Follow Their Guidelines
Peer-Review Suggestions You Can Make to NIH, NSF

Wouldn’t it be terrific if your colleagues, mentors, best friends, and loving spouses could be the actual reviewers who score your grant proposal? Unfortunately, that’s not going to happen.

That’s because federal agencies, in particular the National Institutes of Health (NIH), have strict guidelines designed to promote fairness, objectivity, transparency, and competitiveness in the grant-making process. So, in the case of the NIH, you can’t ask for a specific peer reviewer by name in your application.

You can, however, boost your competitiveness, expedite your application, and avoid conflicts of interest by making appropriate

Study Section Insider
Knowing Your Program Officer Contributes to Funding Success
by Christopher Francklyn, PhD

While reading a science blog recently, I was struck by a principal investigator’s comment that he had never spoken to his National Institutes of Health (NIH) Program Officer (PO).

This took me aback, because I’ve always considered my NIH PO to be (with the possible exception of my department chair) the individual with the greatest potential influence over the success of my program.

Simply put, POs represent the critical link between your individual research effort and the immense scientific apparatus of NIH or the National Science Foundation (NSF).

If you understand what they can and cannot do for you, and are willing to look beyond their occasional need to deliver you some bad news along with the good, they can influence your career in many significant and positive ways. If you haven’t taken the time to build a relationship with them, it will be that much harder for them to go to bat for you when you need them.

We should start by comparing in general terms the respective roles of POs in the NIH and NSF:
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suggestions about your proposals by adhering to
guidelines of each agency when writing your application.

NIH, NSF rules differ

Start by reviewing agency rules before suggesting
peer reviewers who “should or should not” review the
proposal. These differ for the NIH and the National
Science Foundation (NSF).

It’s extremely important to follow the NIH’s Office
of Extramural Research (OER) specific instructions of
not requesting individual peer reviewers by name in an
application or cover letter. This is done to protect you
and to protect peer reviewers from potential charges of
conflict of interest and the appearance of impropriety.
Requesting individual reviewers, no matter how well-
intentioned, could get very sticky and result in rejection
of your application without review.

Because conflict of interest is such a sensitive topic
in the world of competitive funding, NIH applicants
can and should provide names of individuals (e.g.,
competitors) they believe should not be considered
as reviewers — and include an explanation of why in
proposal cover letters. This keeps everything above-
board and honest and you may be commended for your
forthrightness and integrity.

NIH’s Scientific Review Officers (SRO) have
jurisdiction over study sections, or Scientific Review
Groups (SRG), for various disciplines and research
areas. SROs assign groups of specific reviewers to
review 10 to 15 proposals at a time based on:
• Proposal content
• Reviewer expertise
• Consultations with funding Institutes/Centers (ICs)
• Applicant suggestions in cover letters of “specific
  expertise” needed for review of a proposal.
Analysis has shown that requests from PIs for
expertise (as long as reviewers go unnamed) are
a valuable source of information when the NIH is
selecting peer reviewers.

The NIH accepts suggestions for reviewers with
specific expertise in a cover letter written in a structured
writing_application.htm.

The cover letter can include any of the following:
• Suggestions of study sections or funding agencies
  best suited to a proposal. Advice to an applicant
  from a Program Director or SRO about a study
  section, or IC, should be included.
• For multidisciplinary applications, highlight the
  main disciplinary/ methodological thrust of the
  application.
• Include a list of areas of expertise critical to
  understanding your application.
• Point out any potential conflict of interest.

It’s perfectly acceptable for PIs to learn about NIH
peer reviewers by viewing SRG rosters at http://era.
nih.gov/roster/, but NIH warns applicants “never” to
communicate directly with a review group member
about an application either before or after review. Peer
reviewers must report to SROs any direct or attempted
contact by applicants. If communication is reported,
review may be delayed or applications may be returned
without review.

