

# Tips from the NSF & NIH Grant Application Writer's Workbook

College of Computational, Mathematical, & Physical Sciences | Research Development Office | Updated April 2026

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## PROPOSAL DEVELOPMENT

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### Preparing a Competitive NSF CAREER Proposal

One of the most common misconceptions about NSF CAREER proposals is that they are simply standard NSF proposals with an added educational component. In practice, CAREER proposals are evaluated much more broadly. Reviewers are assessing not only the proposed research project, but also the investigator's long-term trajectory as a scholar, educator, and future leader in the field.

Strong CAREER proposals present a coherent research and education ecosystem. Rather than treating research, mentoring, outreach, and teaching as separate activities, successful applicants demonstrate how these components reinforce one another over time. The proposal should help reviewers understand where the investigator intends to take their research program over the next five years and how students will participate in and benefit from that trajectory.

This does not require building an overly complex educational infrastructure. In fact, one of the most common weaknesses in CAREER proposals is the inclusion of educational activities that feel disconnected from the science itself. Generic outreach plans or loosely connected mentoring activities often fail to persuade reviewers because they appear added late in the writing process rather than integrated into the intellectual vision of the project.

Instead, investigators should focus on authentic integration. Reviewers respond positively when the educational plan naturally extends from the research objectives. For example, undergraduate students might participate in research modules connected directly to project aims, graduate students might lead portions of a vertically integrated mentoring structure, or course development might emerge directly from new methods or discoveries produced through the proposed work.

CAREER reviewers are also evaluating whether the applicant is positioned to lead this work successfully. The proposal should therefore communicate why the investigator, laboratory environment, institutional setting, and existing expertise collectively support the proposed trajectory. Preliminary work, prior mentoring experience, institutional resources, and

collaborations all help establish reviewer confidence that the vision presented in the proposal is feasible and sustainable.

Faculty preparing CAREER proposals should begin planning early. Competitive applications often require substantial time to develop educational integration, refine broader impacts activities, communicate with Program Officers, and build a coherent long-term narrative across the proposal. A successful CAREER proposal ultimately presents more than a single research project; it presents the foundation of an evolving scholarly program that integrates discovery, education, mentorship, and long-term contribution to the discipline.

Tip: CAREER proposals are strongest when reviewers can clearly see the connection between the proposed research, the development of students, and the investigator's long-term scholarly trajectory.

## **Specific Aims**

November 2025

Summary: The Specific Aims attachment is required unless accepted by the NOFO. Limited to one page with no hyperlinks. It serves as both an executive summary and a roadmap — guiding reviewers through your logic and giving them language to use during panel discussion.

Detailed: The Specific Aims attachment is required unless accepted by the Notice of Funding Opportunity (NOFO). It is limited to one page with no hyperlinks or Uniform Resource Locators (URLs). They must be at least 11pt. font size and recommended to be in a font such as Arial, Georgia, Helvetica, or Palatino Linotype all with appropriate horizontal (15 characters per inch) and vertical spacing (6 lines per inch). (See Research Instructions for NIH and other PHS agencies, p.83)

The Specific Aims attachment (significance, innovation, approach) is an exceptionally important part of your proposal because it serves as both an executive summary and a roadmap. It guides reviewers through your logic and gives them language they can use during panel discussion. If the Specific Aims attachment is strong, reviewers are more likely to advocate for you; if it is weak, the rest of the application may not get a fair hearing. Below is a proposed fill in the blank paragraph for your consideration:

*Introductory Paragraph* – Set the Stage: This paragraph establishes what is already known, identifies the key gap in that knowledge, and explains why filling that gap matters. It draws the reader in by describing the problem's real-world significance and what happens if the need remains unmet.

*What, Why, Who Paragraph* – Define the Direction: This section states the project's long-term goal, overall objective, and central hypothesis. It tells reviewers what you plan to accomplish, why it's important, and who will carry it out—connecting your rationale to the gap identified in the introduction and setting up the Specific Aims.

*Specific Aims Paragraph* – Show the Plan: Here you translate your big ideas into concrete actions. Each aim should be clear, achievable, and logically connected to the next. Together, your aims form the roadmap of the project, showing reviewers how your approach will close the identified gap.

