•Presentation designed to introduce you to the basis of research funding in the West
Identifying funding opportunities and developing successful proposals is a learned skill—you can do it!

External Funding for the Dept of Physics University of Illinois at Urbana-Champaign

- Developing good proposal writing skills can mean good things for your research group and laboratory
- Advantage to structured proposal writing is consistency and improvement over time
- Optimize your chances for success
- Not everyone will be successful on their first proposal submission
- If not successful try again, improving where possible
- Proposal writing is a learned skill
- Proposals take a lot of effort to create – especially collaborative proposals
- Make the most of your time
- Example is the author of these presentations—Celia Elliott
  - Professional proposal writer for Phys Dept. U of Illinois
  - Dept experienced increase in funds due to focused effort

- N.B. $$ are not adjusted for inflation, but it should be noted that U.S. federal funding for physics research declined about 15 percent during this period.
Goals for this session

Learn what a “proposal” is
Understand the role of competition and peer review in Western funding
Learn the criteria Western agencies use to make funding decisions
Learn what an “RFP” is and why it is important
Become familiar with the steps in the funding process
Appreciate the realities of review
Western agencies fund projects, not institutions, in a “bottom-up” paradigm

- Government set % of total is added for “overhead”
- Ministry
- Institution 100% of what is needed for a specific project goes directly to researcher
- Department
- Researcher Funder

- Drastic difference in western funding compared with Soviet-style funding
- Soviet-style is a top down approach
  - All funds from government, little private funding
  - Funds directed at institutions
  - Funds do not reach individual researcher until last step
- Western style is driven by the needs and aims of the researchers
  - A funder usually has a specific amount of money set aside for specific projects
  - Project funds go directly to researchers
  - Set % used for overhead and administrative costs
- This is a fundamental and philosophical shift
- Western institutions have a vested interest in supporting successful researchers— the more $$ the researchers bring in, the more $$ the institutions have available, because they get a fixed percentage of all grants
Western agencies use “proposals” and competition to select projects to be supported

Proposals describe projects that could be undertaken

Proposed projects compete with one another for available funding

Competition is controlled by “peer review” — the recommendations of neutral experts

Goal is to identify the “best” projects that will advance the funder’s goals

• Most all western funding programs administered on a competitive basis
• Competition weeds out the bad and identifies the best
• Most western funding agencies employ peer-review
  • Rely on the scientific community outside the organization to review proposals
  • Reviewers are neutral
    • Conflicts of interest are not allowed – no favoritism
  • Often many stages to peer-review
• Ultimate goal to find the best proposals
  • The best proposals are likely to advance the agency’s goals
    • Agency’s must report to their sponsors and donors in order to continue programs
Okay, so what is a “proposal”?  
✓ A written description of scientific work  
✓ That has not yet been done  
✓ To be carried out by specific people  
✓ Over a specific time period  
✓ For a specific amount of money  
✓ Employing specific methods and facilities  
   That will, if successful,  
✓✓Create new knowledge, solve an important societal problem, or promote economic growth through new applications

• Proposal is a concisely written summary/description of scientific work  
• Work has not yet been done  
• Outline of who specifically will be working on the project  
• Must define a specific period of time  
• Must utilize a maximum amount of money to accomplish specific list of tasks  
• Specific methods will create a sound environment for productive work  
• Identifying specific resources, including equipment and facilities  
• Most importantly – will lead to something fruitful,  
   • new knowledge,  
   • solving society’s problems  
   • Promote economic growth
The purpose of a grant competition is to identify worthy projects that will most effectively and efficiently, in the least time and for the least money,

1. Create new useful scientific knowledge
2. Solve important societal problems
3. Lead to economic growth through useful applications
4. Advance the funder’s mission

If your project will not accomplish at least one of goals #1–3, plus #4, don’t waste your time on preparing a proposal because no funder will give you money for it.

• The proposals with the greatest possible novel impact are the ones to be chosen
• Funders look for projects that make the most of their money
  • If a funder is not convinced of the utility of a project, it likely will not be funded
• Ideally a project will meet each of the following
  • Create new useful scientific knowledge
  • Solve important societal problems
  • Lead to economic growth
  • Advance a funder’s mission
• If your project has zero impact, do not waste your effort, time
Agencies base funding decisions on a variety of criteria

Scientific merit—probability the project will successfully produce
  New knowledge
  Solution to a specific problem
  Useful applications

Organizational goals and objectives

Timeliness of the concept

Reputation of the proposers and realism of the project budget

Amount of money available

• Often times, funding agencies will rank proposals on how well they meet set evaluation criteria
• Scientific merit, often the most important criterion
• Additional criteria are
  • Organizational goals and objectives
  • Resources available
  • Timeliness of project
  • Performance excellence of project personnel
  • How much money funders have available for the program
Before you can create a proposal, you must know

