**Week 1: Introduction**

Learning Objectives for First Week in Lab

*Skills*

* Calculate serial dilutions and solution concentrations
* Generate Excel graph and alter default settings

*Cognitive*

* Propose explanations for graph results of serial dilutions

**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 5 videos from list for week 1 lab, as well as this one (<https://youtu.be/-et7jDXOLB4>)

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 do the terms *solute* and *solvent* mean? What is a *aliquot*?

B) How can you make a 0.002% trypan blue solution if trypan blue is a powder? What is the solvent and what is the solute?

C) How is spectrophotometry used to calculate the concentration of a solute in a solvent?

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

Challenge to be discussed in lab groups: Using the information in the 4 questions above, how can you make a solution of trypan blue that is 0.00003125%? How will you know if you have successfully made this solution?

**In-Lab**

During lab:

1. Group voting on 2 truths and a lie FlipGrid videos.
2. Answer questions A – D with group challenge to be solved by lab groups.
3. Perform all the dilution series exercises:
   1. Watch five videos that introduce the various tasks
   2. calculate the dilutions
   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.
4. 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.
5. Submit CATME Team Maker data (<https://www.catme.org/login/index>)
6. Take GenBio-MAPS if this is your first college biology course. (~20 min)