

Introduction to R

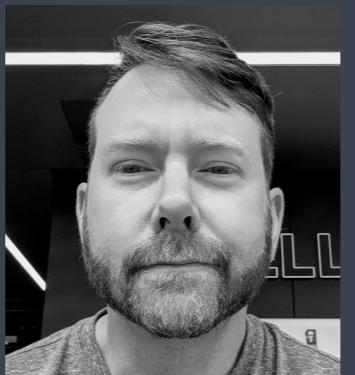
Harvard Chan Bioinformatics Core

<https://tinyurl.com/hbc-r-nanocourse>

Sponsored by HMS (TnT) and HSCI



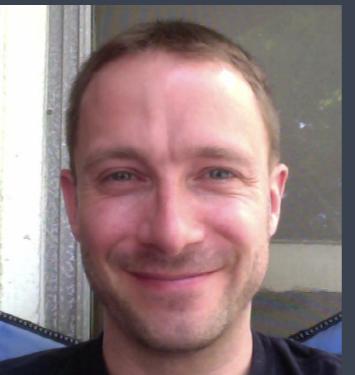
Shannan Ho Sui
Director



John Hutchinson
Associate Director



Victor Barrera



Rory Kirchner



Zhu Zhuo



Preetida Bhetariya



Meeta Mistry



Mary Piper



Jihe Liu



Radhika Khetani
Training Director



Ilya Sytchev



James Billingsley



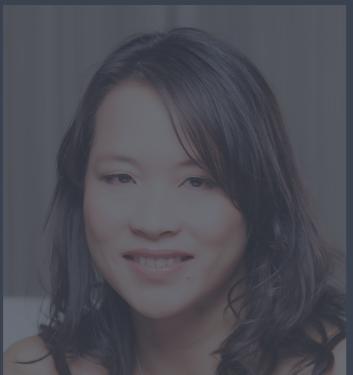
Sergey Naumenko



Joon Yoon



Peter Kraft
Faculty Advisor



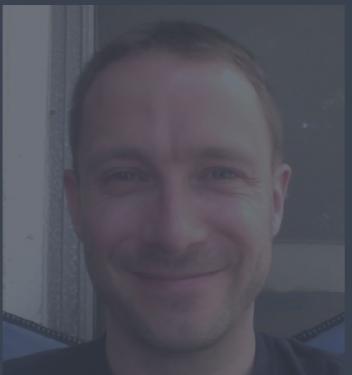
Shannan Ho Sui
Director



John Hutchinson
Associate Director



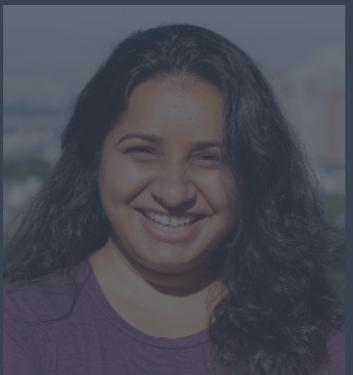
Victor Barrera



Rory Kirchner



Zhu Zhuo



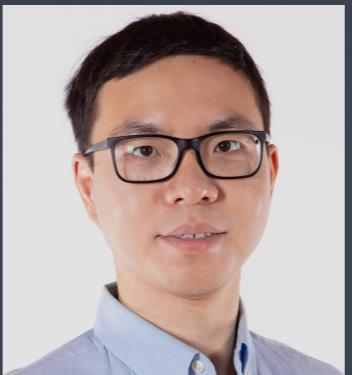
Preetida Bhetariya



Meeta Mistry



Mary Piper



Jihe Liu



Radhika Khetani
Training Director



Ilya Sytchev



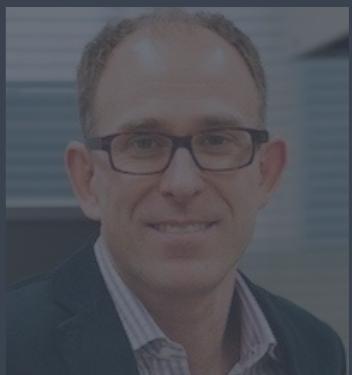
James Billingsley



Sergey Naumenko

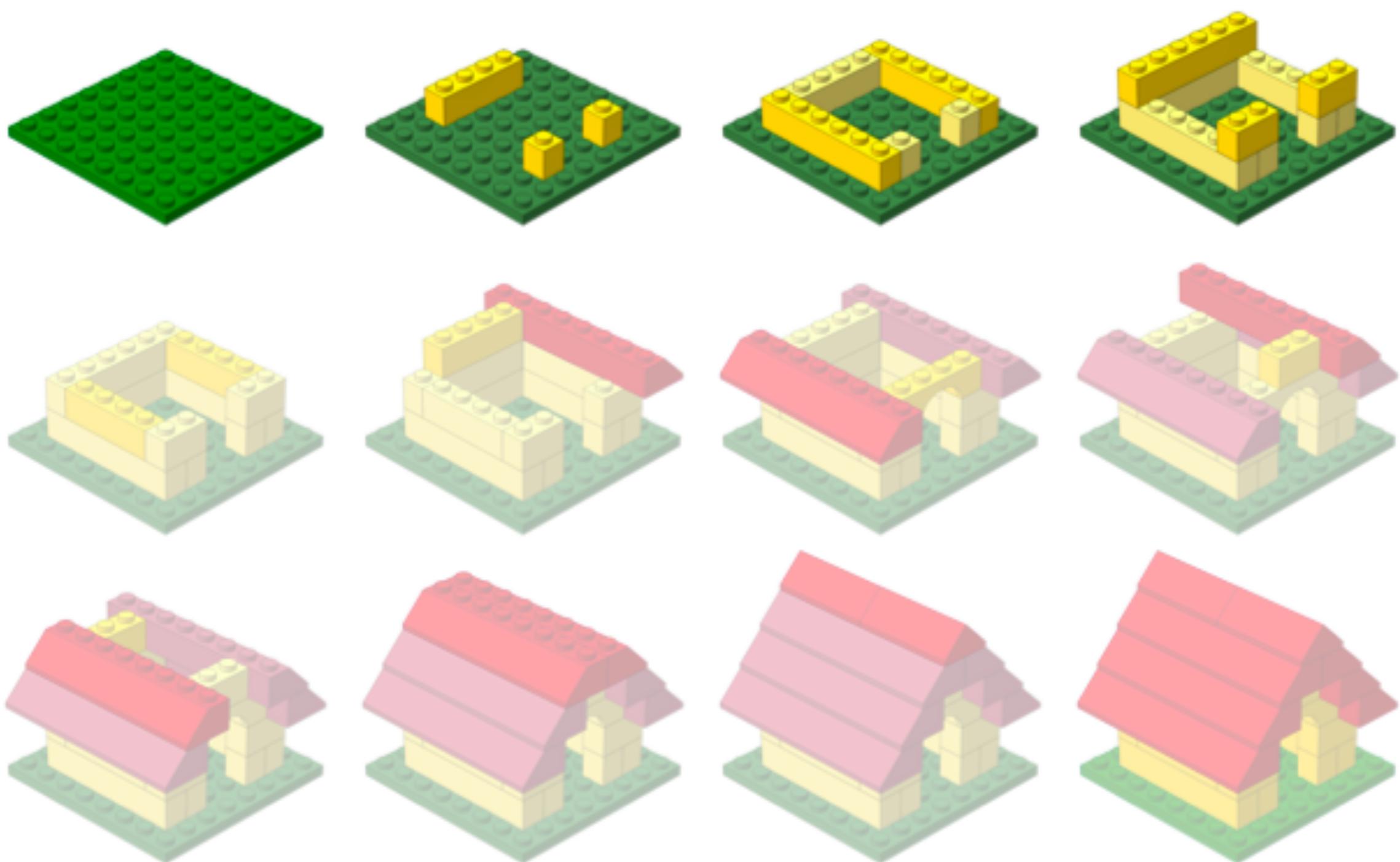


Joon Yoon



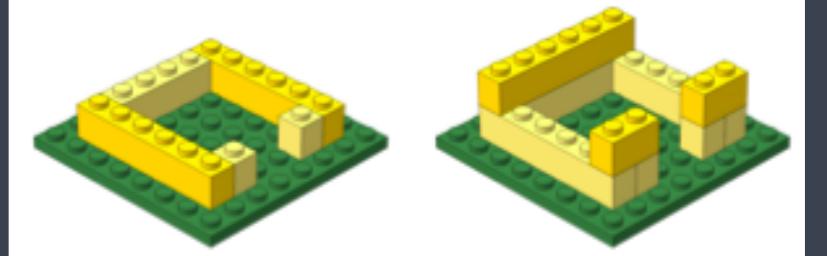
Peter Kraft
Faculty Advisor

Workshop Scope...



Learning R

Workshop Scope



- ✓ Comfortably use RStudio (a graphical interface for R)
- ✓ Fluently interact with R using RStudio
- ✓ Become familiar with R syntax
