News from the National Institute of General Medical Sciences (NIGMS)

TIPS FOR GETTING YOUR RESEARCH GRANT APPLICATION FUNDED ON THE FIRST TRY!

While You're a Postdoc

Ideally, you and your mentor will start planning your first research grant application before you even start looking for your first job. Part of your postdoctoral experience will include beginning the project you'll be taking with you. When you leave the lab, ask your mentor to give you a letter explaining the relationship of your project to the mentor's and affirming your independence. Important steps are accumulating preliminary data, establishing feasibility, learning the needed techniques, and identifying potential collaborators. If your previous training has not included writing a mock grant proposal and having it critically reviewed, get your mentor and his or her colleagues to arrange such an experience for you, other postdocs, and predocs in your department. Most national scientific meetings have workshops on funding opportunities, grant proposal and scientific paper writing sessions, and mock study section meetings. Take advantage of as many of these experiences as possible. In addition to attending the scientific sessions, these other workshops will help you to know the people, vocabulary, and strategies that—along with your good scientific ideas—will get you funded.

Finding a Job

Check the Web sites of of the societies with which you affiliate for publications on finding a job in your field. For instance, the American Society for Cell Biology Web site, located at: ⟨http://www.ascb.org/ascb⟩, has two such publications: How to Get a Research Job in Academia and Industry and How to get a Teaching Job at a Primarily Undergraduate Institution. Your most important strategy: Get the job that best matches your career goals and particular circumstances. Choose the research career you want, then match it to an undergraduate institution, industry, or major research university or medical school.

Negotiate your startup package to jump-start your new independent position. Get the space, equipment, and technical help you will need to carry you through until you can obtain independent research support. One thing you should ask about is whether you have to use up all of your startup funding in the first year. If you can get permission to request a "no-cost extension" of your startup funds, you'll be able to keep your lab going past the first year if your first grant application isn't funded.

On Being an Assistant Professor

Make sure you understand the rules of the game in your new position. Understand the timetables that will govern your life for the next few years. You and your department chair should agree on what you need to accomplish in the first three years. Find out what you need to demonstrate in order to earn tenure and when you will first be considered for tenure. It's always a good idea to get these agreements in writing. Ask for a written copy of the document that spells out the university's policy on stopping the "tenure clock" should you need to work part-time due to child care or other family responsibilities.

Choose carefully the first students you take into the lab. They will have a lot to do with your success as an investigator. Don't take on more students than you can attend to thoughtfully.

Talk with your more senior colleagues and your department chair or tenure committee about committee work and other administrative responsibilities. You need to balance your desire to contribute to the institution with your need for adequate time to keep your research going, write your proposal, and juggle everything else.

Plan your timing. With respect to your first research grant application, this is one of the most important things you can do. Give yourself plenty of time to write your grant proposal. Make sure you take into account all the other things you'll be doing—teaching new courses, setting up your lab, counseling students, working on committees, and personal considerations. Work backward from the deadline you would like to aim for. Find out your internal institutional deadlines, then work backward in setting firm milestones and dates for each stage. If there is a choice between doing the best job possible and submitting an application you still have concerns about, consider slipping to the next deadline.

Preparing a Grant Application

Good news! Scientific program directors who work at the National Institutes of Health (NIH) want to help you. They are scientists who manage the portfolios of grants in the NIH institutes and centers.[1] They are particularly interested in assisting new investigators in finding their way through the system. Do a CRISP search (see tip 10) to see what research NIH supports that relates to your proposed project. This has the second benefit of showing you which institutes or centers support research in your area of interest. Armed with this information, you can call the appropriate program director in one or more institutes or centers. E-mail addresses and phone numbers are available through the NIH Web site (*http://www.nih.gov*), which has links to each institute and center.

Assuming that you have met with your "grant committee" (see tip 4), discussed your ideas, and sharpened your specific aims, jump into the writing with both feet. Clarify your overall goal—what strategically you are trying to accomplish with your research—and get that on paper first. Then make sure everything relates well to that overall goal.

Plan the best time of day to write, find a setting where you can't be disturbed, and enjoy writing your proposal! Don't

[1] An article entitled Helping Scientists and Facilitating Research describes the roles of scientific program directors and other scientist-administrators at NIH. It also outlines the grant application, review, and funding process. The article can be found by going to <http:www.ascb.org/ascb> and following the links to the April 1999 Women in Cell Biology (WICB) Committee column.

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Table 1. Tips for New NIH Grant Applicants

These tips were gathered by NIGMS staff members. Suggestions for additions to the list are welcome, and should be sent to shafers@nigms.nih.gov.

First Steps

1. Find out about the institutional support that is available to you (such as a startup package).
2. Broaden your vision beyond that which you had as a student.
3. Seek mentoring.
4. Instead of feedback, try "feed forward." (This approach, put forth by Dr. Keith Yamamoto of the University of California, San Francisco, involves asking three senior colleagues to act as your "grant committee" and discussing your ideas for the application with them before starting the writing process. Next, write one page of three to five specific aims and discuss these with the committee before beginning to write the body of the application. Thus, by the time you tackle the bulk of the writing, the organization and content of your proposal have received fairly detailed scrutiny and critical consideration.)

