

NIH Grant Writing Tips: 101

OK EPSCoR NSF Grants Workshop

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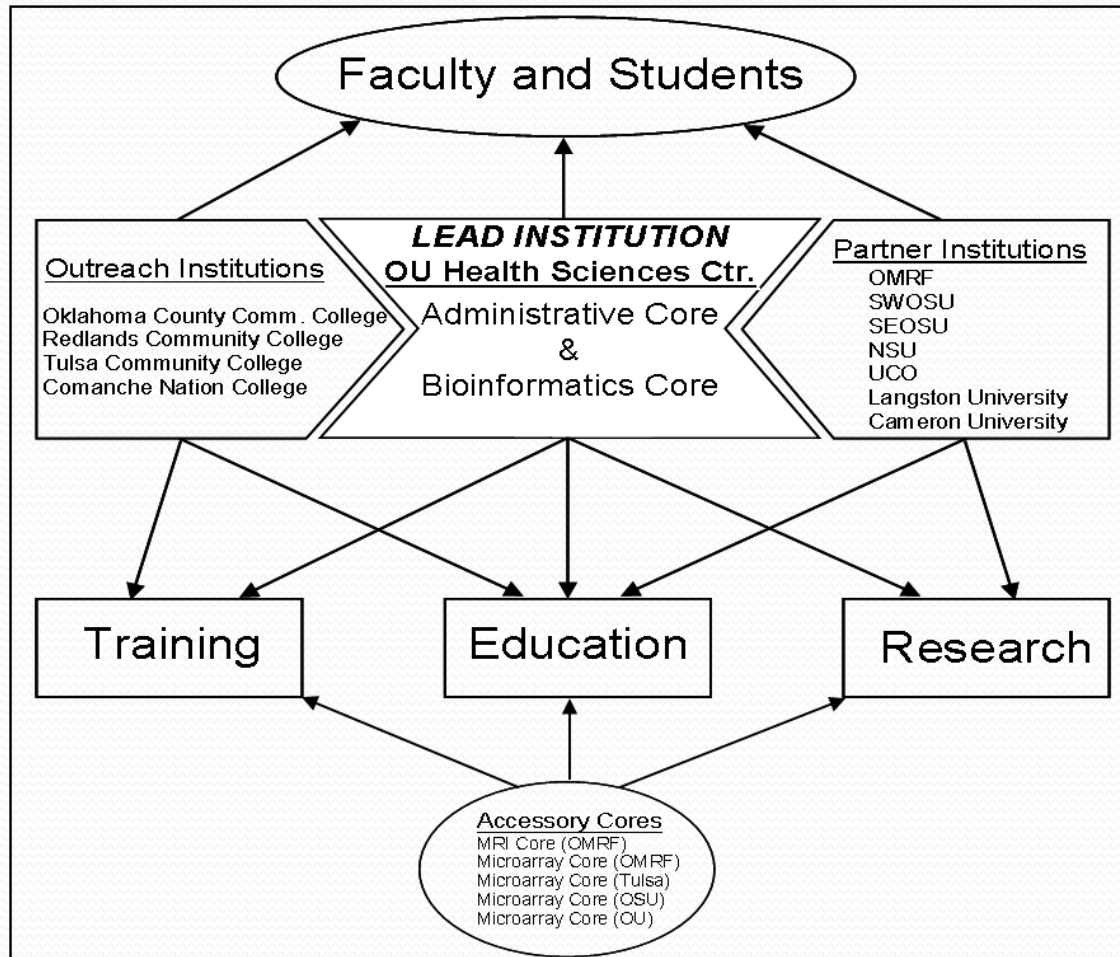
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OK-INBRE



Award Mechanisms

- Junior Investigator Awards – **8** (4@80K OUHSC/OMRF; 4@100K PUI)
- Collaborative Grants – **2** (50K)
- Mini-Grants - **4** (25K)
- Equipment Grants – **4** (2@15K and 2@35K)

Getting Started Writing a Grant Application

Think. What do you want to do?

Will the proposed research **impact significantly** on your field of interest and can you **convince** others that it will?