The NSF, on the other hand, does invite a grant
applicant to suggest and name individuals you believe
are “especially well-qualified” to review your proposal
— and those individuals you believe should not review
your proposal because of potential conflict of interest. If
you do offer suggestions, an NSF Program Officer will
take your suggestions seriously and may contact you for
further information.

A PI can allude to potential reviewers by
including individuals familiar with his/her work in the
bibliography section of an NSF application. NSF
Program Directors look at this section as one source
of potential reviewers. The NSF also asks for names
of individuals PIs have worked with over the past
two years; these people will not be assigned to review
because of potential conflict of interest. ■
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NIH officers and their roles

In the NIH, the Scientific Review Officer (SRO) and PO are separate jobs, each held by full-time government employees. SROs, who work for the Center for Scientific Review (CSR), manage one or more study sections and thus are mainly responsible for ensuring that your grant application is reviewed fairly and expertly.

While the study section(s) and SRO managers may have a single focus, applications submitted for a single meeting may span several of the NIH institutes.

By contrast, your NIH Program Officer (PO) works for just one of the many NIH institutes, both through contributions to defining the strategic mission of the institute, and serving as the critical liaison between applicants/awardees and institute program staff. NIH POs are trained scientists themselves, and they manage the programmatic, scientific, and technical aspects of a “portfolio” of grants appropriate to their own scientific expertise.

In addition to providing consultation before your grant is submitted, they will assist you in interpreting your reviewers’ summary statement and your reviewing scores. Notably, POs can have a significant role in determining whether you will be funded. If you receive an award, the PO is the one who actually reads all those non-competing progress reports you’ll be writing.

NSF officers and their roles

The broad categories of science that NSF supports are called “Directorates” (analogous to NIH institutes in most respects), subdivided into “Divisions” which are populated with Program Officers (POs). As in the case of NIH, all POs possess a specific category of scientific expertise, and this dictates the collection of grants they will supervise. Unlike the NIH, however, NSF POs have the tripe responsibility of managing the review panel that judges the applications, making recommendations about funding based on reviewer scores, and helping awardees manage their grants. Thus, in the NSF, the jobs of SRO and PO are merged into one position, the NSF Program Officer.

A further distinction from NIH, where POs are permanent government employees, is that NSF Program Officers are drawn from the ranks of both permanent government employees and temporary employees. The latter are referred to as “rotators” in NSF parlance, and actually are successful PIs from academic institutions on one- to three-year leaves to work at NSF.

For both NIH and NSF, building a relationship with your Program Officer is a key step in aligning your scientific interests with the strategic mission of the NIH Institute or the NSF Directorate.

In the following sections, we’ll explore some of the specifics of this relationship mostly in the context of the NIH — but most of what is presented will hold true for relationships with NSF Program Officers as well.

Actually, owing to their role in both the review process and the decision to make awards, NSF program staff have a commensurately larger footprint on your ultimate program success — so it is even more important to build a strong working relationship with them.

Your relationship with your PO

The first introduction many PIs have to their NIH PO is when they receive their Summary Statement. The PO’s name is found in the upper lefthand corner, under “Program Contact.” Naturally, we all experience a range of emotions when reading summary statements, from the euphoric high of a clearly fundable score, to the deep depression associated with an unscored application. Between these extremes, there is the stomach-churning score that lands on the margin between unfunded/funded. A score in this range virtually guarantees that you’ll be in funding limbo for the next nine months.

Your PO serves you in different capacities, depending on these outcomes. If your proposal scores poorly, the PO as your chief NIH point of contact helps you interpret the study section’s comments and guides you toward a higher quality resubmission.

The POs often sit in on study-section meetings, quietly making notes about the reviews. If your application is discussed and doesn’t receive a fundable score, your PO may help extend the written comments by providing information about the context of the review. They can often gauge whether the panel balked over specific experiments in your plan, or (more seriously) expressed a profound absence of enthusiasm for your overall program. (You will certainly need to know which scenario applies.) If your grant received a fundable score, then you are in the enviable position of waiting for the “golden phone call,” when the PO calls to congratulate you. Don’t expect this call until after the Institute Council meeting, which can be months after your grant is reviewed.

