UNIVERSITÄT BERN

MIC training: Modern data analysis in R/RStudio

Date:	March 19, 2020
Time:	9 am – 5 pm
Location:	Mittelstrasse 43, 3012 Bern, room 216
Trainers:	Dr. Maciej Dobrzynski, Mirco Hecht, Marc-Antoine Jacques, University of Bern (CH)
Organizer:	MIC of the University of Bern (www.mic.unibe.ch). Dr. Yury Belyaev, MIC, University of Bern (CH) Dr. Guillaume Witz, ScITS and MIC, University of Bern (CH) Supported by the PhD specialization Cutting Edge Microscopy.
Number of participants:	minimum 10, maximum 24
Registration:	until March 12, 2020, here.
Target audience:	PhD students, postdocs, and everyone who wants to get acquainted with modern practices of data wrangling, analysis and interactive data visualisation. **Some prior experience with basic concepts of programming in R and working in RStudio is required.**
Credits:	Certificate of attendance. On request, PhD students of the Cutting Edge Microscopy program can obtain 0.5 ECTS for this course with presenting the learning outcome in the context of his/her project at a separate meeting.
Background:	Over the past several years, the RStudio environment (https://rstudio.com/products/rstudio/) and a multitude of packages have transformed R from a primarily statistical programming language into a rich platform capable of large-scale data analysis. The course will familiarise users with those tools.
Content:	Our guiding example will be a raw time series dataset from a biological experiment. We will learn how to build a reproducible pipeline for data wrangling, reading, merging, and cleaning. We will then proceed to common data operations such as outlier removal, interpolation of missing data and visualisation of different data cuts using modern data frameworks including data.table, ggplot2, and plotly. We will also cover documenting and sharing the pipeline with interactive R notebooks.
Learning outcome:	Participants will learn how to build a modern, reusable and scalable data analytic pipeline for real-world experimental data.
Schedule:	See next page

Time	Day 1 Thursday, 19.03.20
9:00-12:00	Presentation of relevant programming and R/RStudio concepts. Getting acquainted with the dataset, basic data processing. M. Dobrzynski, ICB
12:00-13:30	Lunch
13:30-17:00	Interactive data presentation, plotting different data cuts. M. Dobrzynski, ICB M. Hecht, ICB M.-A. Jacques, ICB