Funding and Grantsmanship for Postdoctoral Scholars in Science & Engineering

- Approaches for Competitive Applications –

NYC ASCENT

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Course: "Funding and Grantsmanship for Research and Career Development Activities"
http://grantscourse.columbia.edu/

Approaches for Competitive Applications

- Identify Funding
- Prepare to Complete the Grant Application
- Complete the Grant Application

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- **Identify Funding**
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Identify Funding

- Identify appropriate funding agencies
  - Government
  - Non-government
- Identify appropriate funding mechanisms
  - Research
  - Training
- Create a calendar of application deadlines for identified funding programs

How to Find Funding Opportunities

- Networking
- Speak to colleagues who are in a similar field
- Speak to colleagues who have been on governmental or private agency review panels
- Speak to colleagues who are on (advisory) boards of private agencies
- Acknowledgement section of publications, oral/poster presentations, press releases, etc.

General Resources

- Grants.gov
  - Database and application system for Federal grants
  - http://www.Grants.gov/
- FedBizOpps (Federal Business Opportunities)
  - Single point-of-entry for Federal contracts
  - http://www.FedBizOpps.gov/
- SPIN funding database
  - https://www.infoed.columbia.edu/
  - e-mail alerts matching research area(s) of interest

Other Sources of Information

- Sponsor publications/website/social media which describe research/programmatic interests (e.g. newsletters, strategic plans, annual reports)
- Sponsor e-mail alert modules
  - NIH
    - *NIH Guide*: http://grants.nih.gov/searchGuide/search_guide.cfm
      - Able to save queries and have "ongoing" results e-mailed as funding alerts
- Funding Databases (government, private)

Private Foundations

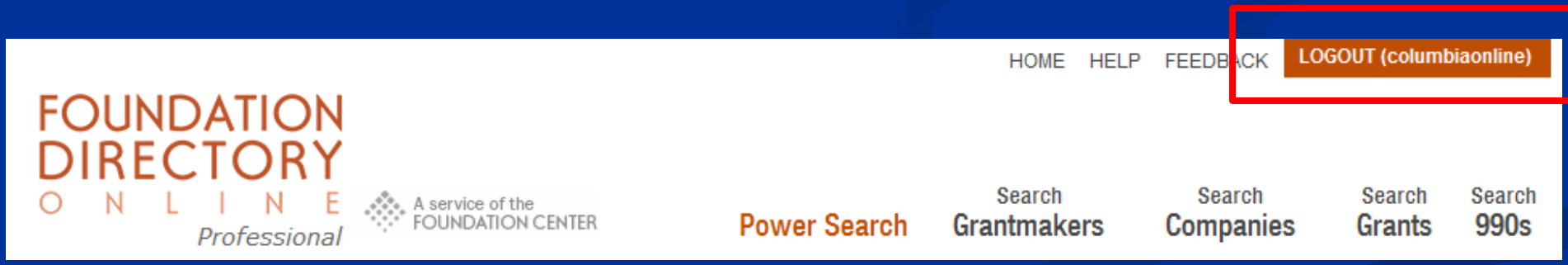
- Non-government, nonprofit organization with its own funds
- Usually from a single source (e.g. individual, family, corporation)
- Program(s) managed by its trustees and directors
- Established to maintain or aid educational, social, charitable, religious, or other activities serving the common welfare, primarily by making grants to other nonprofit organizations.
- Different types: Independent, Company-Sponsored, Operating, Community Foundation

The Foundation Center

32 Old Slip, 24th Floor
New York, NY 10005-3500
(212) 620-4230
http://foundationcenter.org/
http://foundationcenter.org/newyork/

- **Library:** Books, periodicals, and other print and electronic resources; Lending program, "Foundation Directory Online Professional"
- **Courses:**
  - Proposal Writing
  - Proposal Budgeting
  - Guide to Online Grantseeker Resources
  - Grantseekers Basics
- **Hardcopy/Digital Grant Guides**

- **The Foundation Directory Online**
  - 120,000+ foundations and corporate donors
  - 3 million+ grants
  - Tax statements (990's) showing previous awards
  - Access via Columbia University
    - http://www.columbia.edu/cgi-bin/cul/resolve?clio3328966



Grantseeking from Corporations

- Identify companies that might be interested in your research
- Learn as much as possible about the company (e.g. business activities, past giving history)
- Determine the best method of approach (e.g. formal application, personal contacts)
- Articulate your research objectives so as to be in line with the company's giving rationale

Approaches for Competitive Applications

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Prepare to Complete the Grant Application

- Speak with Program Officer
- Speak with colleagues who are/were awardees
- Review funded applications if possible
- Identify what will make the application more competitive (e.g. research arrangements)
- Strengthen "Preliminary Work/Data"

Research Arrangements

- Collaborations
- Subcontracts
- Multiple Principle Investigators
- Co-investigators
- Multidisciplinary/Interdisciplinary

Prepare to Complete the Grant Application

- Identify and meet with Co-investigators, Collaborators, Consultants, Advisors
  - Identify roles and responsibilities
  - Administrative requirements (e.g. if other countries/institutions are involved)
- Identify necessary core facilities and other research resources
- Meet with research administrators
- Human subjects, lab animals, and any other regulatory issues?

