CRAFTING & VETTING YOUR FIRST R01

Lisa Cunningham

Section on Sensory Cell Biology
National Institute on Deafness and Other Communication Disorders
National Institutes of Health

ARO Mentoring Sessions 2020–
Navigating the Grant Landscape

National Institute on Deafness and
Other Communication Disorders (NIDCD)

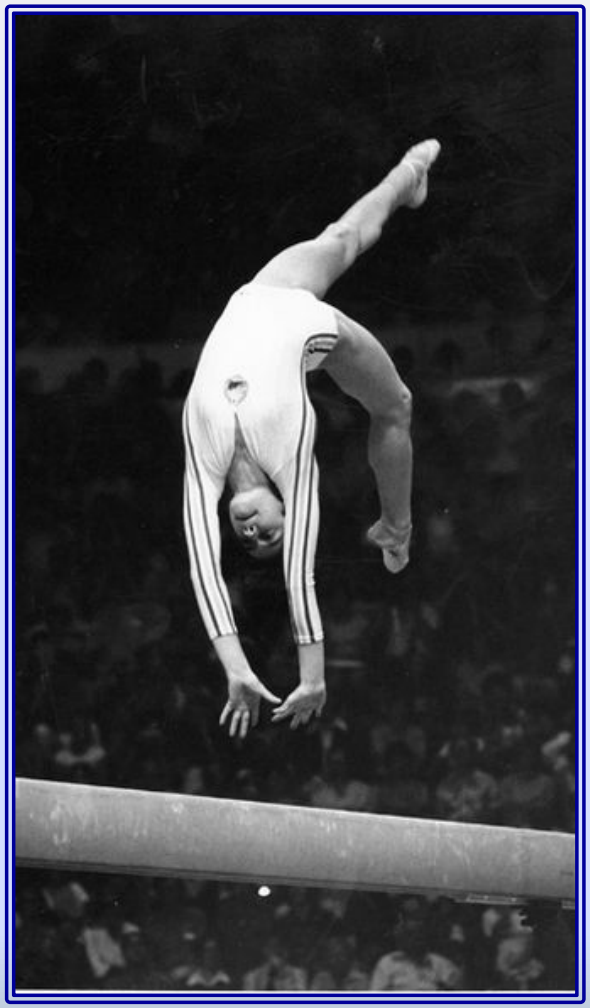
Study section should never see a grant application that hasn't already been reviewed

It takes (me) a year to write an R01

The first 6 months:

It takes a year to write an R01

You have to nail the Specific Aims page



- Why this research is critically important
- You have compelling preliminary data
- You have the expertise for this project
- Specifically what you are going to do
- How the field will be advanced when this project is complete

What happens next

- You continue reading & thinking & doing experiments, because you assume your R01 will not get funded on the first round

- Study Section meets

- You log on to eCommons and see:
  Priority Score: X
  Percentile: Y

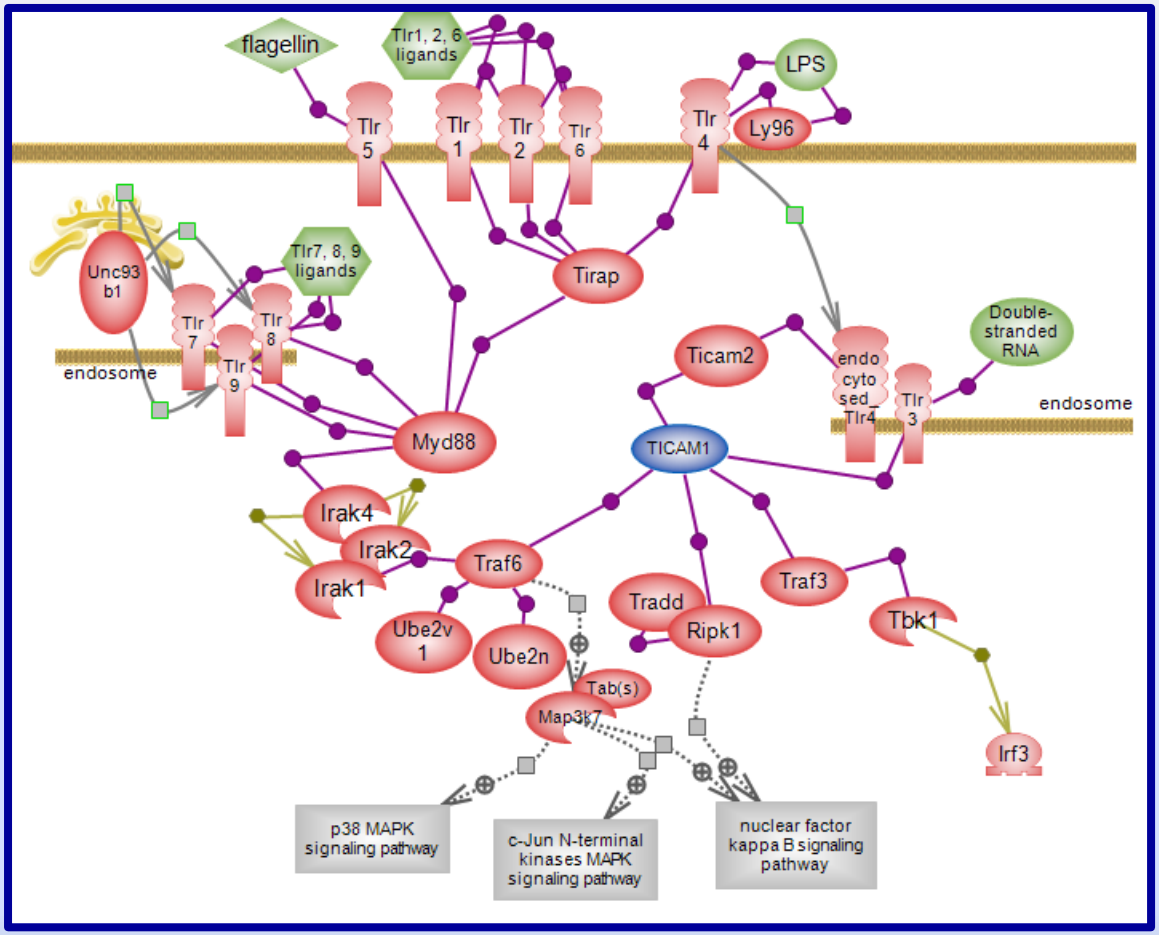
- Email your Program Officer and request a phone appointment