Do you have an adequate foundation of preliminary data to launch a grant application?

If Yes - Outline two to three concise specific aims.

The Initial Planning Phase

Check out the competition; see which other projects in your field are being funded.

Search the NIH database: **NIH RePORTER**

A day or two inspecting this database could be invaluable!

Evaluate yourself: How do your strengths match up with the topics you uncovered in your database search? Can you capitalize on your expertise and fill in any potential gaps with consultants or collaborators?

Identify key resources and support your organization has and what other support you might need.

NIH RePORTER Database

U. S. Department of Health & Human Services www.hhs.gov

NATIONAL INSTITUTES OF HEALTH
Research Portfolio Online Reporting Tools (RePORT)
REPORTS, DATA AND ANALYSES OF NIH RESEARCH ACTIVITIES

RePORT EXPENDITURES & RESULTS (RePORTER)

HOME FREQUENTLY REQUESTED REPORTS REPORTS CATEGORICAL SPENDING RePORTER GLOSSARY FAQs LINKS

Home > RePORTER > Query Form

MyRePORTER BETA [Login](#) | [Register](#) Font Size: - +

03/17/2011 Release Note:
New enhancements now available. [View Release Notes](#) for more information.

NEW! PI PROFILE LINKS [MORE INFO](#)

ABOUT RePORTER DATA FREQUENTLY ASKED QUESTIONS EXPORTER RePORTER MANUAL

NIH RePORTER

NIH ARRA Projects Only: [SELECT](#)

Term Search:
Logic: ☒ And ☐ Or

Hint: Multiple terms are accepted. Separate each term with a space. You may also use terms in "" (double quotes) for exact terms match.

Project Title:

Project Number:
Format: 5R01CA012345-04
Use '%' for wildcard
[Enter multiple project numbers](#)

Principal Investigator:
(Last Name, First Name)
Use '%' for wildcard

Organization:

DUNS Number:

Department: [SELECT](#)

Educational Institution Type: [SELECT](#)

City:
Use '%' for wildcard

State: [SELECT](#)

Country: [SELECT](#)

Congressional District: [SELECT](#)

Fiscal Year (FY): [SELECT](#)
Current FY is 2011

NIH Spending Category: [SELECT](#)

Agency/Institute/Center: [SELECT](#)
☒ Admin ☐ Funding

Funding Mechanism: [SELECT](#)

Award Type: [SELECT](#)

Activity Code: [SELECT](#)

Exclude Subprojects: ☐

Study Section: [SELECT](#)

RFA/PA:
Format: RFA-IC-09-003 or PA-09-003
Use '%' for wildcard
[Funding Opportunities and Notices](#)

Public Health Relevance:

Project Start Date: [SELECT](#)
Format: mm/dd/yyyy

Project End Date: [SELECT](#)
Format: mm/dd/yyyy

Award Notice Date: [SELECT](#)
Format: mm/dd/yyyy

Submit Query **Clear Query**

<http://projectreporter.nih.gov/reporter.cfm>

Check with Funding Institutes/Centers about Initiatives

See if your proposal matches any specific initiatives at NIH (or other relevant granting agencies - Don't forget NSF, OCAST, ACS, AHA... and other foundations).

Contact an NIH Program Officer for an opinion of your idea. *What you want to propose is **not** always what is most important. What **is** most important is finding a program/agency that **wants to fund** your type of research!*

Look at receipt dates for new applications. **Give yourself plenty of time to prepare your application, probably 3 - 6 months.**

Most Common NIH Proposal Mechanisms

R15 – AREA grant award (12 page limit)

\$150-300K direct costs for 2-3 year period

R21 – Exploratory grant award (6 page limit)

\$275K total direct costs for 2 years

R03 – Small grant award (6 page limit)

\$50K per year direct costs for up to 2 years

R01 – Large grant award (12 page limit)

\$250K (or more) direct costs per year for up to 5 years

Getting Help with your Proposal

Find at least **two** colleagues.

One should be an **expert** in the discipline that is the topic of your new grant application.