Approaches for Competitive Applications

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Complete the Grant Application

- Review the application instructions
- Identify the different components
- Identify and delegate responsibilities for the different components
  - Technical/Scientific
  - Administrative – e.g. budget
  - Regulatory
  - Draft letters of collaboration/support

Complete the Grant Application

- Confirm page limits for each component
- Create a schedule for any required meetings
- Determine:
  - Shared computer drive/folders
  - Naming of files (dates?)
  - Track changes?
  - Font, margin, format of literature citation
- Set a firm time-line for each responsibility
  - Writing milestones
  - Absolute deadline date for final compilation

Complete the Grant Application

- Read instructions
- Never assume that reviewers "will know what you mean"
- Refer to literature thoroughly and thoughtfully
- Explicitly state the rationale of the proposed investigation
- Discuss "challenges" and how these will be addressed (e.g., alternate approaches)
- Include well-designed tables and figures
- Present an organized, lucid write-up
- Ask colleagues to review and comment

Elements of a Good Proposal

- Feasible
- Relevant
- Unique
- Innovative
  - Clear
  - Brief
- Consistent

Investigator

- Competent
- Enthusiastic
- Thorough
- Professional

Anticipate Questions

and

Answer them before

they are asked

Common Problems with Grant Applications from New Investigators

- Does not address/follow funding agency's mission, specific instructions, budget limits, etc.
- Overly ambitious
- Not independent of previous mentor's research
- Fishing expedition
- Not hypothesis driven
- Descriptive, not mechanistic project
- Unfocussed
- No or insufficient preliminary data
- Unrealistic budget
- Methodologies beyond the expertise of investigator or research team

Common Problems with Grant Applications from New Investigators

- **Title**
  - Too long
  - Confusing
  - Cute but distracting
  - Not program related
- **Cover Page**
  - Does not follow format precisely
  - Does not include all necessary information

- **Abstract**
  - Not comprehensive
  - Omits significant elements
  - Poor grammar or spelling
  - Too long
  - Cut and paste job
- **Table of Contents**
  - Not included
  - Inaccurate pagination
  - Not informative

- **Institution/School Description**
  - Irrelevant information
  - Does not lead reader to proposal objectives
  - Good history: so what?
  - Too long

- **Objectives/Outcomes**
  - Not clear
  - Too ambitious
  - Omitted
  - Procedures rather than objectives
- **Innovation**
  - Not new or innovative
  - Attempt to justify new equipment/materials
  - Not clearly described

- **Statement of Need**
  - Deals with wants, not needs
  - No documentation
  - Unrelated to objectives/outcomes desired
  - Problem already solved
  - Not supported by current research

- **Task/Activity Plan**
  - Insufficient detail
  - Tasks not related to objectives
  - Tasks not justified by needs
  - Time and task charts not included
  - Responsibilities not clear
  - Does not address "contingency" plans (alternate approaches)

- **Evaluation of Project Progress**
  - Unrelated to objectives
  - Unrelated to innovation
  - Uses outmoded or inaccurate methods

- **Project Staffing**
  - No identification of responsibilities and roles
  - No documentation of competence (e.g. bio sketches)
  - No indication of time and effort for each individual contributing to project

- **Budget**
  - Unrelated to activities proposed
  - Little or no contribution from institution
  - Amounts not supported by proposal
  - Budget justification missing
  - Categories not those of funding agency
  - Budget cannot be sustained after project ends

- **Collaborative Efforts**
  - Names and responsibilities of all involved in proposal not identified
  - No identification of institutions involved
- **Review of Literature**
  - Unrelated to needs, objectives, innovations
  - Does not lead reader to proposed project
  - Dated material
  - Should not be a review article

Why Are Proposals Turned Down?

Research Plan

- The problem is trivial or is unlikely to produce new or useful information.
- The proposed research is based on a hypothesis that rests on doubtful, unsound or insufficient evidence.
- The proposal is more complex than the author realizes.

