



H3ABioNet

Pan African Bioinformatics Network for H3Africa

16SrRNA Intermediate Bioinformatics Online Course: Int_BT_2019

Introduction to R

Why you're going to love R...

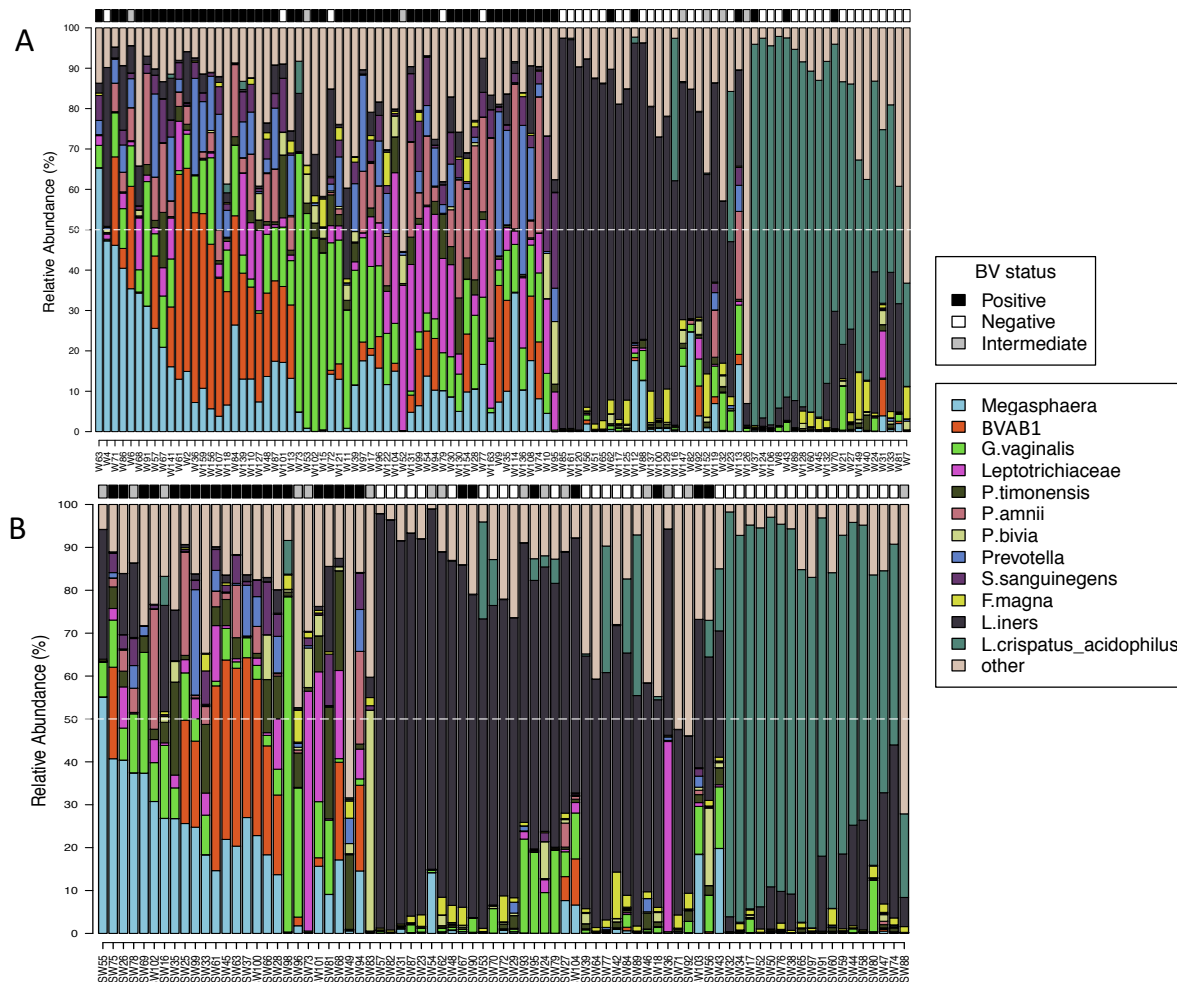
What is R?

- R is an open source programming language used for statistical analyses and graphics
- RStudio is the user-friendly interface commonly used when programming in R
 - Allows you to see your R script, console and graphics all on one screen
 - Easy package installation & updates & help
 - Reproducibility