The other should be **generally conversant** with the discipline, but not necessarily an expert in the subject area of your planned application.

Both should be **experienced grantees**, preferably from the funding institute to which you are applying.

Planning with your Colleagues

Ask them to share a successful grant they have written.

Show them a **one page overview** that includes the central **hypothesis** that will be tested, the **specific aims** of your proposal, and **how the results will significantly advance your field of research.**

Show them your recent peer reviewed publications or preliminary data that are relevant to your proposed application.

True colleagues will be critical and constructive. **Don't be reluctant to revise your plan** as needed/suggested.

Starting the Writing Process

With all of this background work in place, at some point you actually have to start writing the proposal.

Write the Abstract/Summary last, but **NOT** at the last minute. **It's the one thing everyone reads!**

Writing Tips

Use a simple sentence structure. A reviewer should not have to read a sentence more than once to understand it. If you have an urge to use a comma, ask yourself if a period would be better!

Don't use passive words such as "if", "try", "hope", "believe", "might", "could/should".

NIH Research Plan

- A. Specific Aims. *What do you intend to do?*
- B. Background and Significance. *Why is the work important, what is currently known – or not known? Is there a controversy you can solve in the field?*
- C. Preliminary Studies. *What have you already done to support feasibility of the proposed project?*
- D. Research Design and Methods. *How are you going to do the project as you have proposed?*

Common NIH Format

This is the format I use and I have had success with, but there are any number of ways to do this:

- A. Specific Aims: Introductory paragraph followed by Specific Aims**
- B. Background and Significance**
- C. Preliminary Studies**

Common NIH Format (continued)

D. Research Design and Methods

Aim 1: State Aim

Overview

Experiments and Methods Described

Anticipated Results, Potential Problems, and Alternative Procedures

Aim 2: State Aim

Overview

Experiments and Methods Described

Anticipated Results, Potential Problems, and Alternative Procedures

Aim 3: *et cetera*

Common NIH Format (continued)

Also, you must address other issues after the main application in numerous sections, including:

Human Subjects

Vertebrate Animals

Select Agent Research

Multiple PI Leadership Plan

Bibliography

Consortium/Contractual Agreements

Resource Sharing Plan

Know the Formatting Guidelines!!

Granting agencies STRICTLY enforce formatting requirements and will return improperly formatted applications WITHOUT REVIEW!

Don't risk having your application returned, know the guidelines!!

Grant Writing Basics

Make sure your project is focused and not too broad. Your project must be feasible in the time-frame requested.

Reviewers also want to see **how your project fits into the big picture** of your field. Make this **clear and explicit**.

Remember **a hypothesis can't be proven correct** – you can only perform experiments and generate results that either **(i) disprove** your hypothesis or **(ii) are consistent** with your hypothesis being correct.

Develop a Solid Hypothesis

Choose an important, testable, focused hypothesis, based on previous research/preliminary data

Example of a poor/vague research hypothesis:

Antibodies directed against chemokine receptors *might be biologically useful for HIV infection.*

Example of a good research hypothesis:

Antibodies directed against chemokine receptors *will inhibit HIV infection.*

Make sure your Application is FOCUSED

New applicants are often overambitious, want to do everything possible, and overshoot the mark by proposing to do way too much

Make sure the scale of your project fits your request of time, resources, and money.

Reviewers will quickly pick up on how well matched these elements are.

Once you have Finished a Draft

Set the final rough draft aside for a day or two.

Then, go back and edit and re-write as needed so that it actually flows well and makes logical sense.

And then...

Edit, Edit, Edit, Edit...again

If you don't go at least partially crazy editing and re-editing your application, you have NOT done enough editing



Other Details...

Besides the main narrative of the application, there are many, many other details you also must complete.

This means the **administrative form pages**.

Budget

Another good thing to prepare at some point during the process is your budget. Prepare your budget after you have written your research plan and have a good idea of what the costs of your project will be.

Request only enough money to do the work. Reviewers will judge whether your request is realistic and justified by your aims and methods.

