

Grant Submission

From first submission to resubmission strategy

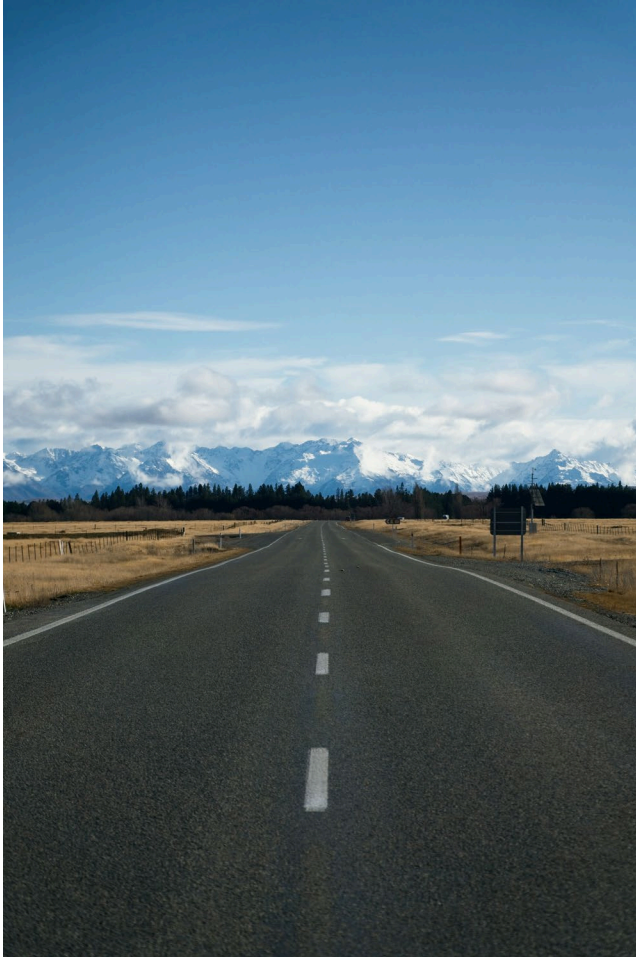
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Memorial Sloan Kettering
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Roadmap



What to Expect When Writing a
Grant – the First Time and the Next
Times



Time
Management and
Prioritization



Strategies to
Revise and
Resubmit

What to Expect When Writing a Grant – the First Time and the Next Times



The Core Takeaway



Grant writing is a journey...

Each grant you write reflects
where you are in your career
stage, *where you've come from*,
and *where you're going*

The Grant as a Career Mirror



Every grant reflects:

- Where you are – current resources, credibility, and capacity
- Where you've come from – track record, preliminary data, mentorship
- Where you're going – vision, innovation, long-term program of research

Every Career Stage Will Have its Challenges

Common feelings when writing a grant at each stage

- **Junior** — overwhelmed, uncertain, ‘can I ask for this?’ ‘what risks can I take?’
- **Mid-career** — pressured, balancing multiple roles or priorities
- **Senior** — responsible for others, legacy-minded



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The Slack message caught me by surprise. It came from my Ph.D. adviser as I was sitting in the lab trying to make progress on my latest experiment. He wanted to know whether I would be interested in applying for a fellowship from the U.S. National Institutes of Health (NIH). “Do you really believe I would be a competitive applicant?” I replied in disbelief. Two years earlier, I had written a mock proposal for the very same award—a requirement for passing my department’s Ph.D. qualifying exam. And I had failed miserably. The experience left me feeling I was not cut out for academia. I didn’t want to waste my time writing another mediocre research proposal. But I knew my adviser had my best interests at heart, so I decided to give it a shot and apply.

<https://www.science.org/content/article/write-successful-scientific-grant-proposals-i-had-learn-take-risks>

**The Goal Is Not Perfection—
but a Competitive, Fundable
Proposal**

**This means knowing what a
competitive, fundable proposal
looks like**

**... and it looks different at every
career stage**

Different Expectations for Different Career Stages

Reviewers often have different expectations for different career stages

- **Junior** — candidate's promise (**potential**), feasible aims and scope, strong mentorship and support
- **Mid-career** — evidence of independence (**individual scientific identity**, not reliant on mentors/collaborators), productive use of prior funding and growing track record
- **Senior** — strong innovation and impact beyond prior work (**legacy**), strong track record of project management and leadership