*Payoff Paragraph* – Deliver the Promise: This closing paragraph explains the expected outcomes and their impact. It tells reviewers what success will look like—how your results will advance science, improve health, or open new lines of inquiry—and why your project is worth funding.

*Tip:* The Specific Aims section “constitutes the template or master plan” for the rest of your proposal and should “create a partnership with the assigned reviewers who will represent you at the review-panel meeting.”

NIH Grant Application Writer's Workbook, pp. 61–63

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## Significance Section

February 2026 & December 2025

**Summary:** The Significance section demonstrates why the proposed project matters. Reviewers are trained to ask "So what?" Break it into three subdivisions: (1) importance of the problem, (2) rigor of prior research supporting the aims, and (3) significance of the expected research contribution.

**Detailed:** For NIH, significance is simply the impact that something will have on some other thing. So, this subsection of your Research Strategy should explain why the proposed work matters and what will change if the project succeeds. Reviewers will use this section to judge:

- 1) whether the research addresses an important problem
- 2) fills a critical gap in knowledge
- 3) is worth NIH investment.

*Questions to ask as you write:*

- Does my proposal address an important problem or a critical barrier to progress in the field?
- Is the prior research that serves as the key support for my proposal, rigorous?
- If my proposal achieves its aims, which concepts, methods, technologies, treatments, services, or preventative interventions will it change in this field?

Make it easy to read with formatting: your proposal should have breakdown the significance subsection into *three distinct subdivisions*:

- 1) “Importance of the problem to be addressed” (one introductory paragraph)
  - A clear statement of the problem or barrier that limits progress in the field.
- 2) “Rigor of the prior Research supporting the Aims”
  - Evidence that the problem is important and relevant, grounded in current primary literature.
  - Identification of specific gaps in knowledge, technology, or practice that the project is designed to address.
- 3) Significance of the expected research contribution”
  - When applicable, a description of downstream impact, such as improved interventions, decision-making, or future research directions.
  - A concise explanation of how successful completion of the aims will advance scientific knowledge, technical capability, or clinical practice.
  - A single statement of significance in italics so it pops out for reviewers

Writing in this way will help clarify the scientific merit of your ideas and help the reviewers confirm the value of your thoughtful research proposal!

The Significance section demonstrates why the proposed project matters and how it will advance the field in a measurable way. Reviewers are trained to ask “So what?” throughout their evaluation. A significance section that identifies the problem, documents the unmet need, and shows how the proposal aims to close a specific gap, is going to score better. This is why special attention is needed when drafting the significance section of your proposal.

To apply this level of clarity to your own work, consider the following questions:

1. What is the specific, documented problem or known gap?
2. Who is materially affected? And by how much?
3. What will remain unchanged if the work is not funded?
4. How do the proposed aims directly address this gap?
5. What measurable advancement or consequence will result if the project succeeds or fails?

Answering these questions may help you present the authoritative data that demonstrates the need for the research, define the gap it addresses, and link each aim to the problem being solved. Framing your work in this way allows reviewers to understand your goals quickly and increases the clarity of your overall presentation.

*Tip: “Diabetes is important, and many people have it.” OR, “Type 2 diabetes affects 37 million U.S. adults and contributes to significant morbidity and health-care expenditures, yet no validated early-intervention strategy exists for high-risk rural populations. This project tests a community-based screening and intervention model tailored to underserved rural adults, addressing the documented gap in early detection.” — Be specific, not vague.*

NIH Grant Application Writer's Workbook, pp. 69–70, 91–96

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## Innovation Section

January 2026

**Summary:** Reviewers want to know what makes your project different from what has already been done. Even modest advancement qualifies as innovation when you clearly explain why it matters.

**Detailed:** Reviewers want to understand what makes your project different from what has already been done. Even a modest advancement can qualify as innovation when you clearly explain why it matters. This section should demonstrate that your project is not merely incremental science, but work that contributes a distinct improvement to the field.

**Example:** Highlight how your approach applies an established method in a new population or setting. State directly, “This application is innovative because it adapts proven methods to adolescents, a group rarely included in prior studies.” This directs reviewers to the specific feature that sets your work apart.

