# Fishing for Fellowships in the Sea of Science

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Or how to Belabor a Chinese Proverb

Give a [woman] a fish and you feed [her] for a day. Teach a [woman] to fish and you feed [her] for a lifetime.

#### Why Fish?

- Prestige and recognition
- Career enhancement (travel, dissertation support)
- Excellent training for career in academia and industry
- Research independence
- Financial improvement
- Laboratory money runs out

#### Not to be Undertaken Lightly

- · Need to find
- Need to understand the odds and requirements and institutional implications
- Need to ask yourself and others for a most valuable resource: time
  - Advisor research and training plan
  - Letter writers
  - Institution
  - Your commitment to follow the process through
  - Your commitment to excellence

#### Finding Opportunities: Looking Inside

- "Close to home"
  - NSF IGERTs
  - NIH Training Grants
- Department-specific
  - Corporate
  - Sponsored funds

## New Grant to Fund Nanobiotechnology Graduate Fellowships

The College of Engineering has received a highly competitive grant from the U.S. Department of Education that will provide fellowships to outstanding Biomedical Engineering or Electrical and Computer Engineering PhD students seeking to focus on nanobiotechnology. Fellows will receive a \$30,000 stipend for one to two years to pursue academic studies and research in this field, which is well-represented at Boston University through its Center for Nanoscience and Nanobiotechnology (CNN).

Offered by the Department of Education's Graduate Assistance in Areas of National Need (GAANN) Program, the grant enables graduate students with financial need to obtain high quality training in disciplines recognized as critical areas of national need.

"Nanobiotechnology addresses key elements of next-generation clinical applications, information industries and communications, and will be essential to national competitiveness, personalized medicine, security and innovation in a flat world," said Professor Selim Ünlü (ECE), ENG associate dean for research and graduate programs.

GAANN fellowships will support ENG PhD students focused on the use of nanostructures to study biological processes and advance healthcare solutions. (Image Courtesy of Lab on a Chin.)

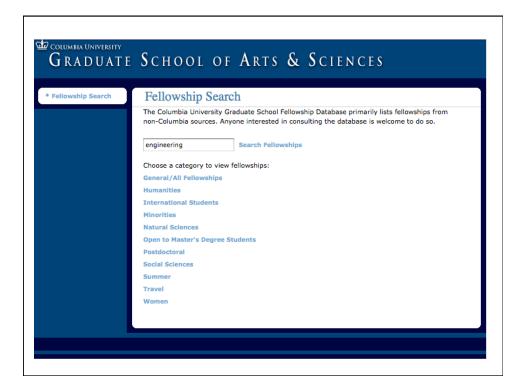
"The GAANN grant will enable BU to train eight to 10 additional PhDs in this emerging field."

## **Looking Outside**

 Columbia University Graduate School of Arts and Sciences External Funding Database

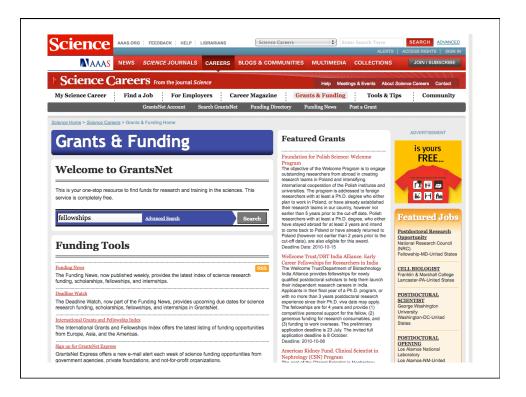
http://www.ais.columbia.edu/sws/gsas/search.php

- Community of Science:
  - http://www.cos.com/
- Cornell University Graduate Fellowship Notebook:
  - http://www.gradschool.cornell.edu/?p=132
- GrantsNET Graduate Database
  - http://sciencecareers.sciencemag.org/funding
- Michigan State University (Jon Harrison)
  - http://staff.lib.msu.edu/harris23/grants/3gradinf.htm
- Blogs!!!
- Talk to People!!!











#### What Next?

- Explore the site
- Contact the program officer
- Determine the odds
  - How many applications
  - How many awards
- Previous winners (network with them)
- Zero in on "what they are looking for" (review criteria)
- Follow Instructions

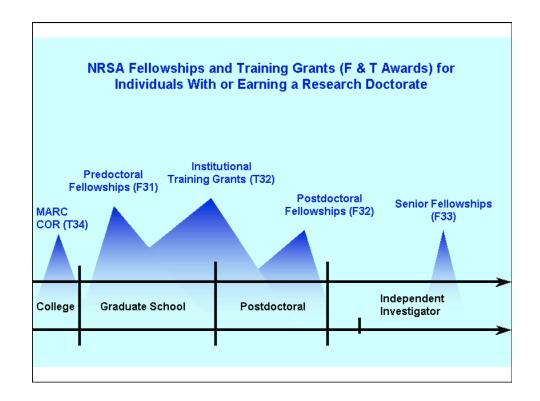
## Ruth L. Kirschstein National Research Service Award (NRSA)

- <a href="http://grants.nih.gov/training/nrsa.htm">http://grants.nih.gov/training/nrsa.htm</a>
- Named in honor of the 1<sup>st</sup> woman to direct an NIH institute (NIGMS)
  - http://www.msa.md.gov/msa/educ/exhibits/ womenshall/html/kirschstein.html

Ruth L. Kirschstein, M.D.

