
November 5, 2013

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Topics to be Discussed

- **Types of Awards**
  - Fellowships (F’s), Training grants (T’s), Career Transition Awards, Research grants,

- **Funding Agencies**
  - Federal
    - National Institutes of Health,
    - National Science Foundation
  - Voluntary Health Organizations, Professional Societies, Foundations, Industry, Other

- **Planning & Organizing a Research Proposal**
  - Research Statement
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Not All Funding
Opportunities Are the Same

- **Different mission statements**
  - Fellowships (F’s)
  - Research project (R’s)

- **Different funding**
  - Stipend/Salary
  - Comprehensive research costs

- **Different time frames**
  - Not renewable: 3 years (F’s)
  - Renewable: 4 years - 5 years (R01) each competitive period
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
# Timeline of Funding for Junior Investigators

<table>
<thead>
<tr>
<th>Graduate School</th>
<th>Post-doctoral Years</th>
<th>Instructor/Assistant Professor</th>
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<tr>
<td>Individual Fellowship</td>
<td>T32 Training Grant</td>
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**Graduate School**

- Individual Fellowship
- T32 Training Grant
- Mentor’s Research Grant

**Post-doctoral Years**

- Individual Fellowship
- T32 Training Grant
- Mentor’s Research Grant

**Instructor/Assistant Professor**

- Timeline of Funding

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**Individual Fellowship**

- T32 Training Grant
- Mentor’s Research Grant
Pre-doc/Post-doc: Institutional Training Grant (NIH-T32)

- Pre-docs/Post-docs selected by institution
- Research training in specific area
- Defined number of slots
- Stipend, health fees, tuition, travel
Pre-doc/Post-doc: Individual Fellowship

- Supports specific individual
- Stipend, health fees, tuition, travel
- NIH: F31 (Pre-doc); F32 (Post-doc)

Review criteria:
- Individual fellow
- Mentor
- Research project
- Research environment
Pre-doc Fellowships (F31s)
Applications, awards, and success rates
Post-doc Fellowships (F32s)
Applications, awards, and success rates

[Graph showing applications, awards, and success rates over fiscal years 1998 to 2012]
Graduate Research Fellowship Program (GRFP)

- 3 years of support ($132,000 total)
- Stipend of $32,000, Cost-of-education allowance of $12,000 to the degree-granting institution
- Individuals early in their graduate careers with demonstrated potential for significant achievements in science and engineering
- “Research with disease-related goals, including work on the etiology, diagnosis or treatment of physical or mental disease, abnormality, or malfunction in human beings is normally not supported…”
- US citizens/nationals/permanent residents
- 2,000 Fellowships offered/yr (17% success rate)
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Individual Fellowships
Pre-docs and Post-docs

Non-government, non-profit agencies
- Voluntary Health Organizations
- Private Foundations
- Professional Societies
American Heart Association (Founders Affiliate) Pre-doctoral Fellowship Program

- Cardiovascular function and disease and stroke
- Basic science, clinical, bioengineering, public health, epidemiological, behavioral, and community research

**Funding**
- Stipend/Salary: $22,000; Fringe Benefits: $1,000

**Award Duration:** 1-2 years

**Citizenship**
- U.S. citizen/ Permanent resident/ Pending permanent resident./Visas (e.g. F1, H1-B, J-1, O-1)
American Heart Association (Founders Affiliate) Postdoctoral Fellowship Program

- Cardiovascular function and disease and stroke
- Basic science, clinical, bioengineering, public health, epidemiological, behavioral, and community research

Funding

- Stipend/Salary: $38,000-$52,000; Fringe Benefits: $1,000

Award Duration: 2 years

Citizenship

- U.S. citizen/ Permanent resident/ Pending permanent resident./Visas (e.g. F1, H1-B , J-1, O-1)
The Helen Hay Whitney Foundation
Postdoctoral Research Fellowships

- Supports early postdoctoral research training in all basic biomedical sciences
- Candidates who hold, or are in the final stages of obtaining PhD, MD, or equivalent - candidates who have no more than one year of postdoctoral research experience
- 3-year fellowships
- Stipend: $49,000-$51,000; Research Allowance: $1,500
- US and foreign citizens
PhRMA Foundation - Pharmacology/Toxicology

“research that integrates information on molecular or cellular mechanisms of action with information on the effects of an agent observed in an intact organism, either in experimental animal or clinical studies or both.”

integrate “mechanism of action of a drug or chemical at the molecular or cellular level with the drug effect observed in a human or laboratory animal. An applicant is expected to describe the significance of a hypothesis being tested in the context of potential influences of biochemical, physiological, behavioral, or social systems.”
PhRMA Foundation - Pharmacology/Toxicology

