Grant Writing and Funding Opportunities for Postdoctoral Researchers

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Goals

- Types of grants—training vs. research
- Specific mechanisms for postdoctoral trainees
- First steps
- Principal components of an individual fellowship (F32)
- More about specific aims and other sections
- Review criteria
- Other funding mechanisms

Grant Mechanisms—NIH Jargon

- R series—Research Grants (RO1, R21, RO3, and lots of others)
- P series—Program Projects, cores, centers (PO1, P30, etc)
- K series—Career development awards, individual and institutional (KO1, KO8, K99/ROO)
- T series—Institutional training grants (pre and postdoctoral; T32)
- F series—Individual Fellowship opportunities
  - F30—MD-PhD support
  - F31—Predoctoral fellowships
  - F32—Postdoctoral fellowships
- http://grants.nih.gov/grants/funding/funding_program.htm

Institutional Training Grants (T32)

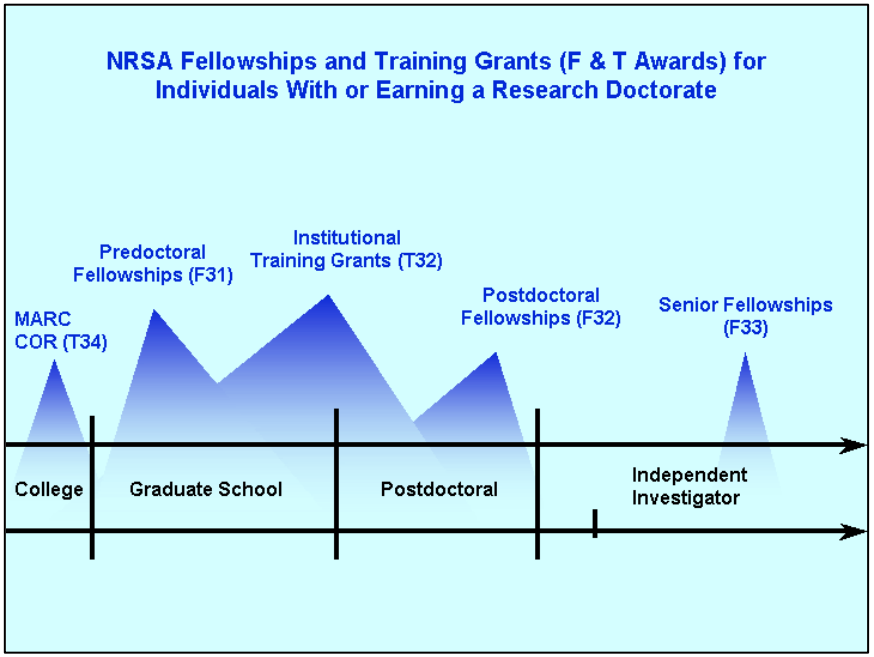
- Grants for discipline-specific training programs
- Target trainees at different levels: predoctoral; postdoctoral; medical student; fellows
- Examples at URMC include:
  - Training in Environmental Toxicology (6)
  - Graduate Training in Hematology (4)
  - Cancer Center Training-Experimental Models (6)
  - Training Program in Oral Science (5)
- Ask your PI or departmental administrator regarding these programs