Grants that score “on the margin” create what is likely the most awkward situation for the PO, because

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he/she won’t be able to give you a firm statement about the likelihood of an award until the entire institute funding process has run the gamut.

Such decisions reflect the ultimate relationship of your grant to the institute payline, which NIH officially defines as “a percentile-based funding cutoff point determined by balancing the projected number of applications coming to an NIH institute with the amount of funds available. Set after the budget is determined, paylines are not mandatory, are not made for all mechanisms, and may be adjusted during the year.”

Additional roles of POs

POs are involved in a broader range of activities in the management of the science in a particular NIH institute (or NSF directorate) than many PIs might appreciate. Owing to the knowledge gained by administering the numerous grants in scientific portfolios, NIH POs advise the institute director on scientific direction and priorities, which for PIs may be reflected by the appearance of Institute-specific Requests for Applications (RFAs) and other funding opportunity announcements that focus on scientific question or approach.

Each NIH institute has its own rubric for deciding which applications receive an award, but the three most important considerations are 1) the priority score of the application; 2) programmatic considerations (strategic priorities and balance); and 3) the amount of funding left over.

Grants that receive a priority score and/or percentile ranking are compiled to form a list that undergoes a second round of review by the institute’s council/advisory board. For the National Institute of General Medical Sciences (NIGMS), and likely for other Institutes, the secondary review of individual applications occurs in closed session. (As an example, see info about the NIGMS council process here: http://www.nigms.nih.gov/About/Council/Council+Meetings+and+Functions.htm).

For applications that pass the scientific review group, the council can take a number of potential actions, including concurring or disagreeing with the study section’s recommendations, or advising changes in the length and amount of support.

POs attend these meetings, contributing to the discussion of individual applications and “programmatic concerns” that reflect the overall strategic mission of the institute.

Based on the experiences of my peers, the council meeting is vital for applications “on the margin.” If your application should fall in that range, it is particularly important to arm your PO with the freshest, most up-to-date information about your research immediately prior to the council meeting; news of major discoveries, significant papers accepted, etc., can increase your chances of funding.

Stay in touch with your PO

This brings us to the key advice about POs: Communicate with them often, and not just when you need to find out if your grant is going to be funded. They can help before you even write the application by providing feedback about whether the project falls within the strategic priorities of the institute and, if so, what would be the most appropriate funding mechanism to use.

After your grant is funded, they can help you with Administrative Supplements and other special requests, like moving to other institutions. If you are contemplating special mechanisms like a program project grant, a conference award, or a planned budget in excess of $500,000, you will need their permission in advance to submit the application.

As part of the non-competing progress report process, do alert them to particularly important papers and discoveries.

Seek out your PO at scientific meetings so they can assign a face to your file.

Finally, be sensitive to their roles in the institute (or directorate) as arbiters of funding decisions and appreciate that they have to be responsive to scientific priorities that are bigger than your individual research program.

Dr. Francklyn is a former study section chair and veteran reviewer for NIH and NSF study sections. He is a professor at the University of Vermont, where his scientific expertise is in protein synthesis and RNA-protein interactions.
How to Craft a Winning Title for Your Research Proposal

The title of your grant proposal to the National Institutes of Health (NIH) and the National Science Foundation (NSF) is your first chance to win over peer reviewers with an innovative, creative idea that they’ll want to champion for funding.

A title that stands out from others and virtually compels reviewers to read your application adds one more advantage to your chances of achieving a high score (if the substance of your proposal is top-notch).

This significant piece of information must be a unique, relevant and intriguing description of your research plan—all packed into about 80 to 100 characters (depending on the agency). In this limited space, you must strive to convey:

• What you will do
• How you will do it
• And, most importantly, what the results will be.

Public agencies and private foundations want to fund work that can seriously impact society or advance science.

“Point to the outcome of the research in your title,” advises Lisa Chasan-Taber, associate professor of epidemiology at the University of Massachusetts/Amherst.