1. What organizations fund your kind of research
2. How to submit proposals to those agencies

• Know what organizations fund your kind of research
  • Organizations that are not interested in your research will deny your proposal, before reviewing it

• Understand how to submit a proposal
  • What are the rules of proposal submission?
  • Who is eligible?
  • What are the deadlines?
  • How does the funding agency wish to receive the proposals
The proposal process begins when the funder identifies a goal

Identifies a problem to be addressed
Allocates finite resources to meet goal
Assigns responsibility for the program to a specific person, the “program officer”
Creates and issues a “request for proposals” (RFP)—a document that describes the program, resources, and rules for submitting a proposal

- Agencies will not fund proposals just to fund research
- Funding is meant to solve a larger problem or meet a goal
- Funding agency identifies the goal
- Has a finite resources to meet the goal
- Specific personnel administer and oversee the program
- Program staff write an RFP which identifies
  - Eligibility
  - Resources
  - Evaluation criteria
  - Rules for submitting proposal
- RFP called different things by different organizations
  - Program announcement
  - Request for applications RFA
  - Call for proposals
The RFP explains the program, including the problem to be addressed, and sets the rules for the competition:

- Types of projects that will be considered
- Who may apply for grants
- Maximum award amounts and number of years for which projects will be supported
- Deadlines
- Instructions for preparing the proposal
- Evaluation criteria
- Award rules, including financial and reporting requirements

RFP describes:

- Types of research that the agency is interested in funding
- Eligibility criteria
- Maximum amount of funding and term of grant
- Deadlines
- Instructions for submission
- Instructions for preparing the proposal and important components
- Evaluation criteria
- Award and reporting requirements in your proposal is selected
The first cut for submitted proposals is an administrative check

Clerical review comes first
- Was it submitted by the deadline?
- Does it conform to the RFP’s preparation instructions?
- Is the proposal complete?

Then the program officer reviews the scientific basis of the proposal
- Is it scientifically sound?
- Does it advance the agency’s goals?
- Does it conform to the program guidelines?

• Upon receipt the funding agency screens the proposal
  • An important administrative process which:
    • Evaluates whether the proposal conforms to the rules of the program
  • Screening removes proposals which do not belong in the program
• Ask yourself several questions
  • Has it met the deadline?
  • Did I follow the directions?
  • Are all the proposal components included?
• If the answer is no, do not submit
• Program staff will evaluate whether the proposal should enter the competition
Proposals that pass the program-officer check are “peer reviewed”

The program officer selects experts to evaluate the proposal (the “reviewers”)
Reviewers are given specific criteria on which to base their recommendations
Overall scientific and technical merit
Feasibility—likelihood of success
Potential contributions to the funder’s specific mission
Proposer’s unique capabilities, experience, facilities, techniques
Qualifications, capabilities, and experience of key personnel
Realism of the project costs

Emphasize that the purpose of review is to make awards based on scientific merit, NOT NEED.

• Proposals which pass administrative review enter competition
• 1st step in competition is peer review
• Reviewers are experts
• Experts are given agency’s specific criteria on which to base their assessment
  • Likelihood of success
  • Contributions to funder’s mission/goal
  • Experience of authors
    • How they plan to employ their methods
    • How they plan to utilize their resources
• Qualifications of key personnel
• Realism of project costs
Reviewers are expected to provide thorough, honest, and objective recommendations

It is part of every scientist’s duty to serve as a reviewer if asked

If a scientist cannot provide a thorough, honest, and objective evaluation, he is obligated to recuse himself from review

A scientist may not use any information obtained as a reviewer for personal gain

A reviewer must keep all information confidential—he may not disclose it to anyone, for any reason

• Scientific professionals are expected to serve as reviewers
  • It is their duty and they often do not receive payment

• Reviewers are expected to provide:
  • A thorough, comprehensive evaluation
  • Unbiased evaluation
    • If a reviewer is partial, must recuse himself from review
  • Honest evaluation

• Reviewers may not use information for personal gain
  • If a reviewer is caught using information, and they are always caught
    • May be removed from their position
    • May be debarred from receiving federal research funds
    • Will tarnish his/her reputation
    • In extreme circumstances, may be prosecuted

• Reviewers may not disclose/disseminate information
  • All information is confidential

