pathway comprises a group of kinases which regulates the activities of effector proteins in growth, proliferation and apoptosis. The extracellular signals from growth factors, cytokines and other stimuli transmitted by surface receptors and upstream signaling molecules are integrated by this cascade of kinases whose activity is regulated by the interaction of oncoproteins and tumor suppressors. RAS-RAF-MEKMAPK pathway have been validated as effective in therapy against a variety of cancers. The modality with combination of signaling molecular should be considered based on cancer related gene profile of the individual patients. To do this, gene expression-driven functional signatures were employed as cross-platform high resolution phenotypic discriminators to link concordant cellular responses to siRNAmediated gene depletions and chemical compound exposure on a library wide scale.

- , biochemistry or in a related discipline - Applying your broad skill set(molecular biology, biochemistry, microscopy, cell biology) to drive the project further - Practical knowledge in extraction techniques for biomolecules (e.g. RNA, proteins)