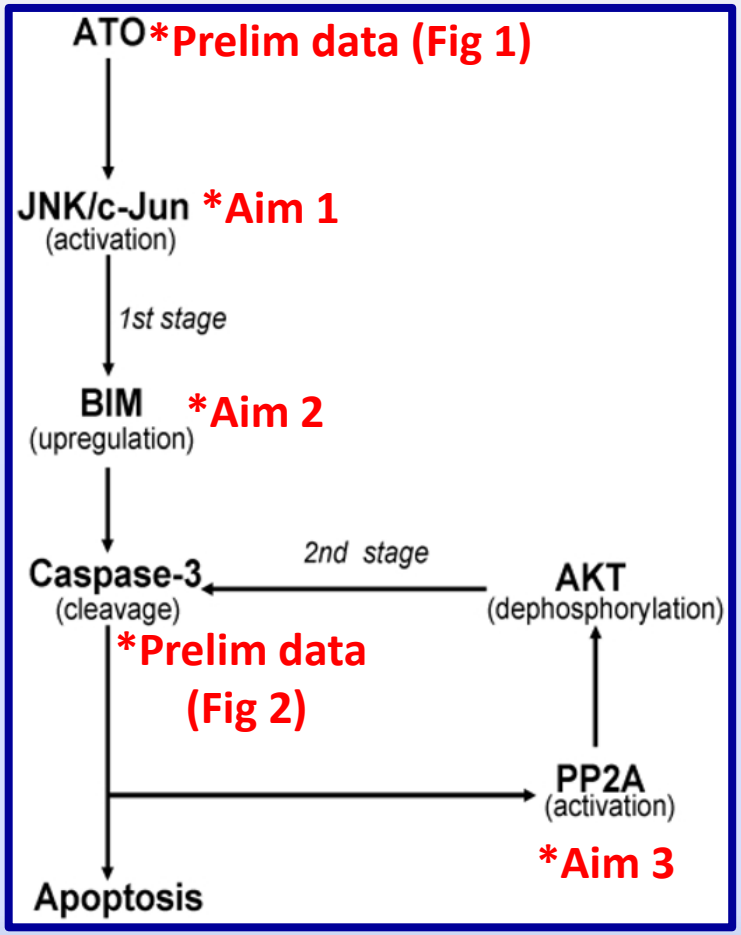
Listen to the reviewers

and your program officer

Do:

- Show a drawing of your overarching hypothesis





Not like this!

Yes like this!

