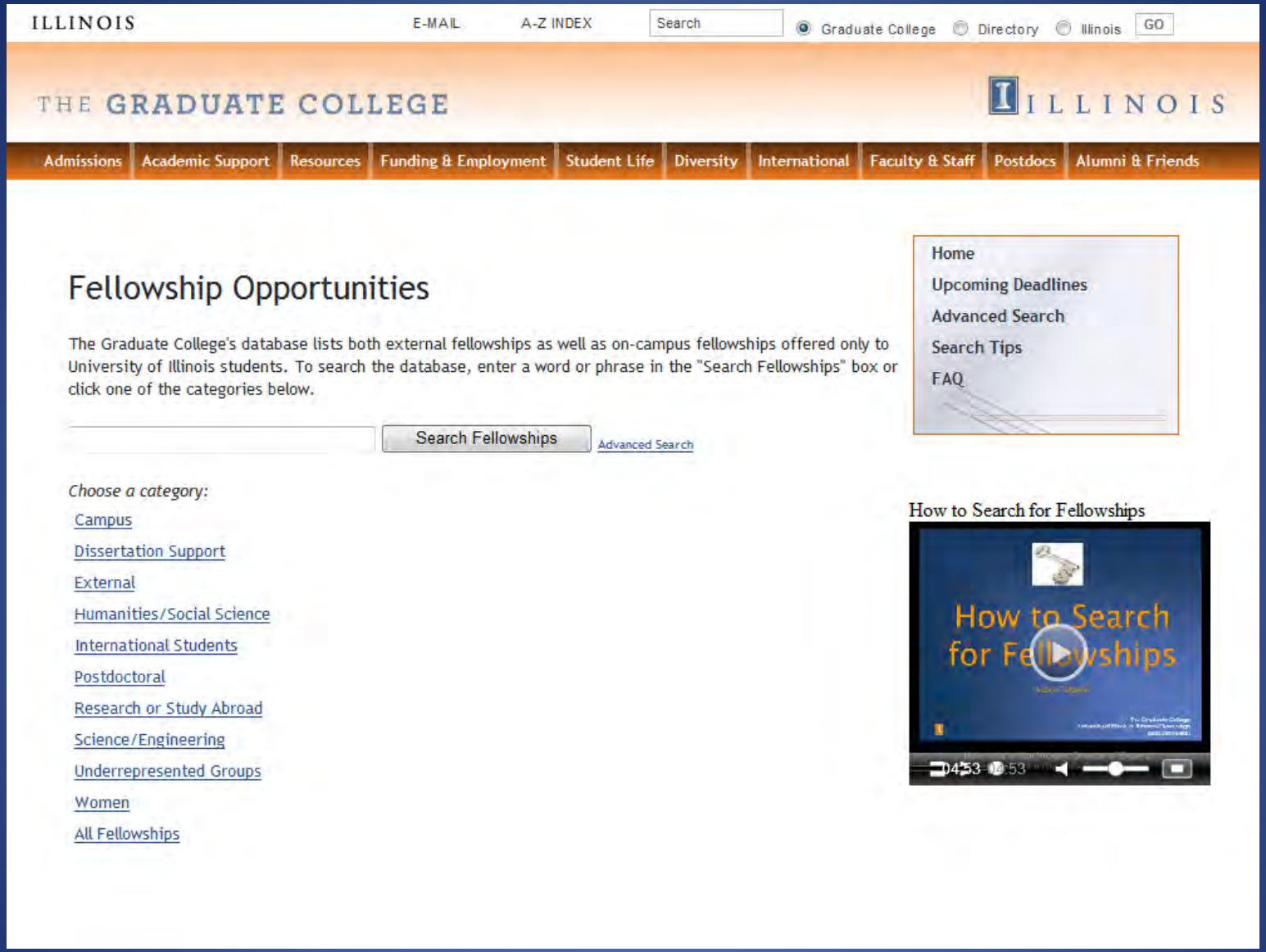
How to Win a National Science Foundation Graduate Research Fellowship

September 12, 2011
Alice Campbell Alumni Center

The Graduate College



https://www.grad.illinois.edu/fellowship/

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Starting an NSF Graduate Research Fellowship Application

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Are you interested in applying for a National Science Foundation Graduate Research Fellowship? If so, this video-tutorial is for you. It points you to several resources providing advice on how to craft a more competitive proposal.

The NSF-GRF program awards fellowships for graduate study leading to research-based master's and doctoral degrees in the fields of engineering and science, including several social science disciplines, relevant to the mission of the National Science Foundation. *Applicants must be United States citizens, nationals, or permanent resident aliens by the application deadline.* Individuals are typically eligible to apply: 1) during the senior year of college, 2) after graduating from college and prior to entering graduate school, 3) during the first year of graduate school, or 4) prior to completing the Fall term of the second year of graduate school. Applicants must have completed no more than 12 months of full-time graduate study or its equivalent as of August 1, 2011.

