

## **Annual Assessment Report of Student Learning Outcomes**

### **Biological and Chemical Sciences major**

**2017**

#### I. Program Assessment Meetings (each was approximately one hour long)

October 2016: The NMS Division met to discuss who would focus on each of our majors. It was decided that Jackie Schnurr would focus on the BCS major, and the first step would be to develop an assessment plan.

April 20, 2017: Christina Schmidt, Kristy Blake, and Jackie Schnurr met as the Biology major to discuss offering BIOL 130L in Fall, changing BIOL 114L to a 200-level course with BIOL 130L as a prereq because students in BIOL 114L were not making appropriate progress due to the amount of material that needed to be covered in only one course.

May 2, 2017: Chris Bailey, Lindsay Burwell, Christina Schmidt, Kristy Blake, and Jackie Schnurr met to establish a plan for assessment reports and plans, and to share major objectives and course objectives in Google Docs.

May 11, 2017: Chris Bailey, Lindsay Burwell, Christina Schmidt, Kristy Blake, and Jackie Schnurr met to discuss the goals and objectives for each of the majors and what we will focus on for the coming year.

#### II. Closing the Loop

The BCS major is in its second year, and did not have an assessment plan of its own prior to this one. This year we created an assessment plan for the future.

#### III. Examination of data collected for this year's targeted learning outcomes

Due to this being a new major, there is no data for this current year.

#### IV. Program Changes for the Upcoming Year

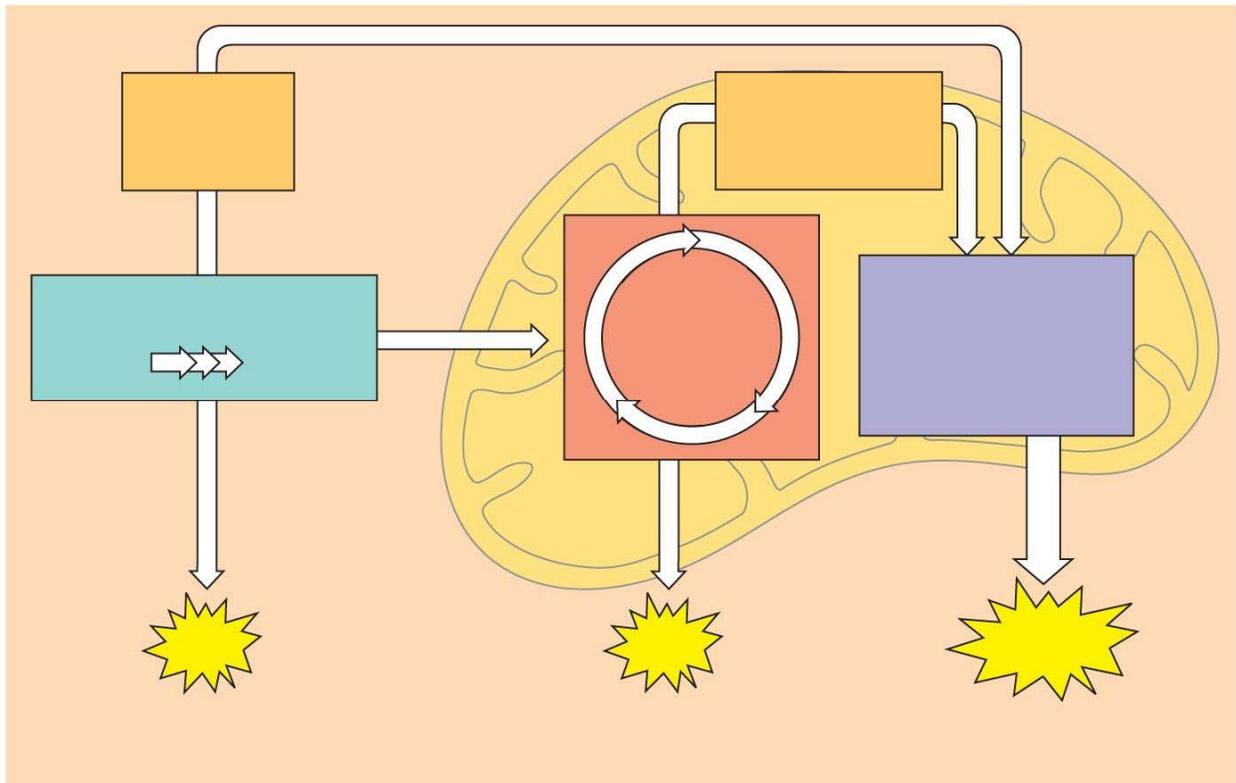
No changes planned for the upcoming year.

#### V. Action Plan for the Upcoming Year

This is the first year that we will be doing an assessment of the Biological and Chemical Sciences major. We (specifically Jackie Schnurr) will focus on Program Goal 1, objective b, outcomes i.

