



INTRO POLL

**What type of grant concept
are you most likely to
develop?**

**(Enter number and short
description in the chat)**

1. Research
2. Programmatic Initiative
3. Education/Outreach
4. Arts Program
5. Something else



YOUR WEBINAR WILL BEGIN SHORTLY



CONCEPT DEVELOPMENT

American University

11:00 a.m. - 12:00 p.m. (ET)

December 9, 2024

WEBINAR LOGISTICS

RUNTIME



~50 minutes, incl. ~10 min. of Q&A

Q&A



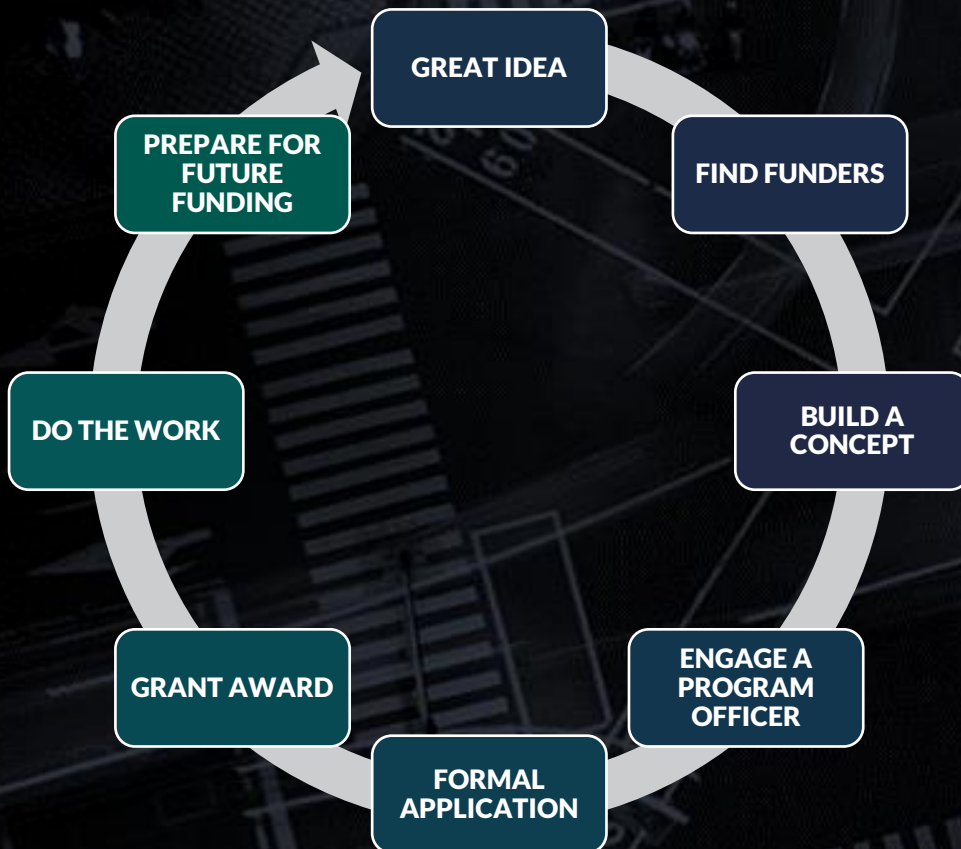
Questions can be asked throughout the presentation; You may also ask questions via the chat link at the bottom of your screen and the presenter will reply

RECORDING & SLIDES



All attendees will receive a copy of the recording, including the slides

GRANT LIFECYCLE



The grant funding process: from idea to implementation.

1. Start with a great idea.
2. Find funders who are interested in the idea.
3. Build a solid project concept aligned with funder goals.
4. Sell the concept to funders.
5. Complete the formal application process.
6. Receive a grant award.
7. Do the work.
8. Prepare for future funding.

This process varies across funder types.



TODAY'S AGENDA

- Turning your idea into a concept paper or project summary
- Incorporating aim or objective development into full proposal drafting
- Q&A



Developing a Concept: Know Your Funder

- Agency & Mission
 - Researching Organizational Structure and Strategic Priorities
- Mechanisms/Programs
 - Identifying Alignment
- Merit Review Criteria
- Research Concept Development

KNOW YOUR FUNDER (AGENCY AND MISSION)

*Understand the agency/division's **mission***

- Read the mission statement
- Comprehend their mission in relation to their funding portfolio
- How do they measure success (broadly speaking)?