*Tip: “The Innovation Section should make clear what is new in your application and why it matters.” Even incremental advances count if you articulate their impact.*

NIH Grant Application Writer's Workbook, pp. 77–78

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## Research Strategy: Approach Subsection

March 2026

Summary: The Approach describes strategy, methodology, analyses, and experimental design for each Specific Aim. Each aim should follow a format of: introduction → research design → expected outcomes → overcoming pitfalls → timeline with benchmarks.

Detailed: The Approach describes the strategy, methodology, analyses, and experimental design used to accomplish each Specific Aim, while demonstrating rigor, transparency, and feasibility. This requires tight concise wording to ensure economy of in the format and structure of the approach.

Each aim of the approach needs to communicate to the reviewers following a format of introduction, a detailed research design, expected outcomes, overcoming pitfalls and a time line with benchmarks for success.

- The introduction to each aim provides an objective and if applicable a working hypothesis.
- The research design describes methods, controls, analysis, and consideration of prior weaknesses.
- Applicants are encouraged to use technical preliminary studies to establish feasibility when reviewers might doubt methods or recruitment.
- Investigators must explicitly address relevant biological variables, particularly sex, and justify exclusions or limitations using evidence.
- The expected outcomes reasonably show the return on investment – that is the value of the research.
  - Expected Outcomes should be integrated into a coherent narrative rather than a list, showing how results collectively achieve the aim and advance the field.
- The overcoming pitfalls should identify potential problems and strategies to mitigate them.
  - Potential problems must be anticipated and paired with credible alternatives. Failing to do this can undermine fundability.
- Timeline shows when the project and its outcomes may be available with potential future directions.
  - The importance of a timeline and benchmarks, which help reviewers assess feasibility and progress measurement.
- The key is a well organized and defended approach to a successful research project that reviewers will take confidence in producing the stated aims.

Writing the approach in this way also allows for the development of Good Laboratory Practice or standardized methods : scientific rigor and reproducibility, unbiased design, appropriate statistical analyses, transparent data management, and adherence to good research practices.

NIH Grant Application Writer's Workbook, Chapter 11

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## WRITING STYLE & FORMATTING

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### Avoiding Common Writing Mistakes

April 2025

**Summary:** Write in clear, simple declarative sentences. Avoid clichés ("state-of-the-art"), empty generalities, and weak words like *if, try, hope, believe, might*. Substitute "expect" for doubt-conveying words. Hyphenate compound modifiers consistently.

**Detailed:** The following are additional considerations that you should keep in mind as you write. By doing so, you will avoid many of the avoidable mistakes that are made by unsuccessful applicants.

1. *Write in clear, simple-declarative sentences.* By doing so, you will avoid the kind of tortuous, hard-to-understand, compound sentences that go on forever. When you consider using a comma and continuing the sentence, stop and ask yourself whether it would be clearer to use a period, instead.
2. *Avoid the use of clichés (e.g., state-of-the-art or cutting-edge) and empty generalities.* The latter are words and statements that, at first glance, look great, but when analyzed carefully, really convey little or nothing. Specificity and precision are what build credibility with reviewers. Use of meaningless clichés and generalities accomplishes the opposite.
3. *Avoid the use of nouns and adjectives.* This is a particularly prevalent problem. Consider: “lower respiratory tract iron burden” or “total parenteral nutrition catheters.” What is actually meant is “burden of iron in the lower respiratory tract” and “catheters for use in administering total parenteral nutrition”, respectively. It doesn’t add that much more text to make things maximally clear. The gain in understanding is well worth it.
4. *Hyphenate compound modifiers (also called compound adjectives),* which consist of two or more words that create a phrase that modifies the meaning of another word. For example, you would put a hyphen between the words, “long” and “term” when they are used to modify “goal”, i.e. long-term goal. An exception is made if the compound modifier follows the word that it modifies. (Continue on page 37 of the NSF Grant Application Writer’s Workbook)
5. *Make certain that you avoid the use of “weak” words, i.e., ones that inadvertently convey doubt in your ability to do something.* By “weak words” we mean ones like: if (if we are able to do X, then we will be able to do Y); try (we will try to overcome the problem that is caused by...); hope (we hope to be able to accomplish...); believe (we believe that we can); might (we might be able to prepare the antiserum); could or should (we could/should obtain...); and may (we may be able to extend our understanding to...).
  1. In every one of these examples, the word “expect” could be substituted (e.g., we expect to obtain instead of we hope to obtain). Use of “expect” is a much more confident way of asserting that you can accomplish what you propose. In addition, “expect” prevents you from making a mistake on the other side of the issue, which is to assert that you will accomplish something.
  2. The word “whether” can pose serious problems for proposal writers. Why? Because, although it is often used alone, it always means whether or something else. Most of the time it is whether or not. Just as is the case with weak words, use of “whether” can unnecessarily create doubt in the mind of a reviewer.

