



Grants

An Introduction



Outline



⑥ Why?



Outline



- ⑥ Why?
- ⑥ From whom?



Outline



- ⑥ Why?
- ⑥ From whom?
- ⑥ How?



Outline



- ⑥ Why?
- ⑥ From whom?
- ⑥ How?
- ⑥ What to write?



Outline



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- ⑥ What happens?

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- ⑥ What happens?
- ⑥ Miscellaneous

Why?

Facts of life 1: A statistician in academia has multiple responsibilities, demands on time

- ⑥ Collaborative research, teaching, service, consulting
- ⑥ Methodological research

... **But:** career advancement and personal satisfaction often come from success in **methodological research**

Reason 1: For **yourself**

- ⑥ Grant funding allows one to “buy time” for research
- ⑥ Success is a form of peer review

Why?

Facts of life 2: Most universities and other institutions do not run solely on tuition, endowments, gifts, appropriations, etc., and there are bills to pay

- ⑥ Salaries, infrastructure, supplies, staff, administration, graduate student funding, . . .
- ⑥ Although a major (although not the only) objective of a university is to promote research, funding for this is inadequate (computers, equipment, travel, **time**)

Reason 2: For your **institution**

- ⑥ Contribute to support of the institution and its research enterprise

Why?

Facts of life 3: Continuing innovations in statistical methodology are essential to advances in science

- ⑥ New complications, data structures, questions,...

Reason 3: For science

- ⑥ Free time to do research allows contribution to advance of knowledge

Why?

Result: Most of the funding to support research activities within a university come from **outside sources**

GRANTS

From whom?

Luckily: Agencies and organizations offer sources of funding to support (statistical) research, for example

- ⑥ **Federal government:** National Science Foundation (NSF), National Institutes of Health (NIH), Environmental Protection Agency (EPA), . . .
- ⑥ **Private agencies and industry:** Sloan Foundation, Howard Hughes Medical Institute, Health Effects Institute, Burroughs Wellcome Fund, . . .

How?

Submit a grant application: A grant application is a document describing

- ⑥ A **research problem**, justifying why it is important, how its resolution will advance science, why the approach is sound, and what the impact will be
- ⑥ The **qualifications** of the individual(s) submitting the application
- ⑥ A **plan** describing the research and how it will be carried out, including a timetable, need for personnel and their responsibilities
- ⑥ A **budget** request for funds to support the research activities, and how these funds will be allocated

How?

Mechanisms for submission:

- ⑥ May be in response to a particular research initiative of the funding agency, e.g., Request For Proposals (RFP), Request for Applications (RFA), Program Announcement (PA)
- ⑥ RFPs and similar requests are generally posted on web sites and in publications of the agency, have specific guidelines, deadlines
- ⑥ The agency may also support investigator-initiated research (investigator chooses topic)
- ⑥ Investigator-initiated applications may be accepted on a regular, cyclic schedule posted by the agency

How?

General structure of an application: Usually, agencies have **specific forms** to complete and requirements on how the package is to be organized

- ⑥ **Principal Investigator(s) (PI)**
- ⑥ Abstract or summary
- ⑥ Personnel (including CVs of all key players), research assistants (graduate students)
- ⑥ Budget, details on other research funding
- ⑥ Sign-off by university officials (grants are awarded to the **university**, not to you!)
- ⑥ **THE RESEARCH PLAN/PROJECT DESCRIPTION**

How?

Preparing a grant application:

- ⑥ Administrative stuff
- ⑥ The research plan/project description

Administrative stuff first...

How?

Budget: Direct costs are the funds that go directly to support research activities

- ⑥ Funds to support a portion of salary to free the faculty member from other responsibilities
- ⑥ Fringe benefits (social security, health insurance, . . .)
- ⑥ Travel, supplies (e.g., books), equipment (e.g., computer)
- ⑥ Research assistants, consultants

How?

Budget: Facilities and Administration (F&A) costs (aka indirect costs, overhead)

- ⑥ Support for institutional infrastructure – buildings, phones, copying, libraries, postage, network, tuition...
- ⑥ Typically calculated as a percentage of direct costs (excluding certain items such as equipment, tuition)
- ⑥ Percentage is negotiated with the agency (NCSU's rate is 46%)

How?

