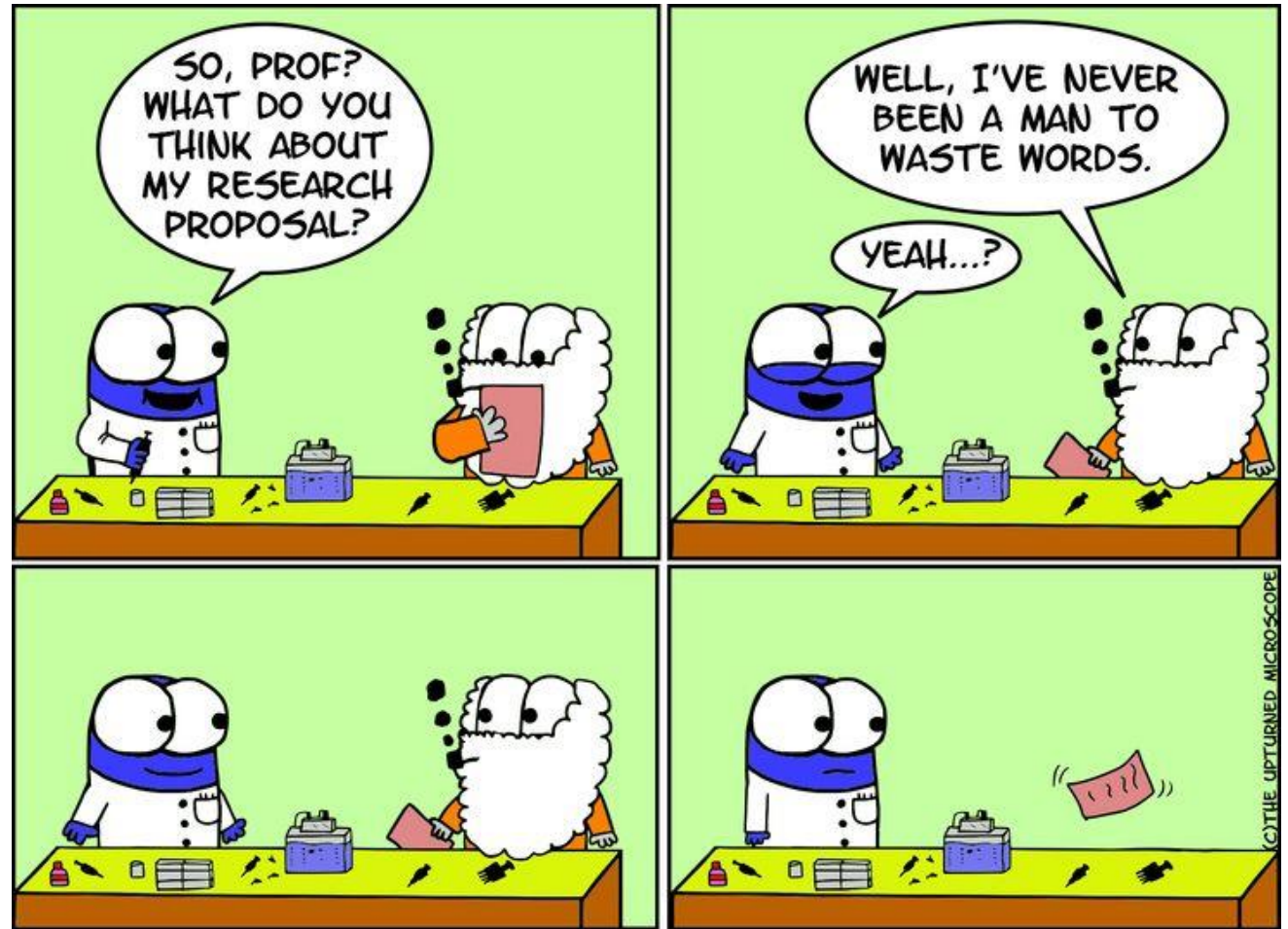


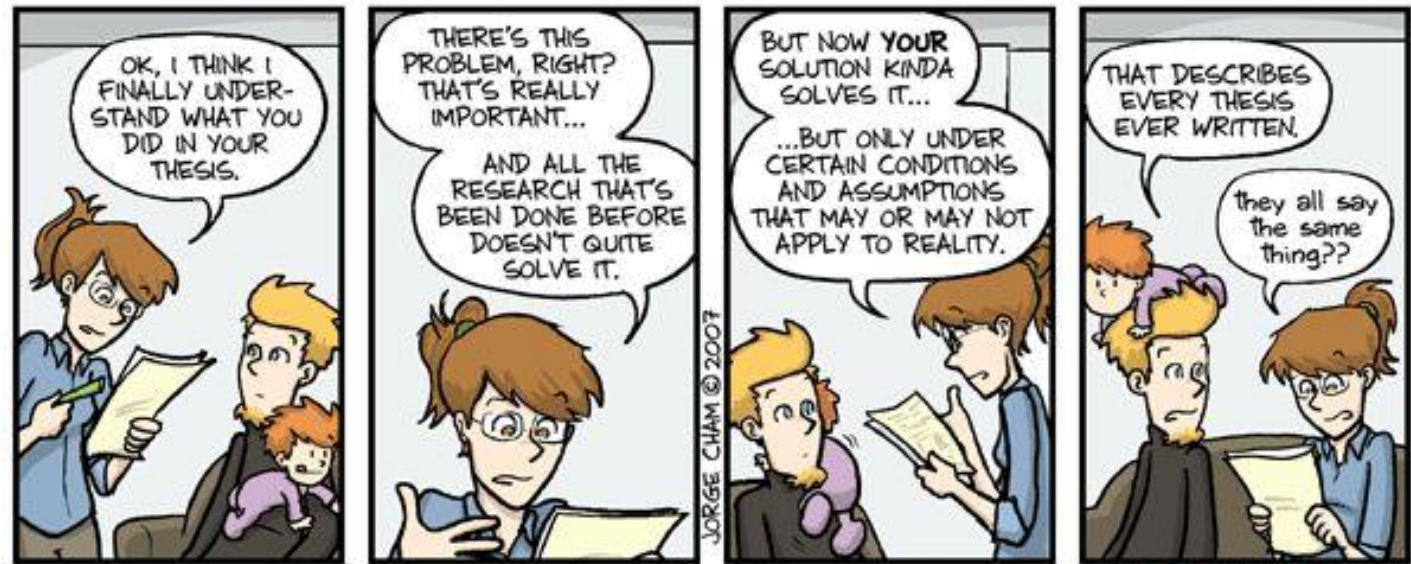
Develop research proposal ideas and draft presentation

1. Prelab discussion
2. Draft specific aims and alternative approaches for your proposal



What topics do you want to cover in the Research Proposal?

