

Introduction to R

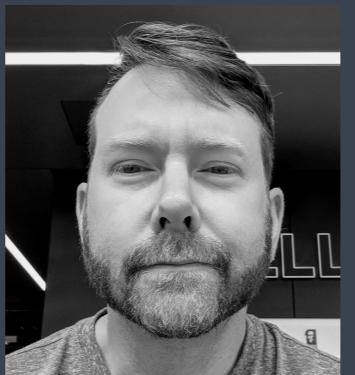
Harvard Chan Bioinformatics Core

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

Sponsored by HMS (TnT) and HSCI



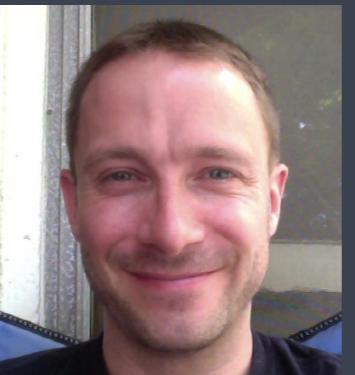
Shannan Ho Sui
Director



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

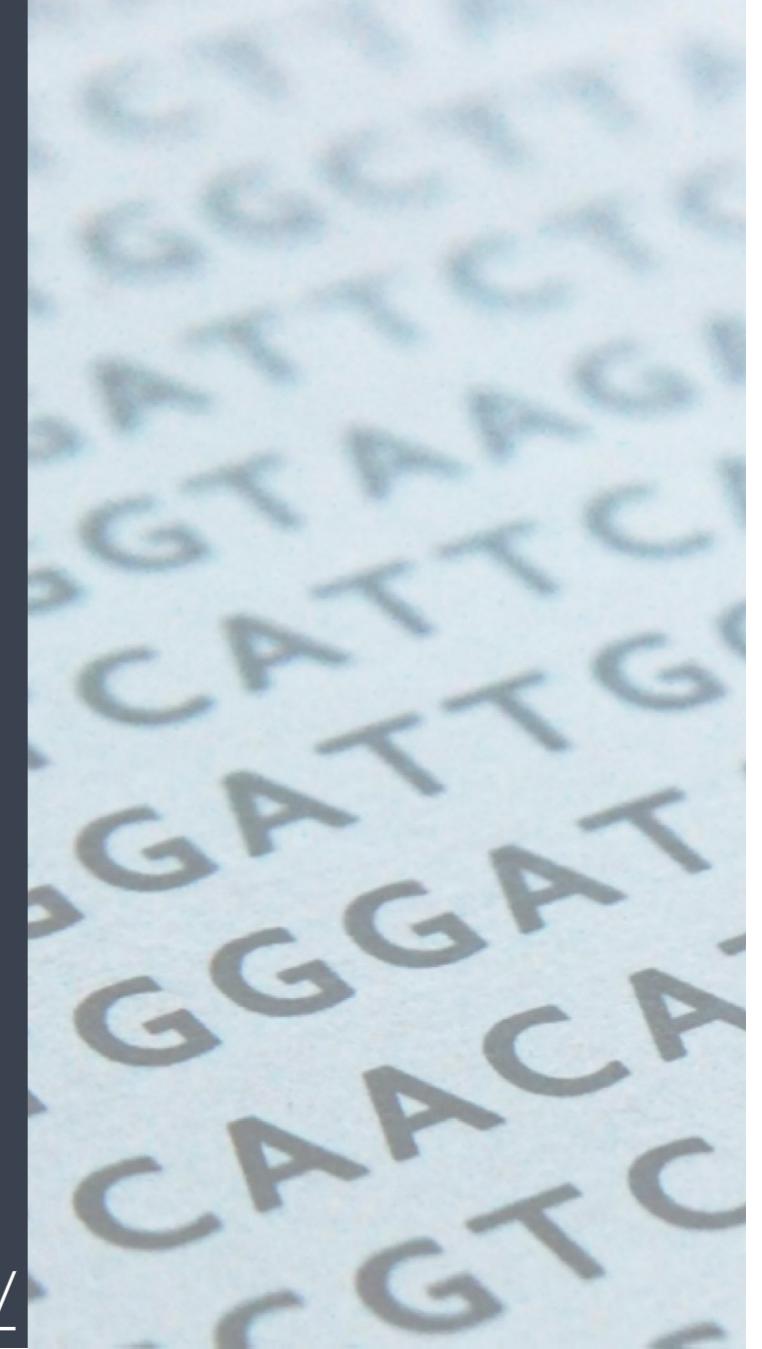


Peter Kraft
Faculty Advisor

Consulting

- RNA-seq analysis: bulk, single cell, small RNA
- ChIP-seq and ATAC-seq analysis
- Genome-wide methylation
- WGS, resequencing, exome-seq and CNV studies
- QC & analysis of gene expression arrays
- Functional enrichment analysis
- Grant support