- ✓ Understand data structures in R
- ✓ Inspect and manipulate data structures
- ✓ Install packages and use functions in R
- ✓ Visualize data using *ggplot2*
- ✓ Utilize pipes, tibbles and functions from the Tidyverse package suite

Logistics

Course webpage (wiki)

<https://tinyurl.com/hbc-r-nanocourse>

Course schedule online

Course Schedule & Content

Day 1

Time	Topic	Instructor
10:00 - 10:30	Workshop Introduction	Radhika
10:30 - 11:15	Introduction to R and RStudio	Radhika
11:15 - 11:30	Overview of self-learning materials and homework submission	Mary

Self-Learning Part 1

1. [R Syntax and Data Structure](#)
2. [Functions and Arguments](#)

Have any questions as you work through the lessons? [Please post them here or upvote existing questions!](#) We will answer them in the next class.

Homework

- All exercises from above lessons have been put together in [html format](#) (web access) and [R script format](#) (download for local access).
- Add your solutions to the exercises in the downloaded [.R](#) file and **upload the saved file, renamed with your initials/name** to [Dropbox](#).

Course materials online



Introduction to R

[View on GitHub](#)

Approximate time: 70 min

Learning Objectives

- Employ variables in R.
- Describe the various data types used in R.
- Construct data structures to store data.