- **Pre-Doctoral Fellowships**
  - Advanced Ph.D. candidates, stipend of $20,000 per year for a maximum of two years

- **Post-Doctoral Fellowships**
  - $40,000 annual stipend (for up to 2 years) to graduates of PharmD., M.D., and Ph.D. programs
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  - Research Statement
Planning & Organizing a Research Proposal

- **Research Statement - Important to understand:**
  - Mission of funding agency
    - e.g. Specific Disease focus
  - “Type” of research
    - e.g. Basic vs. Clinical
  - Career level
    - e.g. early stage pre-doc/post-doc vs. last stage
  - Review criteria
    - NIH: F31 and F32 NRSA Fellowships
    - NSF: Graduate Research Fellowship Program
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<tr>
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<th>SCORED REVIEW CRITERIA</th>
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<td>1.</td>
<td>Fellowship Applicant</td>
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<td>Strengths</td>
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<td>2.</td>
<td>Sponsors, Collaborators, and Consultants</td>
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<td>3.</td>
<td>Research Training Plan</td>
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<td>Strengths</td>
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<td><strong>4. Training Potential</strong></td>
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<th><strong>5. Institutional Environment &amp; Commitment to Training</strong></th>
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OVERALL IMPACT

**Overall Impact** Write a paragraph summarizing the factors that informed your Overall Impact score.
1. Fellowship Applicant.

**F31, F31 Diversity, F32 and F33.** Are the applicant fellow’s academic record and research experience of high quality? Does the applicant fellow have the potential to develop as an independent and productive researcher in biomedical, behavioral or clinical science?

2. Sponsors, Collaborators, and Consultants.

**All Fs.** Are the sponsor(s) research qualifications (including successful competition for research support) and track record of mentoring appropriate for the proposed fellowship? Are there (1) evidence of a match between the research interests of the applicant fellow and the sponsor (including an understanding of the applicant's research training needs) and (2) a demonstrated ability and commitment of the sponsor to assist in meeting these needs? Are the qualifications of any collaborator(s) and/or consultant(s), including their complementary expertise and previous experience in fostering the training of fellows, appropriate for the proposed research project?


**F31, F31 Diversity, F32 and F33.** Is the proposed research plan of high scientific quality, and does it relate to the applicant fellow’s training plan? Is the training plan consistent with the applicant fellow’s stage of research development? Will the research training plan provide the applicant fellow with individualized and supervised experiences that will develop research skills needed for his/her independent and productive research career?

**F31, F31 Diversity, F32 and F33.** Does the proposed research training plan have the potential to provide the applicant fellow with the requisite individualized and supervised experiences that will develop his/her research skills? Does the proposed research training have the potential to serve as a sound foundation that will lead the applicant fellow to an independent and productive career?

5. Institutional Environment & Commitment to Training.

**F31, F31 Diversity, F32 and F33.** Are the research facilities, resources (e.g. equipment, laboratory space, computer time, subject populations), and training opportunities adequate and appropriate? Is the institutional environment for the scientific development of the applicant fellow of high quality, and is there appropriate institutional commitment to fostering the applicant fellow's training as an independent and productive researcher?
Two National Science Board-approved Review Criteria:

• **Intellectual Merit**: this criterion encompasses the potential to advance knowledge

• **Broader Impacts**: this criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes

http://www.nsfgrfp.org/additional_resources/promotional_materials
Panelists may consider the following with respect to the **Intellectual Merit** Criterion:

- the potential of the applicant to advance knowledge based on the totality of the content in the application, including the strength of the academic record, the proposed plan of research, the description of previous research experience or publication/presentations, and references.
Panelists may consider the following with respect to the **Broader Impacts** Criterion:

- the potential for future broader impacts as indicated by personal, professional, and educational experiences
1. What is the potential for the proposed activity to
   A. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
   B. Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

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When Preparing an 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
- Include well-designed tables and figures
- Present an organized, lucid write-up
Elements of a Good Proposal

- Feasible
- Relevant
- Unique
- Innovative
- Clear
- Brief
- Consistent
Anticipate Questions
and
Answer them before they are asked
Investigator

- Competent
- Enthusiastic
- Thorough
- Professional
Common Proposal Problems

- **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
- **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
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.
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
NIH: one round of applications
Reviewers’ Comments
Bell Curve of Reviewer’s Grant Applications

- Definitely do not fund
- Definitely fund

Fine

Great
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
Common Problems with Grant Applications from New Investigators

- 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
Good Luck!