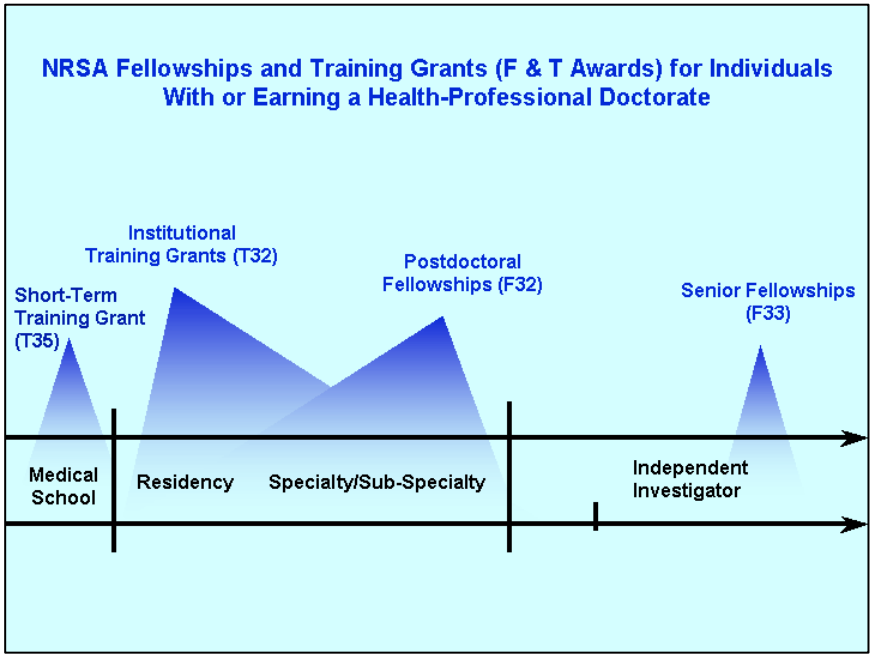
Individual National Research Service Awards (NRSA—F32)

- http://grants.nih.gov/grants/guide/pa-files/PA-10-110.html
- Provide NRSA level stipend
- Provide tuition reimbursement if in degree granting program
- Provide some additional monies to support insurance, travel, etc.
- Postdoctoral fellowships require “payback” agreement*
- Full instructions (167 pages worth!): http://grants.nih.gov/grants/funding/424/SF424_RR_Guide_Fellowship_VerB.pdf

**For individuals receiving postdoctoral support under individual fellowships or institutional research training grants, a payback obligation is incurred for the first 12 months of Kirschstein-NRSA support with the 13th and subsequent months of postdoctoral support serving to pay back this obligation month by month. A Payback Agreement (PHS 6031) is required but only for the initial 12-month postdoctoral support period.*

