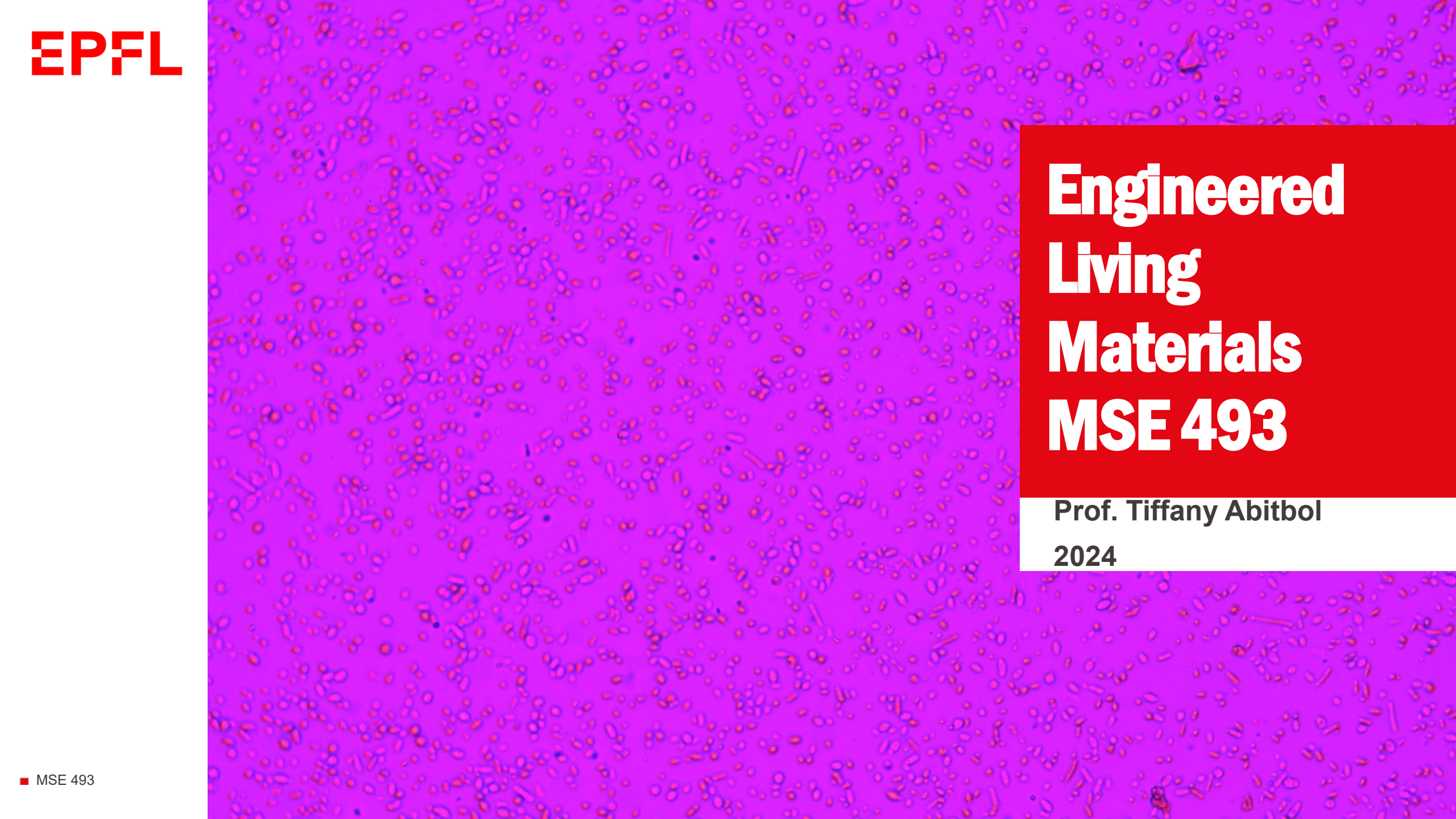


The background of the slide is a microscopic image showing a dense population of cells, likely bacteria or yeast, stained with a pink/red dye. The cells are mostly oval-shaped and appear to be in various stages of division or movement.

Engineered Living Materials MSE 493

Prof. Tiffany Abitbol

2024

Welcome to ELMs

- Making materials with living cells



Who are we?

