



## Synthetic Biology Workshop June 2013 Schedule



Breakfast - 7:30-8:30  
Lunch - 12:15-1:00  
Dinner - 6:00-7:00

Morning Break - 10-10:15  
Afternoon Break - 3:15-3:30

### Day 1 – Tuesday, June 25, 2013

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|-------------|--|---------------------|
| 4:00 – 4:15 | Welcome  |                     |
| 4:15 – 4:45 | Safety Training  |                     |
| 4:45 – 5:45 | Overview   | <i>Synapse Room</i> |
|             | <ul style="list-style-type: none"> <li>• What is synthetic biology?</li> <li>• How is synthetic biology suited for undergraduates?</li> <li>• What are the goals of the workshop?</li> </ul>                         |                     |
| 6:00 – 7:00 | Dinner   |                     |
| 7:00 – 9:00 | Introduction of BioBrick assembly scheme, Registry<br>Registry assignment to participants<br>Synthetic biology project examples:<br>medicine, energy, the environment, technology<br>Ethics and philosophy of SynBio |                     |

### Day 2 – Wednesday, June 26, 2013

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|---------------|---|------------------------|
| 7:30 – 8:30   | Breakfast   | <i>Servery</i>         |
| 8:30 – 8:45   | Reflections on previous day, feedback on workshop so far and goals for Day 2  | <i>Synapse Room</i>    |
| 8:45 – 10:00  | Explore the iGEM Wiki<br>Work as pairs of participants, describing past iGEM projects in area of interest   | <i>Synapse Room</i>    |
| 10:00-10:30a  | Break   | <i>Outside Synapse</i> |
| 10:30 – 11:30 | Report iGEM projects (Why are these “synthetic biology”?)   | <i>Synapse Room</i>    |
| 11:30 – 12:00 | Sally O’Connor from NSF will talk about funding opportunities   | <i>Synapse Room</i>    |
| 12:15-1:00    | Lunch   | <i>Servery</i>         |
| 1:00 – 2:30   | Wet lab work  | <i>Lab 3C.280</i>      |
|               | <ul style="list-style-type: none"> <li>• Run BsaI + ligase reaction with plasmid and oligos</li> <li>• Transform cells with ligation above</li> <li>• Obtaining Registry parts or building new parts</li> </ul> |                        |

## Fourth annual **GCAT** Synthetic Biology Workshop

June 2013

2:30 – 3:15	<ul style="list-style-type: none"><li>Start PCR simulation of building a new part from genome template</li></ul> Synthetic Biology research presentation based on MWSU and DC student research	<i>Synapse Room</i>
3:15 – 3:30	Break	<i>Outside Synapse</i>
3:30 – 5:45	BioMath Exercises	<i>Synapse Room</i>
6:00 – 7:00	Dinner	<i>Servery</i>
7:00 – 7:45	Birds of a Feather discussions – what issues do you see at this point?	<i>Synapse Room</i>
7:45 – 9:00	Participant pairs work on their plans for synthetic biology at their institution Brainstorm area of focus, understand overlapping interests, project ideas	

### **Day 3 – Thursday, June 27, 2013**

7:30 – 8:30	Breakfast	<i>Servery</i>
8:30 – 8:45	Reflections on previous day, feedback on workshop so far and goals for Day 3	<i>Synapse Room</i>
8:45 – 10:00	How synthetic biology reconfigures biological understanding and ethical categories Dr. Katie Kendig	
10:00 – 10:30	Break	<i>Outside Synapse</i>
10:30 – 11:30	Discuss lab methods and practices Wiki, oligator, GCAT-alog, RFP, sharing protocols online Assignment: generate a set of oligos that could assemble into a clonable promoter	<i>Synapse Room</i>
11:30 – 12:00	Announce project topic to group	
12:15 – 1:00	Lunch	<i>Servery</i>
1:00 – 2:00	Lab work <ul style="list-style-type: none"><li>Load PCR products on gel</li><li>Take gel pictures</li><li>Observe colonies</li></ul>	<i>Lab 3C.280</i>
2:00 – 3:15	Work in pairs on topics for project presentation/discussion MC, LH, TE, JP, KK consulting	
3:15 – 3:30	Break	<i>Outside Synapse</i>
3:30 – 6:00	Continue project work in pairs	<i>Lab 3C.280</i>
6:00-7:00p	Dinner	<i>Servery</i>
Evening	Continued project work in pairs, or free time	

### **Day 4 – Friday, June 28, 2013**

7:30 – 8:30	Breakfast	<i>Servery</i>
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8:30 – 9:00	Take online SynBio assessment (for students – feedback welcomed) <a href="http://checkboxweb.davidson.edu/Survey.aspx?s=a317ef10fb42498dbab5fb3e72d4d36c">http://checkboxweb.davidson.edu/Survey.aspx?s=a317ef10fb42498dbab5fb3e72d4d36c</a>	
9:00	Group Photo	
9:20 – 10:00	Team presentations: 10 minutes for each pair for presentation/discussion/feedback	<i>Synapse Room</i>
10:00 – 10:15	Break	<i>Outside Synapse</i>
10:15 – 12:05	Team presentations continued	<i>Synapse Room</i>
12:15	Participants depart ( <i>Optional lunch at Servery</i> )	

### **Short-Term Outcomes of GCAT Synthetic Biology Workshop**

- 1) Everyone will learn as much as possible. We will all have fun, and the participants will begin a new phase in their teacher-scholar career.
- 2) Participants will learn some vocabulary and a new perspective that distinguishes synthetic biology from genetics and molecular biology.
- 3) Interdisciplinary teams will explore an area of common interest and investigate feasible projects for undergraduate research and possible course development.
- 4) Participants will develop a strategy to recruit and support undergraduates for research in synthetic biology.
- 5) Faculty from different departments will collaborate to find common ground, mutual understandings from different perspectives, and a shared vision of how to start a new research adventure.

### **Long-Term Outcomes of GCAT Synthetic Biology Workshop**

- 1) Participants will apply what they learn to develop an undergraduate research program in synthetic biology.
- 2) Participants will assemble multidisciplinary teams consisting of at least two faculty and two or more students from at least two different majors.
- 3) Faculty from outside biology will utilize the methods they learned to help design, construct, and test DNA-based devices as part of a synthetic biology research project.
- 4) Biology faculty will learn the language and tools of the trade from their partner's discipline to a level of proficiency that they can help design, construct, and test a model of the device as part of a synthetic biology research project.
- 5) Faculty will include philosophical and ethical discussions in their classes to encourage students

Fourth annual **GCAT** Synthetic Biology Workshop  
to think about the implications of their work.

June 2013