Orientation and laboratory tour

to 20.109!!

1. Introductions
2. Prelab discussion
3. Orientation exercises
4. Preparations for M1D1

Let’s get to know each other!

- Your name?
- Your research experience or interests?
- If you could go anywhere / see anything in the universe, where would you go / what would you see?

OR

- Talk a bit about a hobby you have

How can you reach us?

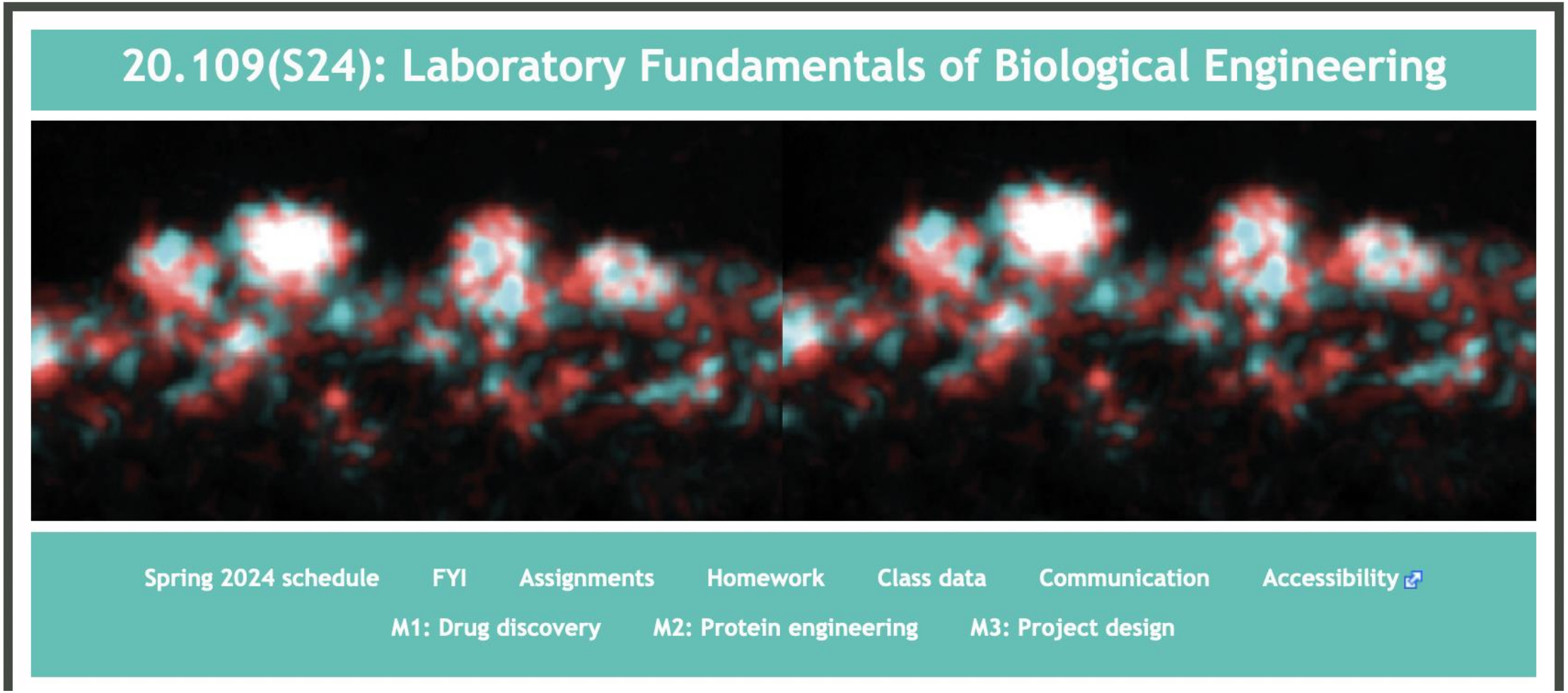
- Noreen Lyell
  - Email: nllyell@mit.edu
- Becky Meyer
  - Email: rcmeyer@mit.edu
- Jamie Zhan
  - Email: zhanj@mit.edu

- Take advantage of class time!
- Office hours TBD
- One-one-one meetings scheduled by request

What will we do this semester?

- Collect authentic data
  - Elements of design, unknown outcomes
- Practice communicating your science
  - Written & oral, in homework and assignments, 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 20.109 team is here to help – come to us with questions!