*Tip: “Be specific!” is one of the cardinal rules of good grantsmanship. Specificity and precision built credibility with reviewers.*

NSF Grant Application Writer's Workbook, p. 37

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## Formatting Pt. 1 — Rules & Typefaces

February 2025

Summary: Adhere to PAPPG Chapter 2, Section C guidelines. Margins at least 1 inch, no more than 6 lines per vertical inch. Allowed fonts: Arial/Helvetica, Courier New, Palatino Linotype — all at 10pt or larger. Avoid two-column formats.

Detailed: You must adhere to the guidelines for formatting that are given in the current edition of the PAPPG, Chapter 2, Section C, unless, of course, the program solicitation to which you are responding stipulates otherwise. For most applications, margins must be at least one inch with no more than 6 lines of text per vertical inch. If you choose to double-space your proposal, the 15-page limit for the Project Description would still pertain. The same holds true for the Project Summary, which would still have to be one page or less.

Only a few typefaces are allowed. They include Arial (Helvetica if you are an Apple user), Courier New, and Palatino Linotype (Palatino for Apple users). All of these must be used at 10 points or larger. You cannot use Times New Roman but, if you do so, it must be at 11 points in size. The Computer Modern family of fonts can also be used 11 points or larger. For routine use, we recommend either Arial (Helvetica) or Time New Roman.

A font size of less than 10 points can be used to present mathematical formulas or equations. Greek symbols, as well as the print in figures, tables (including footnotes to tables) and “diagram captions.” (continued on page 35 of manual)

Avoid using a two-column format for text.

One thing that will help greatly with respect to clarity is the way that you format your Project Description. We recommend that you adopt a hierarchy of headings, subheadings, and sub-sub-headings, along with related indentation from the left margin that is used consistently throughout your Project Description.

NSF Grant Application Writer's Workbook, pp. 34–35

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## Formatting Pt. 2 — Heading Hierarchy

March 2025

Summary: Use a consistent hierarchy: MAIN HEADINGS in bold caps at left margin → Subheadings indented one tab, bold title case → Sub-subheadings indented two tabs, underlined. This helps reviewers understand structure at a glance.

Detailed:

### MAIN SECTION HEADING

- Position main section headings at the left margin. Use all capitalized letters that are bolded. Open a line between the title and first line. Indent the first line by one tab. Continue with subsequent lines returning to the left margin, which prevents ‘white space’ from opening on the left side of the page. Later paragraphs would have their first line indented similarly.

Subheading

- Indent subsection titles one tab. Open a line between the subtitle and the first line. Use bolded letters with the first letter of each main word capitalized. Indent the first line under the subtitle two tabs and continue subsequent lines from the left margin. The first line of subsequent paragraphs under the subheading would be indented similarly to the first paragraph.

#### Sub-Subheading

- Sub-subheadings should be indented two tabs. Again, open a line that separates the subordinate paragraph from the sub-subheading. Underline the sub-subheading with the first letter of each main word capitalized. Sub-sub-headings should not be bold. Indent the first line of the paragraphs by three tabs. As before, return subsequent lines to the left margin.

It is not necessary that you adopt exactly the same approach to formatting that we have illustrated here. However, it is important that you use a similar approach, because doing so will help reviewers establish effortlessly what is subordinate to what is in your Project Description.

NSF Grant Application Writer's Workbook, p. 35

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## Writing the Overview & Objectives

September 2025

**Summary:** Panel reviewers read this section while simultaneously listening to assigned reviewers present. Write at a conceptual, not a detailed, level. Label key sentences and use underlined italics to highlight key words — leading reviewers without them knowing they are being led.

