open science

open access

open research data

open source

→ collaboration and reproducibility

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SPROuT- science powered through reproducibility, openness and teamwork (**MB120C26**, ondra mottl)

GitHub

platform / server to store, share and collaborate on projects

Git

a version control system to store different versions of your work and which connects RStudio with GitHub

RStudio

software using R programing language for statistical analyses (and much more:)

let's put it to practice!

- **create a new repository on GitHub**

in github.com

↪ ☰

↪ Repositories

↪ New repository

↪ Repository name *mykosym*

↪ Choose visibility *public/private*

↪ Create repository

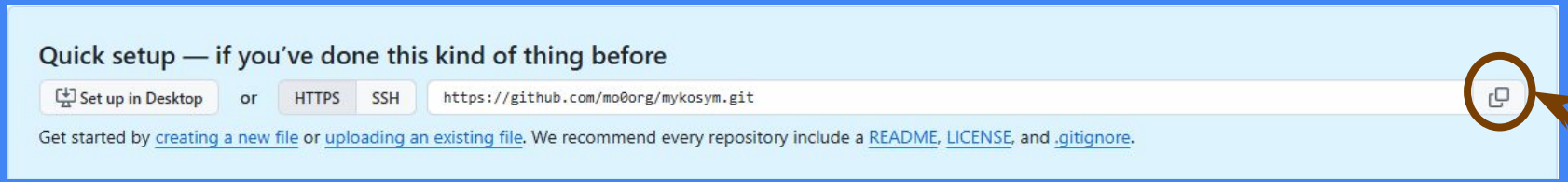
- **use URL to open it as a new project in RStudio**

in github.com

↪ ☰

↪ Repositories

↪ *mykosym*



copy link to your repo

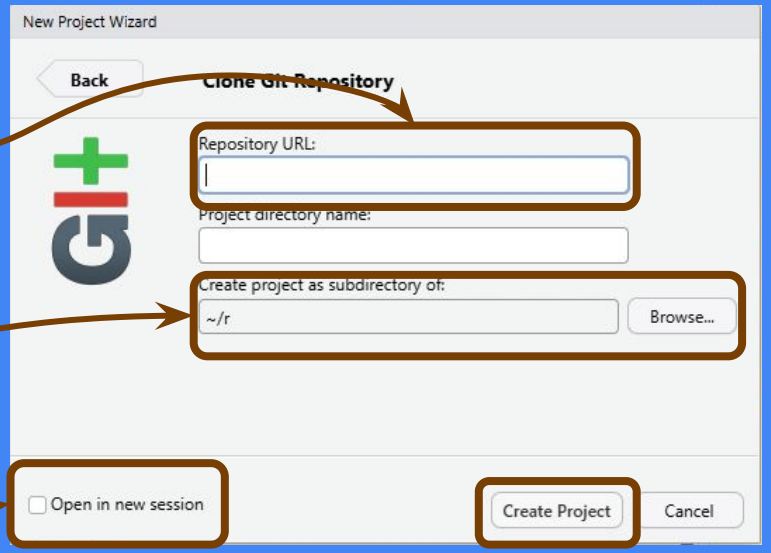
in rstudio

- Project: (None)
  - New Project…
    - Version Control
      - Git

insert URL from clipboard

choose where to store the project on your local repo

one open session= one project



- **create files and scripts in the R.project**

in your file explorer

↪ open the project file

↪ add files (and your datasets, existing r.scripts, etc.)

