Lecture and Dialog on Synthetic Biology

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Goals for Today

A. Introductions

B. Review course outline

C. Introduce big picture goals

D. Review course mechanics, policies, and grading

E. Discuss any questions or issues

F. Distribute Reading Materials for Tuesday 13 January

Introductions

1. Who am I?

2. Who are you? (please complete cards with name, year, major (if declared)email address, home town, and a three word description about yourself)

Review Course Outline

3. The course will be run via OpenWetWare (OWW). The course website is http://openwetware.org/wiki/Stanford/BIOE144. Feel free to join OWW and improve the course website if you like and as appropriate.

4. We will cover the following foundational technologies this term.

    a. DNA synthesis and construction
    b. DNA engineering
    c. RNA engineering
    d. Protein engineering
    e. Cellular engineering
    f. Standardization
    g. Abstraction
    h. Programmed Pattern Formation

5. We will also consider the applications of biotechnology, and the consequences of success and failures (i.e., the “social” issues). You’ll see soon enough.

Introduce Big Picture Goals

6. My hope is that by taking this course we will prepare each of you to decide whether or not you want to help navigate the future of biotechnology, whether it be as a researcher, artist, doctor, teacher, politician, critic, entrepreneur, ethicist, lawyer, farmer, government leader, or some other constructive activity that you can imagine. The course material is designed to prepare you to lead. We will be covering many technologies (about one per week). You will be exposed to both the technical and social context underlying each technology. A common emphasis throughout the course will be on the pace of change for each technology (if any). There will be many open ends and future paths for you to explore if you want.

Course Mechanics, Policies & Grading

7. We'll tend to have a lecture on each Tuesday, with reading assigned the previous Thursday. We'll have a homework assigned each Tuesday in preparation for Thursday's classes, which will tend to be discussion-based.

8. Grading for the course will be as follows:

    a. Homeworks: 8@8% per, with the lowest dropped, 56%

    b. In class midterm, 15%

    c. Final exam, 20%

    d. Participation: 9%

9. I expect that you'll interact with your colleagues throughout the course, in discussing any readings, during class, or in considering any assignments. However, your submitted assignments should reflect and be of your own individual work.

10. I'll arrange standing office hours, likely either on Wednesday or Friday. Let's sort out the best exact time next week. This additional time could take the form of a complementary tutorial, for folks who might be earlier in their studies, or our coming to the course material from a non-technical background.

Questions or Issues?

11. Any questions or issues about the course?

For next time

12. Please read the article, "A Roadmap to the Assembly of Synthetic DNA from Raw Materials," by Yogesh Sanghvi. Don't get bogged down in the details of the chemistry, if that's not your forte. The article is freely available as a PDF from the course OWW site (see note 3, above).