# 113 Lab Learning Objectives

## Week 10: synthetic lab #9

Learning Objectives for Promoter Discovery

*Skills*

- Write effective lab report in the form of a scientific paper.

*Cognitive*

- Employ a scientific approach to answering biological questions and test hypotheses.
- Analyze experimental data and reach logical conclusions.
- Generate overall conclusions of the multi-week laboratory module to identify new promoters that could be useful in synthetic biology research.

## Week 10: Information and Natural Selection lab #5

Learning Objectives for Environmental Information and Natural Selection

*Skills*

- Extract potentially toxic materials from plant tissues.

*Cognitive*

- Employ a scientific approach to answer biological questions and test hypotheses.
- Analyze experimental data and reach logical conclusions.
- Construct explanation linking genetic taste capacity to natural selection and evolution.
- Hypothesize sources of environmental information that indicate toxicity of plant tissues.
- Design an experiment to use model organisms to extrapolate potential toxicity of a compound or mixture.

## Week 10: Information and Evolution Lab #3

Learning Objectives for Bacterial Evolution

*Skills*

- Pipet accurately.
- Work with bacterial cells using sterile technique.
- Make dilutions of stock solutions.

*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.