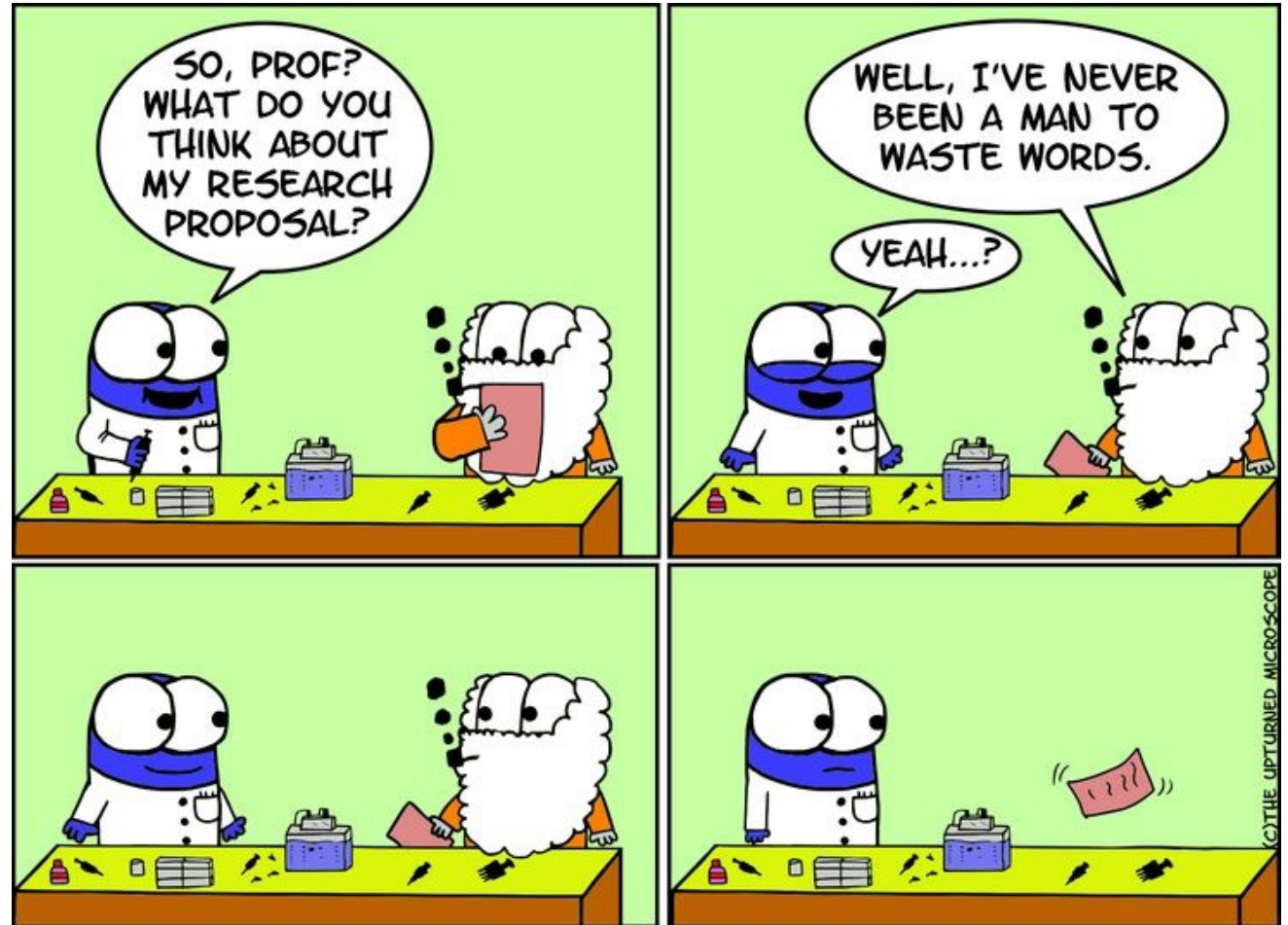


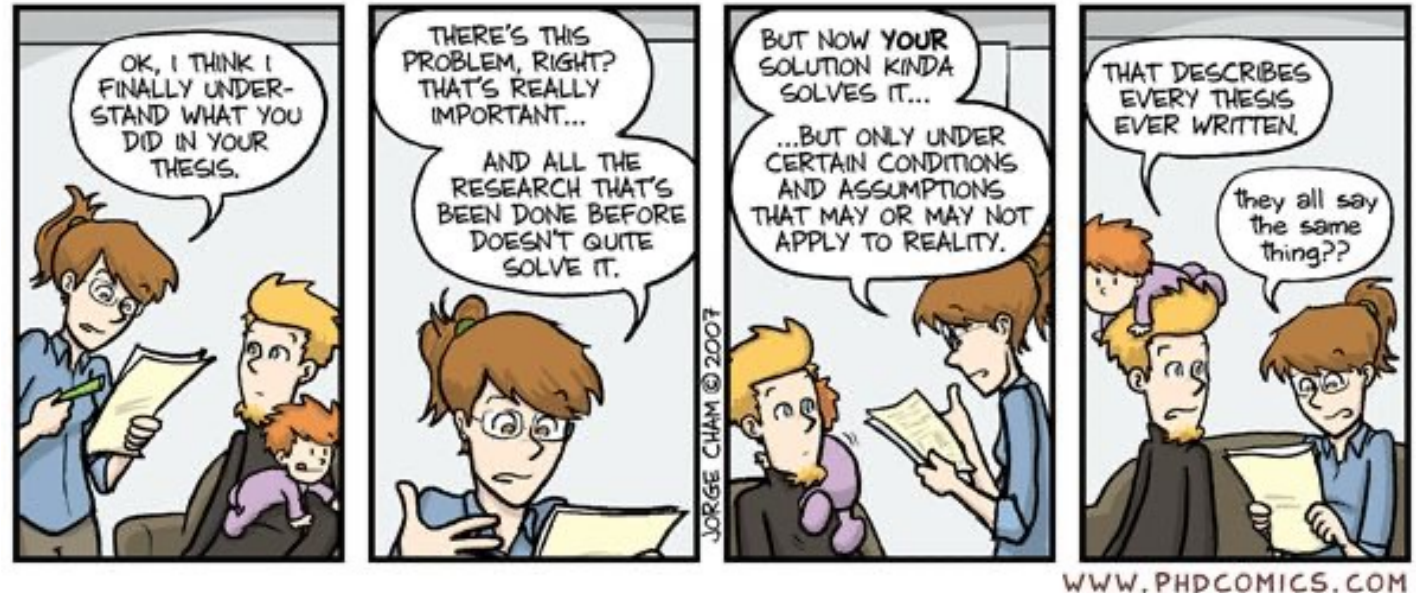
Develop research proposal ideas and draft presentation

1. Comm Lab
2. Prelab discussion
3. 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
 - Reference relevant previous work
 - This provides context and indicates feasibility for your idea/approach

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
 - Build on each other
- 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

Example: Can the genetically engineered XKCD enzyme dephosphorylate tau to prevent the development of Alzheimer's disease?