The wiki is your new best friend



http://engineerbiology.org/wiki/20.109(S24):Spring_2024_schedule

”It’s on the wiki…”

MODULE	DATE	LECTURER	LABORATORY EXPERIMENTS	ASSIGNMENTS
	T/W Feb 6/7	NLL	Orientation and laboratory tour	
M1D1	R/F Feb 8/9	AK	Complete in-silico cloning of protein expression vector	**Orientation quiz** Homework due
M1D2	T/W Feb 13/14	AK	Purify expressed protein	Homework due
M1D3	R/F Feb 15/16	AK	Assess purity and concentration of expressed protein	Homework due
	T/W Feb 20/21		**President's Day holiday**	
M1D4	R/F Feb 22/23	AK	Review results of small molecule microarray (SMM) screen	**Laboratory quiz** Homework due
M1D5	T/W Feb 27/28	AK	Prepare differential scanning flourimetry (DSF) experiment	Homework due
M1D6	R/F Feb/Mar 29/1	AK	Analyze data from DSF experiment and treat cells	Homework due **Research talk due** Sat, Mar 2 at 10pm
M1D7	T/W Mar 5/6	AK	Perform electromobility shift assay (EMSA)	Homework due
M1D8	R/F Mar 7/8	BE Comm Lab	Evaluate experimental results	**Laboratory quiz** Homework due
M2D1	T/W Mar 12/13	AB	Determine peptide design strategy	Homework due
M2D2	R/F Mar 14/15	AB	Clone cell surface peptide display plasmid	Homework due **Data Summary draft due** Sat, Mar 16 at 10 pm Blog post due Mon, Mar 18 at 10 pm

Mark your calendars

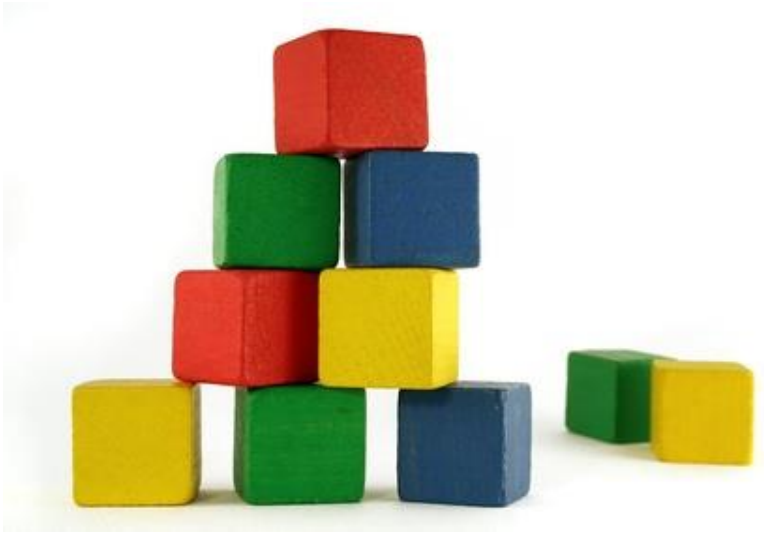
Module	Assignment	% of final grade	Due date
1	Research talk	5	3/2
1	Data summary	15	draft 3/16, revision 3/25
2	Journal club presentation	15	4/2 & 4/3 or 4/7 & 4/9
2	Research article	20	4/29
3	Research proposal presentation	20	5/9 or 5/10
all	Homework	10	daily
all	Laboratory notebook	5	refer to wiki
all	Participation and blog	5	refer to wiki
all	Quizzes	5	refer to wiki

individual : ~65%

team: ~35%

Homework is the key to success

- Only 10% of final grade?!
- Give it your best:
  - Consider homework to be a first draft
  - Never gratuitous, building blocks for major assignments
  - LOTS of feedback is provided
  - Great tool to stay of track and pace your work