- Tiffany Abitbol (Professor)

MXD 230 (office)

tiffany.abitbol@epfl.ch

- Buse Tatli

Buse.Tati@epfl.ch

- Yuki Hayashi (TA)

Yuki.Hayahsi@epfl.ch

Buse T



Yuki H





Sustainable Materials Laboratory



BASF

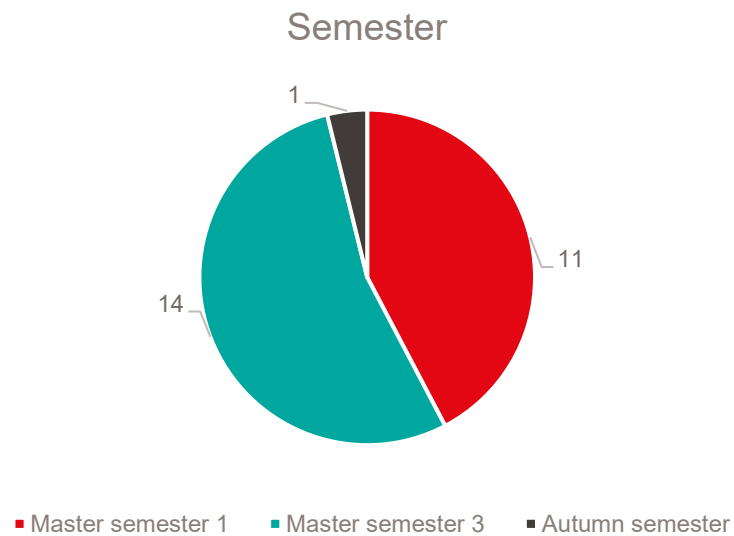
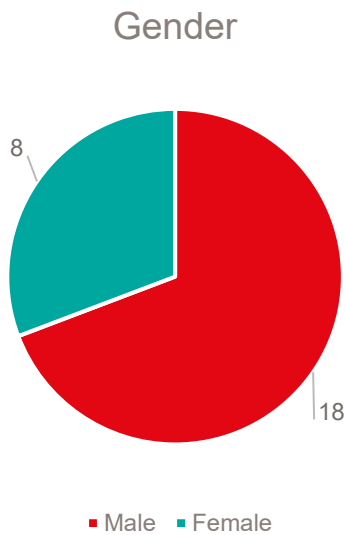
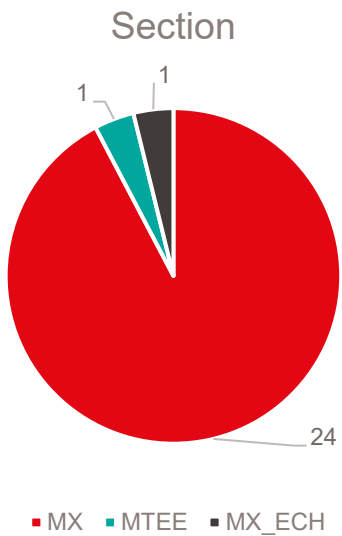
We create chemistry