*Look for **alignment** between your work and the funder's mission*

- How is what you are doing aligned with their mission?
- How can your work advance their mission?
- What specific funding opportunities or programs align with your work?

FUNDING MECHANISMS, OPPORTUNITIES, AND PROGRAMS

Identify potential funding mechanisms

- Are there existing funding programs/RFPs that align with your work?
- Do they offer an appropriate scope and budget?
- Are you and your institution **eligible**?

Read the funding notice carefully!

- Get to know the funding notice (i.e., RFP, FOA, PA, or NOFO)
- Identify exactly what is required for a responsive and competitive application
- Assess potential for **competitiveness** vis-à-vis the merit review criteria and scoring weights

MERIT REVIEW CRITERIA

Know the merit review criteria

- List the criteria
 - Commit them to memory
 - Print them out and post them beside your computer monitor
 - Think about them during concept and proposal development
- Crosswalk **how your project addresses each criterion**
- Leverage the crosswalk to assist with project design

Design to the merit review criteria

- Engineer your project design to achieve desired outcomes
- Highlight how those outcomes **produce impacts that fulfill the criteria**
- Tie everything back to how your project **advances the funder's mission**

HOW TO DEVELOP A RESEARCH PROJECT CONCEPT

Thinking about the
funders in your domain...

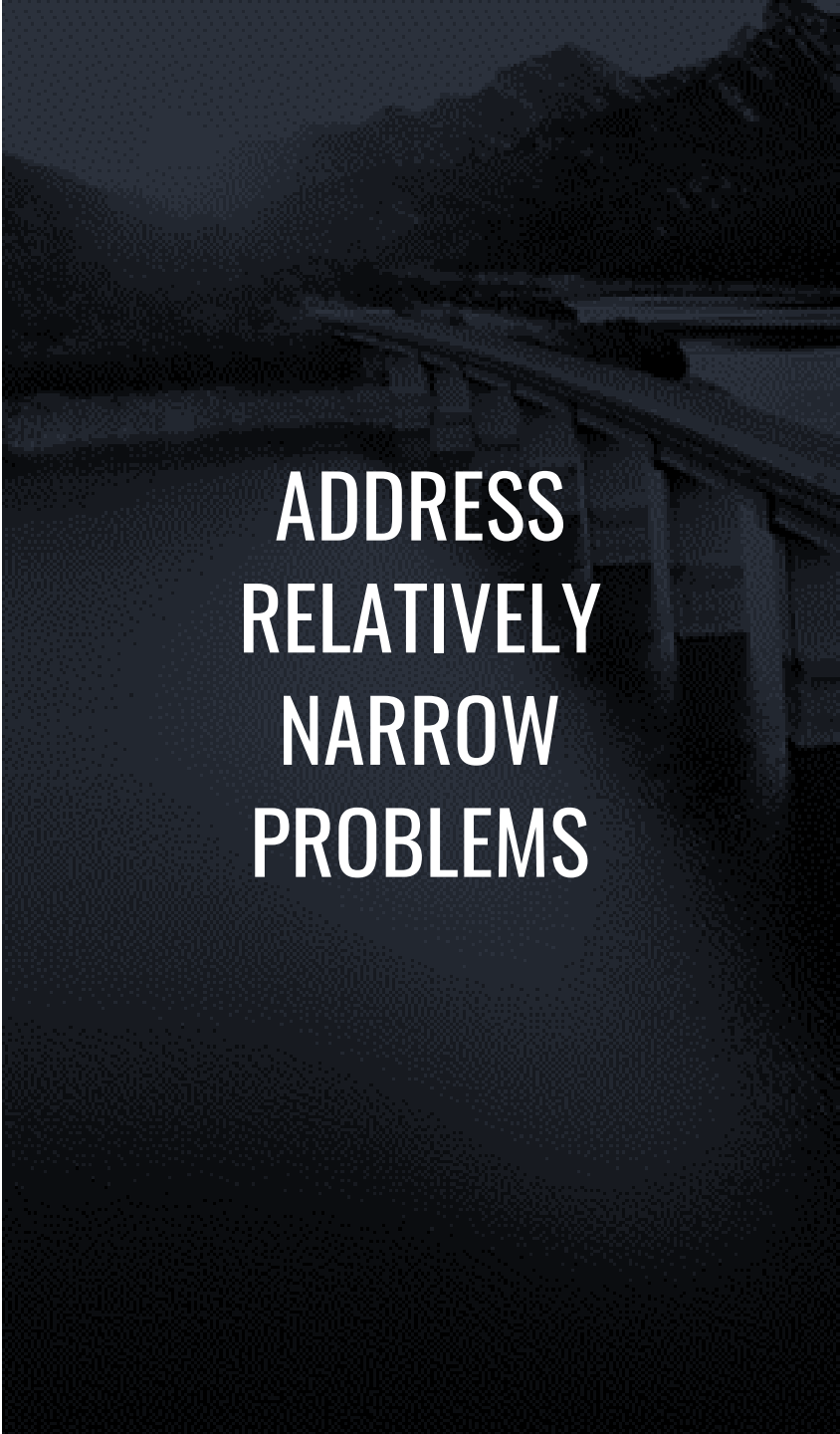
- Select one of the active funders
- Which competition is most appropriate for your work?
- Develop a project idea:
 - What do you want to investigate?
 - Who do you want to work with?
 - What will your project achieve that aligns with the funder's mission, vision, and/or strategic plan(s)?