• Western scientists take their ethical responsibilities very seriously

• Western scientists are very well paid and have no financial incentive to cheat
The reviewer provides a written evaluation and confidential recommendation to the agency
Identifies strengths and weaknesses
Evaluates the “worth” of the project
Determines the project’s feasibility; i.e. will the people assigned to the project be able to do what they propose with the resources they are requesting
Assesses the adequacy of the facilities and equipment to be used in the project
Judges whether the budget is reasonable
Assigns a rating or priority for funding

• Reviewers provide in-depth evaluation
  • Identifies strengths, weaknesses
  • Determines worth of project
  • Places the proposal in context of research field
  • Determines feasibility
  • Adequacy of resources, facilities
  • Identifies over-estimates, shortcomings of budget
  • Assigns a final rating or ranking
    • Example: CGP rating 1-5
Be aware of the realities of review

Reviewers are experts, and they’re very busy
They are not compensated for reviewing
They read proposals under less-than-ideal conditions
They are looking for mistakes, omissions, logical flaws, objections
They may be reading several proposals on the same topic—how will yours compare to your competitors’?

• Reviewers read proposals often under less-than-ideal conditions
  • They’re very busy
  • They’re not paid
  • Above normal working expectations
• Understand WHEN and HOW proposals are reviewed.
  • Reviewers read them when they’re jet-lagged,
  • when they’re falling asleep,
  • when they’ve already read fifteen similar proposals.
• They may read only the abstract. Or they may look only at the figures.
• Ask yourself, how would my proposal compare to others when being review under less-than-ideal conditions?
Some proposals are recommended for funding

Funding agency ranks the proposals

The program officer works down the list, allocating money to specific projects until he runs out of money

A “grant” is awarded to funded projects

ID #7638—$78,000
ID #5749—$63,500
ID #7381—$44,900
ID #6647—$76,000
ID #7089—$59,300
ID #5976—$73,000
ID #6573—$69,800
ID #6788—$54,000
ID #7124—$61,200
ID #7433—$70,100
ID #6199—$68,900
ID #6387—$44,900
ID #6218—$21,000

• Funding agencies have finite resources
• After proposals are ranked
  • Proposals are selected from the top down, starting with highest ranked
• Grant awarded to selected projects
• A program officer works down the stack of proposals, making grants until he runs out of money
• In this example, the program officer had $650,000 available for this program. The proposals are ranked from highest score (top of the list) to lowest score (bottom of the list). Projects above the red line, totalling $649,800, were funded. Those falling below the red line were not funded.
• The only thing that determines whether a project is funded is where it falls in the ranking vs. the total amount of money available. Submitting a proposal for $21,000 vs. $78,000 does not matter, if the $21,000 proposal is poor.
• Your goal as a proposer is to write a strong proposal that is ranked above the “red line.”
A “grant” is a legal agreement between a funder and a researcher

The funder promises to provide a specific sum of money over a specific period of time

The researcher promises to do the work outlined in the proposal, to conduct his research ethically, and to report his progress to the funder and his results to the community

If the researcher does not meet his obligations, the funding agency may declare him “in default”

• A grant is a legal agreement, a contract
  • Between funding agency and researcher
• Funder promises
  • Specific amount of money
  • Specific grant period
• Researcher promises
  • Conduct the work
  • Adhere to the grant agency’s grant requirements
  • Report progress on regular basis
• If researcher does not meet specific grant terms
  • Funding agency may declare him ineligible for future activities
Important checkpoints in the proposal process are

Submission—complete and on time
Administrative check for conformance with preparation instructions
Program officer review
Peer review
Rank ordering of all reviewed proposals
Selection of proposals for funding
Awarding of grants to successful proposers

• State Checkpoints
Most proposals do not fail because of bad science—but because of:

Failure to follow instructions
   Not submitted by deadline
   Exceeds page or budget limits
   Missing signatures and certifications
   Mandatory information not supplied

Failure to consider the funder’s mission

Unclear or unrealistic goals and objectives

Poor logical organization

Lack of detail

Failure to anticipate reviewers’ questions and objections

• Most proposals are unsuccessful because
  • Applicants did not follow instructions
  • Proposal does not address funder’s mission
  • Proposal is not rooted in reality
  • Poor organization of resources, plan, personnel
  • Insufficient detail
    • Leaves the reviewer guessing
  • Does not anticipate reviewers’ questions
Let’s review what we’ve learned...

✓ What a proposal is
✓ Creating a successful proposal is a learned skill
✓ The role of competition and peer review in Western funding
✓ The criteria Western agencies use to make funding decisions
✓ What an “RFP” is and why it is important
✓ The steps in the funding process
✓ The realities of review

• List review items
For More Information . . .


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• Resources for writing proposals
  • Web resources
  • Author of these presentations