- The problem is local in significance, production, or control, or otherwise fails to fall clearly in the mainstream of the discipline.
- The problem is intellectually premature - only a pilot study.
- The problem as proposed is overly involved with too many elements required to be investigated simultaneously.
- The description of the research leaves the proposal nebulous, diffuse, and without a clear aim.

Investigator

- Investigator does not have experience or training for the proposed research.
- Investigator appears to be unfamiliar with pertinent literature or methods, or both.
- Investigator's previously published work in the field does not inspire confidence.
- Investigator relies too heavily, or insufficiently, on experienced associates.
- Other responsibilities prevent investigator from devoting sufficient time to this project.

Resources & Environment

- Available equipment is unsuited to the research.
- Institutional setting unfavorable.

Research Design and Methodology

- The proposed methodology, including tests and procedures, are unsuited to the objective. May be beyond the competence of the investigator.
- The over-all design is not carefully thought out.
- Statistical aspects are not given sufficient consideration.

- Approach lacks imagination or originality.
- Controls are either inadequately conceived or described.
- Proposed material for research is unsuited of difficult to obtain.
- The number of observations proposed is unsuitable.

Additional Problems

- Requirements for equipment, personnel or time are unrealistic.
- Current research grants are adequate in scope and funding to cover the proposed research.

Mentored Fellowship/Training/ Career Development Awards

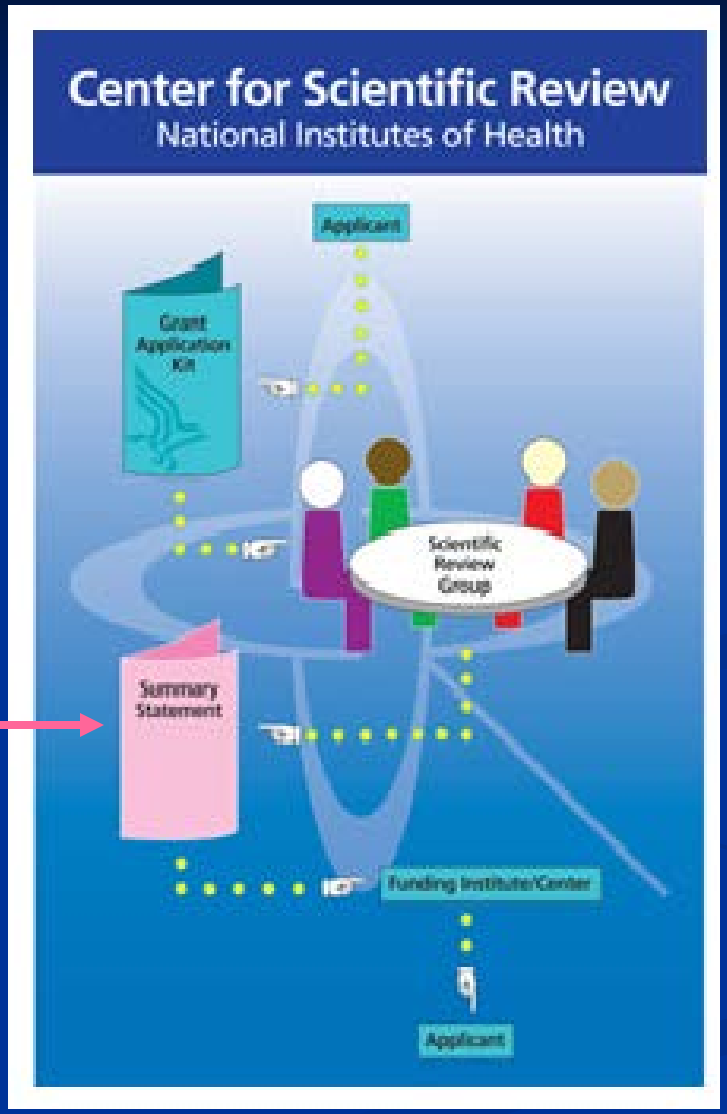
- **Mentor**
  - Too many other responsibilities (e.g. administrative, clinical)
  - Too many other mentees (e.g. students, post-docs)
  - Not appropriate scientifically
  - Too junior
  - Limited experience as a mentor
  - Limited funds to support proposed research

