

Orientation:

 to 20.109!!

1. EHS laboratory-specific training
2. Introductions
3. Prelab: Laboratory logistics
4. Orientation exercise – your first protocol!
5. Preparations for M1D1

Where to find us?

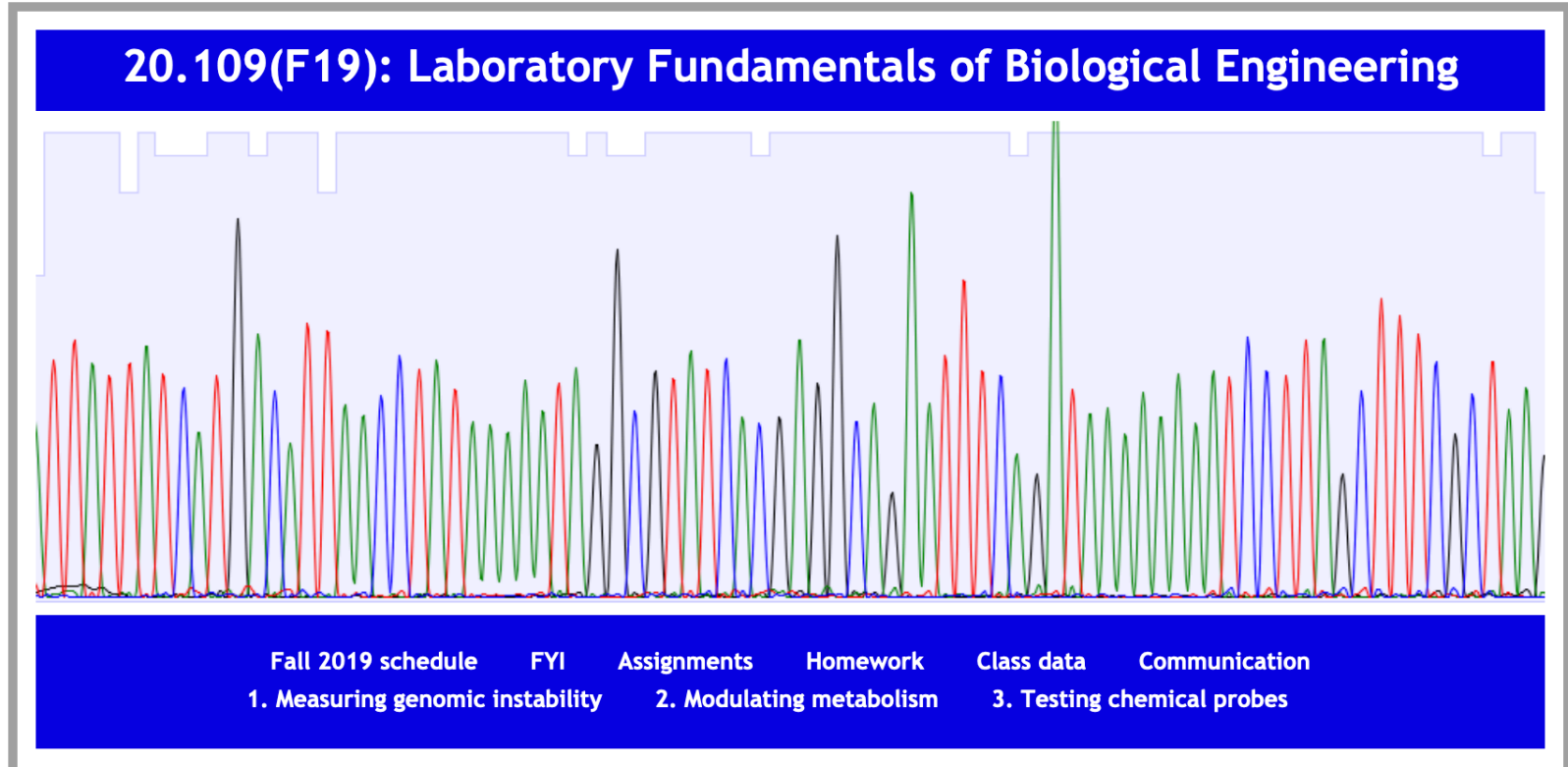
- Noreen:
 - 16-317
 - nllyell@mit.edu
- Becky:
 - 16-469
 - rcmeyer@mit.edu
- Leslie
 - 16-469
 - lesliemm@mit.edu



