# M1D0: Welcome to 20.109!

2/6/13

- Aim 1: Authentic Investigation

pathway to independence

- Aim 2: Authentic Communication

- Aim 3: Extensive Collaboration (...with limits)
  - Equal contribution to team assignments.
  - Fair discussion, but independent completion, of individual assignments.

1. Introductions & 20.109 Mission

2. Semester Overview & Intro to Wiki

3. Day-to-Day Operations (SOP)

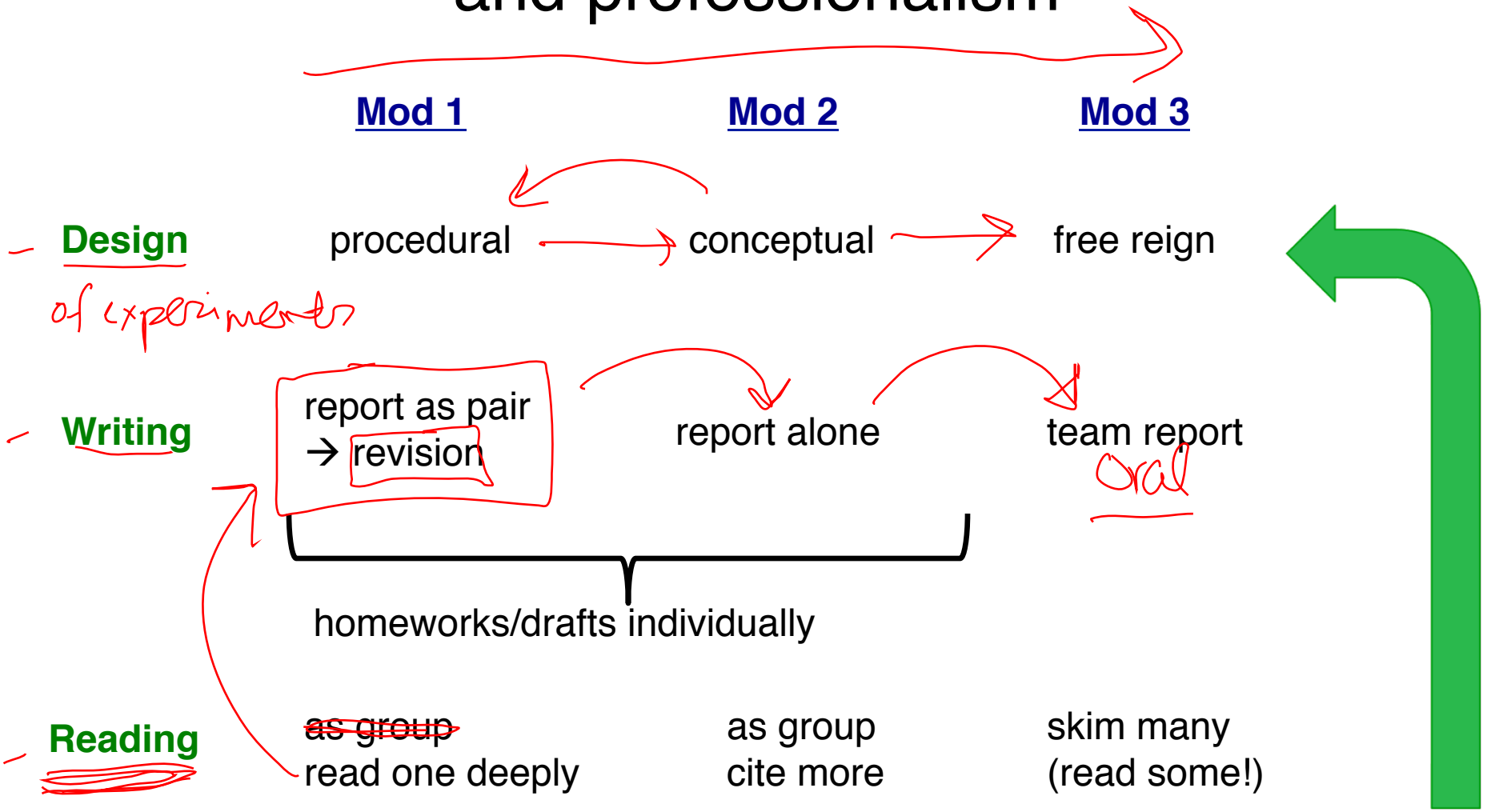
4. Lab Safety

5. Lab Tour and Worksheet

# Semester Overview

- Work completed in 2-person teams
- Broader class collaboration
- Assessment Structure: Major vs. Minor
- Office Hours
- **The key to 20.109: *Time Management***

