Funding and Grantsmanship for Extramural Support

Occupational Therapy Programs
Department of Rehabilitation and Regenerative Medicine

November 21, 2016

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Course: “Funding and Grantsmanship for Research and Career Development Activities”
http://grantscourse.columbia.edu/
Topics to be Discussed

- Funding Agencies
  - Government
    - Federal: NIH, Dept. of Defense, Dept. of Education
  - Non-Government: Voluntary Health Organizations, Professional Societies, Foundations, Industry

- Types of Awards
  - Grants, Contracts, Cooperative agreements,
    - e.g. Research grants, fellowships, career development awards

- Identifying Funding

- Approaches for Competitive Applications

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■ Identifying Funding

■ Approaches for Competitive Applications
Federal Agencies

- Dept. of Defense
  - Congressionally Directed Medical Research Programs

- Dept. of Education
  - Office of Special Education & Rehabilitative Services
    - Office of Special Education Programs (OSEP)
    - Rehabilitation Services Administration (RSA)

- Dept. of Health & Human Services
  - National Institutes of Health
  - Administration for Community Living (ACL)
    - National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR)
Agency for Healthcare Research and Quality (AHRQ)

- “Mission is to produce evidence to make health care safer, higher quality, more accessible, equitable and affordable…”

- Portfolios of Research
  - Comparative Effectiveness
  - Cross-Agency Communications
  - Health Information Technology
  - Innovations & Emerging Issues
  - Patient Safety
  - Prevention & Care Management
  - Value
Centers for Disease Control and Prevention (CDC)

Supports programs to promote health and quality of life by preventing and controlling disease, injury, and disability

- Funds grants and cooperative agreements to support public health programs (national and international)
  - National Institute for Occupational Safety and Health
    - Mentored Research Scientist Development Award (K01)
    - Exploratory/Developmental Grant Program (R21)
    - Small Research Program (R03)

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About OSERS

The Office of Special Education and Rehabilitative Services (OSERS) understands the many challenges still facing individuals with disabilities and their families. Therefore, OSERS is committed to improving results and outcomes for people with disabilities of all ages. OSERS supports programs that serve millions of children, youth and adults with disabilities.

Special Education--National Activities--Educational Technology, Media and Materials for Individuals with Disabilities Program
www2.ed.gov/programs/oseptms

Rehabilitation Engineering Research Centers
www2.ed.gov/programs/rerc

Advanced Rehabilitation Research Training Project
www2.ed.gov/programs/rtg

http://www.ed.gov/programs-search/institutions-of-higher-education
DoD Congressionally Directed Medical Research Programs (CDMRP)

Autism

Vision - Improve the lives of individuals with autism spectrum disorders now

ARP Appropriations and Number of Awards

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Millions ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>18</td>
</tr>
<tr>
<td>2008</td>
<td>17</td>
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<tr>
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<td>2013</td>
<td>18</td>
</tr>
<tr>
<td>2014</td>
<td>10</td>
</tr>
<tr>
<td>2015</td>
<td>7</td>
</tr>
</tbody>
</table>

Non-government, Non-Profit Agencies Funding Agencies

- Voluntary Health Organizations
- Professional Societies
- Private Foundations
Non-government, Non-Profit Agencies Funding Agencies

- Professional Societies
  - The American Occupational Therapy Foundation (AOTF) - Intervention Research Grants
    - To advance the science of occupational therapy to support people's full participation in meaningful life activities. The purpose of this grant program is to lay the necessary groundwork for larger intervention studies and support the profession's Centennial Vision of occupational therapy as science-driven and evidence-based.

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## NIH Extramural Program

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>NIH Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant</td>
<td>Patron (Assistance, encouragement)</td>
</tr>
<tr>
<td>Cooperative Agreement</td>
<td>Partner (Assistance but substantial program involvement)</td>
</tr>
<tr>
<td>Contract</td>
<td>Purchaser (Procurement)</td>
</tr>
</tbody>
</table>

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications

Types of Awards

- Individual fellowships
- Training grants
- Career transition awards
- Career development awards
- Research grants
- Program Projects
- Loan Repayment Program
- Administrative supplements
- Cooperative agreements
- Institutional Clinical & Translational Science Award (CTSA)
- Subcontracts
- Contracts
Not All Funding Opportunities Are the Same

- **Different mission statements**
  - Fellowships (F’s)/Training grants (T’s)
  - Career development (K’s)/Scholar awards
  - Research project (R’s)

- **Different funding**
  - Stipend vs. Salary/Fringe benefits
  - Pilot awards vs. Comprehensive research costs

- **Different time frames**
  - Not renewable: e.g. 5 years (K’s), 3 years (F’s), 2 years (T’s)
  - Renewable: 4 years–5 years (R01) each competitive period

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Research Grant (NIH R01)