Do:

- Show a drawing of your overarching hypothesis
- Show that you have thought carefully about the pitfalls
- Remember that your reviewers are not all experts in your area
- Use these terms:
  - Mechanism
  - Our hypothesis predicts
  - Our preliminary data indicate
  - These data suggest
  - Novel
  - Impact
- Describe your controls, analyses, statistics

Do not:

- Propose domino aims or fishing expeditions
- Propose strictly descriptive research
- Be overly ambitious
- Leave room for concern about your independence
- Argue with the reviewers or fail to adequately address their comments

Cunningham Summary Statement

Reviewer 2: *In Aim 3, uptake of tagged Hsp70 will be determined by immunofluorescence. A better approach would be isolation of hair cells by FACS followed by western blotting.*

Response: We agree that it may be difficult to detect uptake of the Hsp70-GFP fusion protein by immunofluorescence, especially if only a small amount of Hsp70-GFP is taken up by hair cells.

FACS sorting has been used successfully with dissociated cells from neonatal mouse cochlea [15]. These investigators used cells pooled from several cochleas to obtain a fairly small number of hair cells and supporting cells (~10,000 cells of each type), which they then analyzed by RT-PCR. Our study would require western blotting of the FACS-sorted supporting cells and hair cells. We considered this approach in the original application; however, the director of the MUSC FACS facility, Dr. Daohong Zhou, advised us that western blotting from FACS-sorted cells requires 500,000 cells of each type (or approximately 360 mice per experiment). Thus this approach is complicated by the amount of material required. To address the potential pitfall that we may not be able to detect uptake of Hsp70-GFP, we have added to Experiment 3.4 an alternative immunohistochemical approach…

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The Long View: deciding on a long-term goal/trajectory for your laboratory

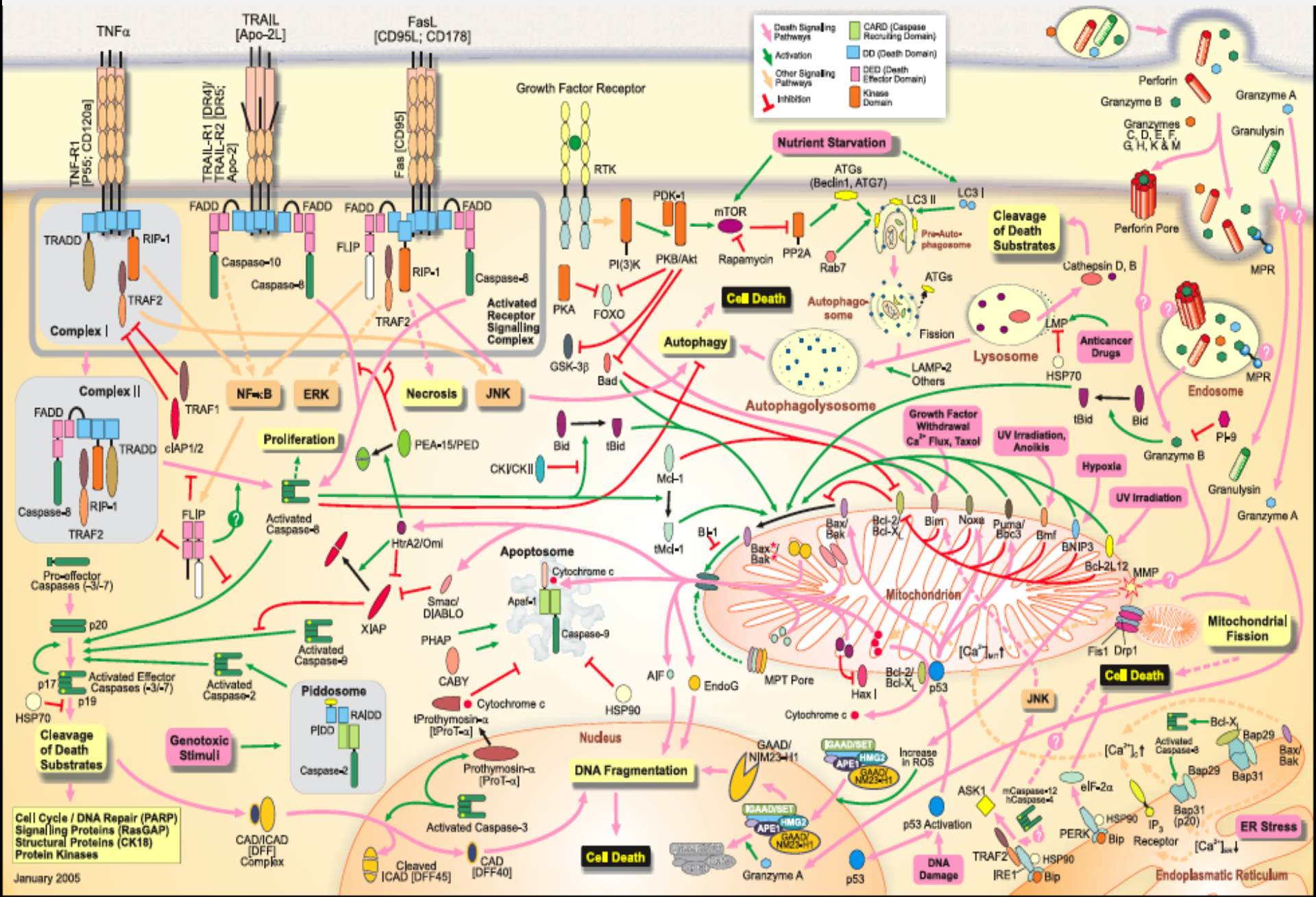
Make sure you are focused on an important question

