

SEED Synthetic Biology Final Project Requirements Spring 2012

Key Dates

- *Apr 21 (Sat, no SEED)*: Complete parts list must be emailed to instructors. See “Parts List” under “Sections”, below. (If you are having trouble finding a gene/protein to do what you want, contact us earlier than this and we can help you!)
- *Apr 28 (Sat, week 10)*: Poster content is to be finalized. Bring hard copies of text & diagrams to class for instructor feedback.
- *May 4 (Fri)*: Present posters to friends & family.

Sections

Your poster should be divided up into several sections, listed below. (They do not all need to be the same size. Depending on your project, you might make some larger or smaller, or combine two related sections into one. You also do not need to put them in the exact order they are listed here – arrange them so they tell a story that makes sense.)

- **Title & Tagline:** Come up with a good title for your project and a tagline that summarizes what it is and what it does (e.g. "Plants detecting and removing arsenic", "Bacteria Taking Photographs").
- **Problem:** What are you trying to solve?
- **Specification:** What does your system do? How does it interact with the world via its inputs and outputs? How is it packaged and used by the end-user?
- **Device Diagram:** Draw the major devices of your system and show how they interact using arrows (remember positive and negative arrows --> and --|). You will not be able to make animations, but be sure you can clearly talk through the function of your system, using the device diagram as a visual aid. You may wish to draw two or more secondary diagrams showing how your system responds to different conditions (e.g. No Arsenic -> No Color, Some Arsenic -> Blue, Max Arsenic -> Red).
- **Timing Diagram or Truth Table:** Draw a timing diagram or truth table of your system in action. (If you're having trouble thinking of which would be appropriate, consult the instructors.)
- **Parts Diagram:** Draw the operons that make up your system. Clearly label them so the viewer understands how the parts diagram relates to the devices diagram (which parts go in which device?).
- **Parts List:** *Not to be on your poster, but to be turned in to the instructors.* For *key* parts (mostly inputs and outputs), you should find a specific gene or protein name (and the part number if it's in the Registry of Standard Biological Parts). For less crucial, interchangeable parts, you may leave them unspecified (e.g. RBS, repressible promoter X, repressor protein that goes with promoter X).
- **Chassis:** Specify your choice of chassis organism and give reasons for choosing that organism. (If it's E. coli, you don't have to say anything complicated -- people choose E. coli because it's the most well-understood bacterial species to do bioengineering in.) (over)

- **Testing:** List a few experiments that would be necessary in order to actually build your system and have it work. (The instructors can suggest experiments! Will your cells be able to survive in the package you have chosen? Will they be able to produce enough of whatever chemical they might be producing? Will you need to tune anything?)
- **Open Questions:** List a few concerns about whether the project could come to fruition. (Here again, the instructors can help you come up with questions! Are there reasons why your project might be physically impossible? Any safety concerns? Other difficulties? Would it be too expensive to actually use?)
- **Citations:** Cite your sources! Use MLA format for books and websites. For scientific papers, use the following format:

Lastname, F. et al. "Title of Paper." Journal Name VolumeNumber:IssueNumber (Year): PageNum-PageNum.

Format

- Each group will get a tri-fold science fair board.
- Lay out your board so it is easy to read and understand. When possible, go heavy on pictures and light on text. "Neat and clean" is the phrase to keep in mind.
- All text is to be typed. Use large fonts that can be read from a few feet away. (We suggest a minimum of 60pt for the title, 30pt for headers, 18pt for text.)
- Diagrams should be drawn on the computer if possible, or **neatly** drawn by hand.

Presentation

- You will present your projects at the SEED final poster session, on the evening of Friday, May 4th (the week following Session 10).
- You will be expected to explain your project to attendees of the poster session (other SEED students, staff, parents). Ensure that every member of your group can explain all the parts of your project.
- Practice on each other! Pretend you are someone's parents who don't know much biology, and ask questions about how your project works.