- Supports a discrete, specified project
- “Comprehensive” funding
- Modular budgets up to $250,000/year
- Multi-year
- Flexibility
- Most of the research that NIH supports is through this funding mechanism
Research Grant (NIH R01)

- Funds research project
  - Salaries of PI and other research personnel
  - Supplies, reagents, etc
  - Animal costs
  - Patient care costs
  - Core facilities
  - Travel to national meetings

- Multi-Year (4yrs – 5yrs)

- Renewable
  - e.g. original grant + 2 renewals = 15yrs

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Exploratory/ Developmental Grants (R21)

- Encourages new, exploratory and developmental research projects by providing support for the early stages of project development. Sometimes used for pilot and feasibility studies.
- 2 years of funding
- Budget: $275,000 (D.C.) over two years
- Investigator-initiated R21 studies not funded by all Institutes

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Small Research Grants (R03)

- **Supports, e.g.**:
  - Pilot or feasibility studies;
  - Collection of preliminary data
  - Secondary analysis of existing data
  - Small, self-contained research projects
  - Development of new research technology

- **2 years of funding**
- **Budget**: Direct costs up to $50,000/yr
- **Not renewable**
- **Some Institutes only accepts applications in response to their specific funding opportunity announcements**

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Research Career Programs (K)

- Provides predominantly salary support
- Minimum requirements for the amount of effort that must be devoted to research and career development (e.g. 75%, some exceptions to 50%)
- Up to 5 years
- Specified salary levels
- US citizen/permanent resident.
- Can reduce effort to 50% in last 2 years if PI of NIH research grant

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Mentored Patient-Oriented Research Career Development Award (K23)

- **Patient-oriented research:** Research conducted with human subjects (or on material of human origin) for which an investigator directly interacts with human subjects

- **Research areas:** (1) Mechanisms of human disease, (2) Therapeutic interventions, (3) Clinical trials, and (4) Development of new technologies

Mentored Research Scientist Development Award (K01)

Not all NIH Institutes participate in program. Participating Institutes may use for different purposes.

- Train in a new field
- Specific research areas
- Hiatus in research career
- Increase research workforce diversity
Mentored Research Scientist Development Awards (K01)

- National Institute of Child Health and Human Development (NICHD):
  - (a) Medical Rehabilitation Research
    - Applicants must have clinical training in a rehabilitation-related profession (e.g., P.T., O.T., R.N., or Speech and Language pathologist), possess a doctoral level degree (e.g., Ph.D., D.Eng., Ed.D.), and be committed to a career as an independent investigator in medical rehabilitation.
  - (b) Child Abuse and Neglect
  - (c) Population Research

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Research Career Development Awards

- **AHRQ K08**: Mentored Clinical Scientist Research Career Development Award
  - Quality,
  - Safety,
  - Efficiency,
  - Effectiveness of health care

- **AHRQ K08**: Patient-Centered Outcomes Research (PCOR) Mentored Clinical Investigator Award

- **AHRQ K01**: Patient-Centered Outcomes Research (PCOR) Mentored Research Scientist Development Award

CDC K01:

- National Institute for Occupational Safety and Health
- Mentored Research Scientist Development Award
  - “career development experience in occupational health and safety research leading to research independence”
Research Career Development/Scholar Programs

- Doris Duke Charitable Foundation
  - Clinical Scientist Development Award
- Robert Wood Johnson Foundation
  - Harold Amos Medical Faculty Development Program

CTSA Awards: A Home for Clinical and Translational Science

CTSA HOME

Clinical Research Ethics
Biomedical Informatics
Clinical Resources
Biostatistics
Regulatory Support

Trial Design
Advanced Degree-Granting Programs
Participant & Community Involvement

NIH
Industry
Other Institutions

Source: Zerhouni (NIH) [9/06]

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Mentored Clinical Scientist Development Program Award (K12)

- Support to an institution for the career development experiences of clinicians leading to research independence.
- Institutions recruit and select candidates into their programs.
- Candidates must meet the same criteria as for the individual mentored clinical scientist development award.

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Mentored Clinical Scientist Development Program Award (KL2)

- CTSA - Clinical and Translational Scientist Award
- CUMC TRANSFORM Scholars Mentored Career Development program [Training and Nurturing Scientists for Research that is Multidisciplinary]

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CTSA Awards: A Home for Clinical and Translational Science

Source: Zerhouni (NIH) [9/06]
Research-Oriented Masters Degree Programs

- Comprehensive courses in clinical research/
  “Patient-Oriented Research”
  - Biostatistics, epidemiology, study design,
    bioethics, legal and regulatory issues
- For the career development of clinical investigators

CU Irving Institute/CTSA
Funding Programs

- **TRANSFORM TL1 Postdoctoral Precision Medicine Training Program**: Two-year mentored training program combining integrated didactic training, mentoring, and multidisciplinary research.