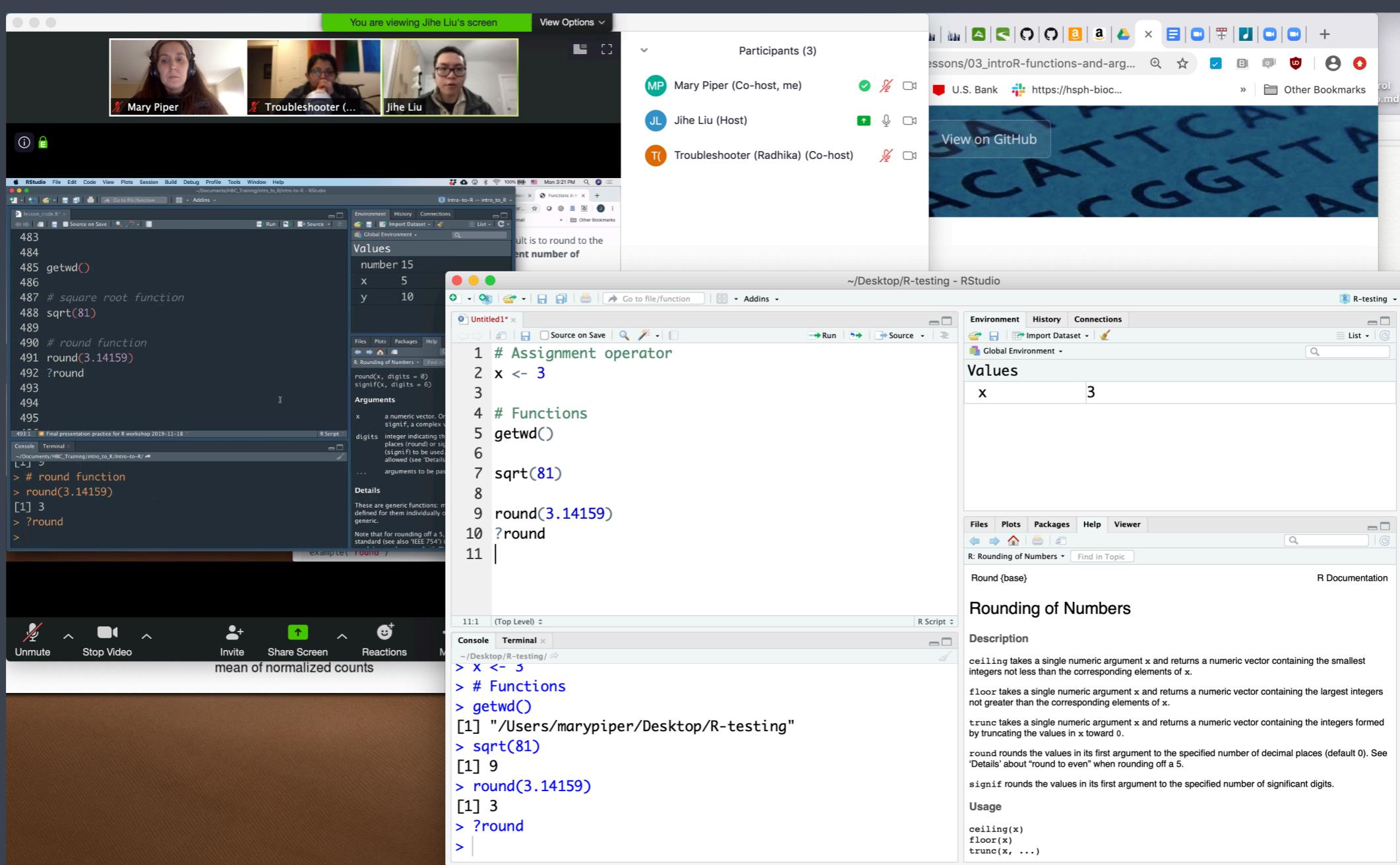
The R syntax

Now that we know how to talk with R via the script editor or the console, we want to use R for something more than adding numbers. To do this, we need to know more about the R syntax.

