

# Basic Introduction to



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# Goals

- Start to code
- Learn how to use R for the analysis of your data
- Know where and how to get help if you are stuck

# Why use R?

- Reproducibility
- Keep original data untouched
- It is open source... with a large community
- Advanced statistics
- State-of-the-art graphics
- Powerful data manipulation
- Supports large datasets
- Fast computation
- Easier automation
- Anyone can contribute
- ...

# RStudio



The screenshot shows the RStudio interface with the following components:

- Script editor (write code):** The top-left pane shows an R script file named 'Why\_use\_R.R'. The code includes comments and functions for reading data, replacing values, deleting data in a specified region, and plotting.
- Environment / History (loaded objects):** The top-right pane shows the 'Global Environment' with a search bar and a list of objects. The 'Data' tab is selected, showing 'data\_L1' with 998 observations of 4 variables.
- Console (executed code):** The bottom-left pane shows the output of the executed code, including the same script as the script editor.
- Files / Plots / Packages / Help:** The bottom-right pane shows a file explorer view of the project directory, listing files like '.gitignore', '.Rhistory', '01\_Data', '02\_Slides', '03\_Script', 'Introduction\_to\_R.Rproj', 'LICENSE', and 'README.md'.

# Shortcuts

	Mac	Windows / Linux
Run line	Cmd + Enter	Ctrl + Enter
# Comment line	Alt + 3	
[ ] Square brackets	Alt + 5 / Alt + 6	
{ } Curly brackets	Alt + 8 / Alt + 9	
OR operator	Alt + 7	
~ Tilde	Alt + N	
Show RStudio shortcuts	Alt + Shift + K	Option + Shift + K

# Capabilities of R

- Nice graphs  
[https://www.r-graph-gallery.com/violin\\_and\\_boxplot\\_ggplot2.html](https://www.r-graph-gallery.com/violin_and_boxplot_ggplot2.html)
- Maps with R  
<https://www.r-graph-gallery.com/choropleth-map.html>
- Interactive web applications (R Shiny)  
<https://shiny.rstudio.com/gallery/movie-explorer.html>
- R and databases  
<https://db.rstudio.com/getting-started/connect-to-database>

# Where to get help

- Websites
  - RStudio Cheat Sheets  
<https://www.rstudio.com/resources/cheatsheets/>
  - Google  
e.g. „r how to merge two data frames“
  - <https://stackoverflow.com/>
  - <https://www.r-bloggers.com/>
- Online book
  - R for Data Science  
<https://r4ds.had.co.nz/>

# ...more help

- Other R courses
  - R: tidyverse for data science (UZH)  
<https://app.connect.uzh.ch/apps/id/kurse.nsf/veranstaltungen.xsp>
  - Specialised R-Workshops (2 days, 1ECTS for PhD students, Plant Science Center)  
<https://www.plantsciences.uzh.ch/en/teaching/phdplantscience/coursecatalogue.html>
  - Zurich R Courses  
<https://www.zhrcourses.uzh.ch/en.html>
  - Specialised R-Workshops (1 day intensive course, small groups)  
<https://ethz.ch/services/de/it-services/katalog/support-weiterbildung/it-training/kurse.html>



# Sources

For the development of this course I was mainly inspired by the course material of Jan Wunders *R* course

*Introduction to R (Wunder, 2016)*