- **Precision Medicine Research Fellowship**: Two-year program to train physicians/researchers to use genomics and complex clinical data to improve clinical care and clinical outcomes by tailoring prevention, screening, and medical interventions based upon individual patient characteristics.
CU Irving Institute/CTSA Funding Programs

- **KL2 Program:** TRANSFORM KL2 Scholars Mentored Career Development program
- **Irving Scholars:** Florence and Herbert Irving Clinical Research Career Awards - $60,000/year for 3 years
- **Irving Institute/CTO Pilot Awards:** $50,000 awards for P&S junior faculty to conduct pilot studies leading to future independent funding
- **Imaging Core Pilot Awards:** Funding for junior investigators: magnetic resonance imaging (MRI), optical imaging, PET tomography, single photon emission computed tomography/computed tomography (SPECT/CT), and ultrasound
CU Irving Institute/CTSA Funding Programs

- **Collaborative and Multidisciplinary Pilot Research Awards (CaMPR):** Two-phase program that provides planning and start-up funding to newly-configured investigative teams to support the planning of novel, cross disciplinary projects.

- **CaMPR-BASIC Awards:** Two-phase program that provides funding to form a new collaborative team consisting of two principal investigators at the Assistant Professor level: one from a Basic Science department and one from a Clinical department.
CU Irving Institute/CTSA Funding Programs

- **Health Practice Research Pilot Awards:** For junior investigators to pursue an informatics-based project in an operational clinical setting (w/ the Dept of Biomedical Informatics)

- **Personalized Medicine Pilot Awards:** For research focused on approaches to tailor medical care (prevention, diagnosis, and/or treatment) to the individual patient. Studies may include the use of biomarkers, genomic data, aggregated clinical data, and/or patient reported data to develop personalized medical care.
Reach for the First R01 Course: Participants receive five free hours of biostatistical consulting, access to CTSA resources, two expert pre-reviews on an early draft of their R01 application, and bi-monthly, closely-monitored meetings to ensure structure and timeliness in completing the tasks required to successfully submit a first R01 application.
CUMC Research Training/Didactic Programs

- **Columbia Summer Research Institute (CSRI):** 5-week (10 credit) training program in research design and statistical analysis for patient oriented research.

- **Epidemiology and Population Health Summer Institute (EPIC):** Dept. of Epidemiology's series of week-long, non-credit courses provides opportunities to gain foundational knowledge and applied skills for advancing population health research.
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- Identifying Funding

- Approaches for Competitive Applications
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.

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General Resources

- **Grants.gov**
  - Database and application system for Federal grants

- **FedBizOpps (Federal Business Opportunities)**
  - Single point-of-entry for Federal contracts

- **SPIN funding database**
  - [https://www.infoed.columbia.edu/](https://www.infoed.columbia.edu/)
  - e-mail alerts matching research area(s) of interest
SPIN Funding Database

https://www.infoed.columbia.edu/

Select keywords from the SPIN controlled vocabulary to use in your search.

Available Keywords

- AGRICULTURE/FOOD SCIENCES/FOODS
- ARTS/HUMANITIES/CULTURAL ACTIVITIES
- BEHAVIORAL/SOCIAL SCIENCES
- EDUCATION
- ENERGY
- ENGINEERING
- HEALTH AND SAFETY/MEDICAL SCIENCES/BIOMEDICAL
- INTERNATIONAL/GEOPOLITICAL REGIONS
- LAW
- MANAGEMENT/COMMERCE
- OTHER (ANY/ALL DISCIPLINES)
- SCIENCE & TECHNOLOGY/MATHEMATICS/COMPUTER SCIENCE

Chosen Keywords
SPIN Funding Database

Chosen Keywords
Rehabilitation/Therapy, Occupation/Vocation

Select Keywords

Results Found: 99

Drag a column header and drop it here to group by that column

Save Current Search

Search name: Rehab Therapy
User: Select an Option

Would you like to configure SMARTS™ automation? Help Note: This can be setup or edited under Funding Alerts later.