ADDRESS A SINGLE PROBLEM

Identify a project that will address a single important problem.

- What is the key gap (in knowledge, programs, tools, services) that your project will address?
- How will you address the selected gap?
- What specific results of your work will fill the gap?
- How is this work different from work already underway?
- What concrete impact will your work have on the field?



**ADDRESS
RELATIVELY
NARROW
PROBLEMS**

Identify a narrow problem to target via your project.

- What challenge(s) will your project address?
- How will you address the challenges(s)?
- What specific results will generate measurable changes for key audiences?

**Don't try to solve every problem.
Carefully select the problems you will
solve so that your project is achievable.**



Writing & Revising A Concept Paper or Project Summary

- Essential Asset
- Format Familiar to the Funder
- Describe Project/Link to Merit Review Criteria
- Revise with Colleagues
- Share with Program Officer

The Project Concept or Project Summary is your Essential Asset!

Write to the program officer, reviewers, and funder

- The project summary or abstract is the most-read document in your proposal package
- Use it to communicate with a program officer re: **alignment** and insights
- Reviewers use it to triage proposals and prepare for panel discussion
- Funders use it as the description of your project in their awards databases

Write to persuade!

- Explain the project's potential to advance from a compelling context toward a significant goal
- Cite literature, motivating theory, and/or preliminary data as your evidence base
- Succinctly describe who, what, when, where, how, and why you will conduct the project
- Describe the outcomes and impacts
- *Link the outcomes/impacts to the merit review criteria and to the funder's mission*

USE A FORMAT FAMILIAR TO THE FUNDER

Use the Funder's Preferred Format

- Use the summary/white paper/concept paper/abstract format the funder recommends
- *Structure your response according to their instructions* (as required in the proposal guidance)

or

- When in doubt, *leverage logic and storytelling to convey your project and the merits*
 - Context (challenge, opportunity, specific project, merits, overall impact vis-à-vis mission)
 - Specific work (who, what, when, where, how, and why you will do the work)
 - Outcomes (what will result and how will it impact the field and/or society in general)
 - Alignment with the funder's mission – how this work will advance their mission
- *Write in plain language for a broad audience*
 - Write to a broad audience – assume they are educated readers who can understand your project concept if you explain it well
 - Funders will post the summary/abstract in their awards databases and press releases

DRAFT THE PROJECT SUMMARY

Example – National Science Foundation (NSF)

Overview (~ 1/2 page)

- Context (problem, literature, gap in knowledge, preliminary results, and project rationale)
- Overview of what will occur if the project is funded (including methods and activities)
 - Main hypothesis
 - Corresponding objectives, activities, tasks
 - Expected findings or anticipated results

Intellectual Merit (~ 1/4 page)

- Clear description of how the project and outcomes will contribute to new knowledge and/or **advance the field**

Broader Impacts (~ 1/4 page)

- Clear description of how the project will have **impacts within and beyond the field** to a broader set of stakeholders and beneficiaries (“societal benefits”)

OTHER PROJECT SUMMARY FORMATS

Different funders use different formats:

National Institutes of Health (NIH)

Specific Aims

- Introduction
- Significance
- Aims
- Overall Impact

Department of Defense (DoD)

White Paper

- Name and contact info
- Broad Agency Announcement (BAA) number and title, if applicable
- Funding and duration
- Scientific discussion
- Relevance
- Cost

REVISE USING COLLEAGUES' FEEDBACK

Work with colleagues and subject matter experts to review summary

- Writing is re-writing – iterating on your project summary is key
- Share with colleagues and/or other SMEs – ask them for feedback
- Reach beyond your field to other experts who represent different reviewer types
 - Statisticians (study design)
 - Evaluators (outcome correlations)
 - Generalists (broad perspective)

There is no substitute for a peer/colleague who asks thought-provoking questions while you are in design mode!