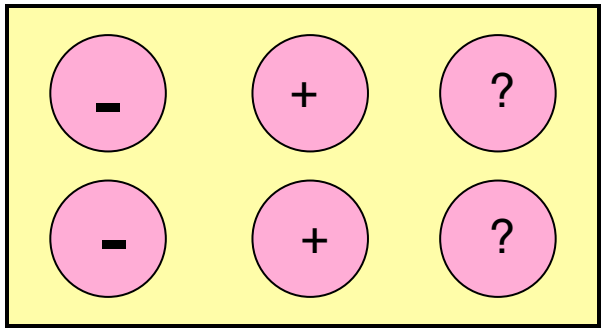
# Towards independent research and professionalism

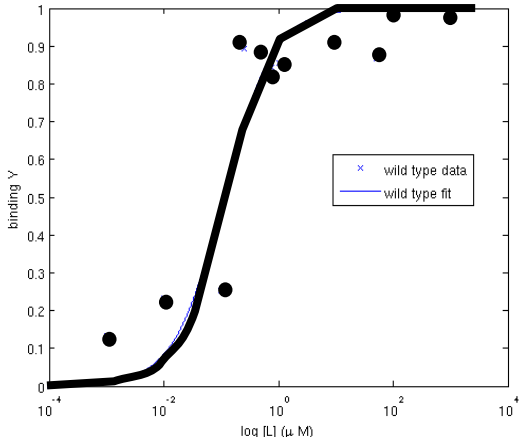



Thanks to Agi Stachowiak for this slide!

# After 20.109, you should be able to…

- Organize a lab notebook
- Implement laboratory protocols
- Design novel experiments with appropriate controls
- Interpret qualitative data
- Analyze quantitative data
- Recognize utility of models
- Examine the scientific literature
- Communicate in multiple modes
- Present salient points of your own

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# Day-to-Day SOP:

- Turn in FNT, Receive graded assignments
- Lab Treat:

1:10

http://my.clevelandclinic.org/heart/prevention/nutrition/chocolate.aspx

- Pre-lab lecture & discussion
- The fun stuff
- **The key to daily 20.109: *The wiki is your friend***

# From protocol to lab notebook

1. Begin by adding the correct amount of water to a 200 ul PCR tube. Add that amount +1 ul to a second PCR tube.
2. Next add the primers to each reaction. Be sure to change tips between additions.
3. Next add template to the first reaction tube.
4. Finally add PCR Master Mix to each tube, pipetting up and down to mix. Leave your tubes on ice until the entire class

Statement of purpose: Today we will design primers to delete 32 bp from the 5' end of GFP and flank the sequence with new restriction sites. Then we will prepare truncated GFP by PCR as an insert for later cloning.

<u>Design primers for GFP insert (M1D1 Part 1)</u>
See attached Word document.

<u>PCR to make GFP insert (M1D1 Part 2)</u>

Added 27 uL H20 to expt'l, 28 uL H20 to control sample.
Added [1 uL] primer and [20 uL] Master Mix (<u>last</u>) to both samples, and 1 uL template to expt'l only!
Rxn ready at 3 pm → on ice → thermal cycler started at 4 pm.

Thanks to Agi Stachowiak for this slide!

# Lab notebook alternatives

- All include statement of purpose, conclusion, etc.
- Differ in treatment of protocols section

  (1) Cite protocols and write out only unique numbers/conditions

  (2) Write out summary protocol by hand (must include all numbers, but not lab tips, etc.)

  (3) Print out protocol and below/to side of section write out unique numbers/conditions

  (4) Some hybrid of the above that works for you!

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# Lab Safety

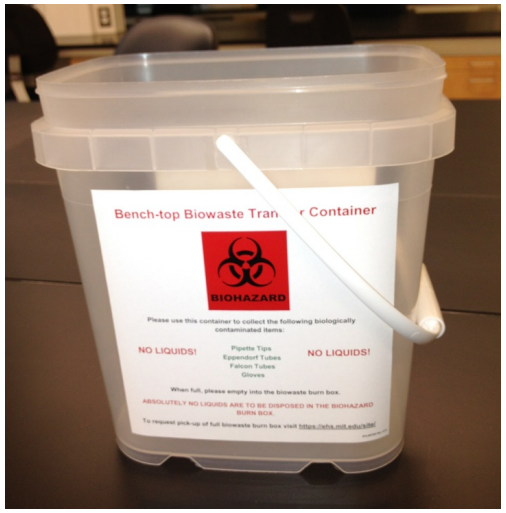
- Protection: gloves, glasses, coat, coverage
- Just in case… eyewashes, shower
- Hazards: Materials < Biological / Chemical

  Minor. Splashing hazard
- Waste disposal (less frequent)
  - chemical waste in fume hood (tubes → us)
  - biological liquid waste bleached (vacuum traps)

Thanks to Agi Stachowiak for this slide!

# Waste disposal (frequent)

weak sharps
(main lab)





sharps
(TC lab)

biol. solids
(main & TC)

true
sharps
(rare)

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