How NIH Sees It



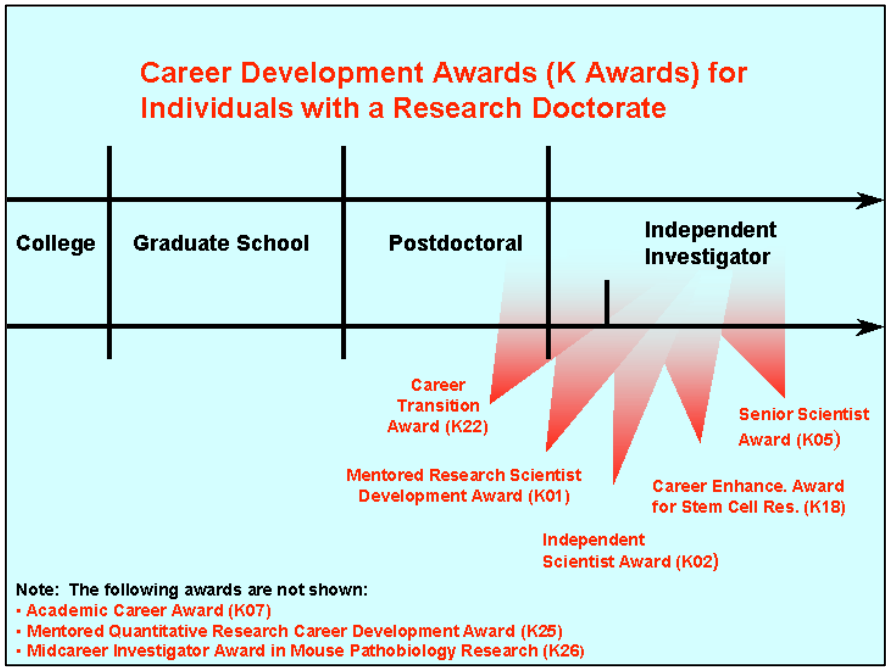


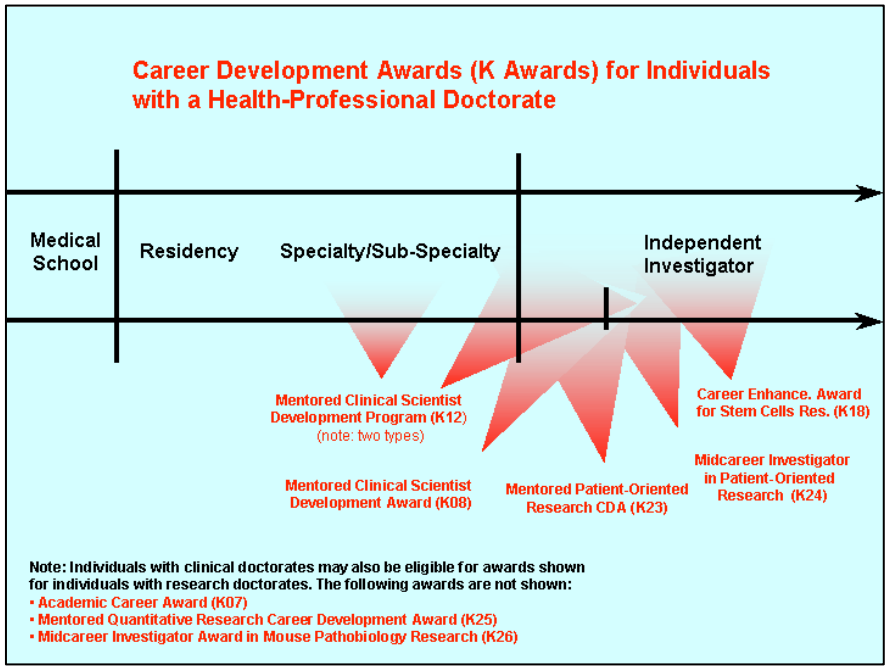
http://grants.nih.gov/training/nrsa.htm

Career Development Awards (K)

- Support career development at multiple stages
- KO1—Mentored Research Scientist Development Award
- KO8—Mentored Clinical Scientist Career Development Award (K12 and KL2 are institutional versions, eg. CTSI KL2 program: http://www.urmc.rochester.edu/ctsi/education/k12.cfm)
- K22—Specialized Career Transition Awards
- K99/ROO—NIH Pathway to Independence Award
- http://grants.nih.gov/training/careerdevelopmentawards.htm

How NIH Sees It





http://grants.nih.gov/training/careerdevelopmentawards.htm

New and Early Stage Investigators

- NIH has restated their commitment to supporting new investigators
- Early Stage Investigators (ESI): Folks 10 years or less from a terminal degree who have not yet received a "substantial NIH independent research award"—RO1)
- Special Review Considerations
- Special Grant Opportunities
  - Pathway to Independence Program (K99/ROO)
  - NIH Director's New Innovator Award
- http://grants1.nih.gov/grants/new_investigators/index.htm#indaward

Citizenship Requirements

- The vast majority of NIH sponsored training grants, fellowships, and career development awards are limited to US Citizens, Non-Citizen Nationals, and Permanent Residents
- The K99/ROO award is an exception; see: http://grants2.nih.gov/grants/guide/pa-files/PA-10-063.html

First Steps

- Identify the administrator in your department or program who helps your PI with grant submissions; introduce yourself.
- Identify your ORPA administrator. This is the person who will actually do the final submission of your grant package to NIH.
- Get an NIH Commons Account:
  - Fill out form available at: http://www.rochester.edu/ORPA/eRA/index.htm
  - Send to Lori Hume at ORPA (lori.hume@rochester.edu)
- Office of Research and Project Administration (ORPA)—Your Friends! http://www.rochester.edu/ORPA/
- Three really important resources from ORPA:
  - UR Proposal Information Sheet
  - ORPA PHS SF424 Application Guide
  - UR Forms—grant signoff sheet

Principal Components of an F32 Award

- Research Training Plan
  - Specific Aims (1 page)
  - Research Strategy (6 pages)
  - Human Subjects (if applicable)
  - Vertebrate Animals (if applicable)
  - Respective Contributions (1 page)
  - Selection of Sponsor and Institution (1 page)
  - Responsible Conduct of Research (1 page)
- Sponsor and Co-Sponsor Information (6 pages)
- Additional Information
  - Goals for Fellowship Training and Career (1 page)
  - Activities Planned Under this Award (1 page)
  - Dissertation and other Research Experience (2 pages)
- OTHER STUFF
  - Cover Letter
  - Biosketches of Applicant and Sponsor(s)
  - Letters of Reference (3 to 5, sponsor not included)
  - More
- Full Instructions: http://grants.nih.gov/grants/funding/424/SF424_RR_Guide_Fellowship_VerB.pdf

Specific Aims (I)

- State concisely the goals of the proposed research and summarize the expected outcome(s), including the impact that the results of the proposed research will exert on the research field(s) involved.
- List succinctly the specific objectives of the research proposed, e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology.
- Specific Aims are limited to one page.

