

# Downloading R and R Studio:

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Data Expedition: Circular Statistics

## Installing R and R Studio:

**Installing R:** Go [here](#) to download R. Complete these steps before downloading R Studio.

Windows:

1. Select your operating system
2. Download the binary setup for R
3. Open the downloaded .exe file
4. Install R

Mac:

1. Select your operating system
2. Download the appropriate .pkg file
3. Open the downloaded .pkg file
4. Install R

**Installing R Studio:** Go [here](#) to download R studio.

Windows:

1. Select the Windows link from the list of downloads (usually the first link)
2. Open the downloaded .exe file
3. Install R Studio

Mac:

1. Select the macOS link from the list of downloads (usually the second link)
2. Open the downloaded .pkg file
3. Install R Studio

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From now on, opening R Studio will automatically open R!

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# Learning R and R Studio:

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## Data Expedition: Circular Statistics

In this worksheet, you will learn the basic user interface for R Studio and some simple R capabilities.

Please follow through the rest of this worksheet and the corresponding R Markdown file carefully.

## Learning the R Studio Interface:

R is an incredibly useful open source software first developed to teach statistics, but has since blossomed into an incredibly powerful and popular software program that can help you process and visualize your data.

For our purposes, we will be using a software called RStudio, which is an integrated user interface for R that makes it more user-friendly.

When you first open R studio, you will see three panels: the console, the environment/history, and the files/help/packages (Figure 1). When you open a script file, or some other code editor, a fourth panel will open showing something like what you see below.

**Code editor** – Also known as your source, this panel is where your script or markdown file is located. You can freely edit your code and save it as separate files here.

**Environment/History** – Here is where R studio will show you what datasets and variables you have created and are defined in your memory.

**Console** – This panel is where you will see the execution of commands that are written in your code editor. You can work interactively here, but we recommend doing all code editing in the script file located in the code editor panel.

**Files/Help/Packages** – This multipurpose panel has a lot of functions, which you can switch between by selecting the corresponding tab on the top left of the panel. Some of these include the packages you have installed and activated and the files where your working directory is set.

Data Expeditions: Circular Statistics  
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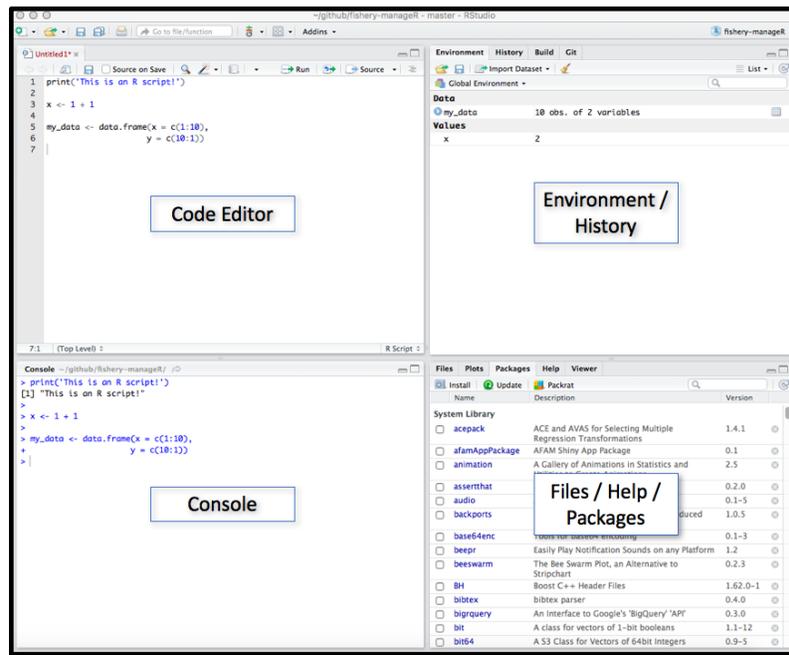


Figure 1: The user interface for R studio.