<http://bioinformatics.sph.harvard.edu/>



Training

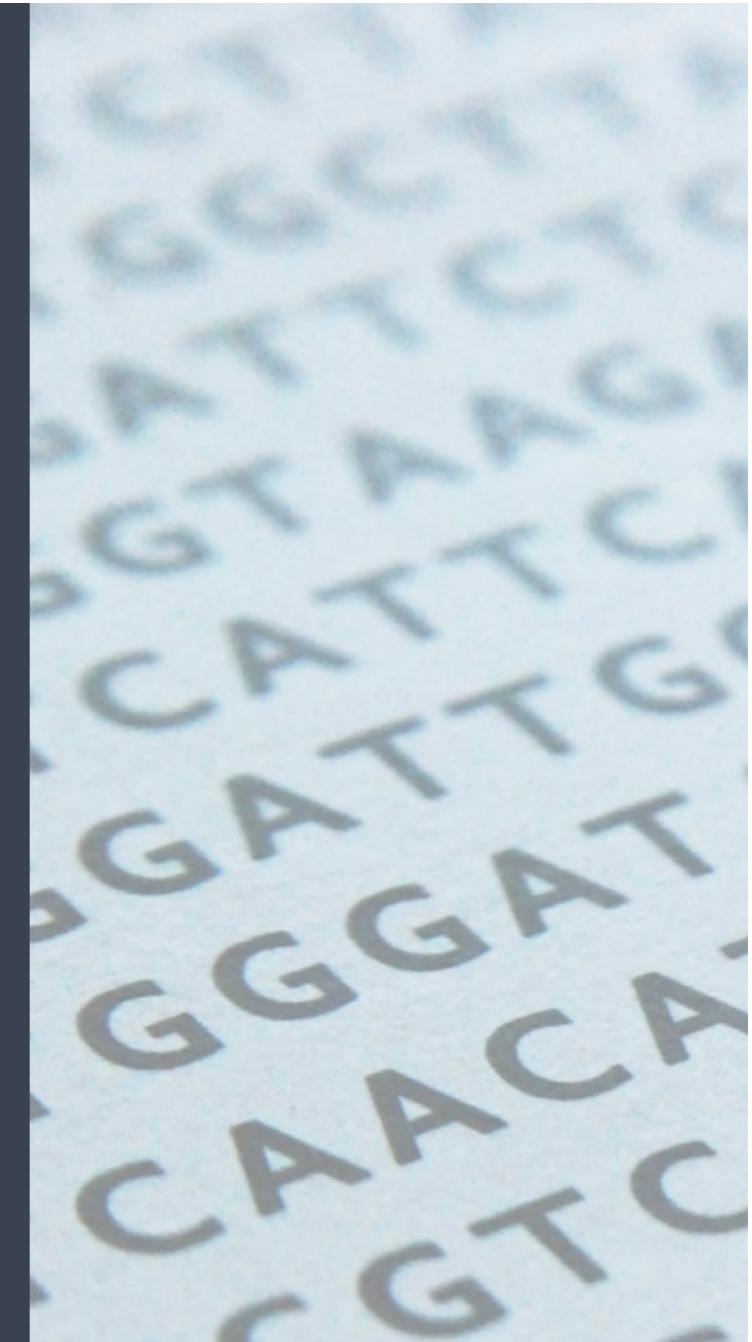
We have divided our short workshops into 2 categories:

1. Basic Data Skills - No prior programming knowledge needed (no prerequisites)
2. Advanced Topics: Analysis of high-throughput sequencing (NGS) data - Certain “Basic” workshops required as prerequisites.

Any participants wanting to take an advanced workshop will have to have taken the appropriate basic workshop(s) within the past 6 months.

<http://bioinformatics.sph.harvard.edu/training/>

<https://hbctraining.github.io/main/>





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Bioinformatics

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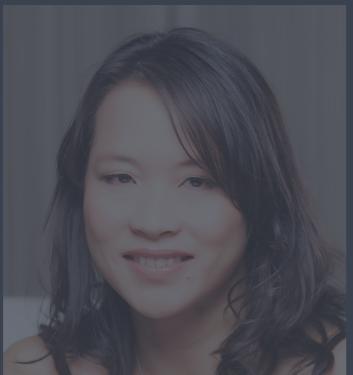
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Introductions!



