



CAIRIBU TRAINEE SUMMER CAMP

Developed by the CAIRIBU Urobiome RIG

Goal: Facilitate knowledge exchange and spur collaborations in the urobiome and adjacent fields

EXECUTIVE SUMMARY 06/26/2026 CAIRIBU Trainee Summer Camp



Audra Crouch, PhD (Ohio State University)

- [Access this workshop's materials, including R download instructions and sample code](#)

In this summer camp, Dr. Crouch explained how to use R to create boxplots

Starting with a CSV File

- R recognizes data in CSV file format
- Save an Excel file as a CSV by selecting the CSV format from the dropdown menu after selecting “Save As”

Introduction to R Studio

- Key sections of the R Studio interface are the command line, environment, and directories
 - **Command line:** where commands are typed
 - **Environment:** shows where files are saved and the history of the project
 - **Directories:** your home directory is wherever you have set up your R studio
- In the lower right corner, see space for plots, packages, and help sections; reference help section for troubleshooting
- Saving R files for later reference helps with data reproducibility in that users can easily reuse code and tweak as needed for specific uses or plots

Installing Packages in R Studio

- Run the **install.packages command** [“insert package name”] to install a package
 - Users can run installation commands one by one or highlight several command lines and “Run” to install all at once
- A given package need be installed only once; **packages must be initiated after installation**

Setting Working Directory

- Users must set up their working directory so R knows where to reference for files and where to save files
- There is a command to set up your working directory: **setwd** [“insert folder path”]
- Alternatively, users may navigate to “**Session**” in the bar menu and choose a directory

Entering and Analyzing Data in R Studio

- R can read your CSV file and create a variable and can understand that your file contains headers
- Clicking on your variable in the environment will show you information from within the CSV file
- To make a boxplot, **convert your data frame from a wide version to a long version**. Users can specify that they want their data all in one column and assign names to groups of values.

Creating Boxplots

- Dr. Crouch demonstrated how to create a basic boxplot – she specified parameters and typed a plus sign into the commands to ensure all specifications were run
- Adding more complexity to a basic boxplot can provide better visualization and more context for your audience
- Utilizing R’s statistical testing capacity, Dr. Crouch demonstrated how to create a more complex boxplot with statistics, whiskers, jittered data, advanced coloration/formatting, titles/labels and other parameters

Audra Crouch, PhD is a Presidential Postdoctoral Fellow in the lab of Vanessa Hale, DVM, PhD, MAT at the Ohio State University. Her work in the Hale lab centers on host-microbe-chemical interactions in the gut and bladder.