How Grant Writing Strategy Differs for Every Career Stage

	JUNIOR	MID-CAREER	SENIOR
Main question to answer	‘Can I do good research?’	‘Am I the right person to lead this project?’	‘How am I leading the field?’
Project scope	Smaller, focused mentored projects	Independent and scalable projects	Large-scale, often multi-component
Need to highlight preliminary data	Higher	Moderate	Lower
Need for network and institutional support	Higher	Moderate	Lower
Competitive disadvantage in general competitions	Often higher	Variable	Often lower
Time to develop a grant	More	Moderate	Less, but complex collaborative proposals require more time

Grant Writing for Junior Researchers

	Strategy	Recommendations
Main question to answer	‘Can I do good research?’	• Avoid over-promising (but at the same time, avoid under-selling yourself) • Emphasize real strengths, e.g., fresh perspective, novel questions, recent or planned training in cutting-edge methods
Project scope	Smaller, focused mentored projects	• Emphasize feasibility of project scope and how it will set the stage for future research
Need to highlight preliminary data	Higher	• Emphasize preliminary data (perfectly fine if this is under mentorship) that shows feasibility, not completion
Need for network and institutional support	Higher	• Show strong mentorship and environment as a substitute for track record
Competitive disadvantage in general competitions	Often higher	• Target career development grants: • Don’t underestimate training plan and career development sections
Time to develop a grant	More	• Allocate at least 6 months, make good use of grant writing resources (including people) and instructions, revise

Grant Writing for Mid-Career Researchers

	Strategy	Recommendations
Main question to answer	‘Am I the right person to lead this project?’	Emphasize an independent research project vs. extending someone else’s
Project scope	Independent and scalable projects	Establish your scientific identify (signature)
Need to highlight preliminary data	Moderate	Emphasize your own preliminary work (first or senior authorship), not your mentor’s or collaborator’s
Need for network and institutional support	Moderate	Emphasize leadership role within good team science
Competitive disadvantage in general competitions	Variable	Submit and resubmit, build experience and relationships
Time to develop a grant	Moderate	Allocate at least 3 months

Grant Writing for Senior Researchers

	Strategy	Recommendations
Main question to ask yourself	‘How am I leading the field?’	Emphasize program-building/leadership in the field, not just project-funding
Project scope	Large-scale, often multi-component	Emphasize conceptual, not just technical innovation
Need to highlight preliminary data	Lower	Avoid "resting on reputation" — reviewers still want rigorous science
Need for network and institutional support	Lower	Emphasize multi-institutional or other external (e.g., professional society) support, mentorship of junior co-investigators while leading the science
Competitive disadvantage in general competitions	Often lower	Stay current with funding trends and grant review culture
Time to develop a grant	Less, but complex collaborative proposals require more time	Allocate at least 2 months

What Stays the Same Across Career Stages

- Reviewers always ask:
 - Why is this research important? (Significance/Innovation)
 - Can you do it? (Preliminary Data/Approach)
- Good writing is important
 - Make it easy to read
 - Write for the tired reviewer
 - Be crystal clear: why is this research important, why you can do it
- Scientific rigor is non-negotiable

A Competitive, Fundable Proposal

right strategy for your career stage
+
good writing
+
rigorous science
=
competitive, fundable proposal

Time Management and Prioritization



Time Management and Prioritization are Important Grant Skills

‘The key is not to prioritize what's on your schedule, but to schedule your priorities.’

– Stephen Covey, author of *The 7 Habits of Highly Effective People*

How Much Time Does it Take to Write a Grant?



Claude Sonnet 4.6

How Much Time Does it Take to Write a Grant?

Writing a grant proposal is a significant time investment that varies widely depending on several factors. Here's a practical breakdown:

General Time Estimates

GRANT TYPE	ESTIMATED TIME
Small/local grant (<\$10,000)	8-20 hours
Mid-size foundation grant	20-40 hours
Federal grant (e.g., NIH, NSF)	100-200+ hours
Large complex grant (multi-year, multi-site)	200-500+ hours

Key Factors That Affect Time

- **Experience level** – First-time writers take significantly longer
- **Complexity of the project** – More components = more time
- **Number of collaborators** – Coordination adds time
- **Availability of existing materials** – Reusing prior work saves time
- **Deadline pressure** – Rushed timelines reduce quality

Grant Writing Timeline – Reverse-engineer the Deadline

- If the deadline is December 31, 2026, set up a grant writing timeline for the appropriate number of months reversed from that deadline
 - Include **all** the components needed for the proposal
 - Consider the readiness of your preliminary data/publications
 - Consider the complexity of the project and collaborations
 - Consider your unique situation and limitations
 - Build in buffers of time – allow time for multiple, progressive rounds of getting feedback and revising