Receive email updates? HTML
Update frequency: Daily

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e-mail alerts matching research area(s) of interest
National Institutes of Health

http://grantscourse.columbia.edu/nih.htm

Tips for Writing Grant Applications

http://grantscourse.columbia.edu/writing.htm
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
      - Able to save queries and have “ongoing” results e-mailed as funding alerts

**Library:** Books, periodicals, and other print and electronic resources; Lending program, “Foundation Directory Online Professional”

**Courses:**
- Proposal Writing
- Proposal Budgeting
- Finding Grants

**Chat Live:** Chat online with a reference librarian
The Foundation Directory Online

- 100,000 Grantmakers
- 3.4 million grants
- Tax statements (990’s) showing previous awards
- Access via Columbia University

http://www.columbia.edu/cgi-bin/cul/resolve?clio3328966
### Results: 1-100 of 272

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<th>Grantmaker Name</th>
<th>City, State / Country</th>
<th>Total Assets</th>
<th>Total Giving</th>
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<td>Simons Foundation</td>
<td>New York City, NY</td>
<td>$2,337,165,679</td>
<td>$230,753,645</td>
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<tr>
<td>Cohen Foundation, Inc., Steven &amp; Alexandra M</td>
<td>Greenwich, CT</td>
<td>$565,933,968</td>
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<td>Autism Speaks</td>
<td>New York City, NY</td>
<td>$19,677,425</td>
<td>$18,934,366</td>
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</table>

[New Search] [Modify Search] [Print/Save] [Email] [Export List]
At A Glance

Simons Foundation
160 5th Ave., 7th Fl.
New York City, NY United States 10010-7037
Telephone: (646) 654-0066
Contact: Anastasia "Stacey" Greenebaum, J.D., M.I.D.,
Comm. Dir.
E-mail: info@simonsfoundation.org
URL: www.simonsfoundation.org

Type of Grantmaker
Independent foundation

Additional Descriptor
Celebrity: Business
Family foundation

Financial Data
(yr. ended 2014-12-31)
Assets: $2,337,165,679
Total giving: $230,753,645

EIN
133794889

BRIDGE Number
8071444646

Purpose and Activities

The primary mission of the foundation is to advance the frontiers of research in the basic sciences and mathematics.

Program Area(s)

The grantmaker has identified the following area(s) of interest:

Autism Research Initiative

The initiative accepts applications for investigations on the impact of physiologically relevant activation of the innate immune system on behavioral, circuit, synaptic and neuronal functions in animal models of autism. For application information see SFARI.org.

990
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Approaches for Competitive Applications

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

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Approaches for Competitive Applications

- Identify Funding
- Prepare to Write the Grant Application
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It’s not the will to win, but the will to prepare to win that makes the difference.

Bear Bryant, University of Alabama
Prepare to Complete the Grant Application

- Speak with Agency Program Officer
- Speak with colleagues who are/were awardees
- Review funded applications if possible
- Review agency’s review criteria
- Identify what will make the application more competitive
  - Research and/or career development arrangements
  - Access to core facilities/research resources
- Strengthen “Preliminary Work/ Pilot Data”
- Who will write confidential letters of reference?
Research and Career Development Arrangements

- Multiple Principle Investigators (research awards)
- Multiple Mentors (mentored awards)
- Advisors (mentored awards)
- Co-investigators/Collaborations
- Subcontracts to other institutions
- 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

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

- Review the application instructions
- Identify the different components
- Create a checklist
- Create an outline
  - Content, Length of section (*vis a vis* page limits)
- 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 (“the hypothesis of my study is…”)
- 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
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- **Include well-designed tables and figures**
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Include Well-Designed Tables and Figures

- Include explanatory caption with the figure (not buried in text)
- Not overly complicated
- Informative, even if printed in black and white
- Easy for the reviewers to read

Tips:

- Bold label in text (e.g., Fig. 4) so it's easier for reviewers to locate relevant text for individual Figure
- Try to have Figure and relevant text on the same page
### Timeline for Specific Aims and Benchmarks/Milestones of Research Progress

<table>
<thead>
<tr>
<th>Benchmarks/Milestones</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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</thead>
<tbody>
<tr>
<td>Summary of Specific Aim 1a</td>
<td></td>
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<tr>
<td>Summary of Specific Aim 1b</td>
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<td>Summary of Specific Aim 2a</td>
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</tr>
<tr>
<td>Summary of Specific Aim 2b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summary of Specific Aim 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Anticipate Questions
and
Answer them before
they are asked
Not everything that can be counted counts.

Not everything that counts can be counted.

Quote Investigator suggests crediting sociologist William Bruce Cameron
http://quoteinvestigator.com/2010/05/26/everything-counts-einstein/

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When describing a previous research experience:

- What was the hypothesis/scientific question?
- What were the findings and conclusions?
- Why was the study important?
- What were your role and responsibilities?
- What did you learn and accomplish?
  - “Intellectual aspects”
  - Do not focus on technical aspects

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Investigator

- Competent
- Enthusiastic
- Thorough
- Professional
Elements of a Good Proposal

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

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NIH: one round of applications

http://www3.cancer.gov/admin/gab/02gpb/nci_grants_bk.pdf

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Bell Curve of Reviewer’s Grant Applications

Definitely do not fund

Fine

Definitely fund

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Poor Statistics
Research Resources not Adequately Described

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Career Development/Research Training Plan not Comprehensive
All Components of the Application are as Strong as Possible
Good Luck!