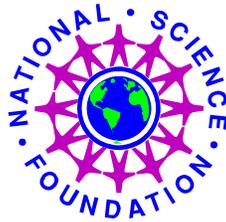


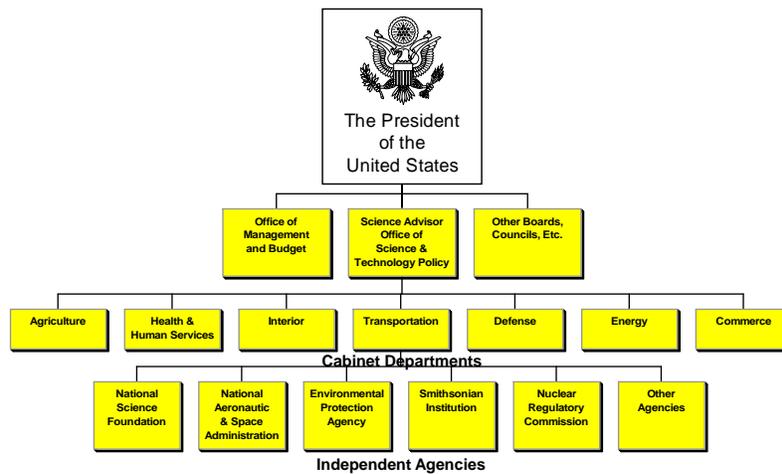
Funding Opportunities at the National Science Foundation



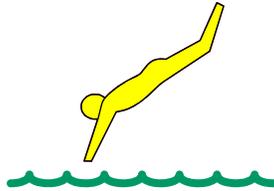
Thomas J. Baerwald

April 2007

NSF Is an Independent Agency of the Executive Branch of the U.S. Government

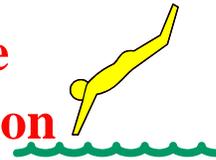


How to Plunge Into the Research Funding Pool



**Some Advice on Obtaining Funding
from NSF (and Other Sources)**

Obtaining Funding Is Like Entering a Diving Competition



Your chances of success are best if you:

- Learn the rules of the competition.
- Learn which entries receive the highest marks.
- Learn how the competition is organized.
- Hone your skills and correct your defects.
- Take care to do your best.
- Realize that how you place will also depend on how well other competitors do.

How Do You Learn the Rules of NSF Competitions?

- Read and follow instructions in the NSF *Grant Proposal Guide*.
 - Publication is available online at <http://www.nsf.gov>
- Follow instructions in any special announcements or solicitations
- Contact the relevant program officer(s).
 - Phone numbers and e-mail addresses are available via WWW.

Learn Which Entries Receive the Highest Marks



Try to think like a program officer!

NSF Programs Are Engaged in “Reverse Alchemy”



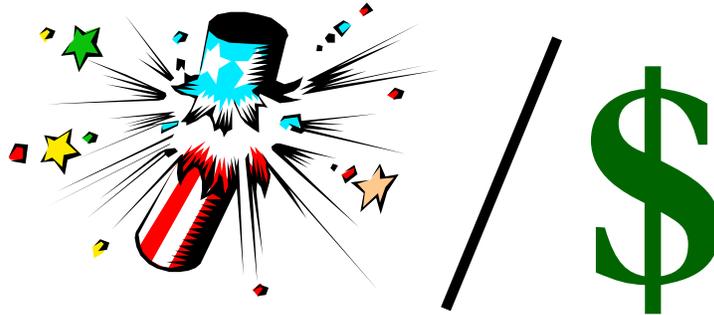
- We have “gold.”
- We want to invest it in “basic research.”
- We want to receive the best possible “return on investment.”

The “Investment Broker” Analogy Is Even Better

- We have funds to invest.
- We’re selecting from a range of options.
- We’re looking to invest in a portfolio that will maximize returns.



What Is the Crucial Ratio for a Program Officer?



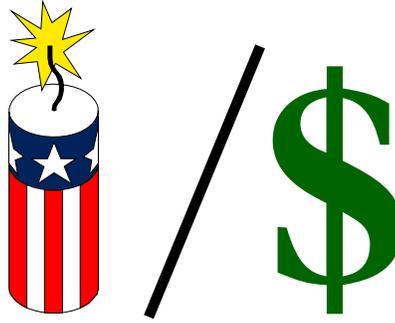
“Bang for the Buck!”

What Kind of “Bang” Is a Program Officer Looking For?

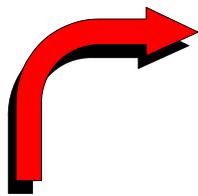
- Significant contributions to general scientific understandings.
- Enhancements of theoretical understandings in addition to any expansion of specific knowledge.
- Broader impacts, such as enhanced education, greater diversity, improved infrastructure or methods, and beneficial applications.
- Dissemination of results, especially in refereed, widely disseminated publications.

So What Is the Crucial Ratio for a Program Officer?

**Likelihood of
Significant
Contributions to
General Scientific
Understanding and
Broader Impacts**



“Potential Bang for the Buck!”



Decisions Will Be Based on NSF Merit Review Criteria

NSF now asks reviewers to comment
on two major criteria:

- **Intellectual merit**
- **Broader impacts**

The First Criterion:

What is the intellectual merit of the proposed activity?

The following are suggested questions to consider in assessing how well the proposal meets the criterion:

- How important is the proposed activity to advancing knowledge and understanding within its own field and across different fields?
- How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, please comment on the quality of prior work.)
- To what extent does the proposed activity suggest and explore creative and original concepts?
- How well conceived and organized is the proposed activity?
- Is there sufficient access to resources?

The Second Criterion:

What are the broader impacts of the proposed activity?