Start Work

5. Have a good idea!
6. Establish your independence as an investigator.
7. Generate preliminary data.
8. Enlist collaborators and include letters that clearly spell out the collaborations in your proposal.
9. Look at successful proposals of colleagues in your field.
10. Contact NIH by Web and by phone to reach people who want to help you:
    * NIH—http://www.nih.gov
    * Center for Scientific Review—http://www.csr.nih.gov/
    * National Institute of General Medical Sciences—http://www.nih.gov/nigms/
    * Computer Retrieval of Information on Scientific Projects (CRISP, a searchable database of federally funded biomedical research projects)—http://www-commons.cit.nih.gov/crisp/

Start Writing

11. Prepare your proposal early—well before the deadline. Do not rush!
12. Make your first proposal your best proposal. Convey your confidence and enthusiasm for the project.
13. Do your homework and know the literature and issues, questions, and controversies in your area.
14. Place your work in perspective. Cite others. If there are two camps, make sure you cite both sides.
15. Make your priorities clear. Provide a timeline.
16. Be focused.
17. Discuss potential problems and pitfalls. Describe alternate strategies.
18. Carefully consider your funding needs. Start with personnel—you will need to explain fully the role of each person on the grant. Review the new NIH modular grant rules, which specify that you must request funds in $25,000 modules and which do not permit increments for inflation in the "out-years." In order to arrive at an appropriate bottom-line figure, you will have to treat the budget as a 4- or 5-year budget; you should get expert assistance in this preparation. Although you will not have to detail budgetary needs, keep in mind that the reviewers will judge your competence, in part, by how well your funding request matches the scope of the project.
19. Use a clear and concise writing style.
20. Proofread! Have zero tolerance for typographical errors, misspellings, or sloppy formatting.
21. Critique your own proposal.
22. Have others read your final draft, as well.

Table 1. Continued.

After Review

23. Remember that reviewers and the NIH program directors who influence funding decisions usually try to give new investigators a break.
24. If you are not funded the first time around, revise your application carefully. Consult your program director for advice.
25. If you are funded, be sure to talk with your program director at least once a year to discuss your progress.

Note: An electronic version of the tips can be found at: http://www.nih.gov/nigms/funding/tips.html

let little things sneak in ahead of your writing and push you into the situation of always writing when you are tired.

When you've finished the first draft of your proposal, set it aside for a day or two and work on other sections of the grant application like the budget and biographical sketch. After you have revised until you think it is ready for outside criticism, give the draft to your "grant committee" and to others. Give them enough time to really read it, and let them know that you don't want kind words, you want tough, constructive criticism and strategic advice. When you get feedback from others, you may find areas where all agree and others where opinions differ. Try to make sure you understand the comments your colleagues give you, but don't take feedback blindly. Try to step back a bit and think about the whole picture when you change a part of your approach. If you get conflicting advice from different people, it's reasonable to go back to the people who disagree and ask each of them what he or she thinks of the other's advice. Sometimes one person will come up with a logical reason why you shouldn't take another person's advice—on the other hand, he or she may say, "Great idea—I didn't think of that!"

As you put the final package together, try to see it as the reviewer and the scientific review administrator (the federal official who manages the review) will see it. It's a cardinal rule: Don't annoy the reviewers! Nothing annoys a reviewer more than a sloppily prepared application. Even if your science is brilliant, your score will suffer if the reviewer has to wade through a hastily written application full of typos, inaccurate references, and confusing presentation. Also, don't make the font small in an attempt to stay within the page limitations. Small type that is hard to read frustrates reviewers. The scientific review administrator will be checking your application for completeness before she or he sends it out to the reviewers. You will make the job easier if your application conforms to the expected order and format and is complete. In the worst case, the scientific review administrator may return your application for revision before it goes to the reviewers.

If your examination of the composition of likely review groups leads you doubt that they'll have the right combination of expertise to review your application, you can point this out in a cover letter. Also, if there is anyone with whom you have had a significant conflict or who you believe could not review your proposal objectively, include that information in your cover letter too. Don't, however, make the mistake of listing too many names as "forbidden!"

Between Submission and Review

You've walked your application through the needed institutional approvals and seen the express mail truck drive away with it safely on board. Now you can dash back into the lab and see how much more preliminary data you can generate before the application is reviewed. When your application is received by NIH, you will be notified of its assignment to an initial review group and to an institute or center for potential funding. This would be a good time to contact the scientific review administrator who runs the study section that will review your application and find out what his or her policy is about accepting information to update your application. There usually is a period during which you can provide additional information if it would materially strengthen your application. Be selective! Only submitted papers that have been accepted or crucial experimental data strengthening your application are worth mailing to the reviewers. If you are in doubt, ask the scientific review administrator for advice. Clearly link the new material to the existing application so that the reviewers understand where it fits and how it relates. And don't forget to write your name and grant application number on any supplemental material that you provide.

After Review

After the study section meeting, the scientific review administrator tabulates the scores and prepares the summary statement that transmits the substance of the review to you, the institute or center staff, and the next level of review, the advisory council. About 2 $^{1}/_{2}$ weeks after the review meeting, the scores are entered into the NIH computer system. Call the scientific program director who is responsible for your application to obtain your score and discuss the prospects for funding. As soon as it becomes available, the scientific program director will send you the summary statement describing the results of the initial review of your application.

Regardless of the score and prospects for funding, read the summary statement carefully. Take advantage of your peers' free advice about your proposed project. If you have any concerns about the review of your proposal, consult your scientific program director. Depending on her or his advice, you may wish to write a letter of appeal outlining your concerns with either the review process or the budget and duration recommendations of the review group. Your scientific program director will present such letters to the advisory council at its meeting. The council can either accept the review as recommended by the initial review group or suggest a change. The institute or center staff takes the advisory council recommendations into account when they make their funding decisions.

With skill, luck, and good information you will have navigated this process successfully and be receiving your award within 3–4 months after the advisory council meeting. Your scientific program director will call you beforehand to notify you and clear up any administrative questions prior to funding. If funding is uncertain or a revision is necessary, listen carefully to the advice of your scientific program director.

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