

Preparing a Successful NSF Proposal

Day 2

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Questions from Day 1

How to prepare the NSF proposals as a research assistant professor?

A. CAREER Program

Proposers must meet all of the following eligibility requirements as of the annual deadline:

- Hold a doctoral degree in a field supported by NSF;
- Be engaged in research in an area of science, engineering, or education supported by NSF;
- Hold at least a 50% tenure-track (or tenure-track-equivalent) position as an assistant professor (or equivalent title);
- Be untenured; and
- Have not previously received a CAREER award. (Prior or concurrent Federal support for other types of awards for non-duplicative research does not preclude eligibility.)

Tenure-Track Equivalency - For a position to be considered a tenure-track-equivalent position, it must meet all of the following requirements: (1) the employee has a continuing appointment that is expected to last the five years of a CAREER grant; (2) the appointment has substantial research *and* educational responsibilities; and (3) the proposed project relates to the employee's career goals and job responsibilities as well as to the mission of the department or organization. As stated in the Proposal Preparation Instructions, for non-tenure-track faculty, the Departmental Letter must affirm that the investigator's appointment is at an early-career level equivalent to pre-tenure status, and the Departmental Letter must clearly and convincingly demonstrate how the faculty member's appointment satisfies all the above requirements of tenure-track equivalency.

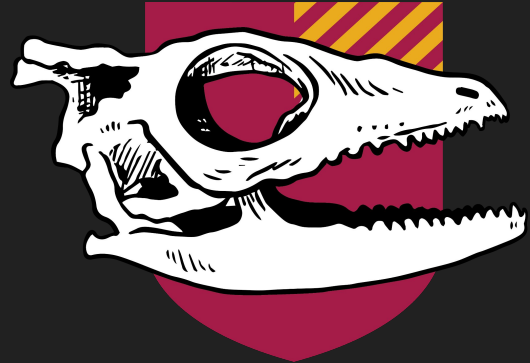
These restrictions do not hold for Core proposals. LUC allows NTT and RAP to apply for federal grants.

Outline for tomorrow

- Building your narrative
- Common pitfalls of NSF unsuccessful proposals
- Building your broader impacts

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Come back for day 2
tomorrow!





Tell reviewers why they should care!

Help the reviewers understand where they are going.

The first page should serve as a introduction to the entire proposal.

Identify the knowledge gap

State how you are going to fill it

(three aims)

If appropriate, state an overarching, testable hypothesis



Tell reviewers why they should care!

An old quote from an NSF Program Officer:

“90% of the grant’s likelihood of success is based on how novel your questions are —ideally they are ones that have not been thought of or posed before”.

The first page can make or break your proposal





Building a narrative

NSF proposals are 15 pages

Project narrative

Broader impacts

Separate documents for:

Facilities, Equipment, and Resources

Post doc mentoring plan

Data management

References

Letters of collaboration



Tell reviewers why they should care!

Set up a road map!

The first page should serve as a introduction to the entire proposal.





Tell reviewers why they should care!

Identify the knowledge gap

State how you are going to fill it (three aims)

Briefly mention broader impacts

If appropriate, state an overarching, central hypothesis





Building a narrative

- 14 pages - There are multiple writing models, but they all share similar goals
 - Convincing the reviewers about the significance of your research
 - Convincing the reviewers that you have the ability to perform the proposed Research
 - Propose and justify the (integrated) education plan

At every step remember, NSF is not risk tolerant.





Tangent alert

I do not like the question, “How much preliminary data do I need?”

There is no simple answer to this question!

The answer is always context dependent.

Reframe the question:

What are the potential criticisms of the proposed research?

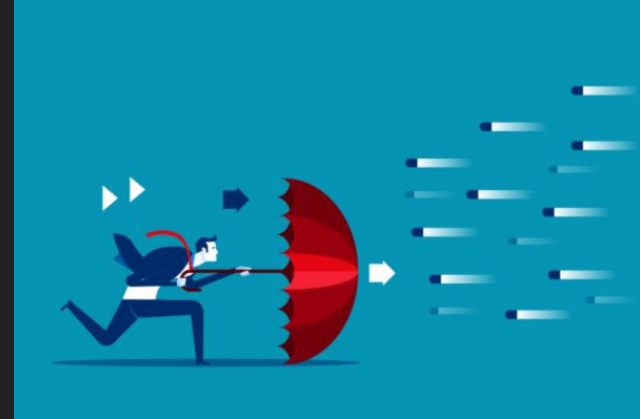
How do I minimize the impact of those criticisms?





