

Introduction to Bioinformatics

Course Workload		Assessment form (examination/ graded test/ ungraded test)
ECTS	Hours	
3	108	Test

The course introduces students to the systems biology approach and, using examples from the field of immunology, shows how the acquisition and interpretation of systems data helps to make biological discoveries.

Course structure:

1. Introduction to immunology

- 1.1. Foundations of immunology and modern era
- 1.2. Antibodies and phagocytes
- 1.3. Cells of the Immune System
- 1.4. T-cells

2. Gene expression datasets

- 2.1. Transcription and RNA sequencing
- 2.2. Exploring gene expression datasets
- 2.3. Simple analysis methods
- 2.4. Working with public datasets

3. Introduction to single-cell RNA-sequencing

- 3.1. Why single-cell RNA-seq
- 3.2. Single-cell technologies
- 3.3. Sequencing. Noise.
- 3.4. Single-cell navigator
- 3.5. Analysis of scRNA-seq

4. Case studies from aging and cancer immunology

- 4.1. Aging immunology
- 4.2. Cancer immunology

5. Immunometabolism

- 5.1. Metabolic network analysis in Cytoscape
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