**Detailed:** Many of the panel reviewers will be reading this section for the first time when your application comes up for discussion at the review-panel meeting. The reviewers will be doing two things at the same time. They will be (i) listening to the oral presentations of the assigned reviewers while (ii) they read parts of your proposal, including this section. They won't be able to handle a lot of details under those conditions. That is why you should write this section as an 'overview' of everything that is important and exciting about your proposal, but at a conceptual, not a detailed, level.

In terms of writing the Project Description, we recommend that you leave nothing to the interpretation of reviewers. If you require them to interpret what you have written, they may not make the desired interpretation or – worse- they may make the wrong interpretation.

To avoid such problems, we recommend that you help reviewers make the connections that you want them to make. The approach we have developed allows you to 'tell' reviewers exactly why you have included information without you running the risk of being regarded as pedantic or condescending.

This approach entails 'labeling' components in such a way that there can be no question as to why you have included the information. Labeling of key sentences also helps to lead reviewers through what you have written. (A well-written proposal leads reviewers without them knowing that they are being led.)

We also recommend that you highlight key words that identify components you know reviewers will need to find to review your proposal. Judicious use of highlighting – we recommend underlined italics – is the key. You should underline and italicize only single words or several words.

At the end of the first paragraph, reviewers must be completely convinced there is a gap/lack that is impeding progress in an NSF-relevant field. If they aren't, in our opinion, no matter what else you write later, the fundability of your proposal will be problematic.

NSF Grant Application Writer's Workbook, pp. 52–53

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## REVIEW PROCESS

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### How Reviewers are Chosen

January 2025

**Summary:** Reviewers are scientists, engineers, and educators drawn from academic institutions, research organizations, and industry. They recommend — NIH/NSF is not obligated to follow their recommendations. Program Officers make accept/decline recommendations considering additional programmatic criteria, including how your application relates to the existing portfolio of funded grants.

**Detailed:** Qualified members of the extramural research community - scientists, engineers and educators - work as reviewers in partnership with an NSF Program Officer. They are drawn primarily from academic institutions, research organizations, and industry. They are chosen to have complementary expertise. It is important to appreciate that reviewers recommend and that NSF is not obligated to follow their recommendations. Reviewers are advisory to the relevant NSF Program Officer.

S/he, in turn, makes accept/decline recommendations to the relevant Division Director. The latter recommendations take into consideration additional, programmatic criteria. For example, how does an application relate to NSF's portfolio of already-funded grants?

(The latter level of review underscores why it is essential in developing your proposal to search NSF's database of already funded grants [<https://www.nsf.gov/awardsearch>] and to seek pre-submission feedback from the relevant Program Officer regarding your project's programmatic relevance: You don't want to submit an application that either duplicates or is closely similar to a project that has already been funded.)

NSF Grant Application Writer's Workbook, p. 30

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### Assessing your Idea's Potential

November 2024

**Summary:** Before submitting, assess three things: (1) your own ability to pursue the idea — time, expertise, preliminary data; (2) your competition — search NSF Awards and NIH RePORTER for funded grants in your area; (3) other funding opportunities via Grants.gov.

**Detailed:**

1) Assess your own ability to pursue the idea

Regardless of how good your idea is, it must be one that is within your capabilities to pursue. For example:

- Will you, as Principal Investigator, have sufficient time to devote to the project?
- If you are in the early stages of your career, are you in a position to commit enough time?
- Will you and your collaborators have the expertise necessary to accomplish the work?
- If not, can the missing expertise be acquired by engaging one or more Co-Principal Investigators, consultants, or collaborators?
- If you are proposing at the most competitive level, i.e. NSF's standard grant, do you have sufficient preliminary data to convince reviewers that the project is feasible in your hands?

The answers to those and similar kinds of questions either have to be answered convincingly in your favor or there is little point in going forward, no matter how good your idea may be conceptually.

## 2) Assess and use your competition to advantage

Good ideas are often generated independently by more than one person. You need to know, therefore, what research has already been funded in the area that you are considering. Clearly, you want to avoid writing an application that is similar to one that has already been funded — and, if such grants are out there, you want to know about them so that you can make use of them to stimulate and extend your own thinking and planning. You can electronically access currently active and previously funded NSF research grants by going to: (<https://www.nsf.gov/awardsearch>). A similar database, RePORTER, exists for federally funded biomedical research grants at (<https://reporter.nih.gov/>).

