Studijní obor: Biomedicínské vědy – Morfologie buněk a tkání
Pracoviště: Ústav histologie a embryologie, Lékařská fakulta, Masarykova univerzita

Školitel: doc. RNDr. Petr Vaňhara, PhD.

Vedoucí pracoviště: doc. MVDr. Aleš Hampl, CSc.

Počet stipendijních míst: 1
Forma studia: prezenční studium

Title: Development of tools for image and spectral data analysis in histology

Annotation

Historically, histology is a visually oriented field providing detailed descriptions of tissue structures. Visual image can be further augmented by involving bioanalytical information to the analysis. Mass spectrometry and other bioanalytical methods bring metabolic, lipidomic and peptidomic/proteomic data provide additional data layers to the tissue image. Despite the great potential of such combined analysis, digital processing of tissue images in large-scale generates vast amounts of data that are difficult to manage, sort, and interpret. Therefore, sophisticated mathematical and statistical approaches, such as machine learning, are needed.

This work will provide methodological fundaments for data processing of cell and tissue data, using large scale visual and spectral datasets.

Aim of this thesis will be development and application of mathematical and statistical tools for processing of bioanalytical and image data of advanced cell cultures, including stem, somatic and cancer cells, and tissue derivatives.

The applicant during his/her studies will become familiar with multiple lab techniques such as working with various somatic and stem cell models including 3D cultures, state-of-the-art visualization techniques (confocal microscopy, electron microscopy etc.) or advanced molecular or bioanalytical tools. Student will be part of an established research team and during studies will have an opportunity to contribute to teaching activities or present on international conferences.

Požadavky na uchazeče:

Vzdělání: Ukončené magisterské studium (nebo letos plánované obhajoby) se zaměřením na buněčnou, molekulární nebo matematickou biologii.
Jazyky: Angličtina, pokročilá slovem i písmem.
Ostatní: Ochota učit se nové věci, cestovat a mít nadšení pro práci která má smysl.

Informace o školiteli:
Aktuální informace o školiteli lze najít na
https://histology.med.muni.cz/petr-vanhara