`fs::dir_tree()`

```
├── data
│   ├── raw_data_csv
│   │   ├── cidlo_DN_data.csv
│   │   ├── OTU_test_14_10_25.csv
│   │   ├── root_biomass.csv
│   │   ├── soil_chem.csv
│   │   ├── vegetace_cs.csv
│   │   ├── vegetace_dn.csv
│   │   ├── vegetace_sv.csv
│   │   └── vegetation_raw.csv
│   └── raw_data_xls
│       ├── colonisation.xlsx
│       ├── dna_root.xlsx
│       ├── dna_soil.xlsx
│       ├── info_sites.xlsx
│       ├── root_biomass.xlsx
│       ├── soil_chem.xlsx
│       └── teplota_moist.xlsx
├── outputs
│   ├── figures
│   ├── tables
│   └── writing
├── README.html
├── README.md
├── r_scripts
│   ├── analyses
│   │   └── vegetation.R
│   └── cleaning_data
│       ├── prep_otu_tbl.R
│       ├── prep_teplota_moist_tbl.R
│       └── prep_vegetation_tbl.R
└── seasonality_project.Rproj
```

- **write a line of code to open a .csv dataset**

in rstudio

↪ open a new script (Ctrl+Shift+N)

↪ save it to the script file (Ctrl+S)

↪ use the here() and read.csv() functions to open a dataset

```
data<-read.csv(here::here("path/dataset_name.csv"))
```

```
sep = ""
header = TRUE
dec = ""
na.strings = ""
```

```
install.packages("here")
```

data <- store the following line in the object "data"

read.csv() R function to read .csv files (for help ?read.csv)

sep = "" argument to the read.csv() function to specify which type of column separator is used in the .csv file ; , / .
header = TRUE argument to the read.csv() function to specify if the .csv file has a header or not TRUE FALSE
dec = "" argument to the read.csv() function to specify type of decimal is used in the .csv file , .
na.strings = "" argument to the read.csv() function to specify what to replace by NA space 0

here::here("path/dataset_name.csv") R function to find the path to the file we want to open (for help ?here::here)
in the path we do not specify the whole path as in setwd() but only what is after the name of the project:
C:/Users/Laura/OneDrive - umontpellier.fr/Dokumenty/r/mykosym/data/raw_data

- **write a line of code to save a dataset to .csv**

in rstudio *(opened script where we have uploaded an initial dataset and we have created a subset of it)*

```
data<-read.csv(here::here("path/dataset_name.csv"))
subset<-data[,2:10]
```

↪ use the here() and write.csv() functions to create a new dataset in your repo

```
write.csv(subset,here::here("path"),subset_name.csv)
```

- **write a line of code to save a figure to .pdf**

in rstudio

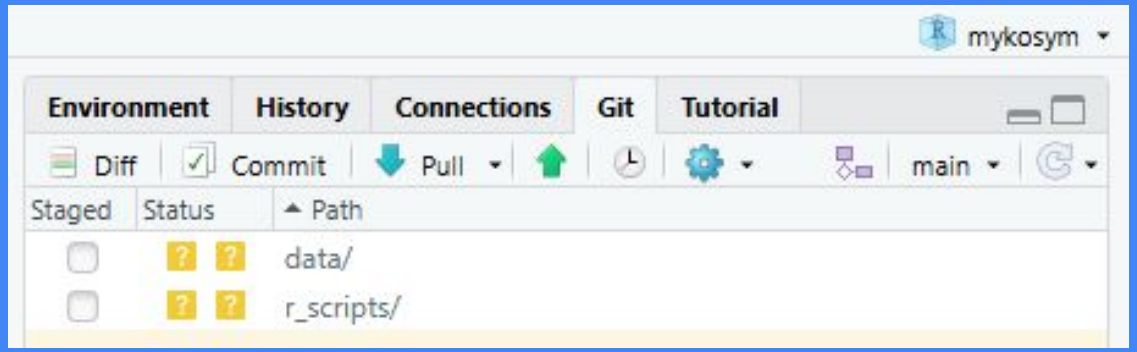
↪ use the here() and pdf() functions to save a figure to your repo

```
pdf(here::here("path","plot1.pdf"))
plot(1,1)
dev.off()
```

- **stage, commit and push changes to remote repo**

in rstudio

↪ go to the git space (in the environment window)



↪ stage all the changes you want to be seen in the remote repo (✔tick the white boxes)

↪ click on commit

↪ write a commit message (describe the changes you made)

↪ click on commit

↪ click on push