

BIO-632

Practical - Waszak Lab

Waszak Sebastian Martin

Cursus	Sem.	Type
Molecular Life Sciences		Opt.

Language of teaching	English
Credits	1
Session	
Exam	Oral
Workload	30h
Hours	36
Courses	4
TP	20
Project	12
Number of positions	

Frequency

Every year

Remark

Open to max. 4 students. 3-day Block course, every year in January. To register, contact EDMS Administration.

Summary

Introduction to imaging-based single-cell genomics and computational methods for single-cell image analysis.

Content

Theoretical:

- Introduction to imaging-based single-cell genomics
- Introduction to computer vision for microscopy
- Introduction to AI for single-cell image analysis

Practical:

- Sample & slide preparation for multiplex imaging
- Data acquisition (multiplex staining & imaging)
- Data preprocessing & quality control
- Data analysis (cell segmentation, quantification, visualization)

Note

Please note that you are not allowed to inscribe in your own group!

Keywords

Imaging-based single-cell genomics; computer vision for microscopy; AI in single-cell genomics

Learning Prerequisites**Required courses**

Introduction to microscopy; laboratory work; genomics

Learning Outcomes

By the end of the course, the student must be able to:

- prepare samples for multiplex single-cell genomics

- process and quality-control hyperplex imaging data
- perform single-cell analysis to quantify protein/gene expression
- identify cell states
- visualize results

Resources

Websites

- <https://www.epfl.ch/labs/upwaszak/>

Moodle Link

- <https://go.epfl.ch/BIO-632>