

CB-L1: Introduction to bioinformatics data types and analysis techniques

Person in charge and Representative	McHardy/Klötgen and DeLuca (with help of Jung, Xiao)
Contact person	BIOMEDAS Office
Semester	1
Topic cluster	Computational biology
Duration/Credit	14 lectures of 1.5 hours
Time	The exact date incl. time will be announced separately
Place	Online. Dial-in data are sent separately
Prerequisite for the lecture	None
Aim of the lecture	<p>This lecture aims at achieving the following objectives:</p> <ul style="list-style-type: none">● basic concepts of bioinformatics<ul style="list-style-type: none">○ Fundamental statistical concepts of bioinformatics data○ Ability to assess bioinformatics data quality for robust analysis○ Basic Machine Learning concepts in bioinformatics○ Overview of useful resources in bioinformatics research● Introduction into high-throughput data generation in multi-omics research● Performing analysis of proteomics/metabolomics data generated by mass-spectrometry● Conceptual understanding of various sequencing platforms and their biochemical properties● Overview of biological assays for “omics” data generation to study genome composition, genome mutations, RNA expression, transcription factor binding and more● Concepts for bioinformatics data types of sequencing data, data preprocessing from assembly to alignment, data filtering and data normalization● Performing downstream analyses from mutation calling, diff. expression to binding-site calling