logitech



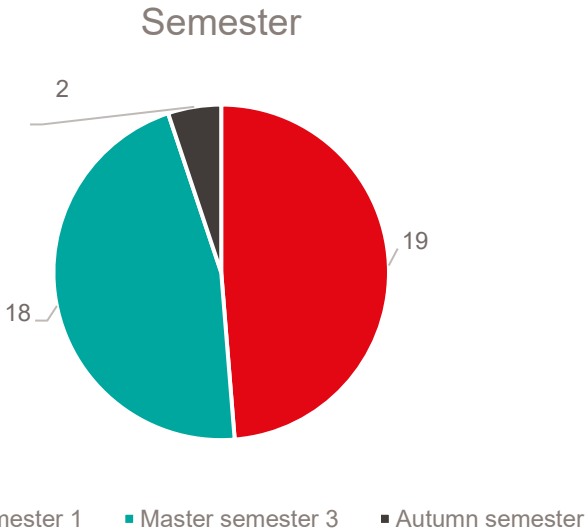
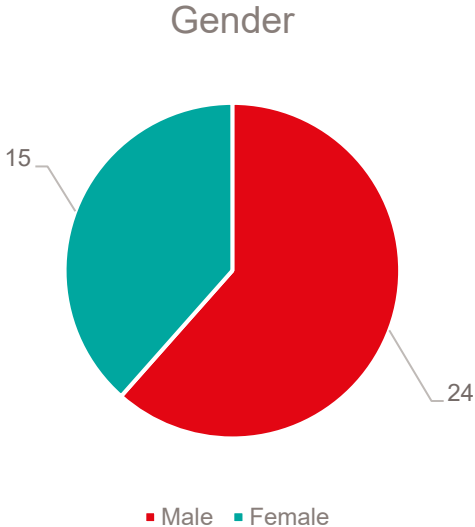
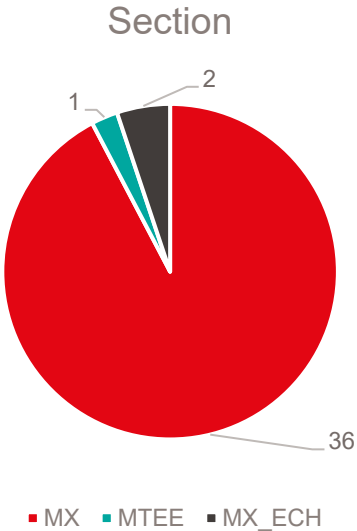
Who are you? (as of Aug 24)

26 students



Who are you? (as of Sept 9)

39 students



Career paths for Materials Science and Engineering grads



Career paths

Types of Careers

Materials science and engineering encompasses a broad array of scientific fields and specialties, and graduates have a wide range of opportunities. Materials science and engineering graduates build dynamic futures—working as engineers and researchers with multinational companies, professors at prominent academic institutions, or policy advisors for governmental organizations. Here's a sampling of jobs materials science and engineering majors get after graduating.

-  **Computational Materials Scientist**
-  **Data Scientist/Analyst**
-  **Materials Engineer**
-  **Metallurgist**
-  **Professor or Academic Researcher**
-  **Product Development Engineer**
-  **Research Scientist**

What are your plans after your studies?

