**Week 1: Introduction**

Learning Objectives for First Week in Lab

*Skills*

* Locate safety equipment
* Accurately pipet a given volume with one of three pipets (1 – 1000 µL)
* Calculate serial dilutions and solution concentrations
* Generate Excel graph and alter default settings

*Cognitive*

* Propose explanations for graph results of serial dilutions
* Evaluate why promoters are critical to a gene’s function

**Pre-Lab**

Before you come to lab:

1) Read “How to use a Pipetman” so you can be ready for lab.

[www.bio.davidson.edu/113/weekly\_Labs/Micropipettor.pdf](http://www.bio.davidson.edu/113/weekly_Labs/Micropipettor.pdf)

2) Watch 7 videos and download all 4 Excel files and the one Word file under #2, serial dilutions. <[www.bio.davidson.edu/people/macampbell/113/2iterationsGGAstudentF2022.html](http://www.bio.davidson.edu/people/macampbell/113/2iterationsGGAstudentF2022.html)>

3) Answer each of these four questions in two sentences or less. You will be called upon randomly for the answer you found.

A) What is the function of the *promoter* in a gene?

B) Do you think a disease could result from a mutated promoter given it does not encode the protein?

C) How can you make a 0.002% trypan blue *solution* if trypan blue is a *powder*?

D) What wavelength of light is the absorption maximum of trypan blue?

**In-Lab**

During lab:

1. Submit CATME Team Maker data (<https://www.catme.org/login/index>)
2. Answer questions A – D collectively.
3. Get certified on using pipets
4. Perform all the dilution series exercises (stock solution is 0.116 mM trypan blue):
   1. Watch five videos that introduce the various tasks
   2. calculate the dilutions, devise a method to execute your plan, tell instructor
   3. generate 4 graphs for series A – D
   4. Propose explanations for why graphs B – D do not fit the trendline as well as series A.
5. Draw a picture of a bacterial gene that includes these components: promoter, ribosomal binding site (RBS), start codon, stop codon, transcriptional terminator. Be sure to consider the spacing of all these elements. You may use ICB or the internet to help you. Confirm your drawing with the instructor.
6. Take GenBio-MAPS if this is your first college biology course. (~20 min)