Prioritization – Not All Components Are Created Equal

- Rank order based on what reviewers focus on and hence would require the most time investment, *not necessarily* which to start first:
 - **Specific Aims** – highest leverage, write first and revise throughout
 - **Research Strategy (Significance, Innovation, Approach)** – main scientific component
 - **Career Development** (for career development grants) – candidate background, goals, mentorship plan
 - **Human Subjects** – often underestimated
 - **Budget** – work with grants office, start at least 1 month out
 - **Biosketches** – request early, follow up
 - **Letters of Support / Collaboration** – request early, follow up
 - **Administrative forms** – last but must be error-free
 - **Required registrations** (for NIH grants) – complete/get out of the way early

Can I use AI to Write Grant Applications?

- Read the instructions very carefully and look up any funder policies around AI
- NIH has a new policy on the use of AI in developing grant applications: [NOT-OD-25-132: Supporting Fairness and Originality in NIH Research Applications](#)

“NIH will not consider applications that are either substantially developed by AI, or contain sections substantially developed by AI, to be original ideas of applicants.”
- Use AI responsibly: <https://medicine.stanford.edu/news/stories/2025/07/10-rules-for-ai-in-grant-writing.html>
 - Don't use it to do any first drafts
 - Don't copy-paste
 - Don't just rely on first suggestions that AI gives – probe/explore/fact check/have fun!
- Remember – Each grant you write reflects *where you are* in your career stage, *where you've come from*, and *where you're going*. **You, not AI, are the expert.**

Can I use AI to Write Grant Applications? (continued)

- Some things that AI is great for:
 - Checking for consistency (e.g., in terminology, in data)
 - Checking for discrepancies (e.g., between the detailed budget and the budget justification)
 - Checking for potential spelling, grammar issues
 - Helping to check for redundancy
 - Checking your document against instructions/review criteria (but you must paste in the specific guidelines/review criteria)
- Some things that AI is not good at:
 - Finding good-quality references
 - For literature reviews, AI is great at helping summarize/interrogate publications that you have already identified. However, refrain from using AI to identify relevant references.

What Are Other Helpful Tools Besides AI?

- Reference managers (free programs include Zotero and Mendeley)
- Cloud-based resources (for simultaneous collaboration, back-ups)
- Sample grants and templates

Example Scenario of Timeline and Prioritization

Scenario: You are a first-time NIH applicant applying for an NIH Emerging Global Leader Award (K43 Independent Clinical Trial Required) award.

- Read the opportunity carefully: [PAR-24-295: Emerging Global Leader Award \(K43 Independent Clinical Trial Required\) \(nih.gov\)](#)
- Note the upcoming deadline: December 3, 2026.
- Reverse-engineer a timeline
 - Give yourself at least 6 months to write and submit the proposal

1st Month – Know the Instructions Inside Out

1st Month

1. Gain familiarity with what NIH career development grants are about (**2 weeks**):
 - NIH website, videos, etc.
 - Introduction to Grant Writing I:
<https://videocast.nih.gov/Summary.asp?Live=9343&bhcp=1>
 - (NIH) Introduction to Grant Writing II:
<https://videocast.nih.gov/Summary.asp?Live=9344&bhcp=1>
 - Review Process: <https://grants.nih.gov/grants-process/review>
2. Read instructions, develop a checklist, formulate file organization system, and format/outline main/supplemental documents (**2 weeks**)

Example Checklist

- For every NIH grant, NIH has at least two sets of instructions. Be familiar with both:
 - **GENERAL (SF424) Instructions for all NIH grants:** [How to Apply - Application Guide | grants.nih.gov](https://grants.nih.gov/grants/applicationguide/)
 - **SPECIFIC (NOFO) Instructions for the specific opportunity]:** [PAR-24-295: Emerging Global Leader Award \(K43 Independent Clinical Trial Required\) \(nih.gov\)](https://www.nih.gov/grants/funding/par-24-295/emerging-global-leader-award-k43-independent-clinical-trial-required)
- Make a checklist based on both. (**Example Checklist Attached Separately**)

Example Pre-Filled Document

- Use both sets of instructions to pre-fill various components
- **Example Pre-Filled Document Attached Separately**

2nd Month – Specific Aims as the Engine

2nd Month

1. Draft **Specific Aims** (one page). Once the specific aims page is drafted:
2. Identify **mentor group and collaborators**
 - Get initial feedback from mentors and refine the specific aims. Set up recurring meetings as needed.
3. Contact the relevant **NIH program officer** to see if they have any insight/suggestions
4. Consider resources and what else is needed to complete the grant application (develop a plan to obtain any resources that are currently lacking, build collaborations as needed, etc.)
5. Check that **required registrations** are/will be completed
6. Maximize the potential of **preliminary data**