Fatal criticisms

The question is not novel or interesting





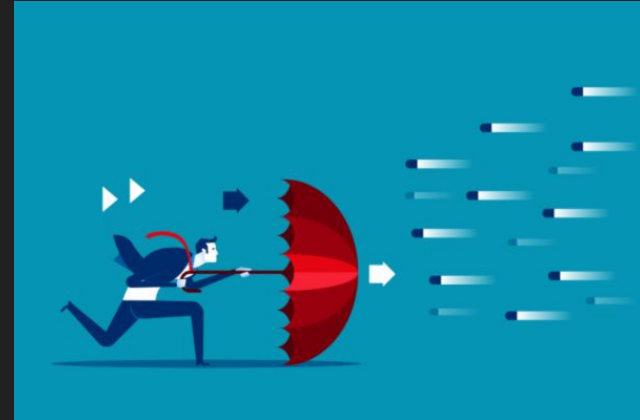
Fatal criticisms

The question is not novel or interesting

Discussion of background literature

Justify and support the knowledge gap

Do NOT dilute your message with an extensive literature review of every paper ever written on a topic

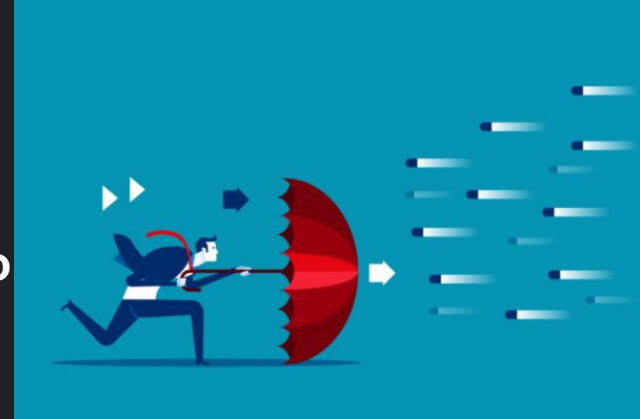




Fatal criticisms

**The results will provide only incremental
advancements for the field.
(not transformative)**

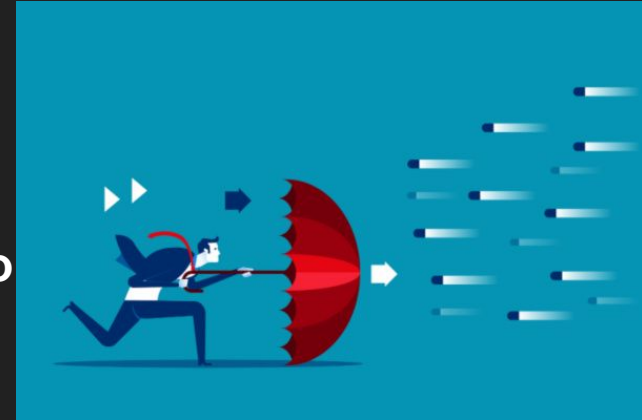
**It is unclear whether the results will be generalizable to
species/groups outside of the study.**





Fatal criticisms

**The results will provide only incremental
advancements for the field.
(not transformative)**



**It is unclear whether the results will be generalizable to
species/groups outside of the study.**

Provide a significance statement

Call it out with a subheading

Discuss the parallels with other systems/groups

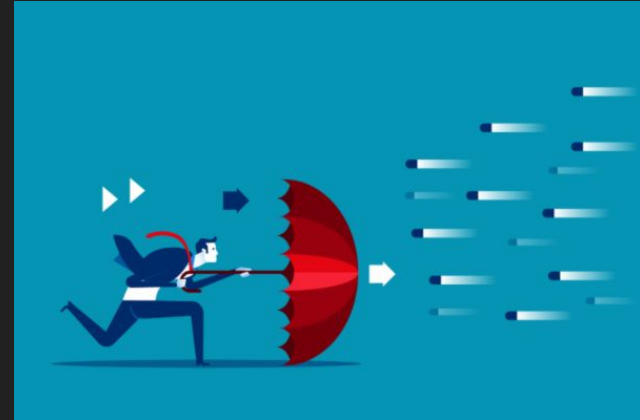
You may want to repeat this information in multiple places



Fatal criticisms

The PI has not established their research program since becoming a PI.