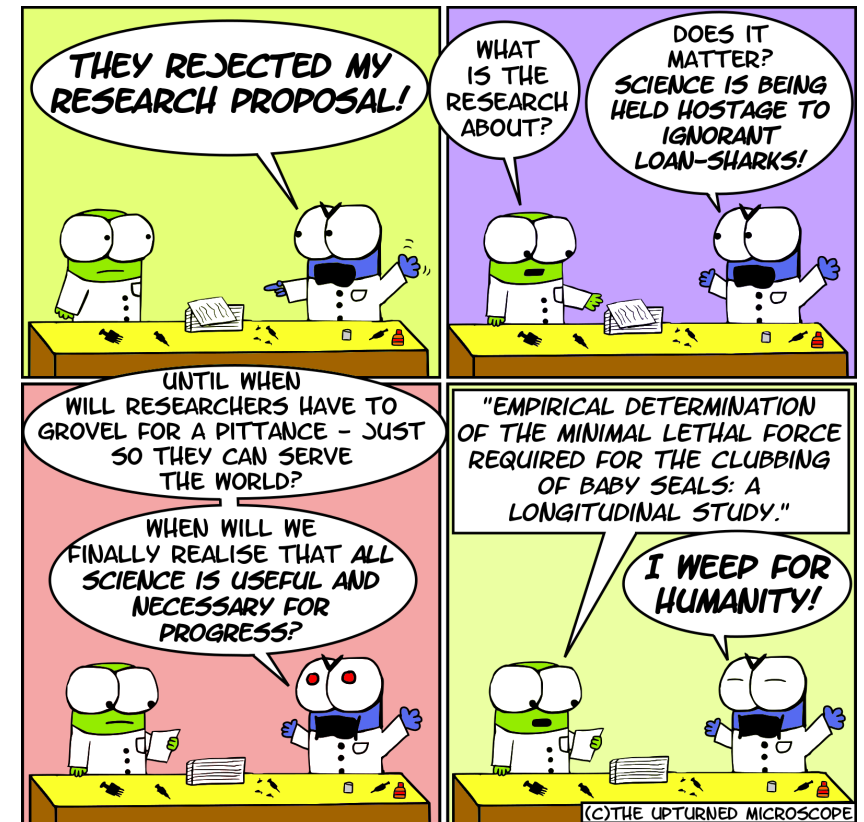
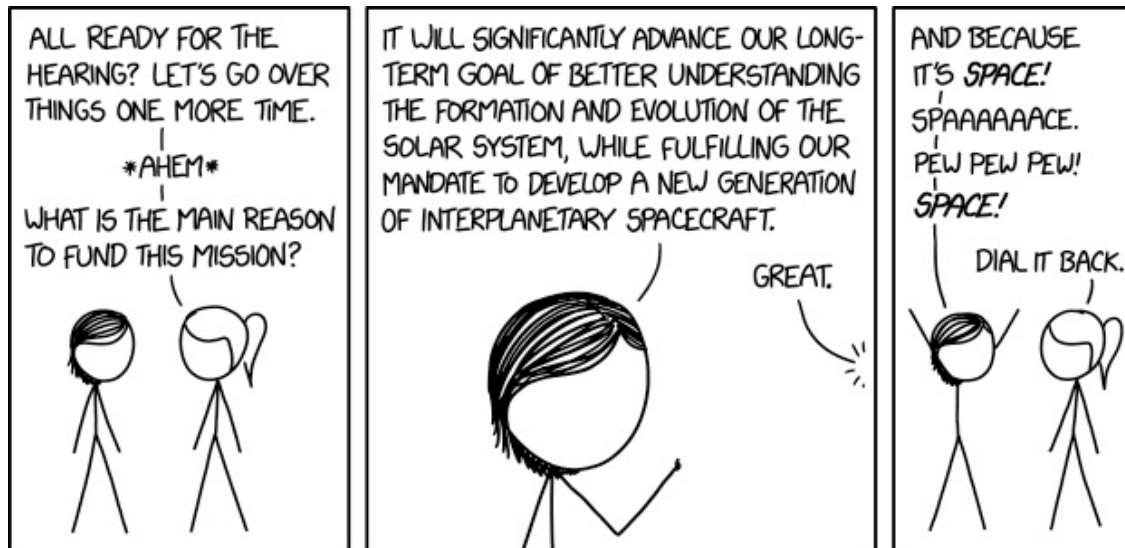
- Specific Aim 1: Optimize production and packaging of XKCD enzyme
- Specific Aim 2: Test XKCD dephosphorylation activity *in vitro*
- Specific Aim 3: Test delivery and efficacy of XKCD using *in vivo* mouse model of AD

Experimental approaches & alternative approaches

- Each specific aim will include an 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?**
- It can be helpful to include mock data to illustrate your expected results

Societal Impact

- What is the societal impact of your work (intended or otherwise)?
 - You will start on this today and the lecture on Thursday will cover this in much more detail



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