Arabidopsis Project Proposal Guidelines
Field Biology

Your project proposal will communicate to me exactly how you and group will be conducting your Arabidopsis project. This document will tell me what type of stress you are applying to your plants, how many plants you will be growing, what materials your group will need, and how your group will be making your measurements. Your proposal needs to be developed through research; in other words, you will not be making decisions based on *your* opinions, you will be making decisions based on the opinions of other researchers who have done similar studies to yours. This will ensure that 1) your methodology is accepted by the scientific community and 2) the data you collect will properly support your study goals. This is an **individual assignment** – each of you should turn in your own proposal in your own words. This document should be in future tense, because it describes actions that you will be taking at some point in the future. If done correctly and thoroughly, your proposal will likely be somewhere around 2 – 3 pages, single-spaced. When you are done with your proposal, show it to an instructor for review. When your proposal is approved, send it as an e-mail attachment to dan.bregar@corvallis.k12.or.us with the subject line "per *x your name* Arab Proposal".

Proposal Format
I. Introduction
In this section, state in one or two paragraphs what your research question is.

a) The first sentence should be a brief, concise description of your question. You should include in this sentence both what stress you will be applying and what measurement you will take on the plants (for example, "The goal of this study is to determine the how applying hot needles to the plant's roots will affect the number of leaves of Arabidopsis plants").

b) This should be followed with supporting sentences that add details. These sentences should describe how the general parameters of the PREP project will work – specifically, you should explain the following:

1. What are Arabidopsis plants? Why are they such a common species for plant research?
2. What types of mutations might exist in our plants?
3. How and why might different environmental stresses affect Arabidopsis plants?
4. What is the general ecological significance of our class studies? How does understanding the role of mutations and environmental stresses add to our understanding of ecology?

c) Finally, this section should include a hypothesis. Your hypothesis should explain *what* you expect to see and *why*; for example, "…we expect that the plants that have hot needles applied will develop root nodules that will increase the number of leaves on the plants". Do NOT try to develop your hypothesis without doing some research. Instead, you should develop your hypothesis AFTER you've found some background information. In other words, use the information you uncover in your research to help you figure out what the likely answer to your question is!

II. Methods

Your methods should clearly explain what you are going to do to carry out your study. This section should be written in paragraph form or, where appropriate, in a list form, using complete sentences. Depending on your study, your methods section should be anywhere from 1-5 paragraphs long.

Start by describing your initial project set-up. How many pots will you need? How many plants will you have in each pot? How many plants will receive your experimental treatment, and how many will be controls (i.e., they will NOT receive the experimental treatment)? How many replicates will you need? How, specifically, will you collect your data (this part of your methods might need to be in step-by-step format)?

Your methods should also include a BLANK data table – this is a form (like the ones we used to collect data for the Kincaid's Lupine

project) that you will fill out when you are collecting data from your plants.