### Creating your first R Markdown Script:

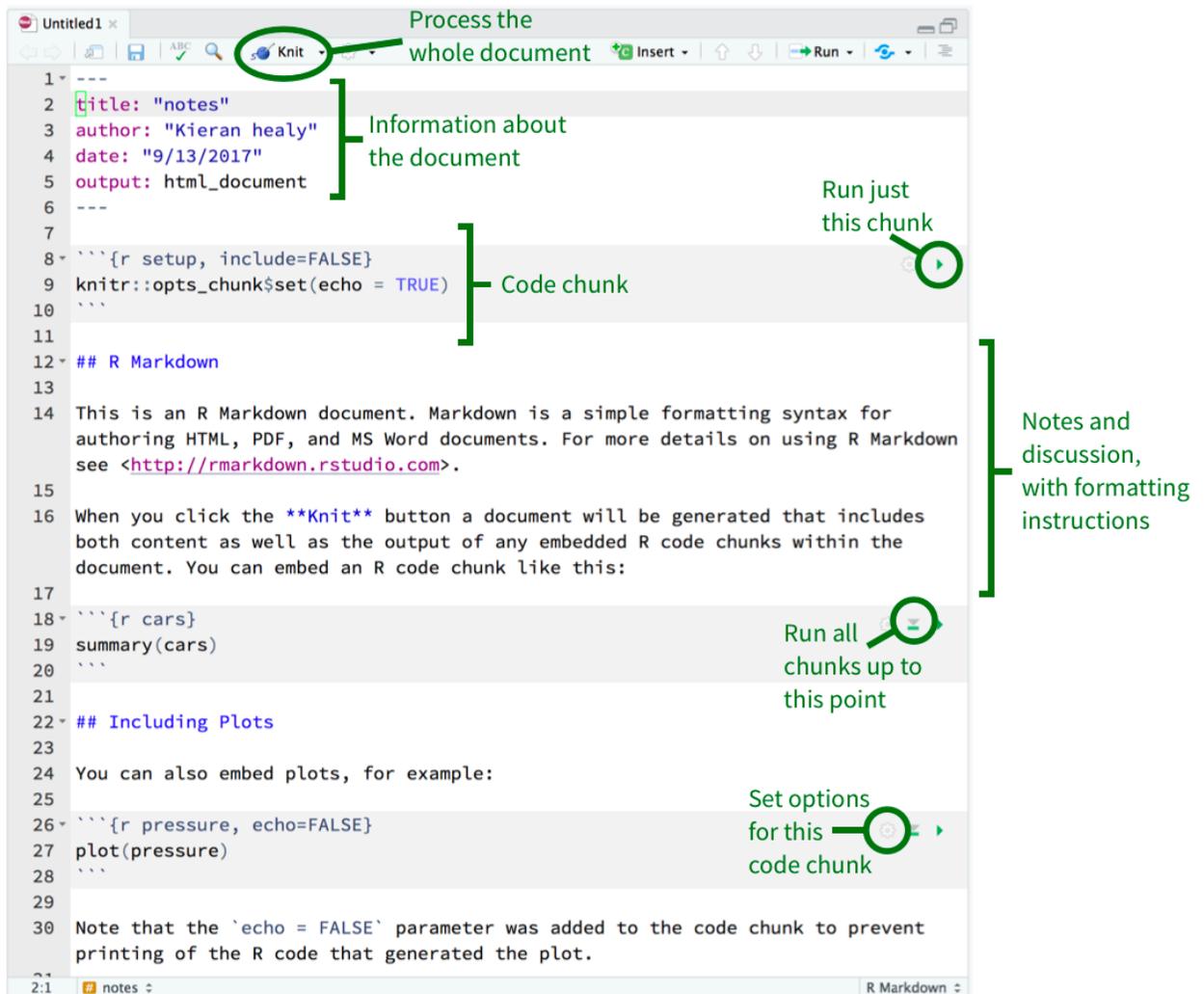
Now that you know a little about what R is and what it looks like, it is time to open up your first R script and explore what R can do! For this class, we will be using R Markdown files. We have chosen these files because you can easily break up your code into digestible chunks, run them separately, and create a nice finished product.

To create new markdown files, click on the 'File' menu and select 'New File' and then 'R Markdown...'. In this activity, we created an RMarkdown file for you (LearningR.Rmd). This will automatically open in RStudio if you double click it in your file browser.

There are two basic regions of text in your new markdown file. Anything written between `{r}` and `}` is code, and all the code written within the delimiters are called a **code chunk**. Anything outside of those delimiters are plain text. The plain text is useful for describing what is going on within your code chunks.

You can manually type `{r}` and `}` to create a code chunk, or you can use keyboard shortcuts: on macOS, the keyboard shortcut is Command+Option+I, and on Windows or Linux, the keyboard shortcut is Ctrl+Alt+I.

You can run each code chunk by pressing the green triangle at the top right hand corner of the chunk.



*Figure 2: An example of an R Markdown sheet as seen in R Studio.*

Now that you know how to create a new R Markdown, create code chunks, and comment your work using plain text, let's try running some simple code. Open the RMarkdown file accompanying this worksheet called LearningR.Rmd. This worksheet will walk you through assigning variables, using R functions, installing R packages, and plotting data. Read the comments carefully, and work through running all the code.

### Extra helpful information:

If you are still confused and want some extra help, please follow this link to learn a little more about how to use R and R Studio.

R and R Studio: <https://datacarpentry.org/genomics-r-intro/01-introduction/index.html>