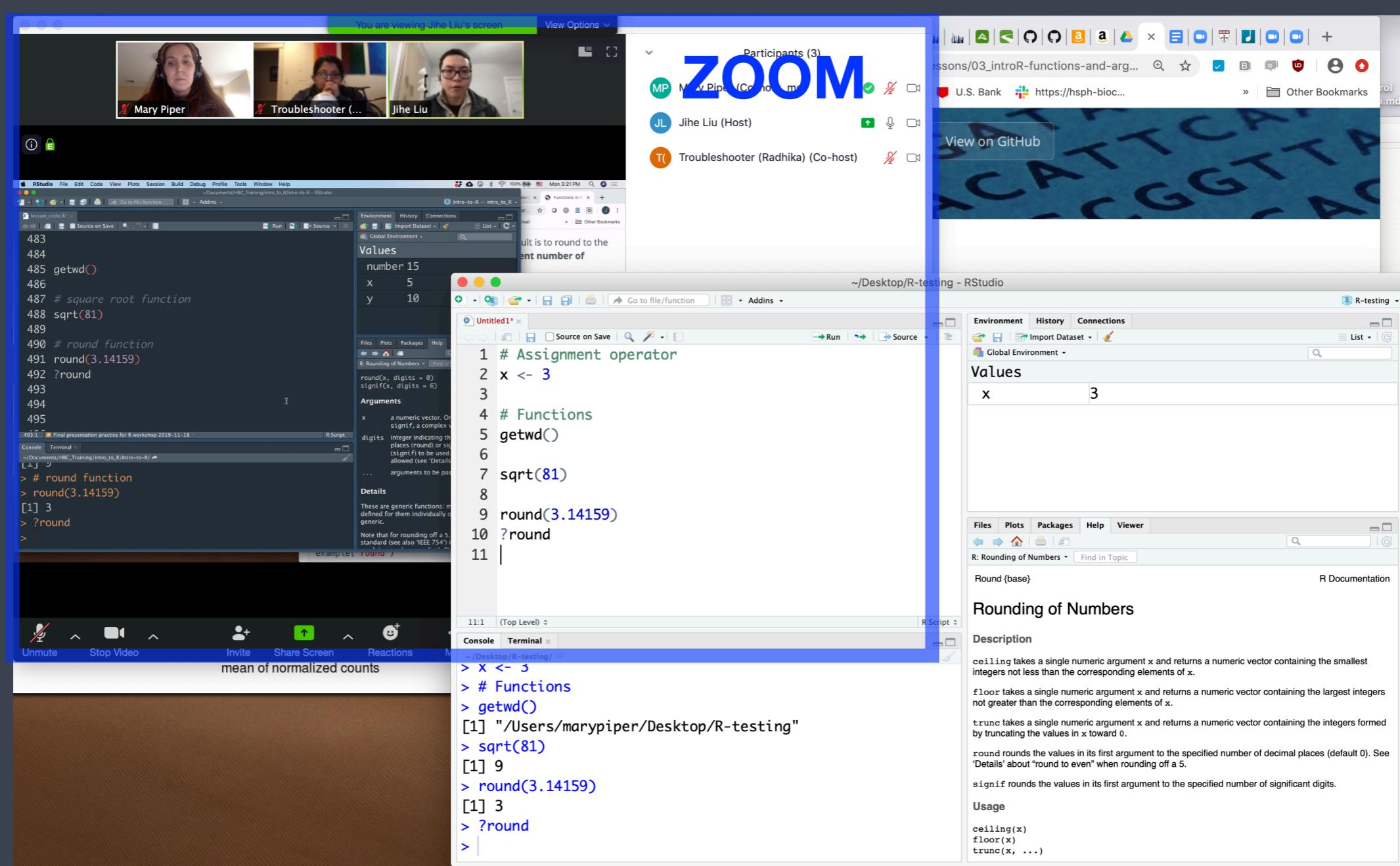
Below is an example script highlighting the many different “parts of speech” for R (syntax):

- the **comments** `#` and how they are used to document function and its content
- **variables and functions**
- the **assignment operator** `<-`