Specific Aims (II): Convince Reviewers, Give Milestones, Write for a Broad Audience

- Use this section to convince reviewers of your idea. Think of yourself as marketing your application to them.
  - Briefly state the impact of the research on your field.
  - Briefly state why you chose the project.
  - Convey its significance and innovation.
  - Write this section for all peer reviewers. Use terms a broad audience can understand.
- Choose Specific Aims peer reviewers can easily assess. Each one should be an achievable end point rather than a best effort.
- You should probably limit your application to one Specific Aim a year. For new applicants, being too ambitious is a common mistake.
- Have no more than one or two sets of experiments for each aim. If you need more, reorganize.
- Think of your Specific Aims as the framework of your application, as an expanded table of contents for your Approach section.
  - Make each aim a header in your approach section.
  - Design experiments to address each aim.
- Describe your Specific Aims as well-focused objectives to achieve.
  - Describe options with milestones depending on results.
  - Have aims that test your hypothesis.
- As you work out the details of your Research Strategy, review and rewrite your draft Specific Aims. Your experiments in the Approach section must directly support your Specific Aims.
- If you are applying for more than one grant, make sure the Specific Aims differ.

http://funding.niaid.nih.gov/ncn/grants/cycle/part05.htm#a2

Specific Aims (III)

Purpose: The purpose of the specific aims is to describe concisely and realistically what the proposed research is intended to accomplish.

Content: The specific aims should cover:

- broad, long-term goals;
- the hypothesis or hypotheses to be tested, and
- specific time-phased research objectives.

Suggestions:

- The Specific Aims section should begin with a brief narrative describing the long-term goals of the project and the hypothesis guiding the research. This is followed by a numbered list of the Aims.
- **State the hypothesis clearly**. Make sure it is understandable, testable and adequately supported by citations in the Background and by data in the Preliminary Results Sections. Be sure to explain how the results to be obtained will be used to test the hypothesis.
- Show that the objectives are attainable within the stated time frame.
- *Be as brief and specific as possible*. For clarity, each aim should consist of only one sentence. Use a brief paragraph under each aim if detail is needed. Most successful applications have 2-4 specific aims.
- Don't be overly ambitious. A small, focused project is generally better received than a diffuse, multifaceted project.
- Be certain that all aims are related. Have someone read them for clarity and cohesiveness.
- Focus on aims where you have good supporting preliminary data and scientific expertise.

http://deainfo.nci.nih.gov/extra/extdocs/gntapp.htm#7

Research Strategy (I)

(a) Significance

- Explain the importance of the problem or critical barrier to progress in the field that the proposed project addresses.
- Explain how the proposed project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields.
- Describe how the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field will be changed if the proposed aims are achieved.

(b) Innovation - Fellowship applications *should not* include an Innovation section unless specified in the FOA.

Research Strategy (II)

(c) Approach

- Describe the overall strategy, methodology, and analyses to be used to accomplish the specific aims of the project. Unless addressed separately in Item 16 (Resource Sharing Plan), include how the data will be collected, analyzed, and interpreted as well as any resource sharing plans as appropriate (*Data Analysis or Statistics*).
- Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims (*Expected Outcomes and Alternatives*).
- If the project is in the early stages of development, describe any strategy to establish feasibility, and address the management of any high risk aspects of the proposed work.
- Point out any procedures, situations, or materials that may be hazardous to personnel and precautions to be exercised. A full discussion on the use of Select Agents is required in a separate section.
- Include any courses that you plan to take to support the research training experience.

If an applicant has multiple Specific Aims, then the applicant may address Significance and Approach for each Specific Aim individually, or may address Significance and Approach for all of the Specific Aims collectively.