Revise the summary

- Incorporate all feedback to enhance study/program design
- Share your best version with program officers!



Contact a Program Officer for Feedback

- Email a Program Officer
- Request a Phone Call or Virtual Meeting
- Confirm Alignment Between Your Concept and the Opportunity
- Gain Insights into Potential Improvements to Your Concept

WHY TALK TO A PROGRAM OFFICER (PO)?

Program staff influence and guide funding decisions

- Peers in your fields
- Manage a portfolio of investments in your fields
- Network with colleagues and other funder professionals
- Guide applicants to more suitable division or funding opportunity
- *Definitive resource for information on alignment and competitiveness*
- Make funding recommendations and decisions
 - Can be advocates or detractors
 - Important to establish short- and long-term rapport

HOW TO APPROACH A PO

Share the strongest draft of the project summary or project concept with a program officer

- Attach to an email that:
 - Introduces you (and your team)
 - Briefly describes what you are working to accomplish – link to mission
 - Refer to the summary for specific details
- Request a phone call (or virtual meeting) to discuss alignment
- Use that phone call to:
 - Confirm alignment and ask any technical questions
 - Be strategic – try to gain insights that can help you enhance the project/proposal

<https://www.nia.nih.gov/research/blog/2021/05/communicating-with-program-officers>

<https://www.uvu.edu/osp/docs/what-to-say-to-program-officers.pdf>

https://oric.ehe.osu.edu/files/2019/10/Can-We-Talk_Contacting-Grant-Program-Officers.pdf

REVISE THE PROJECT SUMMARY

Revise the summary, abstract, or concept paper

- Incorporate all feedback to enhance study/program design and revise again!
- Use this revised version to drive proposal narrative development
- Revise as soon as possible after the meeting with the PO

Writing is re-writing!



Draft the Narrative

- Responsive & Competitive
- Narrative Basics (with a focus on developing aims or objectives that guide the work)

RESPONSIVE & COMPETITIVE

Responsive

Complies with instructions

- Application must be compliant with rules and regulations
- Do this early in your project and proposal development process
- Use the funding notice to build a template
- Use agency-specific portals for submission (e.g., Research.gov)
 - Portals will help you confirm compliance
 - Non-compliance can result in rejection without review

Competitive

Aligns with merit review criteria

- Provide exceptional context and evidence to show how your project will advance the field and priorities
- Address the merit review criteria – be specific, be confident
- Tell a compelling story (who, what, when, where, why, and how) and provide a detailed work plan
- Show how you will control and measure the project impacts and share results widely and effectively

PROJECT NARRATIVE BASICS

Provide a clear statement of the work to be undertaken

- State the aims or objectives for the period of the proposed work and its expected significance
- Describe the relationship of the work to the present state of knowledge in the field as well as to any work in progress by the PI
- General plan of work, including the broad design of activities to be undertaken and clear description of experimental methods and procedures
- What you want to do, why you want to do it, how you plan to do it, how you will know if they succeed, and what benefits will accrue if the project is successful (per the [NSF Proposal & Award Policies & Procedures Guide \(PAPPG\)](#))
- How the project is based on previously established and/or innovative methods and approaches (must be well justified)
 - *Expectation for justification applies to both the technical aspects and the ways in which the project makes broader contributions (e.g., NSF's "broader impacts")*

Begin with a clear statement of your goals, research questions, and hypotheses

- Include a full methods section for each research question, aim, or objective
 - Describe the rationale, activities/methods, and outcomes
 - Where appropriate, describe the planned analyses (including statistical)
 - Include sample size calculations as appropriate
- Identify any partners and indicate their degree of commitment
- For each activity/method, include a section on potential challenges and alternate approaches
 - For example, “if method A does not yield sufficient or appropriate results, we will use method B, which is expected to be successful because”



FRAMING YOUR RESEARCH QUESTION

START WITH A STRONG RESEARCH QUESTION



- What is your goal?
- Start with a question:
 - **Does exercise influence chemotherapy side effects?**
- Get a little more specific:
 - **Do cancer patients who exercise regularly experience fewer side effects from chemotherapy?**
 - **...compared to sedentary patients.**
- Make it testable:
 - **Do patients with cancer who engage in moderate exercise for 15 min/day have fewer side effects from chemotherapy compared to more sedentary patients?**

BUT FIRST, WHAT IS YOUR GOAL?