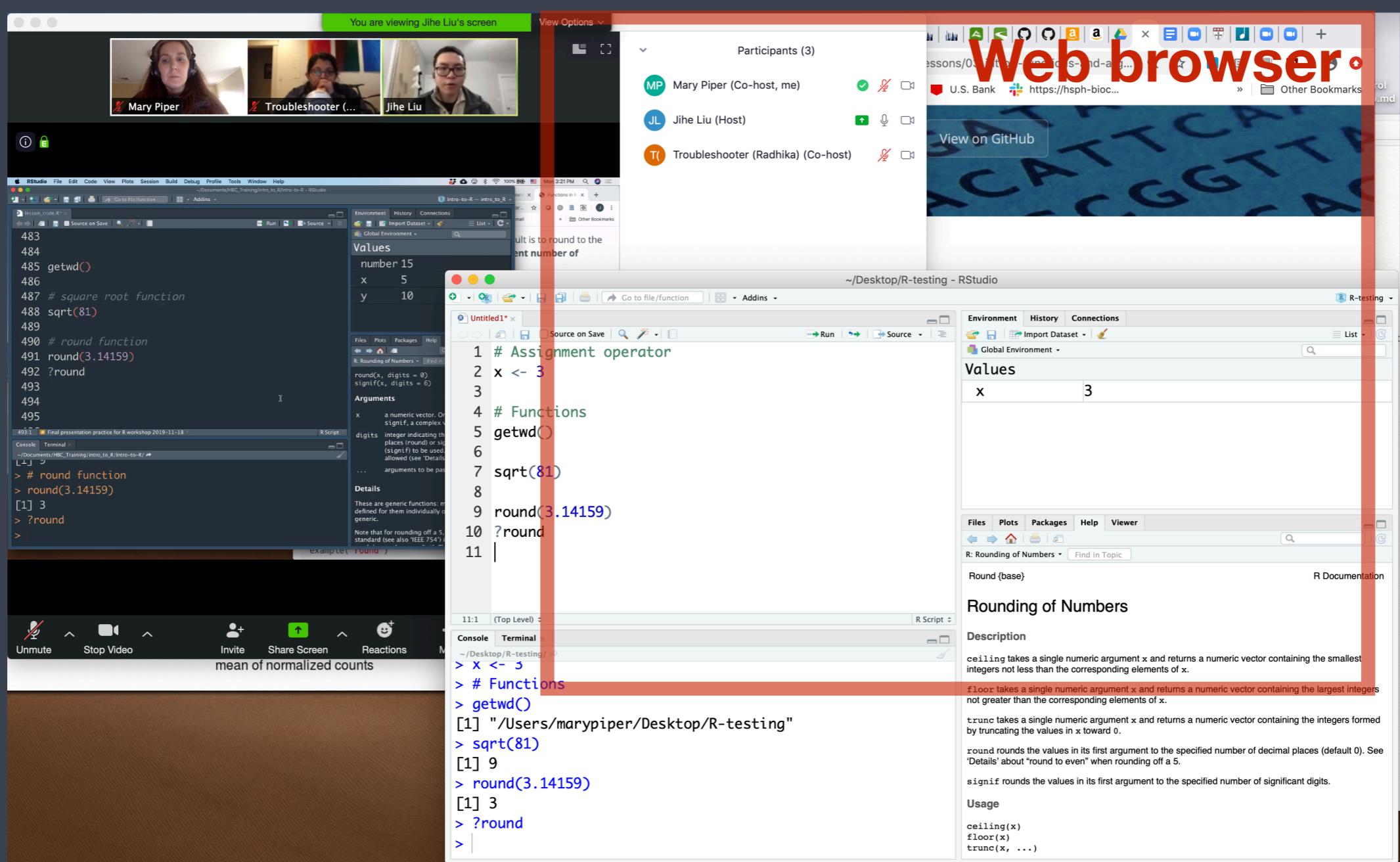
The 3 Window problem...



