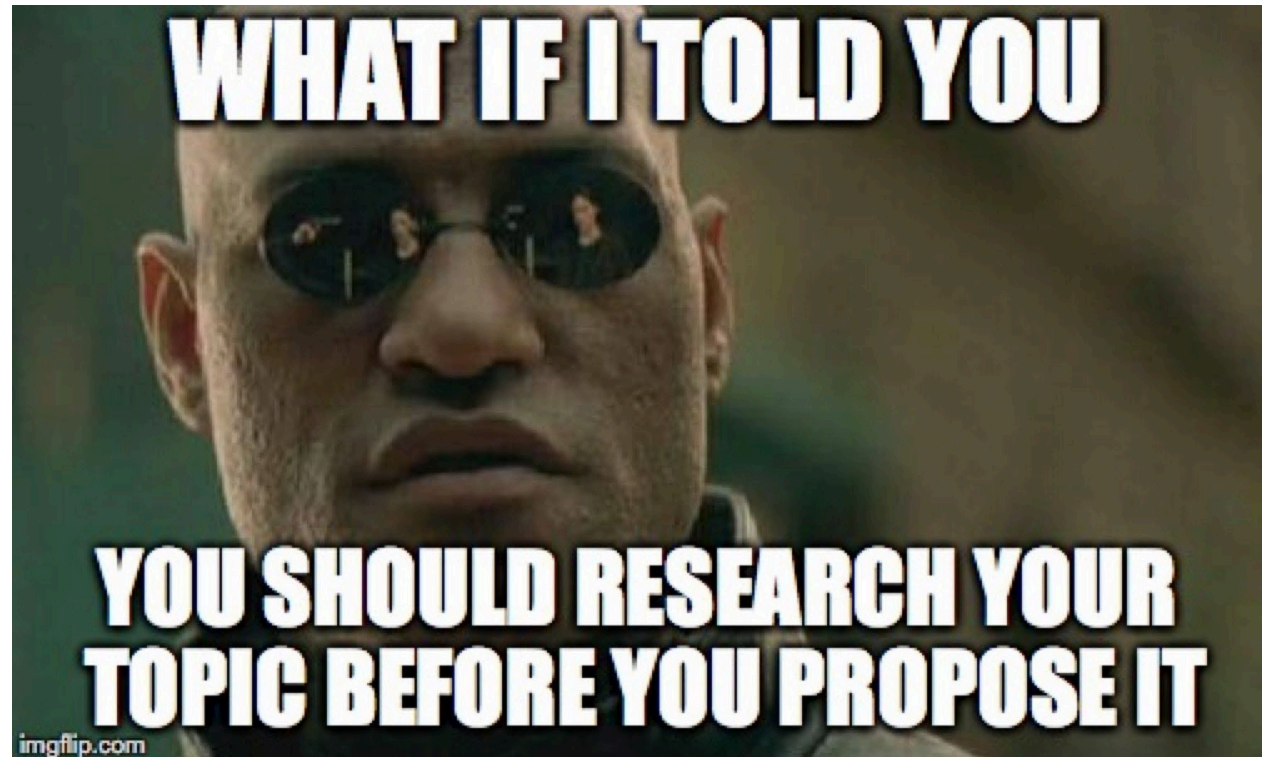


M3D1:

Brainstorm ideas for Research proposal presentation

1. Prelab discussion
2. Discuss research proposal ideas with your co-investigator!



Logistics for Research proposal presentation

- Due date: slides uploaded to Canvas by 12p on presentation date
- Completed with co-investigator (laboratory partner)
- Verbal / visual presentation with 12-minute time limit
- **Goal: propose a novel project that uses concepts / techniques from the field of biological engineering**

How to choose a topic?

- Should be tangentially related to 20.109 topics / concepts / methods
- Should include aspects of biology- and engineering-based research
- Should *not* be a current UROP project
- **We are engineers: we measure, model, make, manipulate!**
 - Build a biologically-derived device
 - Create a new model system or organism
 - Genetically engineer a new biologically-based technology
 - Use a new method or technology to produce a database that addresses a biologically or environmentally important problem

How to define a research goal?

- **Problem-driven**

- I am interested in a problem and want to solve it using a technology based in biological engineering

- **Technology-driven**

- I am interested in a technology based in biological engineering and I want to adapt it to address a problem

- Either way your project should generate something tangible!

How to ensure the research goal is novel?

- Look at the most **recent discoveries** related to your topic
 - What is the most recent advancement?
 - What do other scientists say is a still unanswered question?
- Review the most **recent literature** on your topic
 - Read the Discussion/Future Works section to identify knowledge gaps
 - Find review papers as authors will often point to knowledge gaps
- **Consider how to fill the knowledge gap!**

How will the research project be presented?

- What is the research goal?
- How will the research goal be achieved?
 - Provide 2-3 specific aims that address research goal
 - Include specific information on what experiments will be performed
- What are alternative approaches for key experimental steps?
- What are the ethical implications of experiments / research outcome?

For today...

- Discuss common interests with your co-investigator
- **Draft the research question / goal for your project**

For M3D2...

- Answer question prompts about your project
- Prepare 3-5-minute pitch that you will present in the next laboratory session
 - No visuals, just a brief explanation of the research goal and how your project will address the research goal.