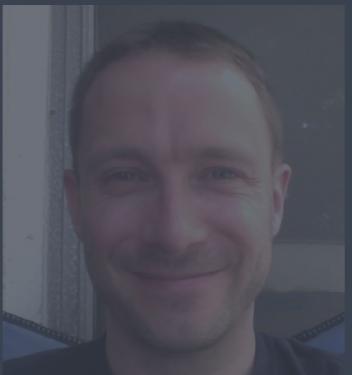
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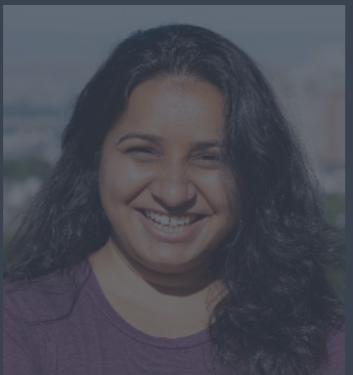
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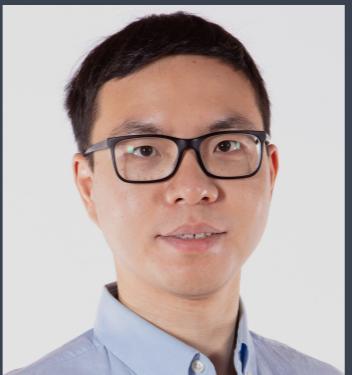
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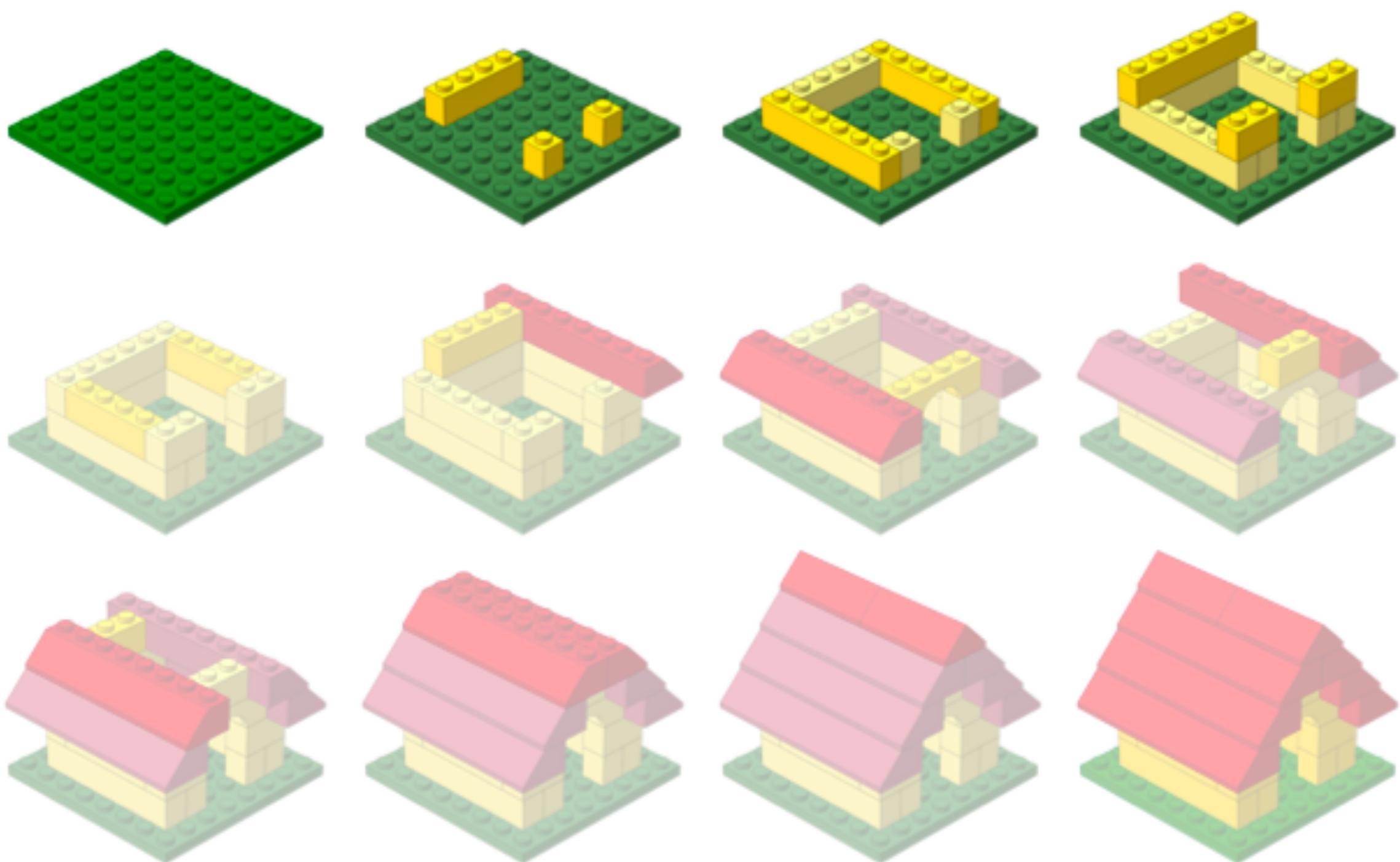