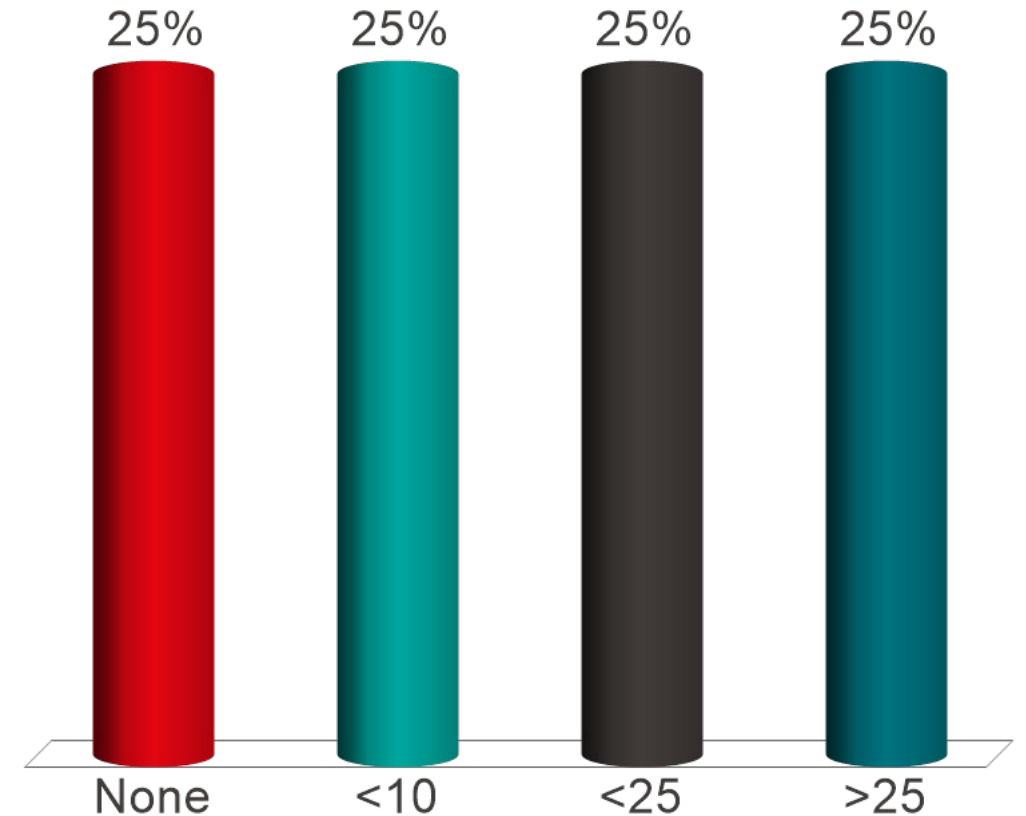
go to: ttpoll.eu

Session ID: MSE493 (no space)



**Thus far, how many scientific
articles have you read?
go to: ttpoll.eu
Session ID: MSE493 (no space)**

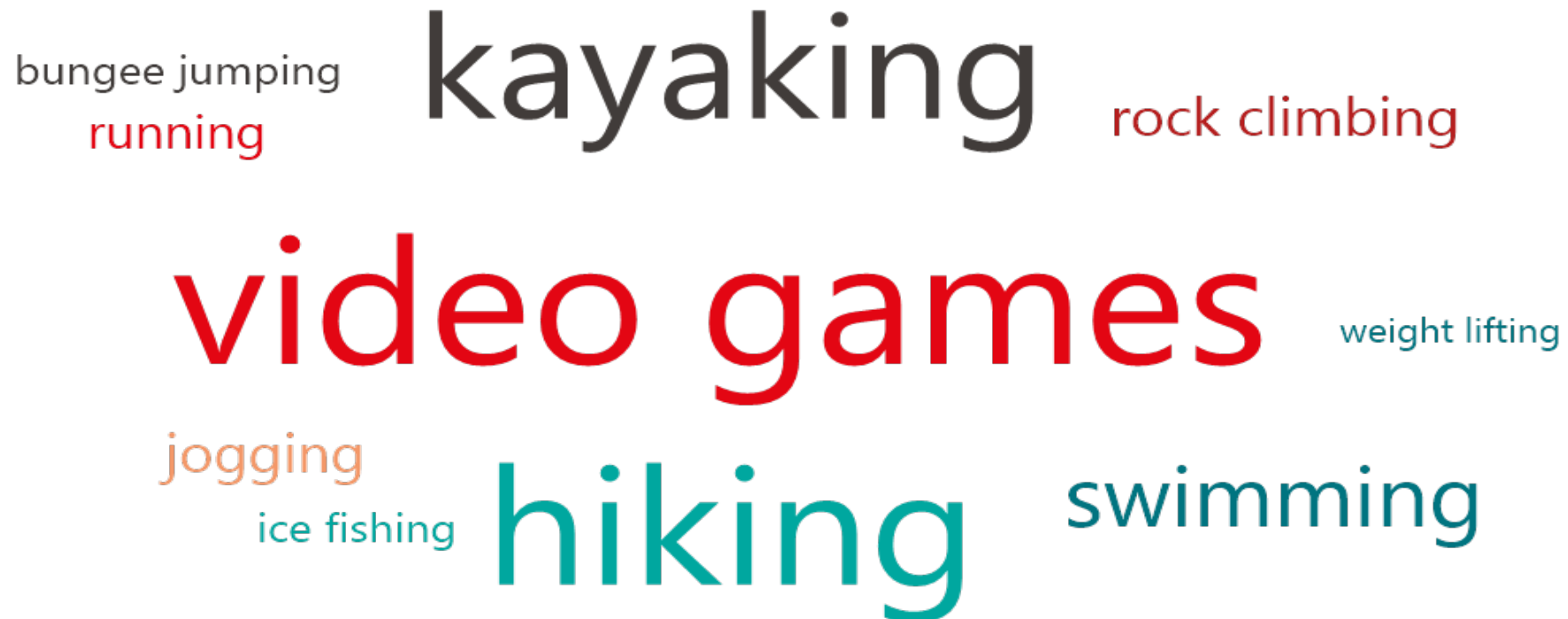
- A. None
- B. <10
- C. <25
- D. >25



What are the hardest parts of reading a paper?

