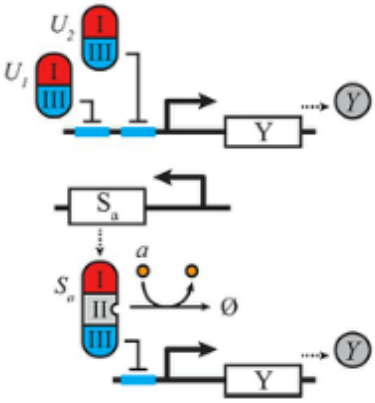
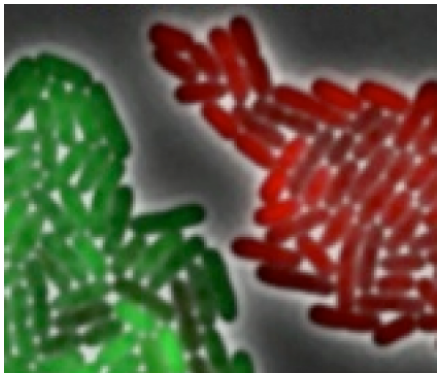
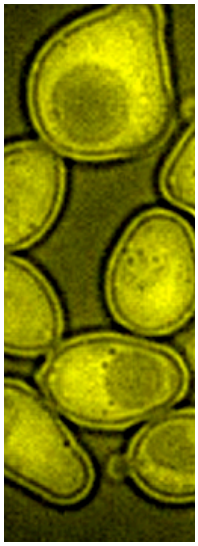
Laboratory Methods in Synthetic Biology

EE 425, BioE 425, CSE 488, ChemE 498



DESCRIPTION[1]: This course is an engineer's introduction to the practice of building artificial gene networks and devices. This powerful technology has applications to therapeutics, diagnostics, biologically derived materials, fuels, biosensors, and much more. New approaches to synthetic biology are emerging rapidly and promise to make engineering living systems easier and more broadly useful. Many of these emerging tools are based on computer science and engineering: digital logic, automata theory, circuit theory, feedback control, signal processing, dynamical systems, automation. In this course you will learn to build upon your engineering background to learn to design DNA, build new genes, make your own transgenic microorganisms, and characterize your constructions using PCR, flow cytometry, fluorescence microscopy, plate reader assays, and DNA sequencing. The course will make use of the Aquarium framework for lab automation and the Intel Center for Pervasive Computing smart wetlab assistant.





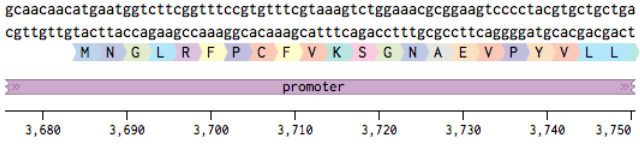
PREREQUISITES[2]: The course is open to all engineering students and does not assume a significant background in biology (although such background would be very helpful). We do assume a basic course in chemistry. The course consists of a lecture and a lab. The lab consists of about six hours a week at the bench (EE B031) and about two hours working on DNA design, writing brief lab reports, data analysis.

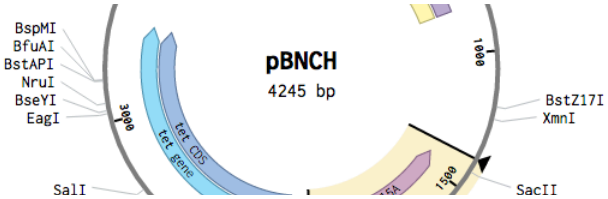
INSTRUCTORS:

- Eric Klavins, klavins@uw.edu
- Leandra Brettner, leandra.brettner@gmail.com

SCHEDULE: Take section C and either CA or CB

- Weekly Lecture (section C): Tue 2:30-320 in EEB 042
- Lab section CA: Tue 3:30-6:20 and Wed 12:30-3:20 in EE **B**042
- Lab section CB: Wed 3:30-6:20 and Thu 12:30-3:20 in EE **B**042





[1] EE 424/524, CSE 487/587 and BioE 424/524 "Advanced Synthetic Biology" is a separate course focusing on literature, theory and simulation. You do not need to enroll in the "Advanced" course it to take "Laboratory Methods in Synthetic Biology".

[2] The pre-requisites include the "Introduction to Synthetic Biology" course. If have not had this course, but have taken a similar course, you may need an add-code to get in. Please contact Prof. Klavins in this case.