(1926 - 2009)





#### Other Important Fellowships

- Department of Defense
- Department of Energy
- Foundations
- Hertz Foundation Fellowships
- NSF's Graduate Research Fellowship Program (GRFP)

#### NSF Graduate Research Fellowship Program

- Funds and promotes basic research and education in science and engineering
- Established fellowship program in 1952
- Goal: to promote the vitality and diversity of the human resource base in science, technology, engineering and mathematics
- 1,654 new awards offered in 2010 (\$66,987,000)
- Generous stipend (\$30,000 per year) and tuition/fee payment (\$10,500 per year) for 3 years; travel allowance; use of national laboratories
- · Honorable mention
- http://www.nsfgrfp.org/

#### **Eligibility Requirements**

- U.S. citizen, national or permanent resident alien
- Field, Degree Program and Research Topic
- Senior year or early stages of graduate study:
  - Level 1: seniors
  - Level 2: 1st-year graduate students
  - Level 3: 2nd-year graduate students
  - Level 4: students changing fields
- Applications are evaluated by level

#### **November 2010 Deadlines**

- 11/15 Interdisciplinary Fields
- 11/16 Engineering
- 11/18 Mathematical Sciences & Computer Information Sciences and Engineering, Chemistry, Physics & Astronomy
- 11/19 Social Sciences, Psychology and Geosciences
- 11/22 Life Sciences
- ? STEM

#### **GRFP Milestones**

- Applications available early August via FastLane (electronic application process)
- November electronic submission deadline
- Late-March award announcement
- Tenure begins fall 2008

#### Criterion: Intellectual Merit

- How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields?
- How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of prior work.)
- To what extent does the proposed activity suggest and explore creative, original, or potentially transformative concepts?
- How well conceived and organized is the proposed activity?
- Is there sufficient access to resources?

#### Criterion: Broader Impact

- How well does the activity advance discovery and understanding while promoting teaching, training, and learning?
- How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)?
- To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships?
- Will the results be disseminated broadly to enhance scientific and technological understanding?
- What may be the benefits of the proposed activity to society?



#### **Application**

- Personal / Academic Background
- 3 Essays Personal and Scientific
  - 12-point font
  - one-inch margins
  - comply with the two-page limitation for each essay
  - address both NSF Merit Review Criteria of Intellectual Merit and Broader Impacts in each essay

#### **Personal Statement**

Purpose: to demonstrate your potential to become experts and leaders who can contribute significantly to research and education

- Describe any personal, professional, or educational experiences that have contributed to your desire to pursue advanced study
- Provide your evidence of leadership potential
- Discuss your career aspirations and how the NSF fellowship will enable you to achieve your goals

#### **Examples of Broader Impact**

- Volunteer in science or engineering outreach activities
- Participation/leadership of science society, other student groups on campus
- Tutor and mentor to other students
- Student representative in departmental committees

## Previous Research Experience (2 pages)

- Description of scientific research activities, both academic and job-related
  - Undergraduate research experience
  - Volunteer job or internship program
  - Industrial or government experience
- Explain purpose and your role
- Include publications and presentations

#### Original Plan of Research

- Format of the Plan of Research
  - Title
  - Key words
  - Hypothesis
  - Research Plan (strategy, methodology and controls)
  - Anticipated Results
  - References
- Statement attesting the originality of the research proposal

#### Formulating a Research Plan

- Reflect upon what captures your attention
  - Your advisor
  - Your own research and thinking
  - Reading journals in your field
  - Talking to others in your field
- Analyze and develop an original research question
- Use your understanding of research principles and approaches to address this question
- You must be at a stage of your graduate studies that you are prepared to undertake research

#### Create a "Proposal Review Process"

- Discuss plan with mentors and peers GWISE
- Revise your plan
- Finalize your Proposal Plan of Research

## References: Make it Easy

- Arrange for meeting or telephone call with potential reference
- Discuss your current work and your plans for future graduate study
- Ask if he/she can write a great reference for you
  - Provide CV and other supporting documents to assist in writing.
  - Follow up to confirm receipt of Reference Report Form

#### **Application Review**

Demonstrated intellectual ability and other accepted requisites for scholarly scientific study, such as the ability (1) to plan and conduct research; (2) to work as a member of a team as well as independently; and (3) to interpret and communicate research findings.								
Overall Assessment of Intellectual Meri	☐ Excellent	☐ Very Good	☐ Good	☐ Less Good	☐ Fair			
Mandatory - explain assessment to the	applicant:							

#### **Application Review**

#### **Broader Impacts Criterion**

Contributions that (1) effectively integrate research and education at all levels, infuse learning with the excitement of discovery, and assure that the findings and methods of research are communicated in a broad context and to a large audience; (2) encourage diversity, broaden opportunities, and enable the participation of all citizens—women and men, underrepresented minorities, and persons with disabilities—in science and research; (3) enhance scientific and technical understanding; and (4) benefit society.

Overall Assessment of Broader Impacts 

Excellent 

Very Good 

Good 

Less Good 

Fair

Mandatory - explain assessment to the applicant:

Evaluation sheets are available after the awards are made. Request evaluations if award is not made to help you improve next year's application

#### Real World

Intellectual Merit Criterion					
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## **Tips**



- · Start Early
- You must use Fastlane, NSF's on-line document submission system
  - Don't wait until the last minute – system could be clogged & you won't get in
- · Read the FAQs

## **Tips**

- Follow directions
- · Supporting documents matter
  - Letters of Reference and Statements of Purpose can make a difference in the selection process
  - References Must truly know you!
  - Get Feedback on Your Writing / Plans
- Keep trying
  - If you don't get an award one year, apply again next year

## **Summary**

- Think about fellowships as a part of career building – what you get out of it is important
- Spend time researching opportunities, develop a plan
- Write great applications
  - Seek advice
  - Develop review support system

## Good luck!