go to: ttpoll.eu

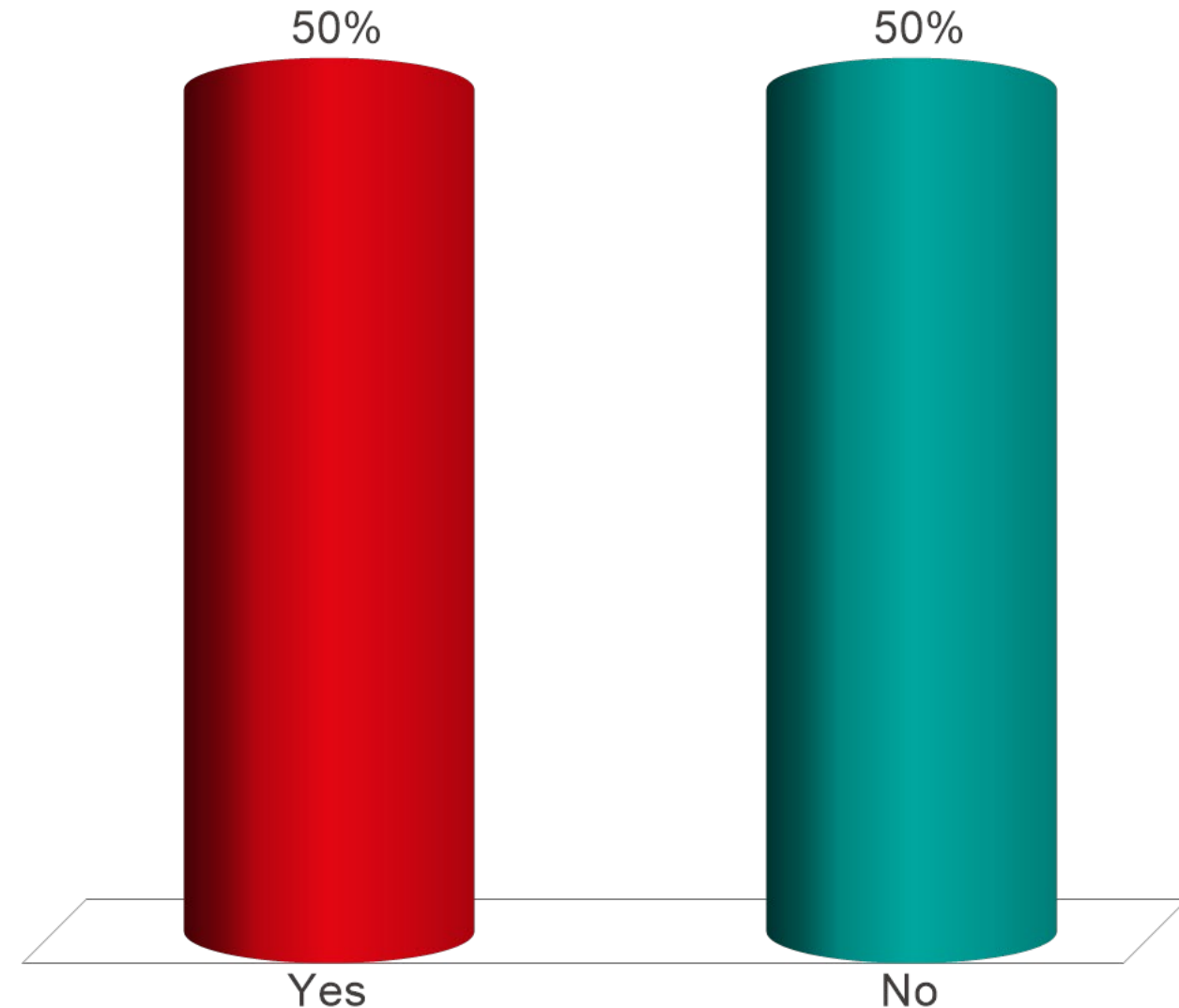
Session ID: MSE493 (no space)



