Summer STEM Fellowship Opportunities
and
How to Write a Fundable Research Proposal

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Yale Summer Fellowships

Yale College First -Year Summer Research Fellowships

- Everyone encouraged to apply-no prior research experience required.
- 10 weeks of independent research with Yale faculty.
- Fellowships pay $500/week.
- All basic science, CS, engineering research are eligible.
- ~95% of applicants receive funding.
- Needs 2 letters of recommendation, one from Yale PI.

STARS Summer Research Program

- 9-weeks of independent research with a Yale faculty
- summer course, SCIE 101 Scientific Research: Process and Presentation (1 WR credit), meets 5 days/week
- Social events (weekend trips to CT attractions)
- Tuition, room, board, and $2,500 stipend provided
- Need one letter of recommendation from your Yale PI

Yale Summer Fellowships

Tetelman Fellowship for International Research

- Supports 10-week long STEM based summer research fellowships.
- Students identify a research mentor in a foreign institution and submit a proposal.
- Up to $7,500 provided per fellowship.
- Need two letters of recommendation, one from foreign PI, other from Yale faculty.

Steps to Find the “Right” Mentor

Apply to at least 5 labs. Read research papers generated by the perspective mentors’ labs.

Send them your CV/resume along with a letter of introduction.

Be somewhat knowledgeable about the mentor’s research area before going to the interview.

Don’t be shy to showcase your own scientific talents during the interview-HS research, STEM courses taken at Yale, etc.

Sit in on a lab meeting to gauge lab dynamics.

Send a thank you note to everyone who took time to talk to you.

What We Look for in a Summer Fellowship Applicant

Applicant's potential to be a future scientist

- 2 strong letters of recommendation-a mentor letter plus a second STEM recommender (non-STEM letter OK if that letter will be strong)
- Past STEM activities
- "Distance travelled"
- CV
- Grades

Quality of the research proposal

- Shows clear understanding of the science conducted
- Shows collaboration between applicant and mentor

Quality of the mentoring environment

- What is the availability of PI and immediate mentor during the training period?
- Mentor's letter must state how the applicant will be trained

You Need to Engage Your Mentor to Craft Your Summer Research Proposal

You are not expected to come up with a research proposal by yourself!

Your research mentor should brainstorm projects with you

- Give you research papers to read
- Give you an idea of the types of projects offered in the lab
- You need to understand the science that you will be working on

You and your mentor will come up with the specific aims in your research proposal together

- Your mentor will help you craft the questions you need to address in your proposal
- You must write the proposal entirely by yourself, incorporating feedback from the mentor. Start early!
- You must NEVER copy your mentor’s past research proposal and pass it off as yours

How to Write a Fundable Research Proposal

12 pt Times New Roman, 1.5 spacing, normal margins, 8 page limit (not including references)

Abstract: summarizes your proposal in 250 words. Identify the problem you are investigating, why this problem is significant, the hypothesis you are testing.

Summarize key experiments that address the hypothesis. The concluding sentence should be ‘Completion of this proposal will lead to…”

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Background and significance: tell us why the problem you've chosen is significant. Lead the reader from the general to the specific. Definitely include a figure to illustrate your points to help your reader wade through the information. Remember, your reviewers might not have expertise in your exact area of research so make their job easier. Define all jargon and abbreviations.
3 pages max.

Hypothesis (1 sentence): formulate a hypothesis that you are testing in your grant proposal. For example:

"I hypothesize that the Delta D457K mutation promotes increased affinity with the ACE2 receptor to enhance viral entry into cells"

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Two specific Aims: these are the research questions to test your hypothesis that you wish to address in your proposal. For example:

Specific Aim 1: To determine mechanistically how the S protein D457K mutation promotes increased affinity with ACE2 in lung epithelial cells.

You need to discuss briefly the experiments you will perform to address the specific aims. Aim 1 should flow logically into Aim 2. Aim 2 might be to test this mutant virus in a mouse model to analyze its infectious properties. Include a figure per aim to help the reviewer understand what you're trying to do. 4 pages max (2 pages per aim)

Potential pitfalls and alternative strategies: this is a very important part of any grant. No experiments are perfect, so you will need to point out to the reviewers that you thought about possible problems conducting them and ways to address these issues. ½ page per aim.

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References

Use this format: Chang, S. Chromosomes going to POT1. *Nature Genetics* (2018); 14:342-247.

2024 Summer Research Timeline

- Nov/Dec: Start looking for potential Yale mentors
- Jan 2024: finalize lab mentor
- Feb 2024: start working with your mentor on your grant proposal
- Feb 9: STARS Summer application due (only mentor rec letter needed, research proposal not required at deadline)
- Feb 22: Yale College Dean’s Research Fellowship application due
- Feb 29: Tetelman Fellowship application due
- March 6: First-Year Summer Fellowship application due
- May 1: Final SEA application deadline; *Priority deadline: April 2