Research Strategy (III)

Preliminary Studies

- Include in the Significance and Approach Sections as applicable.
- For new applications, include information on preliminary studies, if any. Discuss the applicant's preliminary studies, data and/or experience pertinent to this application.
- When applicable (e.g. second submission), provide a succinct account of published and unpublished results, indicating progress toward their achievement.
- DO NOT INCLUDE preliminary data that does not DIRECTLY support your hypothesis or demonstrate feasibility (e.g. a unique method)

Sponsor and Co-Sponsor Information (I)

(a) **Research Support Available:**

- In a table list all current and pending research and research training support specifically available to the applicant for this particular training experience.
- Include funding source, complete identifying number, title of the research or training program, and name of the principal investigator, dates, and amount of the award.
- Include this information for any co-sponsor as well.

(b) **Sponsor's/Co-Sponsor's Previous Fellows/Trainees:**

- Give the total number of predoctoral and postdoctoral individuals previously sponsored.
- Select five that are representative and, for those five, provide their present employing organizations and position titles or occupations.
- Include this information for any co-sponsor as well.

(c) **Training Plan, Environment, Research Facilities:**

- Describe the research training plan that you have developed specifically for the Fellowship applicant.
- Include items such as classes, seminars, and opportunities for interaction with other groups and scientists *(be specific about amount of time that the mentor will devote to the applicant—regularity of individual and group meetings, special journal clubs, opportunities to present work locally and at national/international conferences).*
- Describe the research environment and available research facilities and equipment.
- Indicate the relationship of the proposed research training to the applicant's career goals.
- Describe the skills and techniques that the applicant will learn; relate these to the applicant's career goals.

Sponsor and Co-Sponsor Information (II)

(d) **Number of Fellows/Trainees to be Supervised During the Fellowship:**

- Indicate whether pre- or postdoctoral.
- Include this information for any co-sponsor as well.

(e) **Applicant's Qualifications and Potential for a Research Career:**

- Describe how the Fellowship applicant is suited for this research training opportunity based on his/her academic record and research experience level, including how the research training plan, and your own expertise as the sponsor will assist in producing an independent researcher.

Fellowship Review Criteria (I)

Overall Impact/Merit.

- Reviewers will provide an overall impact/priority score to reflect their assessment of the likelihood that the fellowship will enhance the candidate's potential for, and commitment to, a productive independent scientific research career in a health-related field, in consideration of the scored and additional review criteria.
- *Remember that the F programs are training awards and not research awards. Major considerations in the review are the applicant fellow's potential for a productive career, the applicant fellow's need for the proposed training, and the degree to which the research training proposal, the sponsor, and the environment will satisfy those needs.*

1. Fellowship Applicant.

- 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?

Fellowship Review Criteria (II)

2. Sponsors, Collaborators, and Consultants.

- Are the sponsor(s) research qualifications (including successful competition for research support) and track record of mentoring appropriate for the proposed fellowship?
- Is there 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 is there 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?

3. Research Training Plan.

- 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?

Fellowship Review Criteria (III)

4. Training Potential.

- 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.

- 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?

http://grants.nih.gov/grants/peer/critiques/f.htm

Other Postdoctoral Fellowship Sources

American Cancer Society Postdoctoral Fellowships

- 3 years
- Stipend and modest fellowship allowance ($4000)
- Available to US Citizens and Permanent Residents
- http://www.cancer.org/Research/ResearchProgramsFunding/FundingOpportunities/IndexofGrants/MentoredTrainingandCareerDevelopmentGrants/postdoctoral-fellowships

American Heart Association Postdoctoral Fellowships

- 2 years (no more than 5 years from degree)
- Stipend and allowance
- Available to US Citizens and non-citizens holding visas
- http://www.americanheart.org/presenter.jhtml?identifier=3059777

Ellison Medical Foundation/AFAR Postdoctoral Fellows in Aging Research Program

- 1 year fellowship
- Stipend and allowance
- No citizenship restrictions listed on website
- http://www.afar.org/research/funding/postdoc

Many Others! (see http://www.library.illinois.edu/iris/ for additional links)