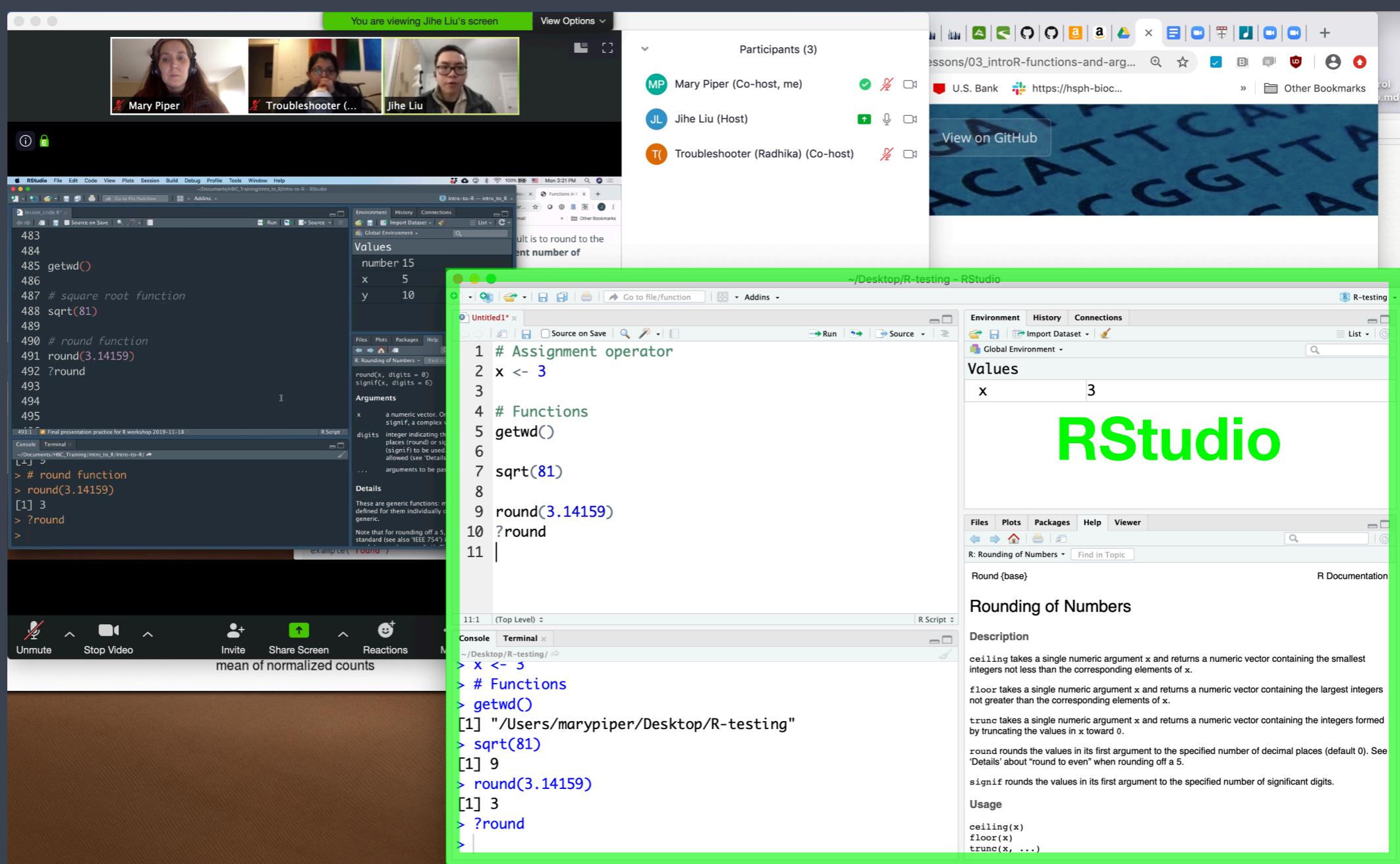
The 3 Window problem....