Joon Yoon



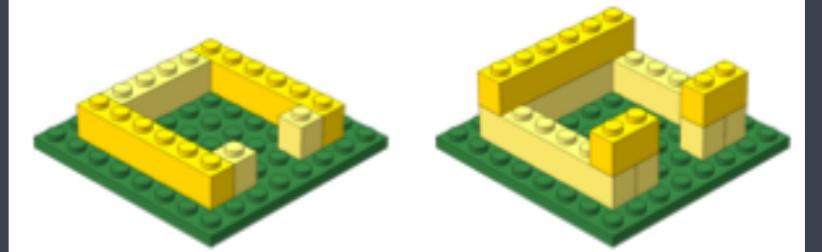
Peter Kraft
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Workshop Scope...



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*

Logistics

Course webpage (wiki)

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

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.

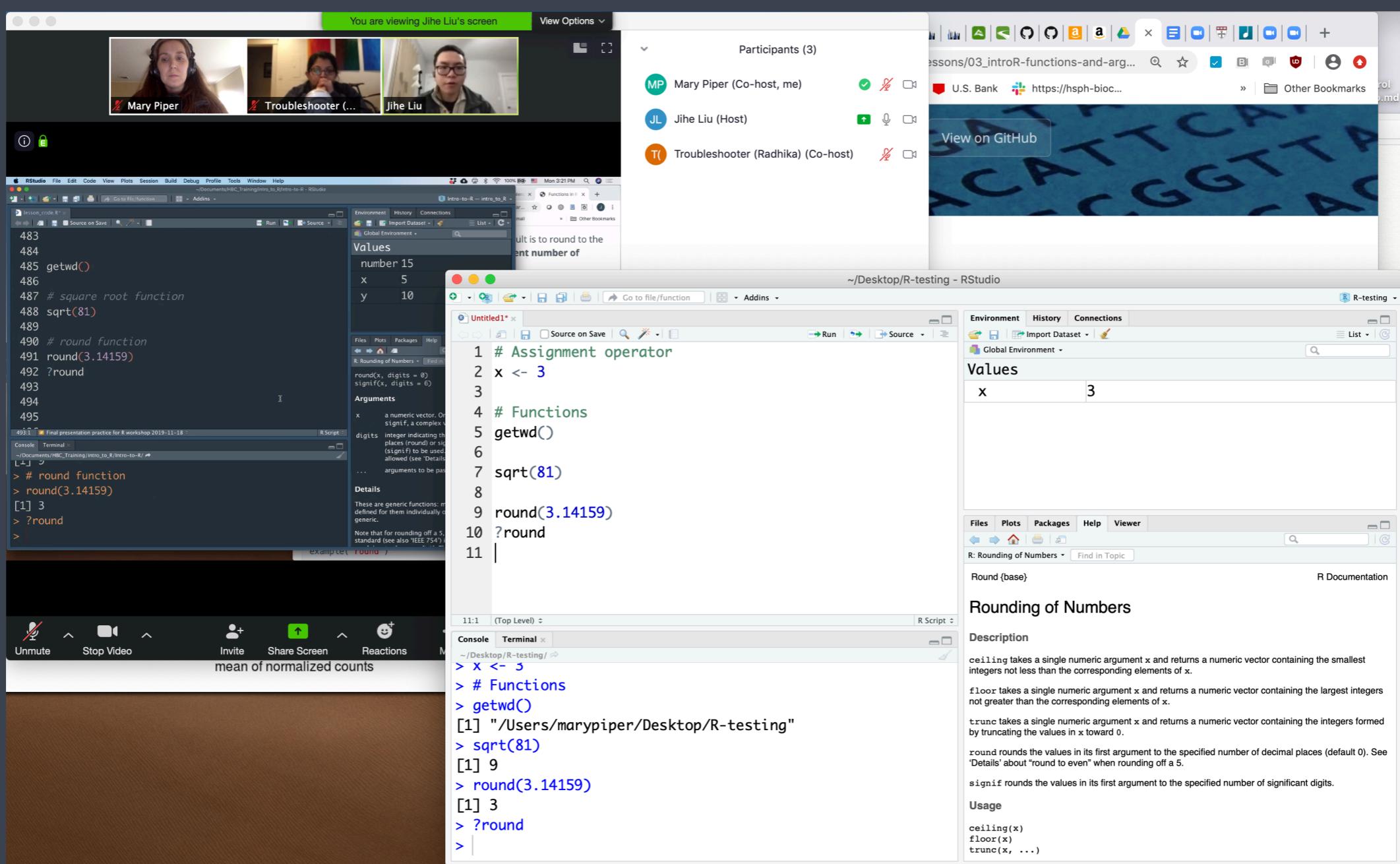
The R syntax

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.

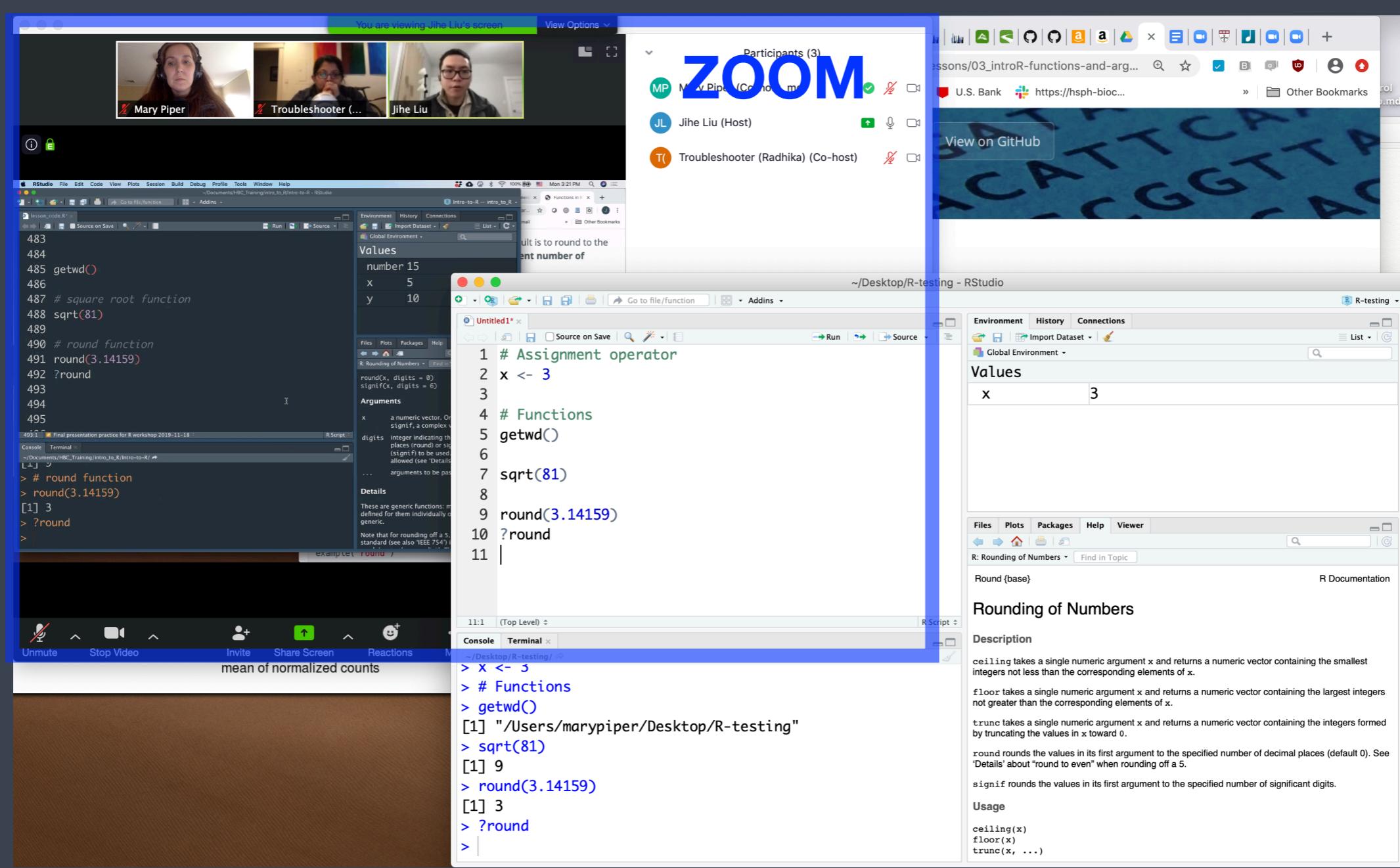
Below is an example script highlighting the many different “parts of speech” for R (syntax):