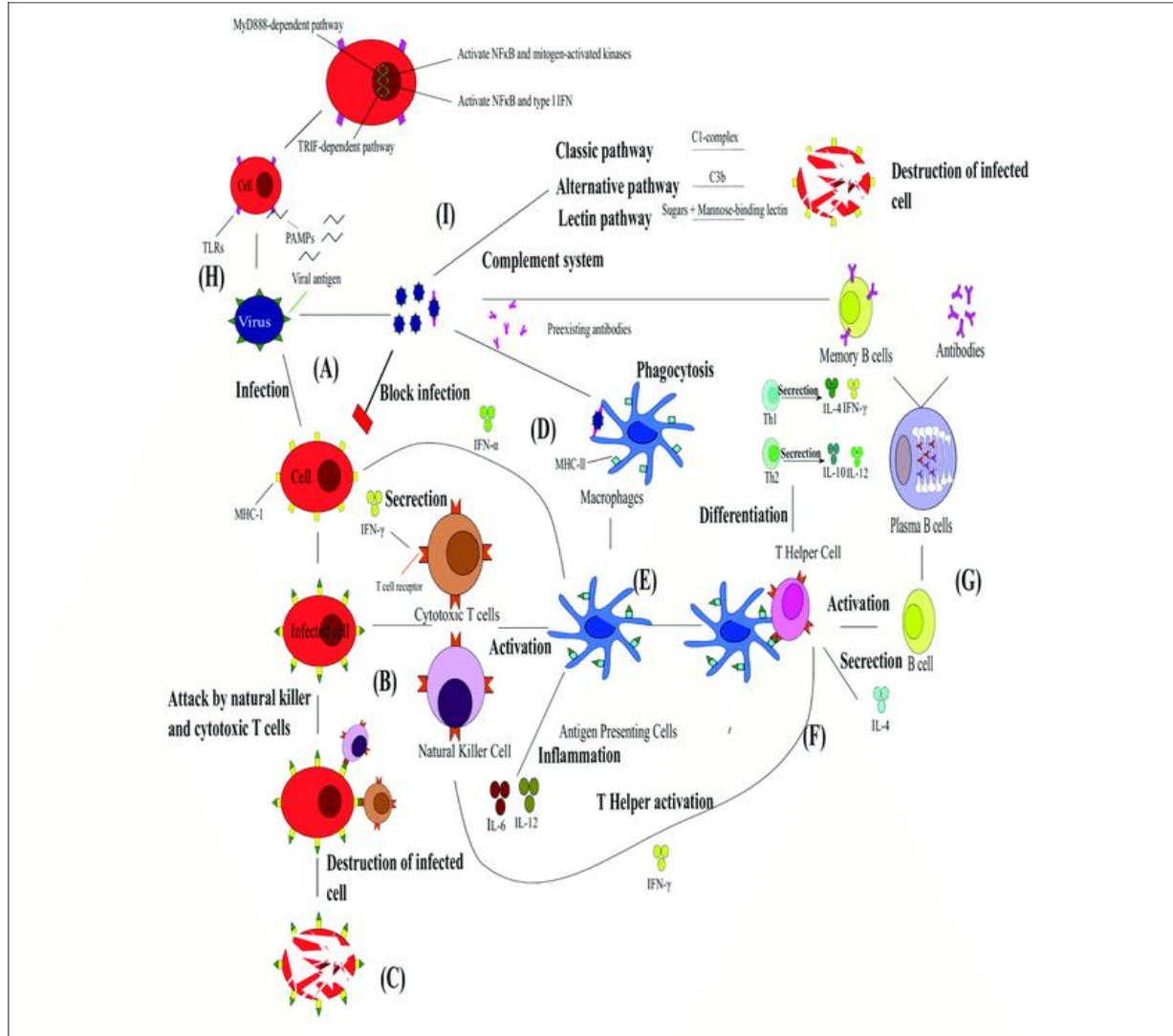
- Background/overview
- Research question/goal
- Specific aims
- Experimental approaches
- Alternative approaches
- Societal/ethical impact
- Summary



Background/overview

- Provide sufficient details for the audience to understand the importance of your project
 - Give overview of the problem you will address
 - Provide specific background information needed to understand the problem and your approach
 - Provide *only info* needed– including images!
 - Refer to relevant previous work
 - This provides context and indicates feasibility for your idea/approach

Goes doubly for complex systems



Research question/goal

- Clearly state this (can be its own slide)
- Background information builds to this research question while emphasizing that it is a new approach to solve a problem



Specific aims

- Proposals tend to have 2-3 specific aims
 - They address key parts of the overall research question
- Each aim is a statement of a clear goal/question that will be answered if the aim is successfully completed
 - By completing all aims, you will answer your overall research question
- ([Fun fact for your future](#): Prerna talked about stand-alone specific aims. You would write those as a PI our group leader, but they require some expertise)

Experimental approaches & alternative approaches

- Each specific aim will include at least one experiment (with methods details) that addresses the goal of the specific aim
 - What experimental approach will you take?
 - What are the different experimental/control groups?
 - What is your readout?
 - **What is the alternative approach you will take if your proposed experiment fails?**
- You can (and should) include mock data to illustrate your expected results and help explain your ideas