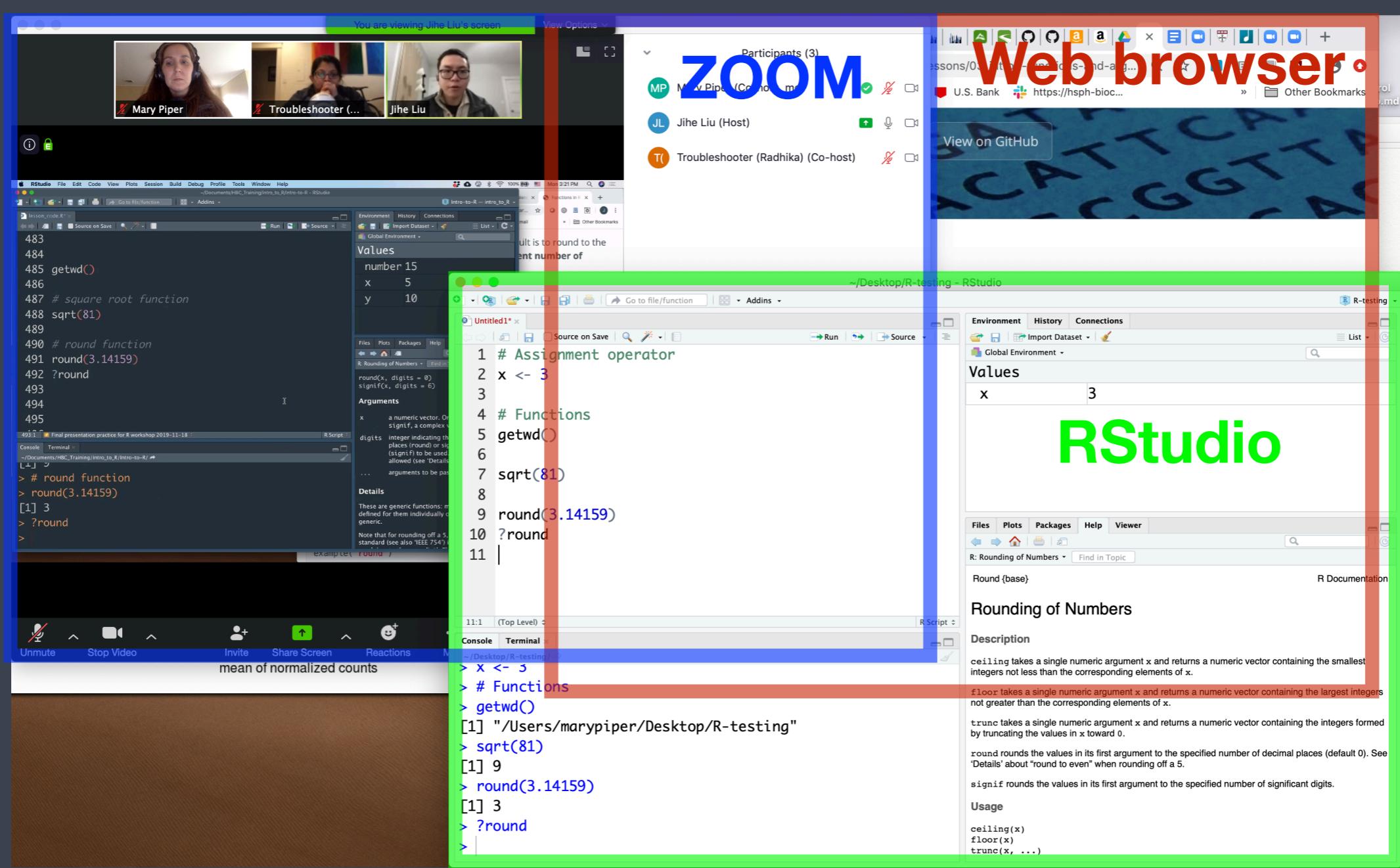
The 3 Window problem...