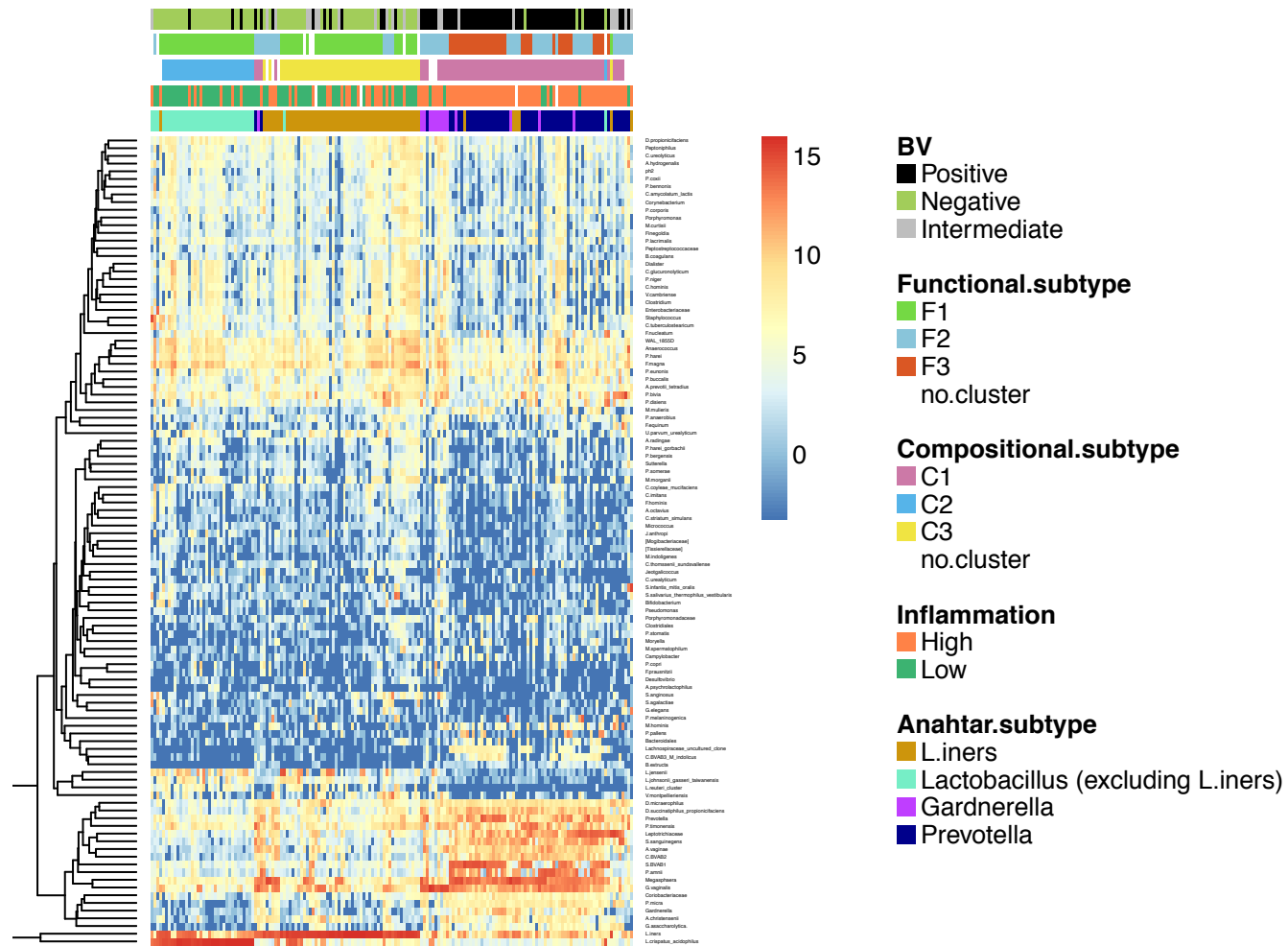
Why learn R?

- Non-programming point-and-click software can be dangerous..
 - Are you sure you know what you're doing or what it is doing?
- R = written commands which has several advantages:
 - You have to think about what you're writing and know what each command is doing
 - Your analysis is now reproducible because you've written each command in an R script file (more and more journals require this)
 - Easy collaboration – share your R scripts
- Specialized software packages that are likely only available through R
 - E.g. you're working on 16S microbiome data: custom R packages (phyloseq, metagenomeSeq...)
- Publication quality graphics, customizable (fun)

Customizable, publication-quality graphics



Customizable, publication-quality graphics



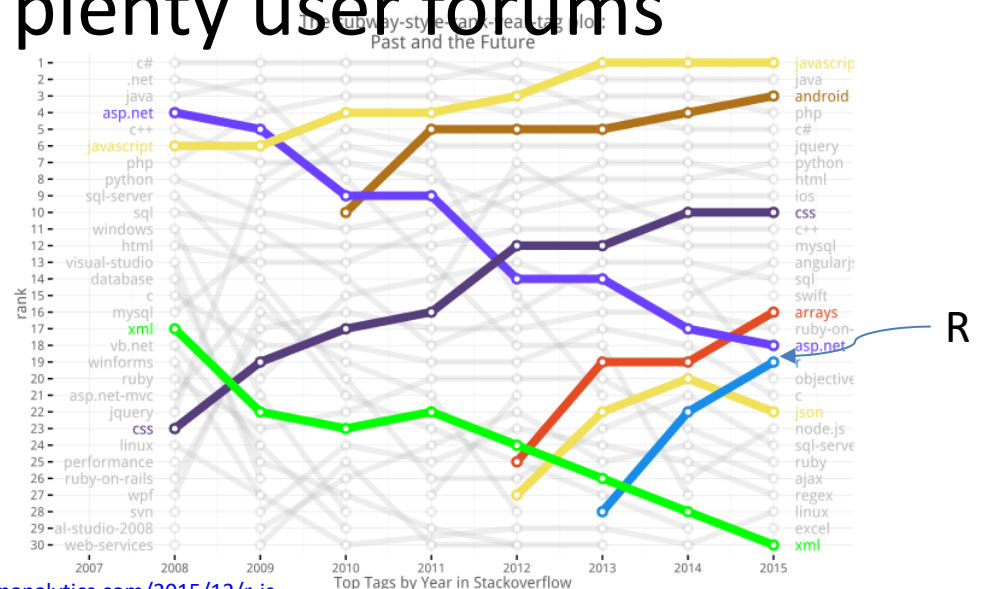
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R help?!

- Just ask uncle Google...
 - If you get an error someone else has had it too (and posted about it)
- Large R community, plenty user forums

[stackoverflow example](#)



<https://blog.revolutionanalytics.com/2015/12/r-is-the-fastest-growing-language-on-stackoverflow.html>

Syllabus (learning objectives)

- Introduction to RStudio
- Define the following terms as they relate to R: object, assign, function, arguments
- Importing data into R as dataframes
- Subsetting, indexing of dataframes
- Best practices for writing R code

Learning Outcomes

- Comfortable navigating RStudio
- Comfortable with basic R operations and syntax
- Importing data from .csv or .txt files into R as dataframes

Introduction to R website