Core missions of 20.109











- Collect **authentic** data
 - Elements of design, unknown outcomes
- Practice **communicating** your science
 - Written & verbal, in homework and major assignments...will receive a lot of feedback!
- Working in **collaboration** with colleagues
 - Experiments completed in teams
 - Assignments are completed individually or in teams (as noted)
 - Class-wide collaboration (for data acquisition and analysis)
 - Punctuality
 - Integrity (*personal* reflections)
- The faculty are here to help – **come to us with questions!**

Say hello to our course wiki!



[http://engineerbiology.org/wiki/20.109\(F19\):_Fall_2019_schedule](http://engineerbiology.org/wiki/20.109(F19):_Fall_2019_schedule)

The Schedule page is your best friend

MODULE	DAY	DATE	LECTURER	LABORATORY EXPERIMENTS	ASSIGNMENTS
		R/F Sept 5/6	NLL 	Orientation and laboratory tour Prelab T/R	
1	1	T/W Sept 10/11	BE 	Practice cell culture and begin gamma-H2AX assay	Laboratory orientation quiz Homework due
1	2	R/F Sept 12/13	BE 	Treat cells for gamma-H2AX assay and prepare CometChip for loading experiment	Homework due
1	3	T/W Sept 17/18	BE 	Complete gamma-H2AX assay and perform loading experiment	Homework due
		R/F Sept 19/20	BE 	Lecture, but no laboratory Career fair student holiday	
1	4	T/W Sept 24/25	Comm Lab	Load cells into CometChip and apply treatments for DNA damage experiment	Laboratory quiz Homework due
1	5	R/F Sept 26/27	BE 	Complete DNA damage experiment	Homework due
1	6	T/W Oct 1/2	BE 	Image CometChip	Homework due
1	7	R/F Oct 3/4	BE 	Practice statistical analysis methods and complete data analysis	Laboratory quiz Homework due
2	1	T/W Oct 8/9	NLL 	Complete in silico cloning of pdCas9	Homework due
2	2	R/F Oct 10/11	NLL 	Design gRNA sequence for CRISPRi	Homework due
		T/W Oct 15/16		Columbus day holiday	Data Summary draft due Mon, Oct 14 at 10 pm [Blog post due] Tue, Oct 15 at 10 pm

Keep track of important due dates

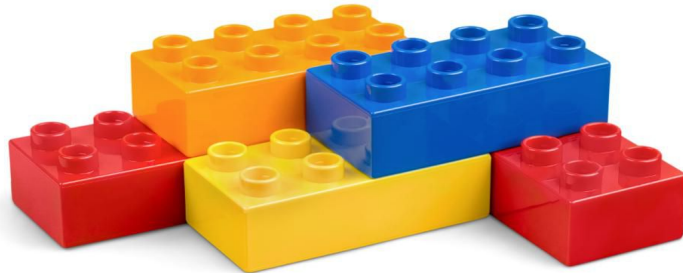
Module	Assignment	% final grade	Due date
1	Data summary	15	10/14 (draft), 10/26 (revision)
1	Mini-presentation	5	10/19
2	Journal club presentation	15	10/23 or 10/30
2	Research article	20	11/11
3	Research proposal presentation	20	12/6
3	Mini-report	5	12/9
all	Homework and Lab notebook	10	daily
all	Participation and blog	5	after module, see wiki
all	Quizzes	5	2 per module

individual : 60%

team: 40%

Homework builds to major assignments

- Only 10% of final grade?!
- Give it your best:
 - Consider homework a first draft
 - Never gratuitous, building blocks toward final reports and oral presentations
 - Feedback is provided (will prove helpful)
 - Great tool to keep ahead of the game and pace your work