Most other writers of grant applications don't use these databases in the development of their applications. If you do, it will give you an important competitive edge.

## 3) Assess your idea's potential for funding

Even though you have probably already decided to submit your application to a specific program at NSF, if you haven't done so already, you need to make certain that there aren't other, equally (or even more) applicable funding opportunities available to you. Utilize (<https://www.grants.gov>) to search for other Federal sources of support. (<https://fconline.foundationcenter.org/>) is an excellent plan to seek non-federal sources of research-grant support.

NSF Grant Application Writer's Workbook, p. 8

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## NSF-SPECIFIC GUIDANCE

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### Creating an Eye-Catching Title

July 2025

**Summary:** Your title should emphasize the payoff of the research — what it will produce — not the process. Never use a generic, process-oriented title. Ensure it reflects the purpose of the specific program you're responding to (e.g., CAREER awards must be preceded by "CAREER").

**Detailed:** General Considerations: The title is critically important, because it is likely to be the first thing that a reviewer will see. The title gives the first impression of your application.

It is particularly important that your title emphasizes what the research will produce, i.e., the payoff of the research, not the process that will yield that product. You should never offer a generic, process-oriented

title like, “Investigations of Infrastructure Needed to Enhance the Economy.” Rather, your title should immediately convey to NSF and its reviewers what the mission-relevant from the Overview & Objectives section and the description of your expected contribution from the Expected Significance section of the Project Description will inform the development of your title. The former conveys what you want to produce. The latter denotes what you expect the product will be.

Another important point is that the title should reflect the purpose of the program to which they are responding. For example, the purpose of CAREER awards is to create teacher-scholars-faculty members who will closely integrate their research with teaching. Thus, the ideal title for such a proposal should reflect integration of teaching and research in a specific area.

Read the solicitation for any special instructions. For example, the title of a CAREER Award application must be preceded by “CAREER”.

There is no limitation placed on the length of an NSF title. All that is needed is for the title to be brief and clear. NSF reserves the right to edit titles if they are overly long and/or not clear. Edits would take place after the title has been seen by reviewers.

The title must be intelligible to reviewers as well as the general public. Nothing in the title should be offensive to any audience. Finally, you need to ensure that there is nothing in the title that could be misunderstood if it were taken out of context.

*Tip: Your title should emphasize the payoff – the PAYOFF of the research.*

NSF Grant Application Writer's Workbook, p. 146

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## Maximizing Programmatic Relevance

August 2025

Summary: Program officers periodically review their portfolio to avoid over- or under-funding areas. Seek feedback from the relevant NSF Program Officer before submitting. Send an email with your Overview & Objectives attached, including the phrase "maximizing programmatic relevance."

Detailed: You may not realize this, but program offices at every funding agency periodically in their portfolio of funded grants. They do so to ensure that their funds have been distributed optimally to accomplish their overall mission; they want to avoid overfunding some areas and underfunding others, because all are important in terms of accomplishing their overall mission. Areas that they discover to be underfunded or that represent emerging areas of importance become future priorities. Ideally, your application should be in a priority area, not in one that is already well- or over-represented in their existing portfolio.

The person who is most able to help you determine whether or not your idea is programmatically relevant is the one who is in charge of the NSF program. We recommend that you seek feedback on this section from the relevant Program Officer.

Once you have the contact information for the relevant Program Director/Officer, you need to approach him/her in a way that will be maximally productive. Don't initially use the telephone. It is a far better approach to send them an email with the template of the master plan (i.e., the Overview & Objectives

section) for your Project Description attached. In your email you will want to include three very important words: “maximizing programmatic relevance.” The Program Director’s/Officer’s job is, in part, to bring the best and most programmatically relevant ideas to the NSF so that, by funding them, s/he can better accomplish that part of NSF’s mission.

If you send an email like the sample below, you will almost always get the kind of feedback that you are seeking:

“I plan to submit a proposal to the Future Manufacturing solicitation (23-550). For your information, I am attaching a draft of the Overview & Objectives section for the Project Description. I would appreciate the opportunity to talk briefly with you about how I can maximize the programmatic relevance of what I plan to submit. Thank you for considering my request.”

If you get no response, don’t take that as rejection. In that case, approach another Program Director/Officer in the same program.

