Course intro

Course staff

- Hadas Volkov - teacher

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- Prof. Itay Mayrose - academic supervisor

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Date and time

We meet every Sunday - 09:15 - 12:00

Sherman 009

Lesson	Date
1	03.11.24
2	10.11.24
3	17.11.24
	24.11.24
4	01.12.24
5	08.12.24
6	15.12.24
7	22.12.24
8	05.01.25
9	12.01.25
10	19.01.25
11	26.01.25
12	02.02.25

Final project:
02.03.25

Course objectives

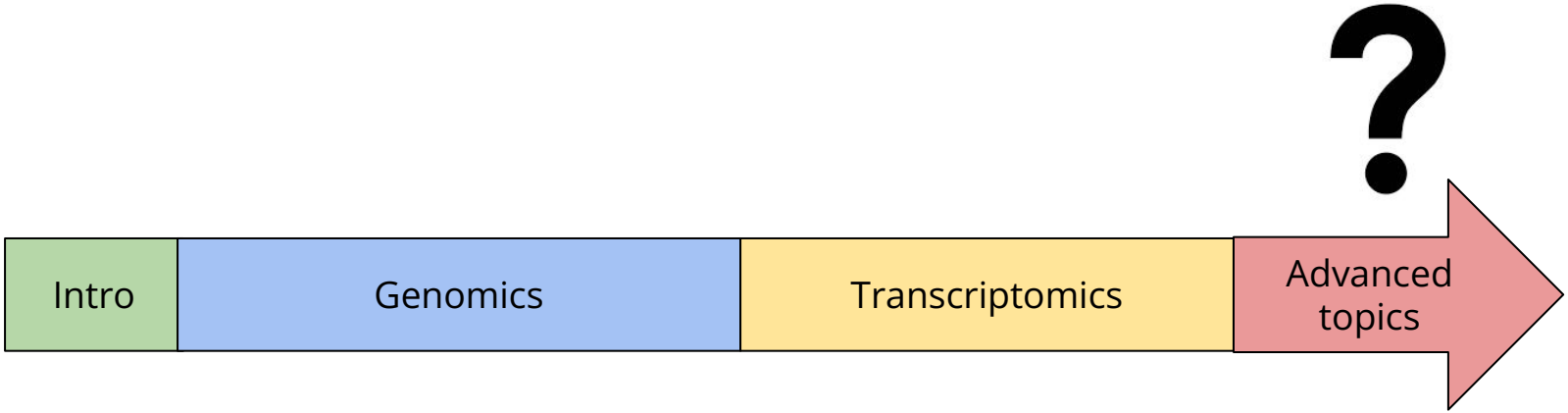
- Give students a broad introduction to NGS and genomic data analysis
- Provide actual tools for performing various tasks
- More practice and relevant theory

At the end of the course you will...

- **Be able to independently work with NGS data related to your research**
- Be familiar with many common tasks related to NGS
- Know how to use a variety of computational tools to perform these tasks
- Understand the basic theory behind these tools
- Be able to use and interpret file formats common in NGS/genomics
- Be able to use a modern computational working environment
- Have some experience with real-world NGS data
- Be familiar with modern terminology and technologies

The Genomics Toolbox

Course modules and lessons



Intro to NGS
Linux

NGS data preprocessing and QA
Sequence mapping
Variant calling
Genome assembly
Genome annotation

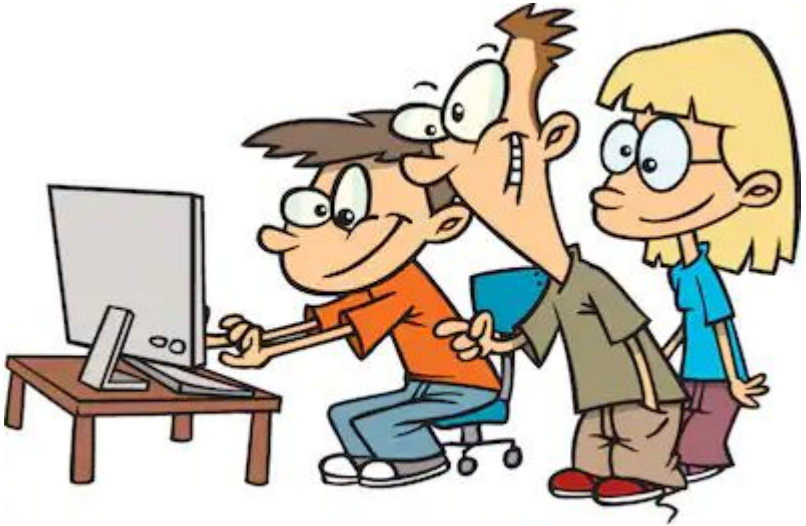
RNA-seq data analysis
Differential gene expression
R/Python

3rd generation sequencing
DBs, etc.
...

Lesson structure

Theoretical lesson

Class exercise



Final grade

- 30% exercises
  - Starting on lesson 2
  - Two weeks to submit each exercise on Moodle
  - Pass
  - Must submit at least 8 exercises

- 70% final project
  - Can be done in pairs (or solo)
  - Submission deadline: 02.03.2025

Course resources

- GitHub https://github.com/hadasvolk/CompLabNGS
  - Slides
  - Resources
  - Exercises

- Moodle
  - HW Submissions
  - Announcements