NIH uses a modular budget system. You request in \$25,000 increments up to \$250,000 per year, or the budget limit is already in place (e.g., R21 has a \$275,000 direct cost budget for two years; R03 is \$50,000 per year maximum...).

The Deadline and Getting it Submitted

At some point, the deadline will be approaching. But it can't go out the door until it's routed through your **Research Administration/Sponsored Programs office**.

You must have them send the electronic application to NIH or sign the face page before it goes out the door to other agencies.

So, **don't take it to Research Administration at 4:30 p.m. on the deadline day** and expect them to sign off without having a chance to review it. **Plan ahead!!** They typically will have guidelines on how far ahead of the deadline they want your application and you need to know that information!!

Once it is Submitted the “FUN” Begins...

The waiting game...



After Submission

Now what happens?

Your application goes to a study section panel.

Each member of the panel gets a big box of grant applications.

The box with the grant applications sits on the reviewer's desk (or the floor) until just before the meeting, then, at the last minute, they quickly read grants and write the critiques. That is why it is important to **be CLEAR and CONCISE**. A reviewer will get 10-12 applications, and he/she doesn't want to spend time trying to figure out what you are trying to say - **they want to understand your proposal clearly the first time they read it!!**

Eventually, the time comes (3-4 months later) and your grant application undergoes *peer review*.

NIH Peer Review Criteria

Here is the template they use for NIH – other agencies are similar:

Significance: *ability of the project to improve health and its significance to the field – does it take the field to new level*

Investigator(s): *productivity and experience of the investigator(s)*

Innovation: *originality of your approach*

Approach: *feasibility of your methods to test the hypothesis proposed*

Environment: *suitability of facilities and adequacy of support from your institution*

NIH scoring system: final scores are given from 1 to 9 by each reviewer at the study section meeting. Scores from all members are added, averaged, and multiplied by 10 for a final score that can range from a best of 10 to a worst of 90.

Hints to help your Proposal during Peer Review

Make your application user friendly to get Reviewers on your side

Label ALL materials clearly.

Guide reviewers with graphics. Graphics/flow charts can help reviewers grasp a lot of information quickly and easily, and it breaks up the monotony of page after page of text.

Edit and Proof text. If there are typos and internal inconsistencies in the document, your score **WILL** suffer. **A sloppy application with numerous typos means lack of attention to detail, which translates into a reviewer assuming you also are a sloppy scientist!**

Study Section

Your application will have **2** audiences at study section: **1.** A majority of reviewers not familiar with your techniques or field. And, **2.** a **much** smaller number of reviewers (1 or 2) who are actually experts in your field.

To succeed at the study section meeting, you **MUST win over the 1 or 2 expert reviewers** from your field, who will act as your advocates in guiding the discussion of your application.

Study sections work this way because time is limited and discussions are short.

Study Section (continued)

Your objective is to write and organize your application so the primary reviewers can easily grasp and easily explain what you are proposing to the rest of the study section.

Most likely, all reviewers other than the three assigned to your application will only look at your summary/abstract, biosketch, and specific aims.

But **all reviewers are important** because each reviewer gets a vote.

After Peer Review

**There are only two
possible outcomes.**

You are funded!!!!



Or, you are not funded!!!!



They just **don't**
get it!! How
stupid can
reviewers really
be!!??

Revise, Revise, Revise...

Odds are, especially on your first application, that it will **not** be funded.

So, get mad for awhile – that is natural. Typical thoughts at this stage are (i) **they didn't get it**, (ii) **I'm ahead of my time and they don't understand**, or (iii) **I'm so smart they didn't fully appreciate my genius**. In reality, if the expert reviewers didn't “get it”, then it is probably **YOUR** fault, not theirs!!

NIH allows the applicant to include a one page introduction in the revised or “A1” application to directly respond to the previous critique.

Be positive in your response, thanking the panel for their insightful advice. But don't be afraid to point out your disagreement if needed, doing it respectfully, of course. **Don't be selective by responding to some but not all comments in the critique.**

Involve your two colleagues in the process again.

The most important part in having grant success is **PERSISTENCE!!**