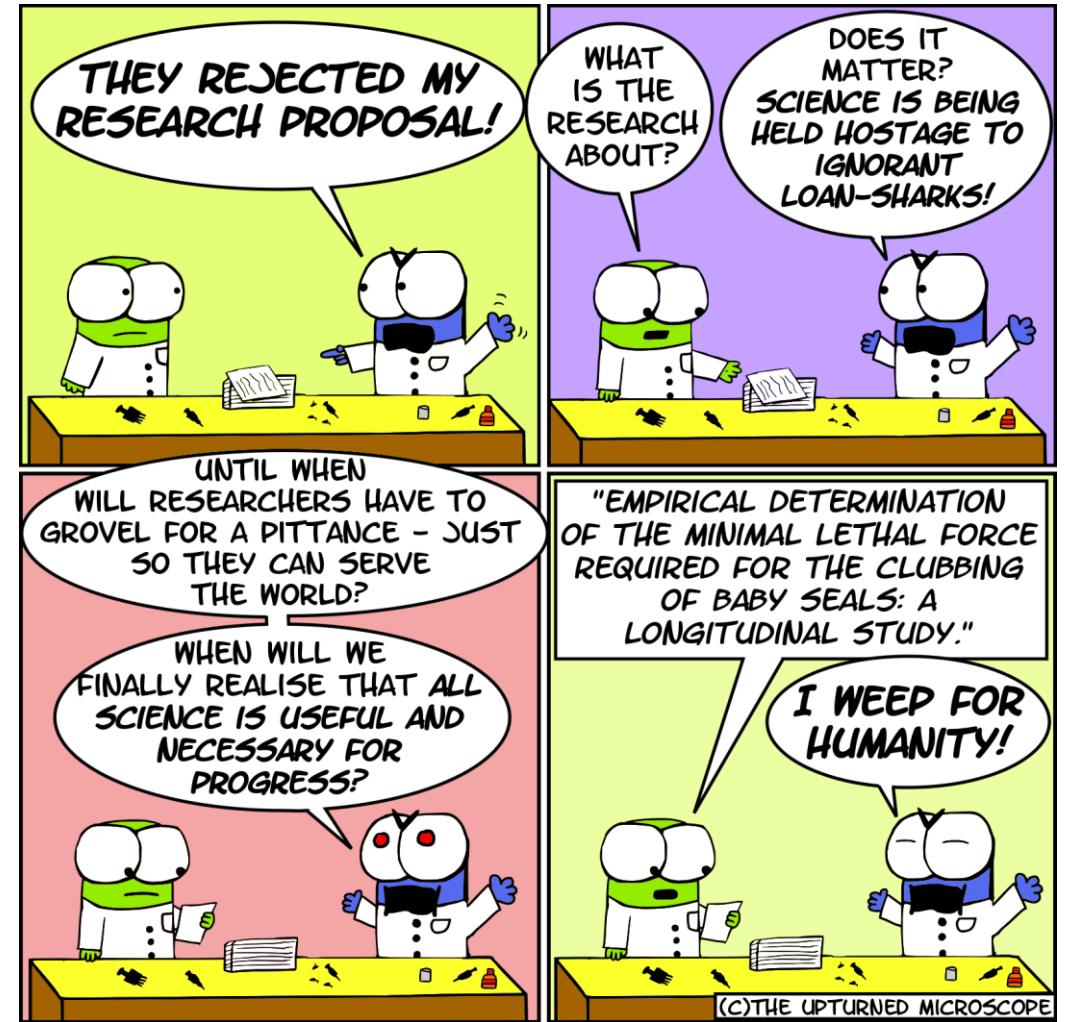
How to win over a critic



Critique	Example	Strategy
Scope is inappropriate / solution is not valid	“My drug cures all cancer”	Potential = Large Claims = Specific
Foundation is not generally understood as factual	“My drug targets the nucleus of red blood cells”	Read up on mechanisms Give necessary background
Not feasible / downsides to approach	Almost every idea ever at some point <i>lol</i>	Alternate approaches Existing, similar approaches Preliminary data*

Societal Impact

- What is the societal impact of your work (intended or otherwise)?
 - The lecture on Tuesday will cover this in much more detail
- Make sure you clearly address this in your presentation
 - Look at the grading rubric



For Today

- Work on specific aims and approaches
 - Get feedback from instructors and TAs
- Begin thinking about societal impact of work
- Begin drafting presentation slides (if you want a head start)

For next time

- You will be doing a peer review activity of each other's proposals in lab
- Prepare information (from the wiki homework section) to help you explain your project and get feedback
 - Although this is due Tuesday– please submit it as early as possible so you can get feedback before the class next week