**How many of you are also attending IMX Seminar series? go to: ttpoll.eu
Session ID: MSE493 (no space)**

A. Yes

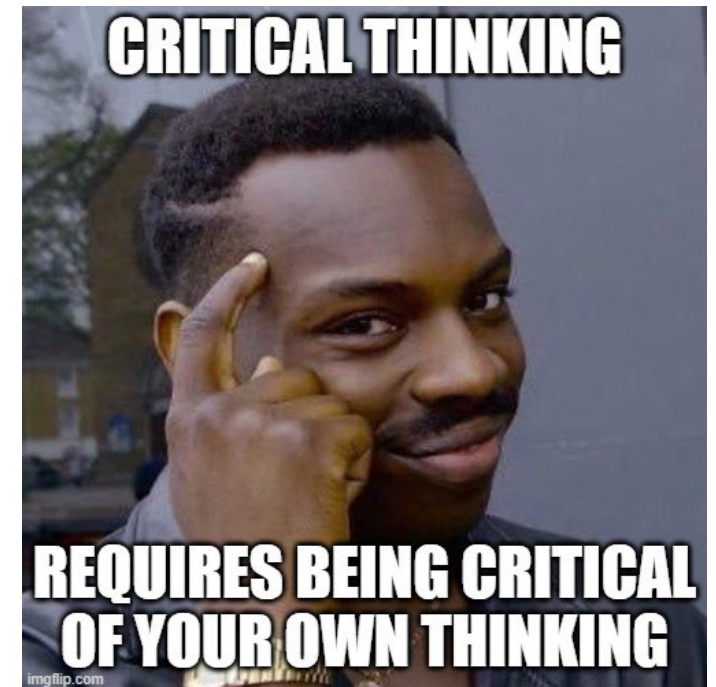
B. No



- **Where?** DIA003
- **When?** Tuesdays 14:15-17
- **Office hours in MXD 230:** 12-13 on Tuesdays (unless otherwise indicated, or by appointment)
- **Communication channels:** Moodle (primary), in person (office hours), email; as much as possible, lecture slides will be posted in advance
- **Format:** Lectures, guest lectures, lab activities, exercise sessions to work on your assignments
- **Resources:** optional readings on most weeks – see *Moodle*

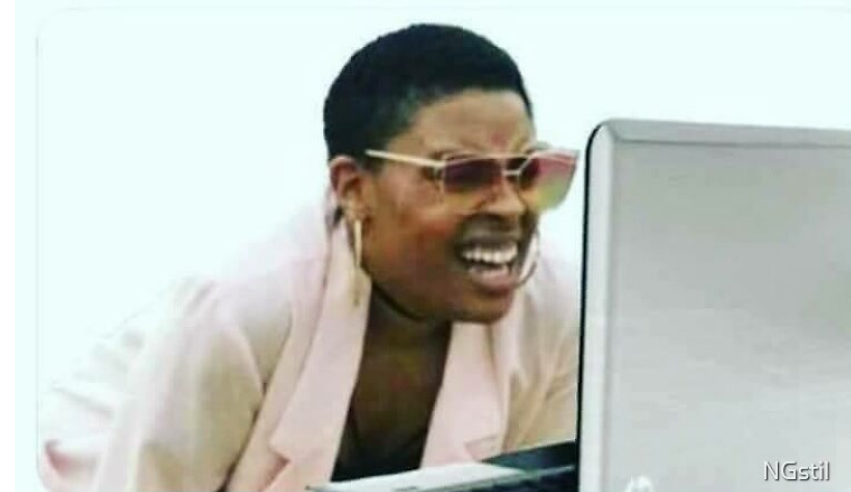
So, how will we learn about ELMs?

- Learning by reading – *journal club style*
- Learning by seeing first-hand – *laboratory activities*
- Learning from experts – *seminar series, guest lectures, EPFL PhD students*
- Learning by teaching and evaluating – *poster session assignment*
- Putting it all together – *A research proposal, where you come up with an idea for **new** research*



- 3 short assignments (solo) – 1/6
- 1 long assignment (choose your own group of 2) – 2/6
- 1 final project (groups assigned on Moodle) – 3/6

When you check your grades and the only "A" you have is in your name.