Internal processing:

- ⑥ Application must be approved by the university
- ⑥ Is the budget correct? Are forms filled out correctly?
- ⑥ Application must go through processing and be signed by an authorized official
- ⑥ Agency deadlines for submission are **cast in stone**, so must allow adequate time for university to process



How?



That's the easy part...

The Important Part: The research plan/project description



What to write?

General considerations:

- ⑥ Almost always a strictly enforced **page limit** (e.g., 15 pages for NSF, 25 pages for NIH)
- ⑥ Must describe background, context for why research is important, and the research itself **within this limit**
- ⑥ **AS USUAL**, clarity, logical flow, organization, accessibility, completeness, . . .

What to write?

Research plan/project description: Format and specific requirements vary by agency, but in general must

- ⑥ State the specific objectives and expected significance
- ⑥ Provide background, place the work in context of the current state of knowledge and explain how the work will advance it
- ⑥ Describe results of previous grants, relevant work already done by the PI, qualifications
- ⑥ Lay out **in detail** what will be done – should be the main focus of the plan!

What to write?

How much detail: Depends on the agency, e.g.,

- ⑥ NIH grants – excruciating detail
- ⑥ NSF grants – can be more vague

What happens?

Evaluation of applications: Just like journal articles, grant applications are **peer-reviewed**

- ⑥ Sent to individuals familiar with the area who read, submit a review, assign a score (NSF)
- ⑥ A review panel of experts in the discipline is identified, members are assigned to review a subset of applications, write reviews and assign scores, discuss at meeting (NIH, NSF)
- ⑥ Generally two–three main reviewers per application
- ⑥ Review criteria depend on agency...

What happens?

What makes a “fundable” application? Main criteria

- ⑥ NIH: Relevance to **real problems**, no “theory for theory’s sake”
- ⑥ NSF: Theoretical, computational advances, more general

What happens?

Decision: Agency awards grants to applications receiving the highest scores

- ⑥ NIH: formula-driven, small chance for “special consideration”
- ⑥ NSF: **Program directors** have latitude on how to distribute the \$
- ⑥ Number, extent of awards limited by \$ available
- ⑥ All applicants (funded or not) receive reviews, score

Good idea: Get to know Program directors/officers

- ⑥ Can sometimes help in borderline cases

What happens?

Grant award: If good news

- ⑥ University, PI are notified, agency sends funds
- ⑥ An internal university account is set up, funds dispersed into categories (e.g., salary, travel, equipment)
- ⑥ PI must determine how to allocate and spend the \$!
- ⑥ Some changes in budget allocations are allowed, must be approved
- ⑥ The university must justify and document all activity to the funding agency

What happens?

Progress: Most agencies require annual reports of accomplishments, budget expenditures, changes in plans, changes in personnel, explanation for unused funds

Next time: Success in obtaining one grant is not guarantee that future applications will be funded!

- ⑥ Some agencies require new applications
- ⑥ Others allow “renewals” (which must compete like any other application)

Miscellaneous

Opportunities: There are numerous grant programs available

- ⑥ Ordinary research
- ⑥ Pilot studies; new research area
- ⑥ Training, fellowship
- ⑥ Conferences

Miscellaneous

Nowadays: Obtaining outside funding is **strongly encouraged** in almost all academic settings

- ⑥ As university budgets shrink, faculty grants become more and more important
- ⑥ “Soft” versus “hard” money: in some academic settings, grants are the **main** source of funding (e.g., medical schools, schools of public health)

Miscellaneous

Advice for new faculty:

- ⑥ The best place to learn about grants is from someone who has been successful at getting them!
- ⑥ Ask a senior colleague for help!
- ⑥ Obtain and study successful applications, note writing style, level of detail
- ⑥ Visit agency websites

Miscellaneous

Summary:

- ⑥ Success in getting grants is a form of peer review
- ⑥ Success in getting grants allows faculty time and bargaining power
- ⑥ Grant writing is hard work, but is a wonderful way to focus one's research ideas!