Goal	Objective	Outcome	How Outcome is Measured	Measurement Tool	Success Criteria	Data Location
#1	Students learn the fundamental basics of biology and chemistry, and appreciate the interconnections between them.					
	b. Demonstrate the interrelationships of chemistry and biology	i. Understand basic biochemical pathways such as photosynthesis and respiration	Class activities in Biol 130, specifically the diagrams of photosynthesis and respiration, Chem 213 - lab activity, and Chem 214, final exam question (below)	Answer key	100% of students to score at or above C level; 70% at or above B level; 30% at or above A level	Faculty files

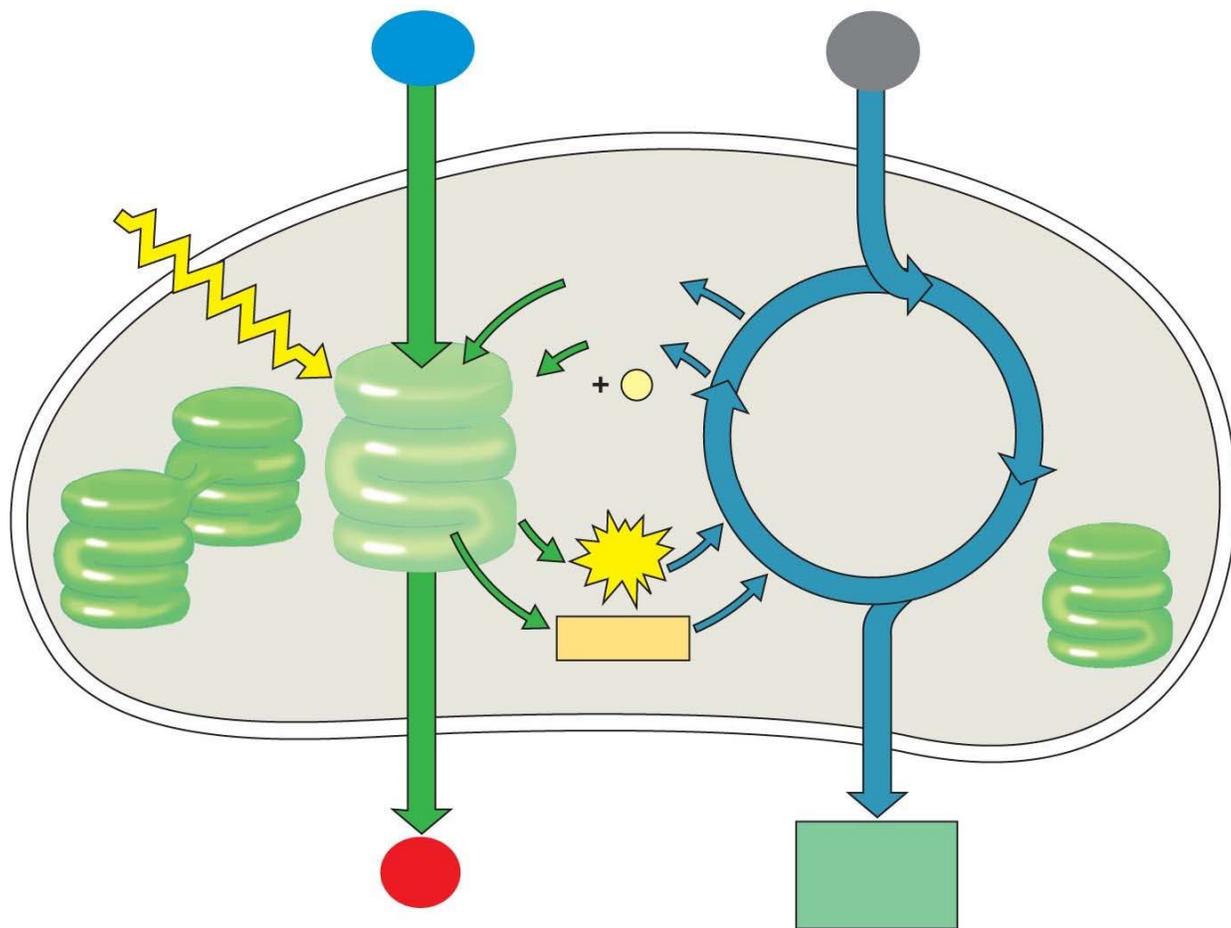
1. What have we been discussing in lecture?
2. What happens during this process? Be as specific as possible.
3. There are 3 major parts of this process. What are they? Label where they occur on the diagram below in boxes 1, 2, 3.
4. What is the big tan structure?
5. Label the other parts of the diagram that are unlabeled, if you can.



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1. What have we been discussing in lecture?

2. What happens during this process? Be as specific as possible.
3. There are 2 major parts of this process. What are they? Label where they occur on the diagram below.
4. What is the big blue structure?
5. Label the other parts of the diagram that are unlabeled, if you can.
- 6.
- 7.
- 8.



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### Organic Chemistry I Labs-

- Isolation of beta carotene: we talk about how vitamins and nutrients are extracted from vegetable and fruit sources to make dietary supplements. We also talk about the biochemical pathway that converts beta carotene to vitamin A and what happens if you have too much or too little vitamin A. Student learning is assessed through a lab report.

### Organic Chemistry II Final Questions-

Thyroxine is a master hormone that regulates several pathways in the human body. Before mature thyroxine leaves the thyroid iodine is added to the molecule. Below is a picture of thyroxine. Knowing what you do about how things are added to benzene rings explain why the iodine molecules are added at those specific positions. In your answer identify the directing group on each ring and what position the iodine atoms are added with respect to the directing group.

Proteins are synthesized by reacting the carboxylic acid end of one amino acid with the amine end of another amino acid. Can this reaction occur spontaneously? Where is this reaction catalyzed in the cell and what is the process of synthesizing proteins called? What does the cell convert the carboxylic acid to before it reacts with the amine of the other amino acid? Draw out a mechanism for this reaction.