**113 Lab Learning Objectives**

**Week 15: Information and Evolution Lab #7**

Learning Objectives for Bacterial Evolution

*Skills*

* Communicate complex scientific information effectively through oral presentation.
* Avoid common mistakes of oral presentations using iBOP Bingo.

*Cognitive*

* Employ a scientific approach to answering biological questions and test hypotheses.
* Describe the big idea of evolution based on lab experiences.
* Explain how antibiotic resistant bacteria can appear quickly in the population.
* Design directed evolution process to select antibiotic resistant bacteria.
* Formulate an hypothesis how antibiotic resistant bacteria evolve outside the laboratory.
* Propose a mechanism that allows bacteria to evolve rapidly when exposed to antibiotics.

**Bio113 Week 15**

Before you come to lab

1) Prepare your directed evolution oral presentation. Each group will present their findings while those listening will write down one thing that the group did well and one thing they could improve upon. You will not find out which section is yours until 1 hour before lab so be prepared for all four sections.

2) Answer each of these four questions in two sentences or less.

A) What is the source of antibiotic resistance in the cells you tested?

B) Did the cells mutate selected genes in order to become antibiotic resistant?

C) If you repeated this experiment multiple times, would you expect to find the same mutations every time? Explain your answer.

D) What is the conceptual connection between the directed evolution module and the taste/toxicity natural selection module?

**Week 15**

In Lab

**Evolution: Directed Evolution of Antibiotic Resistance in Bacteria (a 6 week project)**

1) Each group will present their findings. Please bring your PPT presentation on a flash drive so we can load them quickly and start the presentations.

2) Please fill out your final CATME peer review.

3) Please take the 4th and final skills survey.

4) Please provide your anonymous feedback about this new and experimental laboratory course.