Your goal is where you want the research to take you:

- *My **overarching goal** is to improve the side effects experienced by patients with chemotherapy.*
- *The **goal of this research project** is to determine whether a regular exercise regimen reduces the side effects experienced by patients with cancer who are undergoing chemotherapy.*

Goals are your big idea (where you want your ideas to end up):

- your lofty vision
- not always measurable
- often longer-term
- do not often convey how you will get there

WHAT ARE OBJECTIVES?



Fulfill the goal behind your idea



Focus your study/investigation



Aid in the design and methodology of your idea



Organize the project into defined components



Provide measurable criteria that can be used to evaluate your outcome(s) – did you achieve your objectives?

HOW IS AN OBJECTIVE STRUCTURED?



A good objective:

- Has a rationale
- Has an expected outcome
- Indicates context – to the overall goal of the project
- is SMART



SMART OBJECTIVES

Objective:

Jog 4 times per week for 10 weeks.

Outcome:

Complete marathon in 2025.

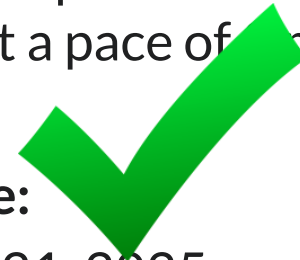


Objective:

From February 1 through April 15, 2025, jog 4 times per week averaging 20 miles weekly at a pace of 10 minutes/mile.

Outcome:

On April 21, 2025, complete the Boston Marathon in 4 hours – a 10-second/mile improvement compared to 2024 – or better.



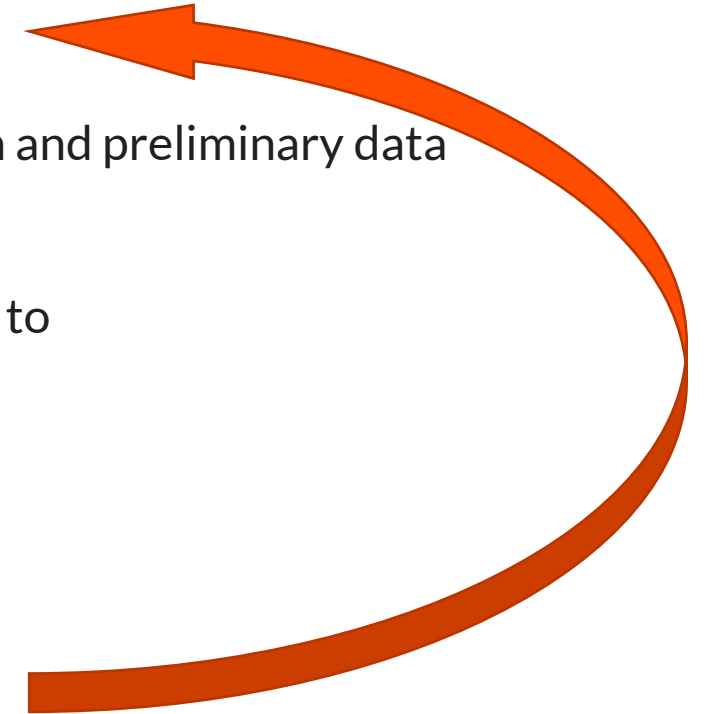
FIVE WAYS TO FRAME A RESEARCH OBJECTIVE

1. The research objective of this proposal is to **test the hypothesis H.**
2. The research objective of this proposal is to **answer the research question A.**
3. The research objective of this proposal is to **measure parameter P with accuracy A.**
4. The research objective of this proposal is to **prove conjecture C.**
5. The research objective of this proposal is to **apply method M from field Q to solve problem X in field R.**

