

For next time

1. Part of your time in lab today was dedicated to planning the assembly of your protein generator and calculating the time associated with this construction. Now consider the option of calling Prof. Endy's company, Evil Co., to have the DNA synthesized one base at a time. You send them the sequence they send you the plasmid...all for only \$1/base pair, delivering the DNA to your mailbox in 4 weeks, give or take two. For next time, calculate the cost of synthesizing your protein generator from scratch, assuming you'll ask them to make only the protein generator itself and then clone it into some inhouse plasmid they provide for free. If you were running a lab, which option would you pursue (direct synthesis or standard assembly) and why? Be sure to consider time, effort, cost and likelihood of success as you make your choice.
2. Calculate the beta-galactosidase activity associated with the light and dark grown cells. Hand in your raw data, the calculated activity and a graph comparing the measurements you made with similar ones that have been published [URLPDF reprint](#). Try to explain any differences you see in the measurements you performed and the published ones.
3. To continue your writing assignment (for details, revisit the FOR NEXT TIME assignment from Day 1 of this module) you should research some recent efforts in synthetic biology. References may be found in some of the articles and web pages you read when you were crafting a mission statement and definition of the field. Once you have found a primary research article of interest, write a two-paragraph summary of the paper. Be sure you describe how the work fits into your model of synthetic biology, what the authors wanted to do, how they did it (recall the discussion of standards from today), and finally what they found. Choose one figure or table from the article, photocopy or print it out, and explain it in your own words. Next, describe what kinds of system you would like to build. You've been thinking about what biology can do already. Now think about what you wish it could. For next time, please:
 - o write an "elevator pitch" of your system. This amounts to a four sentence description of the major goal(s) and the clever idea you've come up with.
 - o specify what cell type you'd like to program: bacteria? yeast? plants? mammalian cells?
 - o say what your cells will do: build something? create a pattern? record or process information in a useful way? convert chemicals to energy? Remember you will have to understand and plan your idea in sufficient detail that you can specify a part for it, though this is not required until later.