Welcome to 20.109(Fa17) T/R section!

Laboratory fundamentals of biological engineering

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MIT BE
BIOLOGICAL ENGINEERING

MOD0: Orientation/Lab Tour

09/07/17

1. EHS training
2. Let's get to know each other
3. Intro to 20.109 lab
4. Start lab orientation: your first protocol!
5. Prep for M1D1

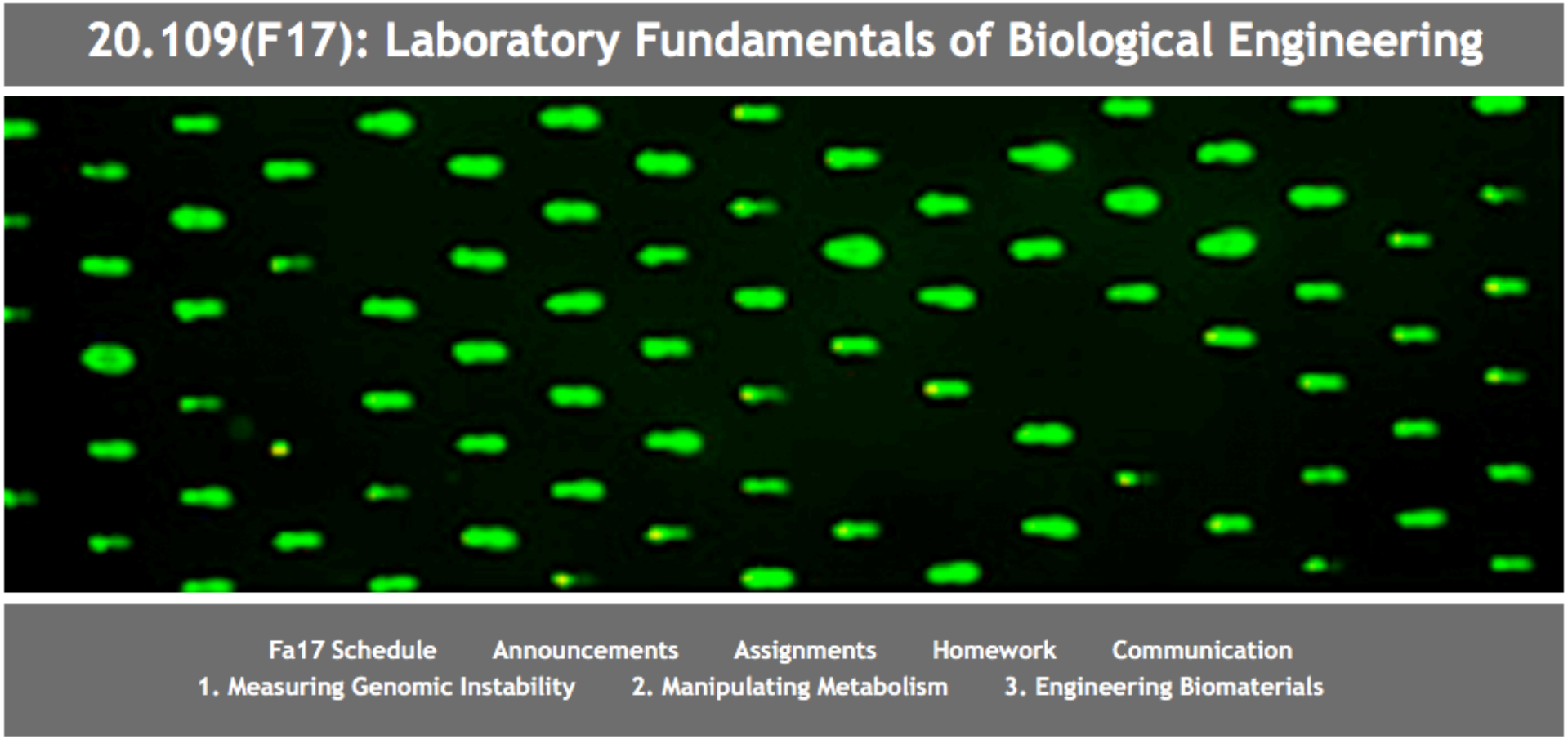
The pillars of 20.109

- **Authentic science**
  - elements of design, unknown outcomes
- Focus on **communicating** your science
  - written & oral, in homework and assignments, a lot of feedback
- **Collaboration**
  - work in pairs
  - assignments are both team and individually completed (as noted)
  - class-wide collaboration (for data acquisition and analysis)
  - punctuality
  - integrity (*personal* reflections)
  - We faculty love being there for you: **come to us with questions!**