The 3 Window problem....

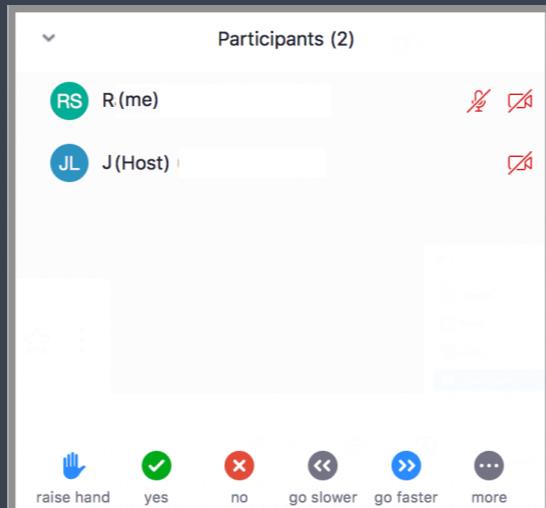


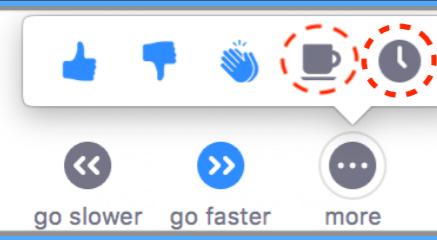
The 3 Window problem...



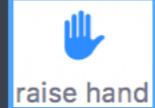
Odds and Ends (1/2)

- ❖ Quit/minimize all applications that are not required for class
- ❖ Click on “Participants” to open that panel in Zoom



- ▶  = "agree", "I'm all set" (equivalent to a **green post-it**)
- ▶  = "disagree", "I need help" (equivalent to a **red post-it**)
- ▶  If you are away from the computer use the coffee cup or clock icon

Odds and Ends (2/2)

- ❖ Questions for the presenter?
 - Post the question in the Chat window OR
 - Post the question in Poll everywhere at <https://pollev.com/hbctraining945> OR
 - Raise your hand  when the presenter asks for questions
- ❖ Technical difficulties with R or RStudio?
 - Start a private chat with the Troubleshooter with a description of the problem.

Contact us!

HBC training team: hbctraining@hsph.harvard.edu

HBC consulting: bioinformatics@hsph.harvard.edu

Twitter

[@bioinfocore](https://twitter.com/bioinfocore)