3rd Month – Flesh Out the Science

3rd Month

1. Start drafting the **Research Strategy** section
2. Start outlining **Budget** components with the grants office

4th Month – Revise the Science! Flesh out Career Development

4th Month

1. **Revise the Science!** – Send final full drafts of the specific aims and research strategy sections to your mentors and incorporate feedback as needed
2. Start drafting the **Career Development** components
 1. Candidate Information
 2. Goals for Career Development
 3. Plans and Statements of Mentor and Co-Mentor(s)

5th Month – Flesh Out Everything Else

5th Month

1. Work on other (non-main) sections of the grant – the grants office might also have some institutional templates already written up. – START ITEMS IN BOLD EARLY

1. **Biosketches**

2. **Human subjects components**

4. **Misc.**

5. **Other potentially applicable items**

1. Authentication of Biological and/or Chemical Resources
2. Vertebrate Animals
3. Select Agent Research
4. Appendix

1. Inclusion Across the Lifespan
2. Inclusion of Women and Minorities
3. Recruitment and Retention Plan
4. Study Timeline
5. Protection of Human Subjects
6. Data and Safety Monitoring Plan
7. Organizational Structure of the Study Team
8. Planned Enrollment Report
9. Statistical Design and Power
10. Availability of IP and IND Status (if applicable)
11. Dissemination Plan

1. Cover Letter

2. Facilities and Resources

3. Equipment

4. **Training in the Responsible Conduct of Research**

5. **Letters of Support from Collaborators, Contributors, and Consultants**

6. Description of Institutional Environment

7. **Institutional Commitment to Candidate's Research Career Development**

8. Data Management and Sharing Plan

Example Timeline (cont'd.)

6th Month

1. Finalize all sections of the grant for submission (resolve everything that's not finished)
2. Perform last checks

Let Time be a Grace

- **Allow time for:**
 - Late biosketches and letters of support
 - Budget negotiations
 - Communication with collaborators that is more than just the bare bones
 - Mistakes
 - Reorganizing as the proposal becomes more complex
 - Using the available resources
 - Exploring, deepening or widening the science
 - Unforeseen compliance or technical issues – lack of preliminary data, software problems, validation errors stopping the proposal from being submitted
 - Making the proposal beautiful!

Strategies to Revise and Resubmit



General Strategies: Managing Expectations

- Prepare for a journey with hills and valleys. The proposal may not get funded on the first try. There are more good ideas than available funds
- Gain experience in reviewing others' proposals to get a reviewers' perspective and be prepared to understand and deal with reviews
- After receiving funding decision and reviews, take time to let anger subside and reason take over
- Consider *all* reviewer comments. Break down reviewer comments into bullet points and assign them into **buckets**: scientific fixes, grantsmanship fixes, and no way to fix
 - Use reviewer comments to refine proposal – whether for the same funder or to a different funder
 - If no way to fix, go back to the drawing board

Are Chances Better with Resubmissions?

- For NIH grants, resubmission proposals have a higher success rate (e.g., 32.1% vs 15.2% for R01 proposals in 2020)
- Resubmissions like the NIH allow the chance to provide a response to reviewers' comments and make a better case
- Understand why a review is lukewarm and be strategic
 - Find a different opportunity
 - Revise and resubmit as a new grant
 - Go back to the drawing board
- Consult with mentors, collaborators, and Program Officers
- Consider resubmission due dates

Other Strategies

- Consider Submitting to Different Sponsors
 - It is often strategic to submit/resubmit to multiple sponsors throughout the year vs. waiting for a chance to resubmit to the same sponsor (which could take more than a year)
 - Check funder policies for simultaneous submissions
- Avoid Pitfalls
 - Re-check instructions to ensure you're following all updated guidelines and forms
 - Even if the guidelines and forms are the same, make sure to update letters, biosketches, and other content (e.g., to reflect the latest literature)

If There is a Chance to Write a Response: Strategies to Craft a Respectful and Positive Response

- Be factual
- Be humble and acknowledge mistakes (but don't over-apologize)
- Do not use inflammatory language
- State which section(s) of the application have changed
- Convey the *responsiveness* of your revised proposal to the reviewer comments, including that you have revised the proposal to address all reviewer concerns
- If you think the reviewer is incorrect, factually state why and cite literature
- If it is not possible to implement a reviewer's suggestion, propose some alternative or compromise

Thank You and Questions

