You are now ready to analyze and interpret your *Arabidopsis* data so that you can make some conclusions about your experiments and share your insights with the researchers at OSU. Today you will focus on three areas: getting your data entered and in order, graphing your data, and analyzing your data. This section of the project is worth **20 points**!

Data Compilation

1. Enter your data into an Excel spreadsheet. Make sure that data is accurate and complete.
2. Data should be entered in the format demonstrated in class starting with the date column on the far left, followed by genetic type, treatment, and then the data variable columns of data.
3. Make sure you do NOT include units in your data fields (Excel won't recognize those as numbers).
4. If you've collected data that is not in numeric form, you'll need to create a scale to convert it into numbers. (For example – yellow, light green, and dark green could be 1, 2, and 3.)

Graphing Your Data (choose one variable to analyze)

Bar Chart (See 1st sheet in example Excel file)

5. Based on the questions you are trying to answer, create a bar graph that will help you interpret your data to answer your question.
6. Arrange your data so that you can calculate the *final averages* or the *average difference before and after your treatment* of your variables (height, diameter, # leaves, color) and arrange them in two column as shown in the example spreadsheet.
7. Select your data and then insert a 2-D Column Chart. "Clean up" your graph by adding correct titles, headings and legends.

Scatter Plot with Linear Regression Analysis (See 2nd sheet in the example Excel File)

8. Make an X-Y scatter plot that compares your two pieces of information (from Excel, highlight the cells you want to plot, then choose "Scatter" from the "Insert" menu.)
9. Your X column might be your sampling dates if you only have one level of stress treatment and your y axis will be the variable you measured (plant height, # of leaves, color).
10. If you have more than one treatment level you could plot X as treatment level and Y as your measured variable.
11. "Clean up" your graph by adding correct titles, headings and legends.
12. Add a trend line to your graph by right-clicking on one of the data points, clicking on the "Add trendline" option, selecting "Display R-squared value on chart", and pressing "OK".

Analyzing Your Data

13. What does your graph show? Is there a positive, negative, or no correlation between the two factors you measured? **Type this information** in the area below your graph.

14. If your R^2 value is greater than about 60%, your correlation is reasonably strong. According to the R^2 value, is there a relationship between the two factors you measured? If you collected 15 or more data points, it is possible that the correlation you've observed is meaningful. Based on the amount of data you collected, do you think it is a meaningful correlation?

15. Based on data in your bar graph, answer the following questions:
    a. Were there differences between the **wild type control** and **wild type stressed treatment** plants? If so, what might this mean?
    b. Were there differences between the **mutant control** and the **mutant stressed treatment**? If so what might this mean?
    c. Were there differences between the **wild type control** and **mutant control**? If so, what does this mean?
    d. Were there differences between the **wild type stressed treatment** and the **mutant stressed treatment**?

16. Copy and paste your graphs into a Word Document for use in your final report.
17. Type your analsysis for each graph in the area below your graphs.

When you have completed this assignment, SAVE IT TO YOUR H-DRIVE OR A USB DEVICE and then e-mail it as an attachment to davisj8@hotmail.com with the subject "per *X your name* Arab Analysis