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

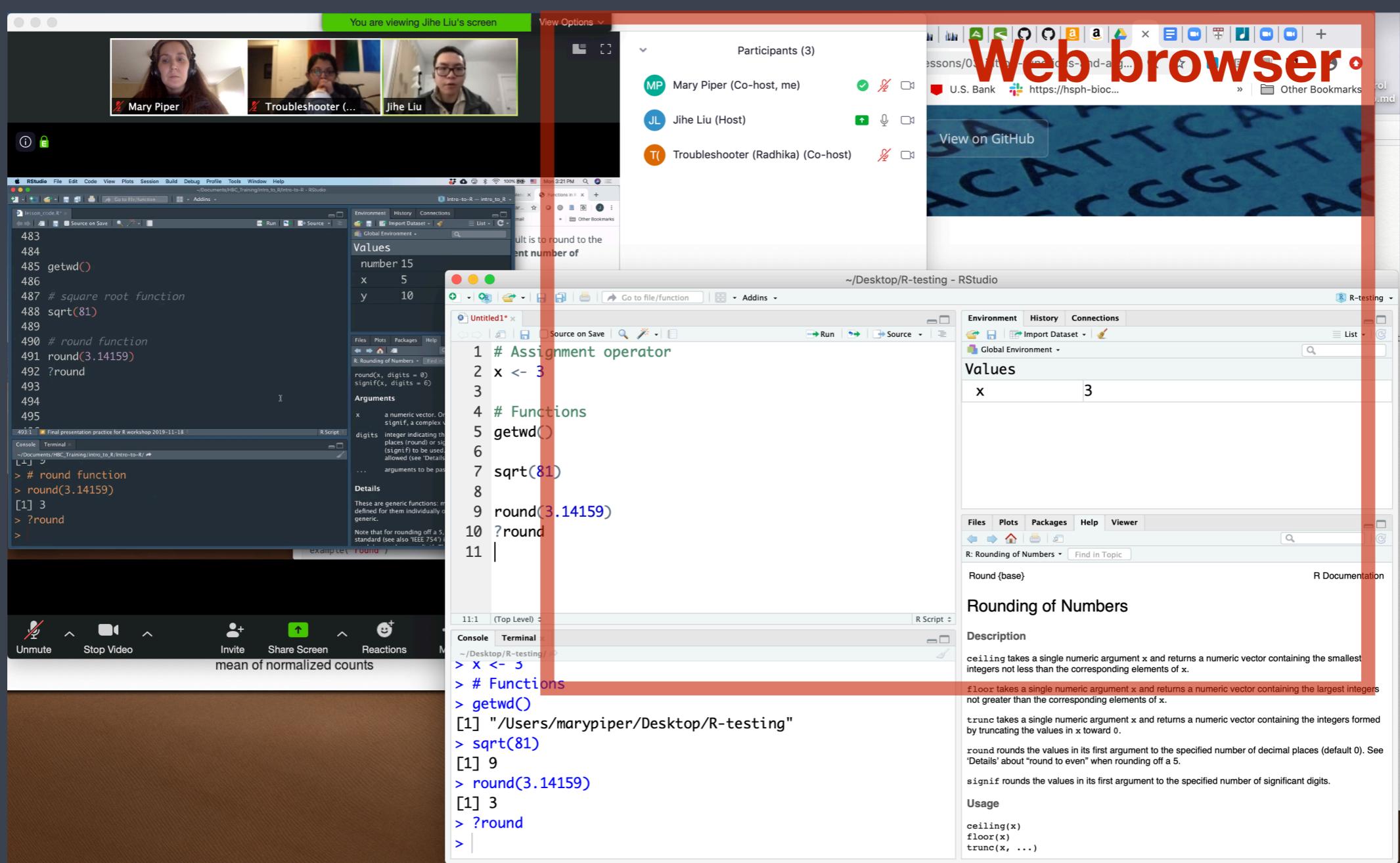
The 3 Window problem...