The following are suggested questions to consider in assessing how well the proposal meets the criterion:

- How well does the activity advance discovery and understanding while promoting teaching, training, and learning?
- How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, geographic, etc.)?
- To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships?
- Will the results be disseminated broadly to enhance scientific and technological understanding?
- What may be the benefits of the proposed activity to society?

When You Prepare a Proposal, Think Like Those Who Will Evaluate It

- External reviewers

- They tend to be specialists; relevant theory and technical details matter.



- Advisory panel members



- They largely consist of generalists; so broader significance matters.

- Program officers

- We're the investors, seeking "big bangs for our bucks."



What's Included in a Competitive Research Proposal?

- An explanation of the theoretical framework within which the research question is set.
- Specification of the methods to be used to answer the question.
- Elaboration of how expected results will enhance the broader theoretical framework and make broader contributions.
- Biographical information about investigator(s).
- A budget with justification of expenses.

Some Tips on Writing a Competitive Research Proposal

- Try to answer any reasonable questions that reviewers might ask about your plans.



“Have an out-of-body experience” –
Reread your drafts from a reviewer’s perspective.

- Make sure your proposal is technically correct.
Careless writing and math imply careless scholarship.
- Convey your enthusiasm in your writing.
- Comply completely with the guidelines.

Use **FastLane** or **Grants.gov** as required for the specific competition. (Give yourself extra time if you must submit via Grants.gov -- as is now required for GRS.)

What Expenses Should Be Listed in a Budget?

All expenses necessary to complete the project.

- For every possible expenditure, ask yourself:
 - Is this expenditure necessary to complete the project?
-- or --
 - Would the research be diminished substantially if this expenditure is not made?



If you answer “**Yes**” to these questions...
Include the expenditure in the budget.

If you answer “**No**,” leave the item out
or reduce it to reasonable levels.



- Be cognizant of overall funding limits for awards and for a program or competition as a whole.



What If Your Proposal Is Funded?

- Work with the program officer(s) to ensure that the “Bang for the Buck” is maintained during any pre-award negotiations.
- Check with NSF regarding any significant changes during conduct of the project.
- Conduct the research properly and disseminate the results promptly.
- Regularly report findings, products, and contributions (even after the funding has ended).

What If Your Proposal Is Declined?



- Pause a while to let the pain subside somewhat.
- Evaluate the reviews.
 - If criticisms focus on correctable points, revise and resubmit the proposal.
 - If criticisms are more general, consider other funding sources or other lines of inquiry.
- If you have questions or want additional information, contact the program officer.

Some Related Advice from Some Colleagues

A Good Proposal

- A good proposal is a good idea, well expressed, with a clear indication of methods for pursuing the idea, evaluating the findings, and making them known to all who need to know.

The Ten (or so) Commandments for Proposal Writing

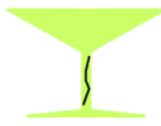


- Thou shalt have a brilliant idea.
- Thou shalt read the *Grant Proposal Guide* and the relevant program announcement or solicitation.
- Thou shalt explicitly address **Intellectual Merit** and **Broader Impacts** in the Project Summary.
- Thou shalt get help with proposal writing.
- Thou shalt write for the right audience.
- Thou shalt not irritate the reviewers with small fonts, dense type, and excessive jargon.

A Division Director's View of the Major Reasons Proposals Are Declined



- Proposals fail to establish a sound theoretical framework and/or are poorly related to relevant literature.



- Proposals fail to specify research methods in sufficient detail or have flawed research plans.



- Theoretical frameworks are sound and research plans are solid, but they don't match up with each other.

How to Develop a Proposal

- Determine the best possible funding sources.
- Give yourself plenty of **TIME**.
- Understand the ground rules.
 - Read announcements and instructions carefully.
 - Read the *NSF Grant Proposal Guide*.
 - Make sure your project really fits the program scope.
 - Look over prior award abstracts.
 - Ascertain evaluation procedures and criteria (see the solicitation).
 - Talk with NSF program officer about specific questions.
- Coordinate with your chair and research office.
- Ask successful PIs for copies of their winning proposals.

"Few things are harder to put up with than the annoyance of a good example." Mark Twain

Speaking of Time... A Suggested Timeline for Developing Proposals

3 months before the deadline	Develop prospectus for proposal and share it with colleagues as well as relevant agency program officers.
1 month before the deadline	Complete what you think is a very solid first draft of the entire proposal. Share it with colleagues and ask for honest, constructive advice.
2 weeks before the deadline	Use comments from colleagues to revise the proposal one or two more times.
1 week before the deadline	Forward the proposal to your sponsored projects office so that they can complete their work and submit the proposal a day or two before the deadline
5 months after the deadline	Politely ask the managing program officer when a decision might be made about your proposal (if you haven't heard about its status already).

Above All Else, Be Persistent!

Remember the words of Christopher Morley:



*“Big shots are just little shots
who keep shooting!”*

A Final Reminder...

- If you have questions, contact:
Your sponsored research office
Your NSF program officer
- If you need additional information:
Surf into the NSF Website
at <http://www.nsf.gov>



The NSF Staff Is at Your Service



Well, it's not quite that easy, but we will do whatever we can to help you make the strongest possible case for your projects.

Call or write!

Contact Information

Thomas Baerwald

Geography and Regional
Science Program
Division of Behavioral and
Cognitive Sciences

Room 995

National Science Foundation

4201 Wilson Blvd.

Arlington VA 22230 U.S.A.

Phone: 703/292-7301

Fax: 703/292-9068

E-Mail: tbaerwal@nsf.gov

- **Consult the NSF web site to identify program officers for other programs or competitions.**