- Identify questions that have high scientific relevance
- Talk to your colleagues and mentors about the most fundamental questions in your field
- Consider your skills and passions
- Consider bringing a new technique to a field where it hasn't been applied before

Find a niche – your laboratory should offer something unique to the field

- You need something that's going to make you distinct
- Early in your career it's better to not compete directly with an established laboratory
- This is especially true for the laboratory in which you trained

Get comfortable with feeling stupid



Essay 1771

The importance of stupidity in scientific research

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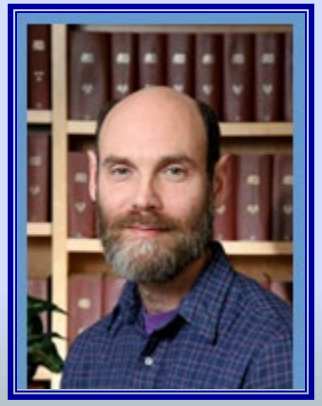

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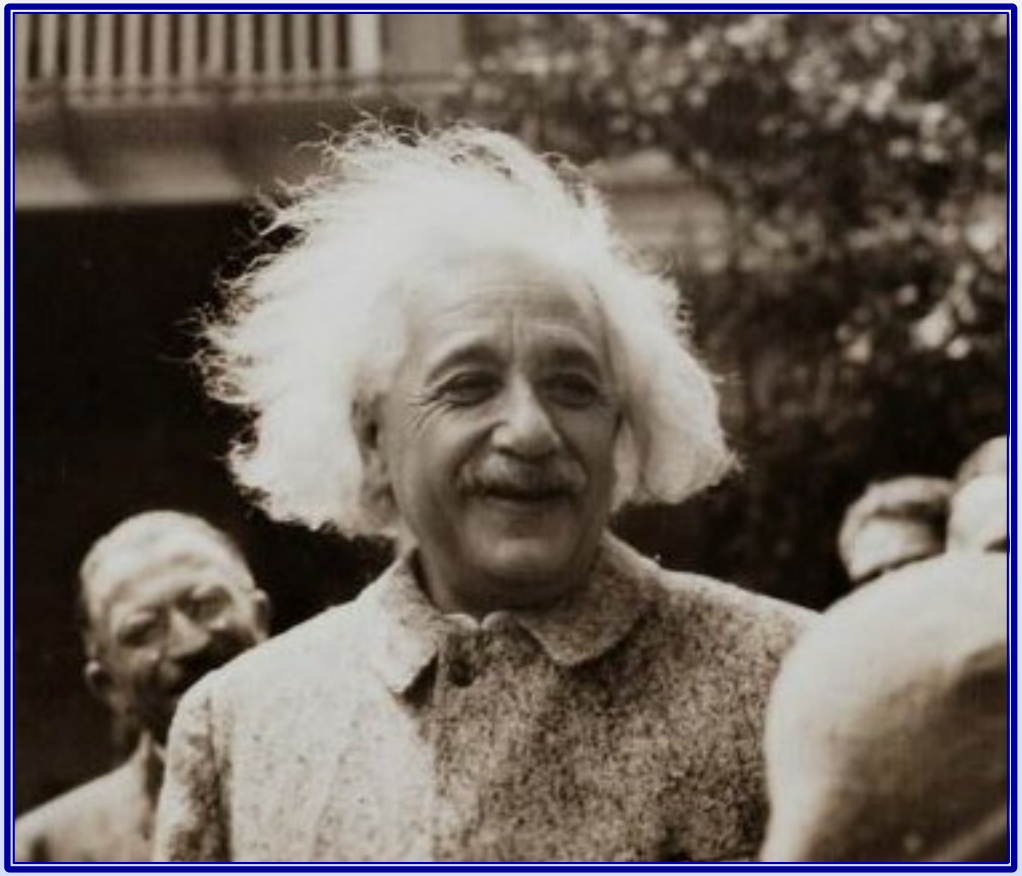
University of Virginia

NIH National Institute on Deafness and Other Communication Disorders (NIDCD)



“If we knew what we were doing, it wouldn’t be called research”

- Albert Einstein