NSF Grant Application Writer's Workbook, pp. 59–60

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## Developing a Preliminary Proposal

June 2025

**Summary:** Read the solicitation several times. During the last read, highlight everything that must be included. Structure your preliminary proposal to match the solicitation's required sections exactly — cover sheet, project summary, project description, references, biosketches, and collaborators.

**Detailed:** What follows is a step-by-step example of how to approach the development and submission of a typical preliminary proposal in Research.gov. Because DEB/IOS had been the most frequent users of the preliminary-proposal approach, we elected to use their format for our illustration. You would adapt what follows, as necessary to follow the instructions of a solicitation issued agency wide or by another of NSF’s divisions. Read the solicitation several times. During the last read, to ensure that nothing is missed, highlight what has to be included.

- Program Solicitation:
  - NSF 17-512 (Division of Environmental Biology (core programs) (DEB))
- Outline the format and list the page limits for each section:
- Cover Sheet
- Project Summary (1 page)
- Overview
- Intellectual Merit
- Broader Impacts
- Project Description (up to 5 pages)
- Personnel (1 page)
- Key Personnel
- All Other Personnel
- Project (up to 4 pages; the first four subsection encompass “Intellectual Merit”):
  - Either, “Conceptual Framework” or “Objectives” or “Specific Aims”
  - Either, “Rationale and Significance” or “Background”

- Either, “Hypotheses” or “Research Questions”
- Either, “Research Approach” or “Experimental Plan”
- References Cited (up to 3 pages)
- Biographical Sketches (up to 2 pages for each Senior person)
- Collaborators & Other Affiliations Information (for each person with a biosketch; upload into FastLane under “Single Copy Documents – Collaborators & Other Affiliations”)
- Collaborators and Co-Editors
- Graduate Advisors and Postdoctoral Sponsors
- Thesis Advisors
- Other Persons with Potential Conflicts of Interest
- Personal List Spreadsheet

NSF Grant Application Writer's Workbook, p. 37

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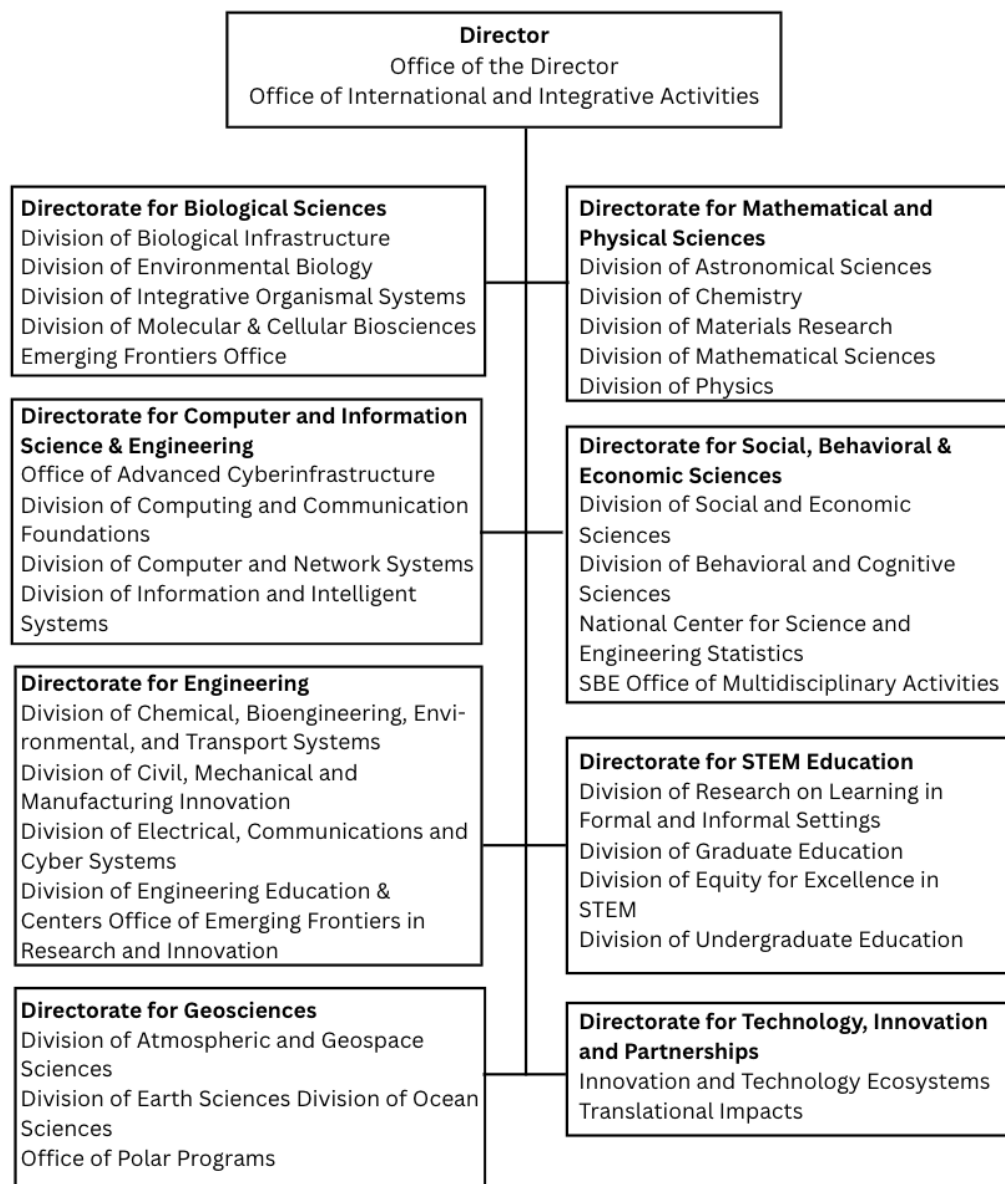
## **NSF Organizational Structure**