BOOKMARK ME

The wiki is your best friend

http://engineerbiology.org/wiki/20.109(F17) :_Fall_2017_Schedule



The wiki will help you with **time management**

In particular, check these tabs :

- Schedule
- Assignments
- Homework

MODULE	DAY	DATE	LECTURER	LABORATORY EXPERIMENTS	ASSIGNMENTS
		R/F Sept 7/8	NLL Orientation lecture	Orientation	
1	1	T/W Sept 12/13	BE	Prepare microwell array and practice tissue culture	**Laboratory orientation quiz** Homework due
1	2	R/F Sept 14/15	NLL	Develop experiment to optimize cell loading	Homework due
1	3	T/W Sept 19/20	BE	Evaluate cell loading results	**Laboratory quiz** Homework due
1	4	R/F Sept 21/22	BE	Test role of biochemical factors in genomic stability	Homework due
1	5	T/W Sept 26/27	BE	Complete biochemical experiment and apply chemical treatments for sub-nuclear foci assay	**Laboratory quiz** Homework due
		R/F Sept 28/29	BE	**Lecture, but no laboratory** Career fair student holiday	

20.109 assignments

Module	Assignment	% final grade	Due date
1	Data summary	15	10/09 (draft) and 10/22
1	Mini-presentation	5	10/14
2	Journal club presentation	15	10/24 or 10/31
2	Research article	20	11/20
3	Research proposal presentation	20	12/7
3	Mini-report	5	12/11
all	Homework and Lab notebook	10	daily
all	Participation and blog	5	Before last day of module
all	Quizzes	5	2 per module