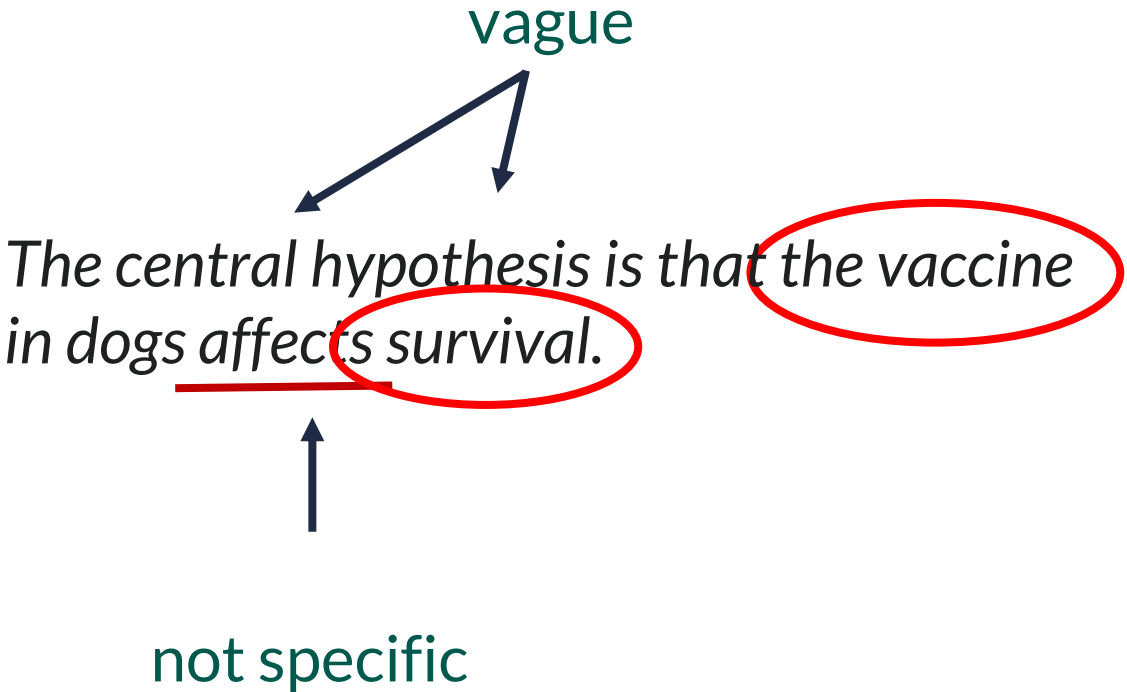
A GREAT HYPOTHESIS IS...



- Logical
 - Supported by a literature search and preliminary data
- Testable
 - With resources you have access to
- Focused
 - It addresses a specific unknown
- Simple
 - No great leap in logic



HYPOTHESIS EXAMPLE #1



What could you change about the wording to make this a stronger hypothesis?

HYPOTHESIS EXAMPLE #1 (CONT'D)

The central hypothesis is that the vaccine in dogs affects survival.

vague

not specific

The central hypothesis is that adjuvanted ARV in dogs has a detrimental effect on female survival by modulating the immune response to infectious and/or parasitic diseases to which females are normally less susceptible than males, and that non-adjuvanted HRV will not have this same detrimental effect.

specific & testable

ANALYZING THE HYPOTHESIS

supported by preliminary data
SUPPORTED



specific cause
FOCUSED



Based on our *preliminary data*, we developed the hypothesis that *mitochondrial oxidant stress* induces hepatocyte necrosis during the early phase of liver injury.

specific, testable effect
FOCUSED/TESTABLE



defined testing stage
FOCUSED/TESTABLE



DEFINING AND DEVELOPING AIMS

- Specific aims are the actions to be taken to test the hypothesis or answer your research question.
 - The key steps necessary to fulfill the objective and address the critical need.



- Each aim should be directly matched with a hypothesis
 - If you have an idea that is not directly testing your hypothesis, save it for later. With a good hypothesis, you should be able to develop Aims directly from there.
- Each aim should be:
 - Highly focused
 - Measurable
 - Feasible
- Independent vs. interdependent
 - Complete independence is ideal.
 - Some interdependence is OK.
 - Complete interdependence is not OK.

***Remember: Aims should be driven by your hypothesis or research question, NOT BY METHODOLOGY**

DEVELOPING AIMS TO SUPPORT THE HYPOTHESIS

only relevant to one aim

- Hypothesis: A causes B
- Aim 1: Determine that A causes B
- Aim 2: Determine how A causes B

implies that you already know A causes B

what if A doesn't cause B?