Mentored Fellowship/Training/ Career Development Awards

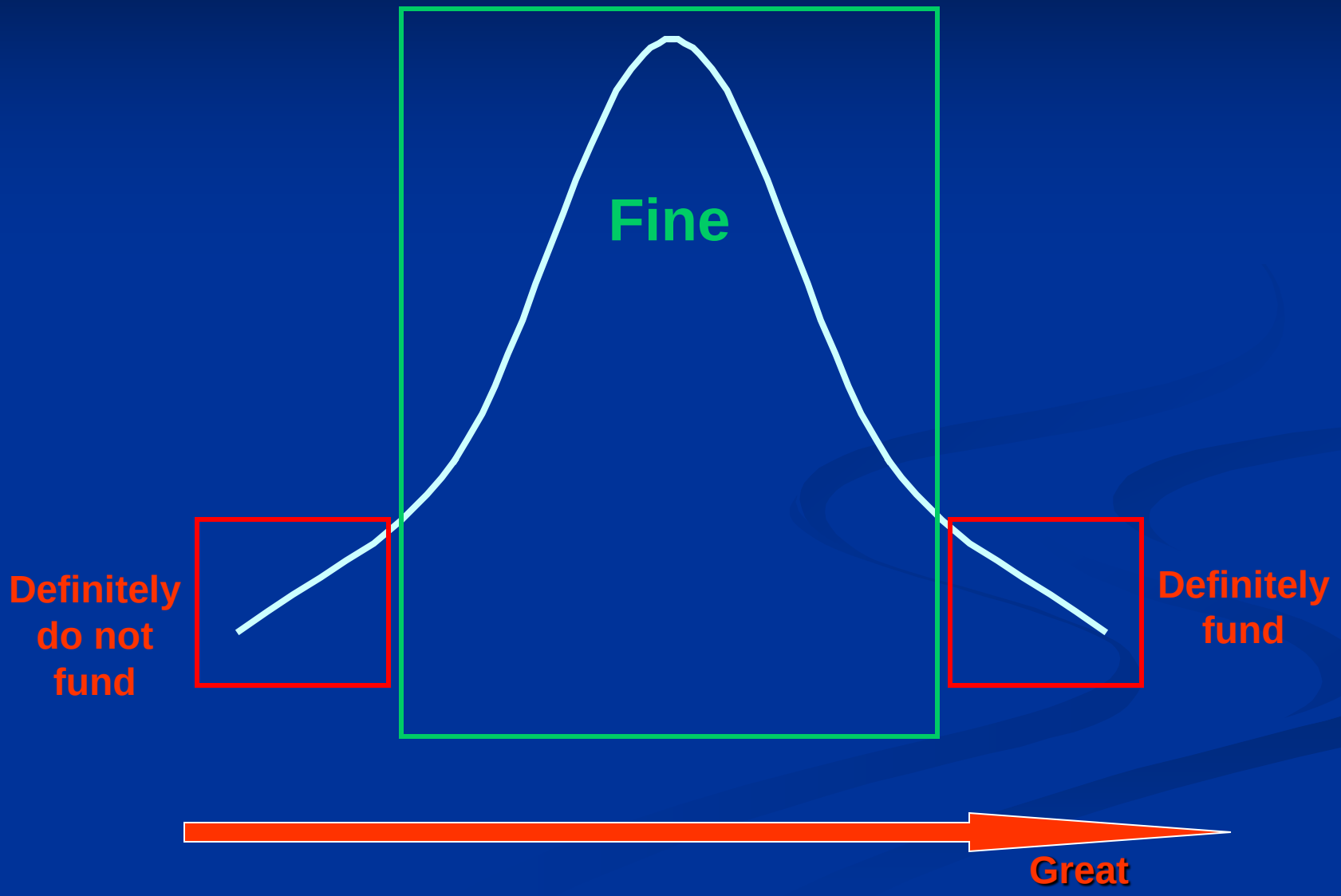
- **Institution**
  - Limited scientific/technical resources
  - Limited career development opportunities
  - Limited opportunities for career advancement

One "cycle" of applications

Reviewers' Comments



Bell Curve of Reviewer's Grant Applications

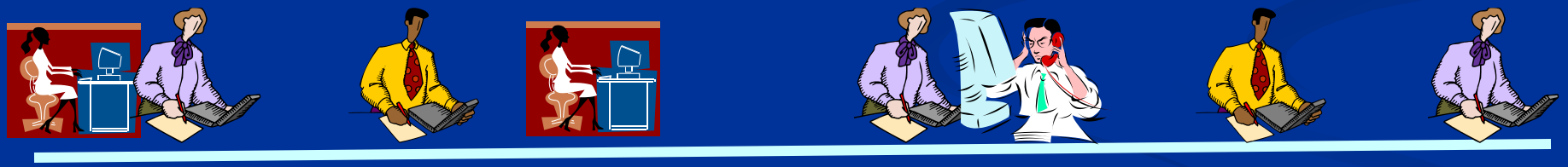


Poor Statistics

Research Resources not Adequately Described

Career Development Plan not Comprehensive

Figure Caption Font too Small



All Components of the Application are as Strong as Possible

Good Luck!