“It should inform the reviewer of the essence of the project,” says Dr. Mario Inchiosa, professor of pharmacology at New York Medical College at Valhalla.

Tips for creating successful titles for NIH and NSF grant applications include:

• Be original and relevant. How? Make sure yours differs totally from those of already submitted applications or from funded research. Agencies want fresh, innovative projects. Review databases of existing applications and awards at www.projectreporter.nih.gov and www.nsf.gov/awardssearch and contact the appropriate NIH scientific review officer or NSF program officer to ensure that your title is not redundant or closely similar to another.

• Be accurate and use agency-friendly keywords that help officials direct your proposal to the appropriate study section.

“It’s important to have terms in the title that will make it clear which study section should see it,” says Chasan-Taber. “For instance, using the term ‘epidemiology of’ will help the application go to an epidemiology study section.”

• Find out which themes are mission-relevant, in priority areas for research, or are emerging as future priorities. For the NSF, these include ecosystem impacts of the Deepwater Horizon oil spill in the Gulf of Mexico, decontaminating dangerous drywall, robotics, energy alternatives, climate change and its impacts, nanotechnology, improving science, math and engineering education and commercialization of biosciences. Go to www.nsf.gov/funding for more information. NIH themes getting attention include cancer, HIV/AIDS, pediatric and adult obesity, and aging-related topics. Information is available at http://grants.nih.gov/grants/oer.htm.

• Use results-driven words instead of those that describe your process. Here are some examples (find more at www.projectreporter.nih.gov):
  — Testing Direct Effects of Reproduction on Stress and Mortality Via Ovariectomy
  — Is Tolerance an Enabling Factor for Greater Alcohol Consumption?
  — Neonatal Neurobehavioral Impacts of Iodine Insufficiency and Pesticide Exposures
  — Be authoritative. That means let reviewers know that you know what you’re talking about. For instance, if you’re a researcher focusing on behavioral science, obesity and nutrition in specific population segments, your grant title could be: Culturally Appropriate Childhood Obesity Prevention Programs for Hispanic Families (An actual successful NIH grant proposal title).

• Keep agency criteria in mind. NIH criteria are: significance, innovation, investigators, approach, and environment. NSF criteria are: intellectual merit and broader impact.

• Use plain language. Notice the simplicity, directness, and economy of words in this successful title: Public Health Preparedness and Response for Bioterrorism. A wordy, awkward, dramatic way of saying the same thing would be: Will Public Health Authorities Be Ready When and If the Horrors of Bioterrorism Unfold in Their Cities?

• Follow the rules. NIH limits title length to 81 characters, including spaces and punctuation. If longer, your title will be cut arbitrarily, stripping away meaning and impact. An agency may request a specific reference as part of a title when issuing a solicitation. For example, the NSF may specify that a title begin with NSCC/SA, which stands for National Security Conflict and Cooperation/Small Award. Agencies may also require specific fonts and type sizes.

• Use active, forward-thinking verbs, such as predicting, mobilizing or empowering, that tell readers your project points to results, such as Enabling TV Meteorologists to Provide Viewers with Climate Change,

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• View your title as a work in progress. Your final one may differ from your initial one because a proposal’s specifics typically change during the writing process. Write a provisional title that you’ll finalize when you’ve completed the application.

• Get input from peer scientists and individuals outside your field, preferably an English professor or an editor for proofreading and language use. Colleagues with grant-writing experience can be especially helpful.

• If you’re resubmitting, keep your proposal’s original title so it’s recognizable to agency officials.

• Finally, proofread your title before hitting the "send" button. Don’t rely on your spell-check program. Use a dictionary. Terminology must be spelled correctly. An insignificant error could wreck your chances of winning funding.

How Many Grants Should You Attempt to Manage Concurrently?

If you didn’t have grant money coming in, would you have a functional lab? Probably not. But more grants isn’t necessarily better. More money? Sure. More prestige among your colleagues? Definitely.