AIMS “DO’S”

Aims are the actions to be taken to test the hypothesis or answer the question. They should:



- Be a natural extension of the hypothesis or research question
- Be brief, informative, and attract the reviewer’s attention
- Convey why each part of the research is being done
- Result in something measurable
- Be related but not interdependent

AIMS “DON'TS”

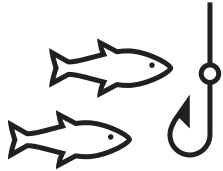
Aims should not



- Introduce new ideas that reviewers have not seen
- Be sequentially dependent (“interdependent”)
- Be unrealistic (the goal is to propose a project that is ambitious but attainable [ED language])

OUTLINING THE NIH SPECIFIC AIMS PAGE

(1 Page Maximum per Application Guide)



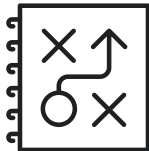
Paragraph 1: Introduce your research subject to reviewers and capture their attention.

- Use a hook, present what is known, identify the gap in knowledge / critical need



Paragraph 2: Introduce the solution.

- What do you want to do? Why are you doing it? How do you want to do it?



Paragraph 3: Briefly describe each Aim (1 to 3 typically).

- Some PIs prefer a simple, single-sentence explanation, and others go into more detail. If you prefer the paragraph approach, address the hypothesis as appropriate, experimental approach, and the expected outcomes or impacts.



Closing Paragraph: Briefly summarize your project.

- Depending on the opportunity, address innovation, expected outcomes, and likely impacts.

OTHER THINGS TO REMEMBER



- Go through multiple rounds of hypotheses/research questions and aims
- As you generate your proposal:
 - Build your background information based on your hypothesis/research questions and aims
 - Consider future directions
- Feedback, feedback, feedback!

EVALUATING YOUR AIMS



- Would someone familiar with your field agree that accomplishing these aims would lead to the achievement of your goal?
- Are your aims independent?
- Are the aims structured logically according to your research question or hypothesis?

If you can answer all these questions in the affirmative, you're ready to move forward!

A NOTE ON PERSUASIVE WRITING

Much of what goes into creating a competitive proposal includes crucial elements of persuasive writing.

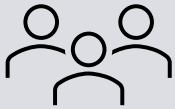
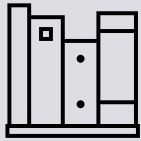
- Avoid circular reasoning – essentially, using your expected conclusion as the basis for your statement.
- Use data (published or your own unpublished) to *demonstrate* the benefits of and obstacles to your proposed work and the need for your work to be completed.

DON'T FORGET – TAKE YOUR HYPOTHESIS SERIOUSLY

A lack of a testable hypothesis is pointed out by reviewers *surprisingly often*, even for established investigators...

and a strong hypothesis forms the basis for generating great aims.

LEVERAGE YOUR RESOURCES



- Mentors, colleagues
- Funding announcements and opportunities
- Funder conferences:
 - [Happening this week: NSF Virtual Grants Conference!](#)
- Program Officers
- Peers who have been funded in your competition of interest
- Consultants
- Abstracts of recent awards (funder awards databases)
 - Provides insights into how funded projects have successfully aligned with funder priorities.
 - Offers a clear understanding of what the funder considers to be deserving of financial support.
- Review funded proposals, if available

RESOURCES FOR GRANTWRITING

The **National Organization for Research Development Professionals (NORDP)** maintains a [Writing a Grant 101](#) page, which includes links to many useful guides, as well as a more general [Resources](#) page.

The [Anatomy of a Specific Aims Page](#) by Bioscience Writers (2015).

The **Foundation Center** provides an [Introduction to Proposal Writing](#) course, focused more on private grants.

The [Grant Application Writer's Workbook](#) offers comprehensive, step-by-step instruction for creating proposals for a variety of funding agencies.

The **NIH Office of Extramural Research (OER)** offers guidance for [Writing the Application](#) and the **NIAID** offers excellent [application samples](#).

Porter, R. (2007). Why Academics Have a Hard Time Writing Good Grant Proposals. *Journal of Research Administration*, 38(2):37. Retrieved from: <https://files.eric.ed.gov/fulltext/EJ902223.pdf>

[10 Red Flags in Grantwriting](#). *Inside Higher Education*.



Q & A



Chris Gray

Senior Content Director

4401 Wilson Blvd, Arlington, VA 22203
www.hanoverresearch.com

E: cgray@hanoverresearch.com

P: 202-350-4797