A laboratory day in the life of a 109er

- Lab starts at 1:05pm
 - You must alert us in advance if you will be late or have a conflict
- Quiz (on lectures and laboratory material)
 - M1D1, M1D4, M1D7...as noted on the wiki!
- Submit printed homework assignments at the front bench
- Participate in interactive prelab discussion
 - Typically 15-45 minutes with focus on experimental details
- Design and Experiment!
 - Keep notes in electronic laboratory notebook (Benchling)
 - Q & A throughout the afternoon


Record your science in Benchling

- Set up your account: benchling.com
- Title your project “20.109(F19)_YourName”
 - Make each module a new folder
 - Make each day a new entry within the appropriate module folder
- Share with Becky & Colin: rcmeyer@mit.edu, cyhkim@wi.mit.edu

Add Protocol

Notes

Metadata




Insert ▾

H ▾

B

I


U





A ▾

x₂

x²







More ▾

Title: Template for notebook entry




TUESDAY, 9/6

M1D2, include the date the experiment was completed here as the automatic timestamp above reflects the day you created this entry (you can also change the automatic timestamp).

Statement of the purpose of the experiments to be completed today.

List of protocols (including experiment 'titles' as written on the wiki):

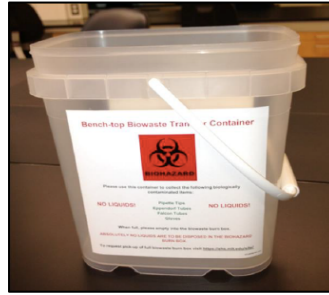
Remember your personal protective equipment (PPE)

Item	Worn (BE guidelines)
<p>Gloves</p> 	<ul style="list-style-type: none">- When working with chemical or biological materials➤ Change when entering tissue culture room!
<p>Lab coat</p> 	<ul style="list-style-type: none">- When working with chemical or biological materials➤ Change when entering tissue culture room!
<p>Goggles</p> 	<ul style="list-style-type: none">- When handling large quantities of powder or liquid due to chance of splash- When pipetting toxic chemicals (mutagens)- When using ethanol burners- In conjunction with face shield at UV transilluminator

Be sure to correctly dispose of your waste



regular trash



benchtop waste



sharps container



liquid waste vacuum flask

NO LIQUIDS!

PAPER
TOWELS
SCRATCH
PAPER

GLOVES
TIPS
TUBES

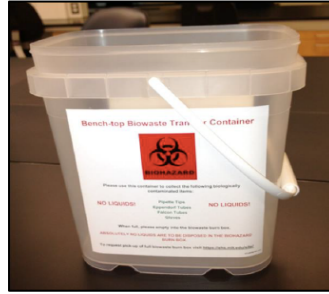
GLASS
NEEDLES

CELL CULTURE
MEDIA

Everyone has waste responsibilities



regular trash



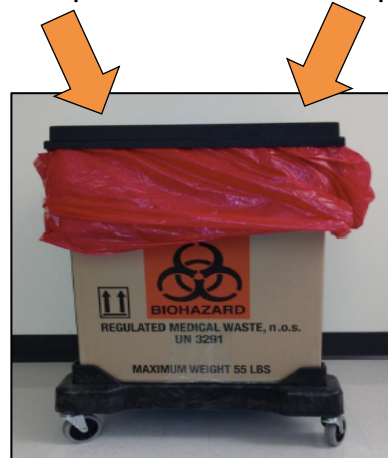
benchtop waste



sharps container



liquid waste vacuum flask



biowaste box

For today:

- Make a friend, choose and bench, sign-up on the laboratory map at the front bench
- Complete lab orientation
 - Orientation quiz on M1D1!

For M1D1:

- Watch for email concerning Office Hours poll
- Complete homework assignments (see 'Homework' tab on wiki)
 - Create laboratory notebook in Benchling
 - Prepare for Orientation quiz
 - Complete EHS training (screen capture certificates)
 - Read Mod1 overview page and M1D1 introduction