individual : 60%

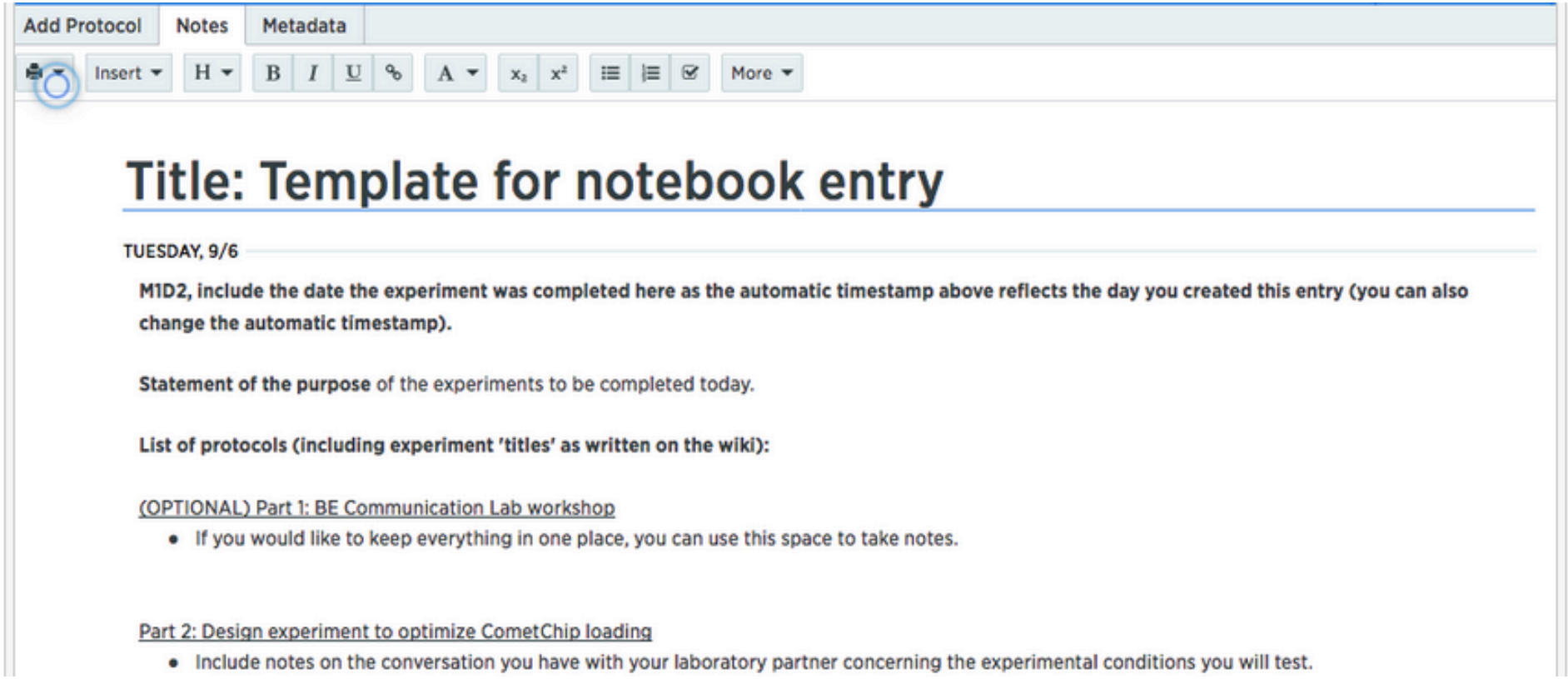
team: 40%

Homework builds your 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
  - we give a lot of feedback (will prove helpful)
  - great tool to keep ahead of the game and pace your work

Lab notebook in Benchling

- Set up an account: benchling.com
- Entitle your project “20.109(F17)_YourName”
- Share with Leslie & Eric: lesliemm@mit.edu & elehnhar@mit.edu



A typical day in 20.109…

- Lab starts at 1:05pm
- Quiz (on lectures and labs)
  - M1D1, M1D5, M1D7…
- Hand in printed homework to front bench
- Prelab: interactive discussion~ 15-45 min
- Design and Experiment!
  - Keep notes in Electronic lab notebook (benchling)
  - Q&A throughout the afternoon

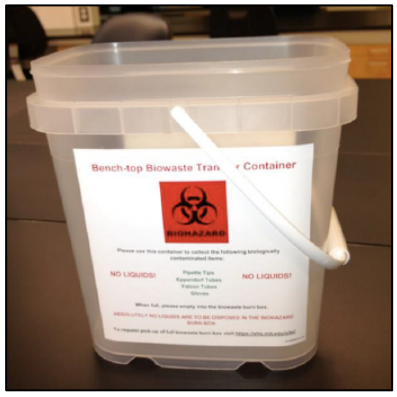
nothing goes from main lab to TC room

Personal protective equipment (PPE)

item	worn (BE guidelines)
gloves 	- when working with chemical or biological materials ➢ change when entering tissue culture room!
lab coat 	- when working with chemical or biological materials ➢ change when entering tissue culture room!
goggles 	- 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

Waste disposal refresher

regular trash can



benchtop waste

sharps container

liquid waste vacuum flask

no liquids!

-bacterial cultures

-bacterial media

-paper towels

-non bio waste

-plastic pipettes

-gloves

-plastic tubes

-pipette tips

-glass tubes

-glass pipettes

-razors

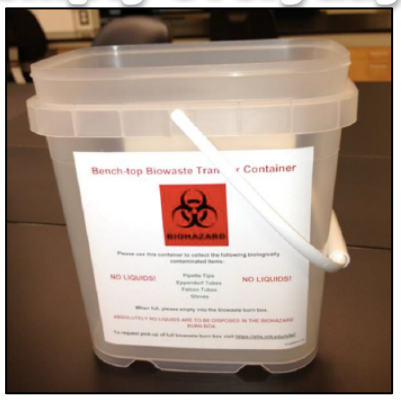
-needles&syringes

Waste disposal refresher

regular trash can

facilities

empty everyday



benchtop waste

throw away when full

sharps container

liquid waste vacuum flask

instructors only

biowaste box

Today

- Find partner and bench / team color
  - record choice at front bench
- Complete lab orientation
  - http://engineerbiology.org/wiki/20.109(F17):Lab_tour
  - no lab notebook entries required today

For Tuesday

- Respond to poll on best office hours times (emailed later today)
- Find homework (http://engineerbiology.org/wiki/20.109(F17):Homework):
  - Lab notebook in Benchling
  - Be ready for orientation quiz
  - print EHS training certificate
  - read Mod1 overview page