Course: Genomics Project

credits: 5

Course code	BFVH24GENOMICS
Name	Genomics Project
Study year	2025-2026
ECTS credits	5
Language	English
Coordinator	M. Kempenaar

Modes of delivery	Project-based learning
Assessments	Genomics Project - Other assessment

Learning outcomes

This module has the following learning outcomes:

1. You know the different types of possible variants occurring in DNA-sequences and can detect, filter and annotate these using the proper tools and techniques.
1. You have a good overview of the quality requirements of NGS data, depending on both the NGS technique used as well as the purpose of the analysis. Furthermore, you can apply the tools to gain insight into and improve this quality.
1. You keep an RMarkdown lab journal that documents all steps taken and records results so that the analysis is reproducible.
1. You develop a simple Galaxy workflow for finding and annotating variants in NGS data

Content

In this module you will work in groups to determine variants from a DNA sequence dataset of a given condition that may contribute to the development of this condition. We do this by processing raw sequencing data to eventually annotate found variants for their relation to a certain condition. Most aspects of this analysis will be performed in the workflow manager Galaxy with several extra steps that require programming in R. Every step taken will be documented in an RMarkdown lab journal, starting with quality control of the raw NGS reads, mapping these to a reference genome, reporting on the achieved coverage, finding and annotating variants and finally researching the found variants on their relation to the condition.

Included in programme(s)

LST Exchange Minor Data Science for the Life Sciences
Minor Data Science for the Life Sciences

School(s)

Institute for Life Science & Technology

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