May 2025

Summary: Understanding how NSF is organized helps you identify the right program and program officer for your proposal. Refer to the NSF Grant Writers Workbook, p. 3 for a full overview.

Detailed:

## ORGANIZATION OF THE NATIONAL SCIENCE FOUNDATION



NSF Grant Application Writers Workbook, p. 3

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## BIOSKETCH

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### Writing Your Biosketch

April 2026

**Summary:** Your biosketch is more than a résumé — it is a marketing document that highlights your suitability for the proposed research. In your Personal Statement, connect your background directly to the project aims.

**Detailed:** Your biosketch is more than a résumé; it is your chance to present yourself as the right person to do the work. NIH expects applicants to connect their past experience and skills to the current project. This section allows you to show that you and your team have the expertise to succeed.

**Example:** In your Personal Statement, connect your background to the project aims: “My prior training in biostatistics positions me to lead the analytic core of this proposal.”

NIH Grant Application Writer's Workbook, pp. 111–112

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## PLANNING & TIMELINE

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### Creating a Writing Schedule

October 2025

**Summary:** A strong application rarely comes together in the final weeks. Create a schedule that starts with Specific Aims, allows time for Program Officer review by week 6, and reserves the final two weeks for revisions. BYU CMS grant coaches Dorothy Taylor and Madi Farnsworth are available to help.

**Detailed:** A strong application rarely comes together in the final weeks before the deadline. NIH reviewers can tell when a proposal has been rushed—sections feel disconnected, aims don't align, and small but costly errors creep in.

Creating a writing schedule ensures that each component is drafted, reviewed, and revised with enough time to polish. It also reduces stress and helps you gather input from colleagues and program officers. A deliberate schedule also forces you to start with the most critical sections, such as Specific Aims, and use them to shape the rest of the proposal. Breaking the application into manageable tasks helps avoid burnout and maintains consistency of style and logic across sections. Early drafting allows time to respond to new guidance from NIH or incorporate last-minute data without derailing the entire application.

Finally, working ahead provides the flexibility to share drafts with mentors, collaborators, or grant coaches who can strengthen your proposal before submission.

**Example:** Map out three months, finish Specific Aims in the first three weeks, allow colleagues and a Program Officer to review by week 6, and use the final two weeks for revisions.

At BYU in CMS, Grant Coaches Dorothy Taylor and Madi Farnsworth are available to help structure and monitor your timeline.

*Tip: “Efficient time management while writing your grant application is one of the most important ways that you can gain an edge over your competitors.” → Create a calendar that balances lead time with dedicated writing blocks.*

NIH Grant Application Writer's Workbook, pp. 57–59

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