





This is to certify that

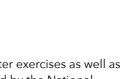
Mina Ali

has attended

RaukR 2021. Advanced R Programming for Bioinformatics Summer School.

The course was held in online June 14-24, 2021 and encompassed 72 hours of lectures, computer practicals and workshops. The following subjects and fields were covered:

- reproducible research (with Christophe Dervieux and Yihui Xie, PhD, RStudio)
- best coding practises
- writing scripts, functions and R packages
- debugging, profiling, optimisation, vectorisation and parallelisation
- object-oriented programming in R
- introduction to tidyverse
- R-Python integration
- graphics with ggplot2
- basic statistics and machine learning in R
- predictive modelling with tidymodels (Max Kuhn, PhD, RStudio)
- iterating well with R and tidyverse (Jenny Bryan, PhD, RStudio)
- own project work + project presentation (32 hours)



Examination: Presence and active participation during lectures and computer exercises as well as successful completion of the collaborative project. The course was arranged by the National Bioinformatics Infrastructure Sweden (NBIS), Science For Life Laboratory (SciLifeLab) and Uppsala University, Sweden.

Uppsala, June 24, 2021

Marcin Kierczak, PhD

Mercin Leverel

Associate Professor in Bioinformatics NBIS, Uppsala University, Sweden Course organiser

Sebastian DiLorenzo

Bioinformatics Scientist NBIS, Uppsala University, Sweden Course organiser