But do you want to manage more grants? That means more responsibility and a lot more work.

It also means potential new funders might wonder if you’re trying to bite off more than you can chew.

How many grants can or should a principal investigator manage at one time?

Mostafa A. El-Sayed, PhD, a chemistry professor and director of the Laser Dynamics Lab at the Georgia Institute of Technology, says two or three grants is probably all you should try to handle. More than that, he counsels, and you run too much risk of making sloppy mistakes or simply burning yourself out. In fact, he emphasizes, a PI working under a single grant — as long as it’s a good one — “can receive as many citations and as much recognition” as PIs trying to juggle too much work.

PI deems 2 grants minimum

Of course, how many grants you can manage at once depends somewhat on their type. Robert Gordon Kalb, MD, a neurology associate professor at the University of Pennsylvania and the Joseph Stokes Jr. Research Investigator at the Children’s Hospital of Philadelphia, notes that academic institutions generally want a PI to cover his or her salary — or at least a substantial portion of it — with grants.

Trouble is, he says, “if you have a modular National Institutes of Health (NIH) grant, you can’t cover it with just one. Two modular 101s will cover about 70 percent of a PI’s salary, so the rest will have to be covered by teaching or other departmental duties.”

In his view, then, two is the minimum number to sustain a lab. But he concedes that if you try to manage many more than that, you might end up having to manage more post-docs and other assistants than you can manage.

“Different PIs have different styles,” Kalb says, “but I think that once a lab gets bigger than eight to 10 people it’s very difficult to know what’s going on. If you’re lucky and have some long-term people or if you’re a very famous scientist who can attract the most outstanding post-docs, you could efficiently run a lab with three or four grants. But the mere mortals among us don’t get those people. So we need to spend more time with them.”

Too many grants also can keep you from getting a specific source of funding you really need — or one that would look especially good on your resume. The NIH, Kalb points out, doesn’t specifically focus on how many grants you have, but it does weigh how much other work you have and where your other money is coming from.

Kalb has served as a reviewer for NIH grants and points out that he and his colleagues are only looking at the science in reviewing applications. But one key to the science — especially under the new application rules — is potential “impact;” in other words, whether you can actually conduct the experiment you want to run.

“Reviewers are permitted to ask themselves, ‘Can this be done?’” Kalb explains. “If a person has a huge lab, some people would say, ‘Well, I don’t know how the PI can spend 5 percent of his time and bring this project to a successful conclusion.’ Or the reviewer could say, ‘This person has a track record of great science and a lot of people in the lab.’ So it’s often a very personal decision on the reviewer’s part.”

In general, conventional wisdom says there tends to be more waste as a lab gets bigger.

NIH stance

The NIH Office of Extramural Research reports: “When NIH staff review a competing application, one piece of that application is Other Support for all PIs and all other individuals considered senior/key personnel. That information is reviewed to monitor potential budget overlap, commitment overlap and/or scientific overlap.”

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Other Support includes “all financial resources available in direct support of an individual’s research endeavors.” That means, the NIH says, that “it is not the actual number of grants that (the) NIH specifically monitors, but the total effort committed for that investigator on all his or her active support.”

There is not, the NIH OER adds, a raw, arbitrary limit on salary dollars from all sources, either — say, $250,000. But the NIH does track all of a PI’s income to make sure the federal government is not the only source of it. “The NIH has no policy that limits the number of grants awarded or the amount of the award,” the OER says. “We do monitor effort commitment and budgets, however, so that we do not pay more than 100 percent of a PI’s salary, for example.”

NSF flexible

The National Science Foundation (NSF) also does not limit the number of grants you are managing concurrently, “as long as it can be determined that the PI has the time available to devote to the time requested in the proposal,” according to the organization’s Office of Legislative and Public Affairs. If you can show that you can handle 10 grants, the agency says, then the fact that you have nine already won’t keep you from getting a tenth. But the office does offer this “insider” guidance to PIs: “Normally, due just to time constraints, PIs probably will not have more than three to four current grants.”

