

For next time

- Read comic [Adventures in Synthetic Biology](#) and consider how PoPS, the common signal carrier described in the comic can be applied to the parts you see at the registry. Specifically, use "PoPS" to justify or criticize the following statements:
 - "a terminator is analogous to a grounding device in electrical engineering"
 - "BBa_I14032 works just like a battery"
 - "the closest part I can find to work like a wire is an ORF"
- Once you get your user account at the Registry, specify the protein generator you designed today. Print out the spec sheet to turn in.
- The term "synthetic biology" is being used to describe efforts like the ones you've started today. One inevitable consequence/explicit goal of synthetic biology is to make engineering biological systems easier: less of a research project to realize a system specification. A Google search of the phrase "it's so easy anyone can do it" generates more than 5.000 hits, and it's easy to imagine that a future where genetic manipulation is easy has both benefits and risks. As your capstone assignment for this experimental module you'll write a creative, thoughtful, researched essay, in which you describe a research idea in synthetic biology and then take either an optimistic or pessimistic viewpoint (your choice) to measure the risks/rewards associated with your idea. You will be required to
 - identify a research goal
 - specify in the registry at least one genetic part needed to reach that goal
 - clearly articulate a mission/definition of synthetic biology and describe how your idea fits into this definition
 - look to the future, i.e. describe the best and/or worst applications of your idea that may enrich/endanger society
 - look to the past, i.e. consider synthetic biology's similarities to other recently emerged technologies with dual-use or societal pitfalls (e.g. nuclear weapons, recombinant DNA, genetically modified foods, computer programming, downloadable music files). Specifically, you'll identify and describe informative lessons from one of these or an example of your choosing.
 - look at the present, i.e. find a recent example of successful synthetic biology, describing the research in detail and articulating the significance of the achievement
 - include your thoughts about the technological/economic/governance factors that might support or quell the field
- To get started on this assignment, you should write an articulate and working definition of synthetic biology. Begin by looking around the wiki, the web and in the literature to read the definitions others have offered. Next, use your definition to decide if the following are examples of synthetic biology, or under what circumstances these might fit your definition. Be sure to justify your answer briefly.
 1. Making a yeast cell that counts to three then turns red
 2. Making a bacterial cell that expresses lots of human insulin

3. Putting a gene into a corn plant so it is resistant to insecticides
4. Transfecting cultured embryonic stem cells from mice with a gene that turns the media green if the cells detect mustard gas.
5. Making a virus whose genome is modified to evenly space every open reading frame
6. Synthesizing a virus with sequence from the 1918 Spanish flu virus
7. Fabricating a lipid bilayer that surrounds a bag of self-replicating RNA molecules
8. Making [GloFish](#)

Once you have completed this part of the assignment you should start to think about what **you** would like a biological system to do. It will be tricky to find an idea that is both of interest and possible to build so start ruminating on this now.