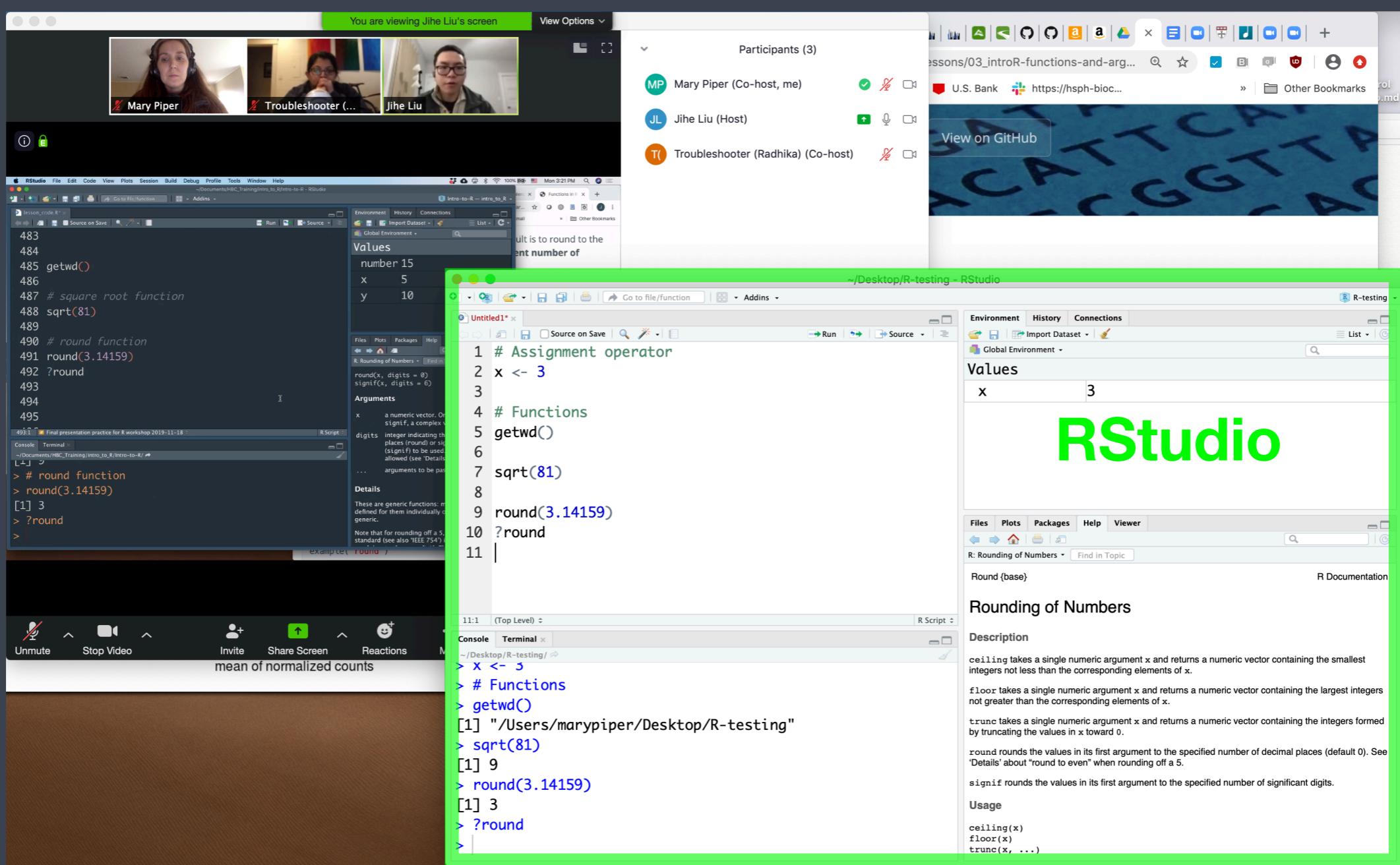
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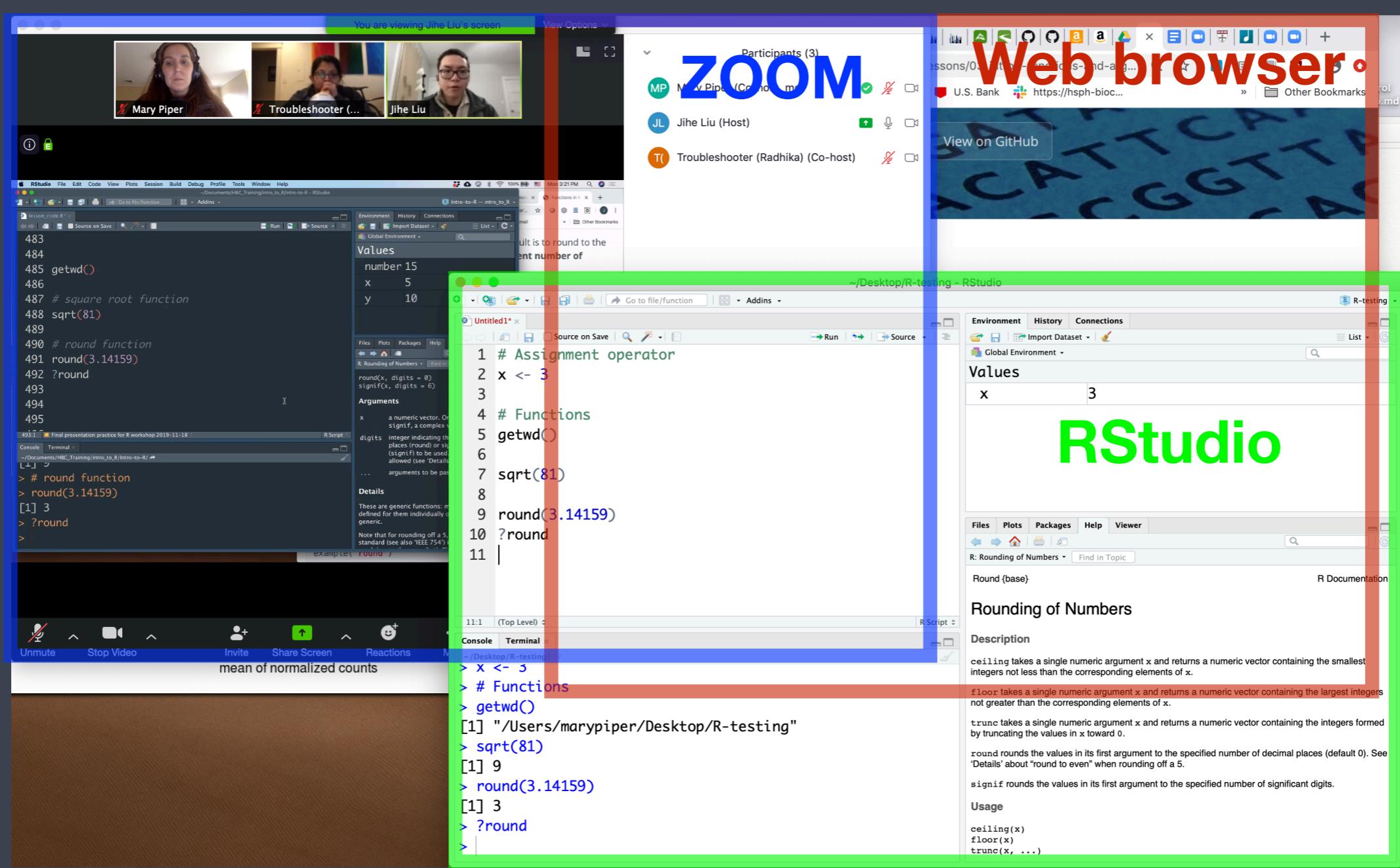
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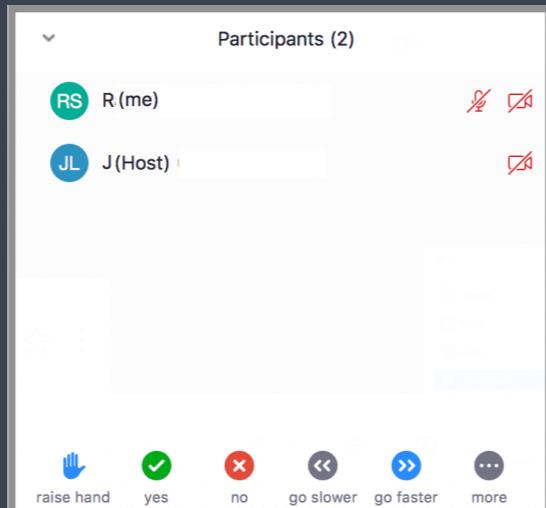


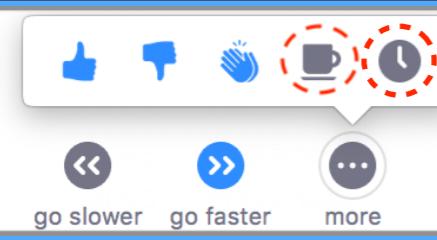
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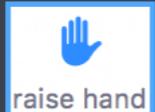
Odds and Ends (1/2)

- ❖ 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?
 - Raise your hand  or
 - Post the question in Poll everywhere at <https://pollev.com/hbctraining945>
- ❖ Technical difficulties with R or RStudio?
 - Open the chat window and start a chat with the host/Troubleshooter with a description of the problem.

Contact us!

HBC training team: hbctraining@hsph.harvard.edu

HBC consulting: bioinformatics@hsph.harvard.edu

Twitter

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