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You’re writing a grant proposal and need letters of support from collaborators and contractors you intend to involve.

How can you ensure that these provide the details that will have an impact on reviewers? One surprising tactic is for the applicant to write the initial draft of the proposed letter personally.

“We tell our PIs to draft the letters themselves,” says Amy Gantt, director of the Office of Proposal Development at Tufts University.

She cites four reasons:

• **Expectations.** “It sets expectations early,” Gantt says. Initial conversations with contractors and collaborators may leave both sides with faulty assumptions. But when they see your expectations of their performance in black and white, including what you will provide to them and what they will provide to you, it avoids potential misunderstandings from growing into full-blown conflicts later on. It puts you all “on the same page.”

• **Timeliness.** “It means the letter will more likely be completed in time,” Gantt says. Your grant application is no doubt a high priority for you and you are well aware of the grant deadline; your collaborators and contractors may or may not have the same priorities. Your letter of support may drop lower on their “to do” list. When you offer to write the letter of support, you’re more likely to get a quicker response – one that meets the deadlines.

• **Facilitation.** “It’s easier for collaborators and contractors to edit letters than draft the letter themselves,” Gantt explains. This helps with the deadline. For them it’s easier to read your letter and offer comments and clarifications than start from scratch. It feels easier to start with something and then correct it.

• **Congruence.** “Finally, it makes sure the letters support the grant,” Gantt says. You are well aware of your strategy in applying for the grant, so a letter of support written by you personally can be part of your overall strategy. It can be difficult and time-consuming to communicate to a third party exactly what is needed, and what to cover, and then ask them to prepare it. Better to do it for them.

**Keys to effective letters**

Here are four tips on drafting support letters:

1. **Clarify duties, roles, and timelines.** Offer specific details about what you expect the collaborator or contractor to do — and the deadline. This will avoid potential misunderstandings later. (e.g., “I didn’t realize you wanted me to do that – especially on that schedule.”

   “When non-applicants, collaborators, and contractors write their own letters of support, it’s often more vague than what a PI would say,” explains Gantt.

   **Key:** Make sure the letter draws attention to what you’ve done that’s relevant to any guidelines outlined in the agency’s RFA (request for applications).

2. **Write it from the point of view of the contractor or collaborator.** Tailor each letter to the specific duties of the collaborator or contractor and write it as if they wrote the letter. By the time they offer feedback and make corrections, it will be from their point of view.

   Essential: If you have more than one letter, use unique wording for each one.

   “We once had a proposal where the PI had drafted the letters of support, but much of the wording in each was exactly the same. It was pretty clear one person had written all the letters,” Gantt recalls.
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3. Display enthusiasm. The letter should convey the collaborator’s or contractor’s enthusiasm for the project by outlining specifics … such as commitment of resources, time, and interest in the project details. That’s better than saying little more to the funder than you’re excited about it.

4. Get the standard details right. Address the letter according to the guidelines of the grant; It will be going to either the PI or the granting agency. Use an institutional letterhead and have it signed by someone authorized to make the commitment.

Letter structure

Gantt recommends the following structure:

• **Statement of support:** Use one to three sentences to show enthusiasm and identify the specific project by name.

• **Supporting paragraphs:** Explain how the research, expertise, or technical skills of the collaborator, consultant, or contractor will support the applicant.

  What is the relevant experience and how does it bear on the project? What’s their previous track record on similar projects? (If you’ve worked together before, describe that and the results.) Explain specific duties to perform and describe the use of any equipment or other resources.

• **Cordial closing.** The closing’s formality depends on the relationship between the principal investigator and the person who is supporting them. If the two have a previous productive working relationship, it can be less formal. If that relationship is more limited, the closing should be more formal.

Comma Coming In Future Issues

- When and How to Resubmit An Application
- R01 or Something Else? Choosing the Right Mechanism
- Steering Tips for Negotiating NSF’s FastLane
- Secrets of Highly Successful Grant Recipients
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