NGstil

Short assignments – important dates

	Given	Due date
A Day in the Life	17 September	1 October
Fantastic Fungi *associated to lab activity	1 October	8 October
Super Algae *associated to lab activity	29 October	5 November

* For details, check out the Moodle of the week that the assignment is given

- 2 of your short assignments will be based on lab activities
- You will be split into groups of 2 on lab activity days: The first group from 2-3:30 and the second group from 3:30-5
- If you have a preferred time slot, let us know ASAP, otherwise the TAs will assign you a slot
- At the designated time, we will meet in the SML Kitchen area in **MXD 233**
- We will then go together to the lab in **MXE 114/115** for a demonstration/activity

Long assignment – Poster!

	Given	Deadlines!
Poster	15 October (already open)	29 Oct – deadline to fill in poster sign up sheet! 14 November – deadline to send TAs the poster for printing, deadline to submit your teaser slide 19 November - poster session in class (where you present your teaser slide and poster, and evaluate posters of others)

✓ **October 15** ✎



ASSIGNMENT

Posters! long assignment ✎



ASSIGNMENT

Poster session teaser slide ✎



Add an activity or resource

- 2 files that you will need to submit before Nov 14



ASSIGNMENT

Posters! long assignment

*see Oct 15 Moodle for more details

[Assignment](#)[Settings](#)[Advanced grading](#)[More ▾](#)

Opens: Tuesday, 10 September 2024, 00:00

Due: Thursday, 14 November 2024, 00:00

Use this return assignment to upload your poster as a pdf or PowerPoint.

In this assignment, we will evaluate your ability to understand, summarize, and present scientific literature in a clear and approachable way.

So, what's this assignment all about?

1. Organize in a group of 3 students
2. Pick a scientific article in the field of ELMs that you all find interesting. No review articles. If you are unsure about your selection please discuss with the TAs and Prof.
3. Read the article and make sure your group understands the key points - discuss together!
4. Summarize and present the article in a poster format. The poster should be clear, concise, and show the main results and conclusions from the selected paper. Make sure to reference appropriately. *P.s. Did we mention? Posters should look good.*
5. In addition to the poster, prepare a 1-slide teaser that briefly summarizes what your poster is about.
6. Please use this sign up sheet by **OCT 29** to indicate your team members and the article you have chosen:

[Poster sign up sheet](#)

The sign up sheet also indicates the schedule for the day.

The first 30 min of the class, each group present their teaser slides in 3 min maximum, and then we will have two sessions, where each team is either assigned the role of presenter or evaluator.

7. As a presenter, you are expected to present your poster (5-7 min) to your classmates, TAs, and prof.
8. As an evaluator, you are expected to listen to your classmates presentations and fill in an anonymous grading sheet. Note the grading sheets will be provided ahead of the class and printed to facilitate your work.



What will the poster session look like?

- Put up your posters (we will try to find a way to do this/ set up room, or find an alternate room)
- We will start with a PowerPoint slide pitch from each team (3 min); slides will be submitted in advance
- Each poster team is assigned to a session, either in the role of evaluator or presenter (**5-7 min presentation**)
- As a presenter, your job is to present your poster and answer questions
- As an evaluator, your job is to evaluate posters (we will give you a grading sheet)

What will the poster session look like?

- Already think of who you want to work with, choose your article, etc., you will upload these details on the Oct 15 Moodle
- Grading sheets will be provided (already posted on Nov 19 Moodle)
- [Link to google drive sign up sheet](#) (team, article, schedule*)
- Schedule will be fine-tuned ahead

Final project – Research Proposal

	Given	Due
Research proposal	10 September (groups and expectations on Moodle)	Anytime before 20 December

Final project – Research Proposal

From the Moodle - 10 September

This is the main activity in this course that will be evaluated. **This final assignment is worth 3/6 points and is due by the end of the semester, *before or on Dec 20*.**

In this activity, you are asked to craft a novel research proposal in the wide open field of ELMs.

We know this is a challenging task, which is why we are giving you this assignment already in the first week of classes and why we will be available to discuss and brainstorm with you in exercise and office hours.

Textbook resources (available online)

General microbiology textbooks:

1. [Concepts of biology](#)
2. [Industrial Microbiology and Biotechnology](#)
3. [Brief Lessons of Microbiology](#)
4. [Principles of Microbiology](#)
5. [Food Microbiology Laboratory for the Food Science Student](#)

What is expected from you in this class?

- Participation
- Reading ahead of time (if you can)
- Using the resources at your disposal, and being communicative if something is unclear

