

Workshop

Basic R for Bioinformatics

Organizer

CUBiDA (Core Unit Bioinformatik, Datenintegration und Analyse) at the Universitätsklinikum Erlangen

Instructors

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Outline

This workshop introduces R as a tool for bioinformatics data analysis. Participants will learn the fundamentals of the R language, including data structures, basic programming concepts, and how to import, manipulate, and visualize biological data.

Outcome

At the end of the workshop, participants will be able to:

- Navigate the RStudio environment and manage R projects.
- Understand and use basic R data structures (vectors, matrices, data frames).
- Perform basic data import and manipulation.
- Create simple visualizations using base R graphics.
- Install and load R packages.

Number of participants

5 to 15

Target audience

This workshop is designed for researchers who are new to R programming and intend to use R for their bioinformatics data analysis.

Prerequisites

Attendance at the "Basic Bioinformatics Skills" workshop or demonstrable equivalent prior knowledge.

Teaching format

The workshop will comprise a mix of interactive lectures with short hands-on exercises. Computers with preinstalled software and data will be provided to all participants. During the workshop, we will also give you access to all our teaching materials.

Provisional workshop schedule

| DAY 1 | |
|-----------------|---|
| 8:30 am-4:30 pm | Basic introduction to RStudio and the RStudio terminal. R as a calculator. Introduction to help pages. Basic data types (numeric, character, logical). Introduction to vectors, matrices, and lists. Basic indexing and subsetting. Working with data frames. Control flow with if/else statements and loops. Functions. Scope. Using arguments and return values. Defining custom functions. Data import. Adding and modifying columns. Sorting data. Base R graphs. Overview of the Bioconductor project. Installing and loading packages. Reproducible Bioinformatics research. Using code as documentation. Markdown for project notebooks. |

Questions

Please, contact us at mik-cubida@uk-erlangen.de.