The PI has no experience with their proposed experiments/statistical technique/field work/etc.





Fatal criticisms

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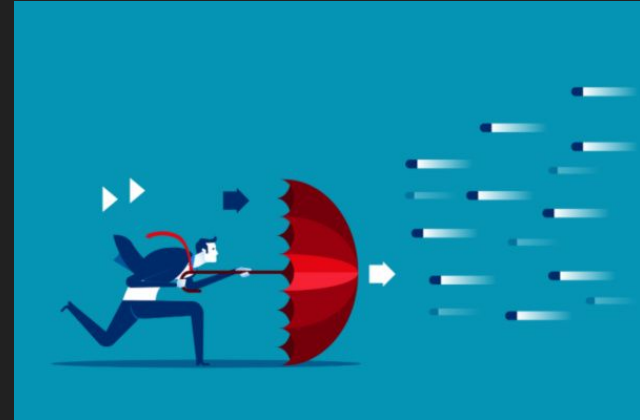
The PI has no experience with their proposed experiments/statistical technique/field work/etc.

Provide citations

Show that methods have been completed under your supervision

Discuss the resources you have available

Include senior personnel (boilerplate letter)



Common criticisms

The question is not novel or interesting

The results will provide only incremental advancements for the field.

It is unclear whether the results will be generalizable to species/groups outside of the study.

The PI has not established their research program since becoming a PI.

The PI has no experience with their proposed experiments/statistical technique/field work/etc.

Questions?



Integrated Education

Approach it with the same attention and rigor as your research

There is an incredibly literature on effective pedagogy

Try to meet the objectives of Next Generation Science Standards (K-12)
or Vision and Change (University)



Think about Impact, Synergy, and Feasibility

Elements of the Education Plan

Identify the following

Grounded idea (include citations)

Audience (who will benefit)

Venue

Learning outcomes

Assessment

Dissemination

Critical

Identify the link to your research?

Elements of the Education Plan

Should include an element of broadening participation

A diverse and capable workforce is vital to maintaining the nation's standard of excellence in STEM: science, technology, engineering and mathematics.

The U.S. National Science Foundation is committed to expanding the opportunities in STEM to people of all racial, ethnic, geographic and socioeconomic backgrounds, sexual orientations, gender identities and to persons with disabilities.

We value diversity and inclusion, demonstrate integrity and excellence in our devotion to public service and prioritize innovation and collaboration in our support of the work of the scientific community and of each other.

Understand how NSF defines Broadening participation

You may not agree with
their definitions,
But they hold the checkbook

NSF supports research and programs that focus on the following areas:

Individuals from underrepresented groups in STEM

- STEM Education Researchers and Professionals seeking NSF funding may propose inclusive, nondiscriminatory strategies to broaden the participation of individuals who belong to underrepresented groups, including those who identify as:
 - » African American or Black
 - » Alaska Native
 - » Hispanic
 - » Native American
 - » Native Hawaiian
 - » Other Pacific Islander
 - » Women
 - » Individuals with Disabilities

Institutions that predominantly serve and/or reach individuals from underrepresented groups such as community colleges, minority serving institutions, women's colleges, institutions for persons with disabilities, and informal institutions such as science centers

Geographic rural areas with lower rates of participation in NSF funded STEM research and education programs

Questions

Grounded idea

Audience

Venue

Learning outcomes

Assessment

Dissemination



Last Questions and discussion?

I will share a link to the slides with anyone that emails

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I hope they can provide a checklist for you to follow as you
prepare your proposal