**First Quant Lab in BIOL 1001 (before potato lab)**

**Purpose:**

* to familiarize students with R Studio
* to get students working with data input and simple data visualizations
* to have students think about how different data visualizations convey different information

**Lab actvities**

1. Intro/tour of R Studio (30 minutes)
2. Data entry and reproduce a graph
3. Create a different kind of graph of the same data
4. Use a video/powerpoint and the “Intro to R” lab manual we are developing
5. I suggest we use the data on pg. 910 of the textbook. I looked at data in the “Scientific Skills” exercises and in the text pages that correspond to the first 3 weeks of the course topics, and none seem to fit well. So I suggest we either make us some data that fits those topics, or use this one. The data here are showing how plant stomatal opening responds to a drought stress gradient (although the point is that there is communication between plants when they are connected via unconnected, which is not a topic covered in the early part of the course). However, the bar graph would be easy to read the data from and write some code whereby the students can replicate it (which would be satisfying!).
6. The other reason I like this data set is that it’s the type of data that can be shown via a box plot with two boxes for “control” and “osmotically shocked”, which helps us foster a discussion around variance, data distribution, etc. We’d have to give them the code to do it.

For Joanie:

* Read off data from Figure in text on pg. 910
* Write code for students to make the bar graph as shown
* Write code for students to make a box plot of same data

Lab Questions (instead of the “Interpret the data” questions in the text, I suggest the following).

1. In the bar graph, what can you tell about the stomatal openings of the treatment plant vs. the control plants? Is it consistent across all the individual plants?
2. Label the following on the box plot (mean, 25% and 75% quantiles, 95% confidence limits, outliers).
3. What does the box plot tell you about the differences between the treatment plants (plants 6-11) vs. the control plants that the treatment plant does not?
4. Why do you think a scientist might choose to represent these data one way over another?