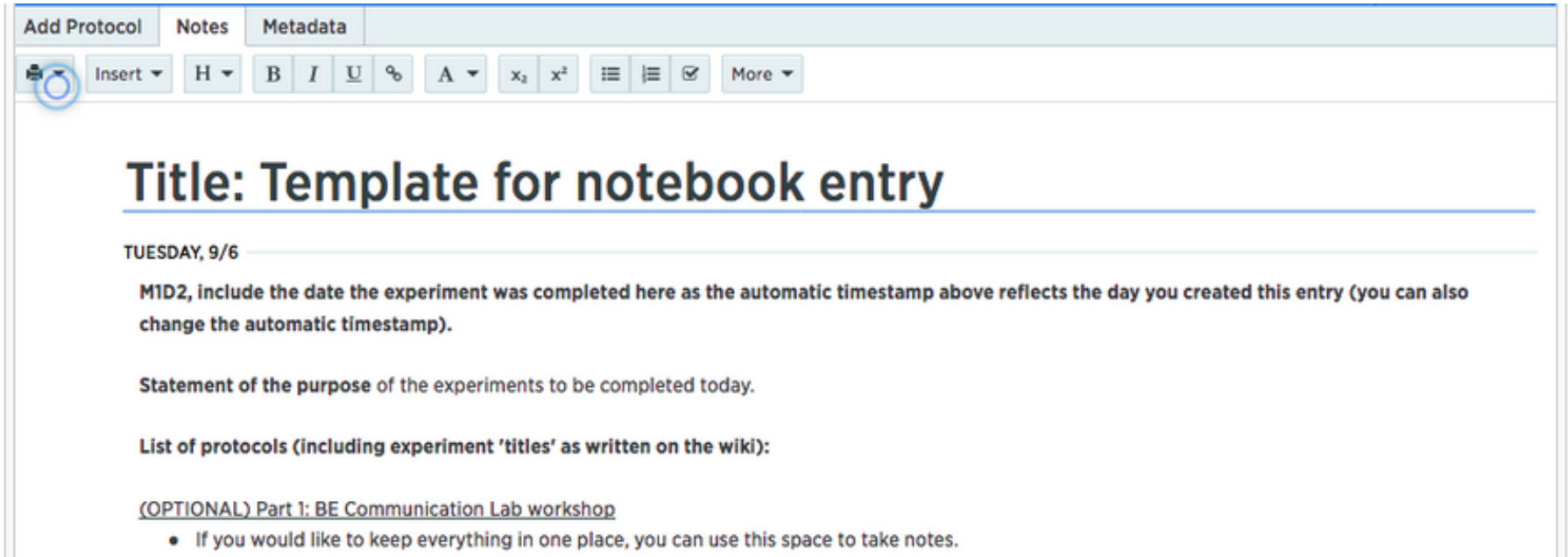
- Submit to Canvas by 1:05p on due date
  - Name submission according to this format: YourName_Assignment (NoreenL_M1D1)
  - Grades and comments will be returned via Stellar
- Generous late policy used in place of extensions
  - 1/3 of letter grade deduction per 24 hrs late (within 24 hr of due date = -0.3 / 10 pts)

A typical laboratory day

- Prelab discussion starts at 1:05pm
  - Alert me in advance if you will be absent / late when possible
- Submit homework to Canvas by 1:05pm
- Participate in interactive prelab discussion
  - Typically 15-60 minutes with focus on experimental details
- Design and Analyze!
  - Keep notes in electronic laboratory notebook
  - Q & A throughout the afternoon
- Quiz (see dates on wiki!)
  - Questions from lecture and prelab material

How will you record your work?

- Set up your account: benchling.com
- Title your project “20.109(S24)_YourName”
  - Make each module a new folder
  - Make each day a new entry within the appropriate module folder
- Share with me (nllyell@mit.edu) and Yichen (ycx@mit.edu)



Important class policies

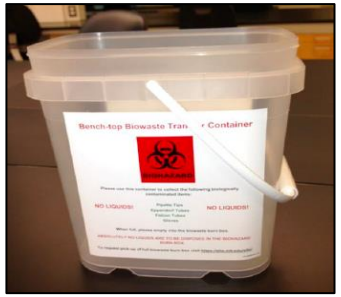
- Absences from lecture will result in loss of participation points
  - You are responsible for getting lecture material even if you are absent
- Laboratory attendance is mandatory
  - Excused absences must be discussed with the Instructors as soon as possible
  - Unexcused absences = 1/3 of a letter grade deduction from the final grade on the major assignment for the module (for example, a B+ would become a B)
  - If possible, you should attend a different laboratory section to complete experiments
- Late policy for homework and major assignments is very generous!
  - In lieu of extensions
  - Each day late = -0.3 pts /10 or -3 pts /100
  - Work will not be accepted 1 week past the due date

Remember your 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

Be sure to correctly dispose of waste!

regular trash can



benchtop waste

sharps container

liquid waste vacuum flask

Please empty benchtop waste after every lab!

biowaste box

For today…

- Watch demonstration for Station 1 of laboratory tour
- Work through remaining Stations of laboratory tour with classmate
- Complete and submit laboratory partner questionnaire
  - Specific partner assignments can be requested
- http://engineerbiology.org/wiki/20.109(S24):Spring_2024_schedule

For M1D1…

- Complete homework assignments described on wiki. Submit a screenshot of your safety trainings to Canvas
- Study for Laboratory orientation quiz
- Prepare for M1D1!