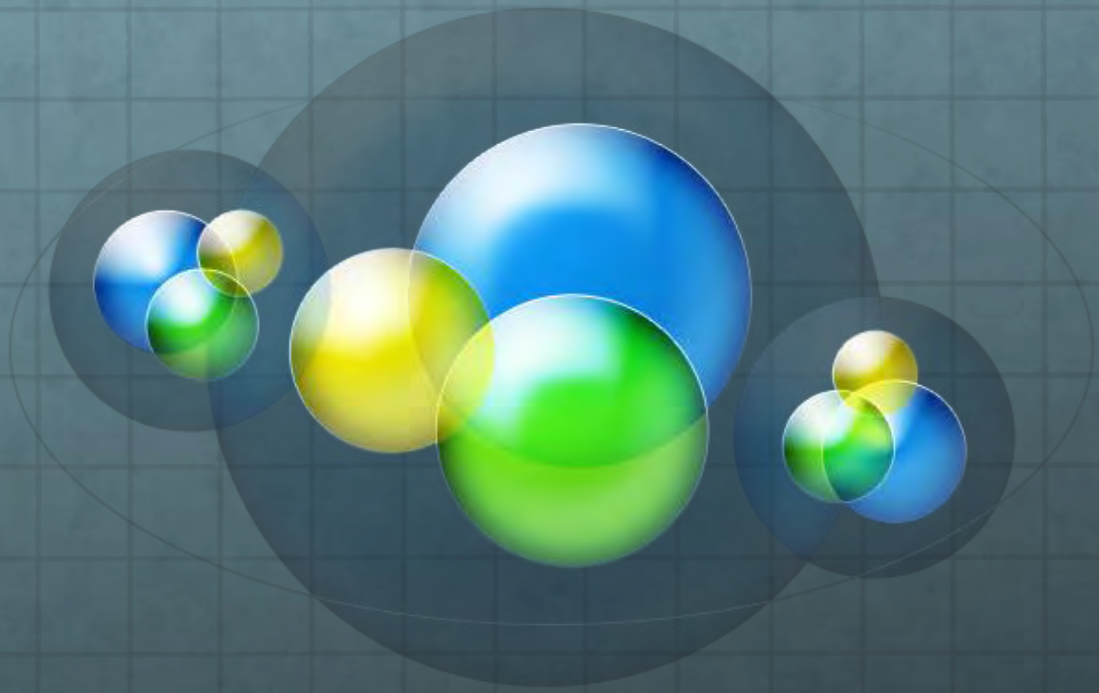
For complete information on the NSF Graduate Research Fellowship program, including detailed eligibility requirements and a list of NSF-supported fields of study, see the NSF-GRF homepage. Resources referenced in the video are listed below.

Starting an NSF-GRF Application

http://www.grad.illinois.edu/starting-nsf-grf-application

Proposal Writing Resources

- Sample Proposals
  - Ken Vickery, vickeryk@illinois.edu
- Dr. Robin Walker's *Unofficial Guide Sheets*
- One-on-One Proposal Review
  - completed draft
  - reviewed by advisor
  - one month ahead of deadline
- *Starting an NSF-GRF Application* tutorial
- *Proposal Writing Assistance* page
  - http://www.grad.illinois.edu/fellowships/proposals



The NSF Graduate Research Fellowship Program

University of Illinois Urbana-Champaign
September, 2011

The National Science Foundation

Federal agency created in 1950 to "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense"

>$7 billion annual budget for research and education in Science, Technology, Engineering and Math (STEM) disciplines - all fields but clinical biomedical (NIH)

Annually awards about 10,000 research grants, 2000 new graduate fellowships (student as awardee), 1500 graduate trainees (e.g., IGERT, GK-12), and 30,000 graduate research assistantships (via grants to Principal Investigators)

NSF Graduate Research Fellowship

Initiated in 1952 – oldest NSF program

>48,500 students including FY2011 awards

Currently about 4000 fellows on “tenure” (taking stipend and cost of education allowance)

Very successful students - high rates of PhD completion, shorter time to degree completion, high placement in faculty positions, high levels of research productivity, high tenure rate, 30 Nobel laureates, 440 National Academies members, etc.

NSF GRF Benefits

READ PROGRAM SOLICITATION CAREFULLY!

Three years of support over a five year period

Annual stipend of $30,000 - cost of living

Tuition support of $10,500 - cost of education allowance paid to institution - remainder normally covered by university

Cyberinfrastructure access via the TeraGrid (NCSA)

*No more international travel supplement

Nordic Programs expanded

Engineering Innovation Fellowship Program (ASEE)

NSF GRF Benefits

Portable to graduate institutions in US or abroad

Flexible - your choice of project, advisor, department

No service requirement (national lab or military)

2,000 new awards expected for 2012 competition

Honorable Mention for meritorious applications

(includes Cyberinfrastructure resources)

*Specific considerations to support underrepresented populations

No concurrent federal fellowship support

GRF Eligibility Criteria

Academic level

- Level 1 - Seniors, baccalaureates with no graduate study
- Level 2 - First-year graduate students
- Level 3 - Second-year grad students (12 months of graduate study or less by Aug 31 prior to submission)
- Level 4 - >12 months graduate study - change in field

Citizenship

- U.S. Citizen, National or Permanent Resident

Discipline

- Research-based Masters or PhD in NSF-Supported Field of study

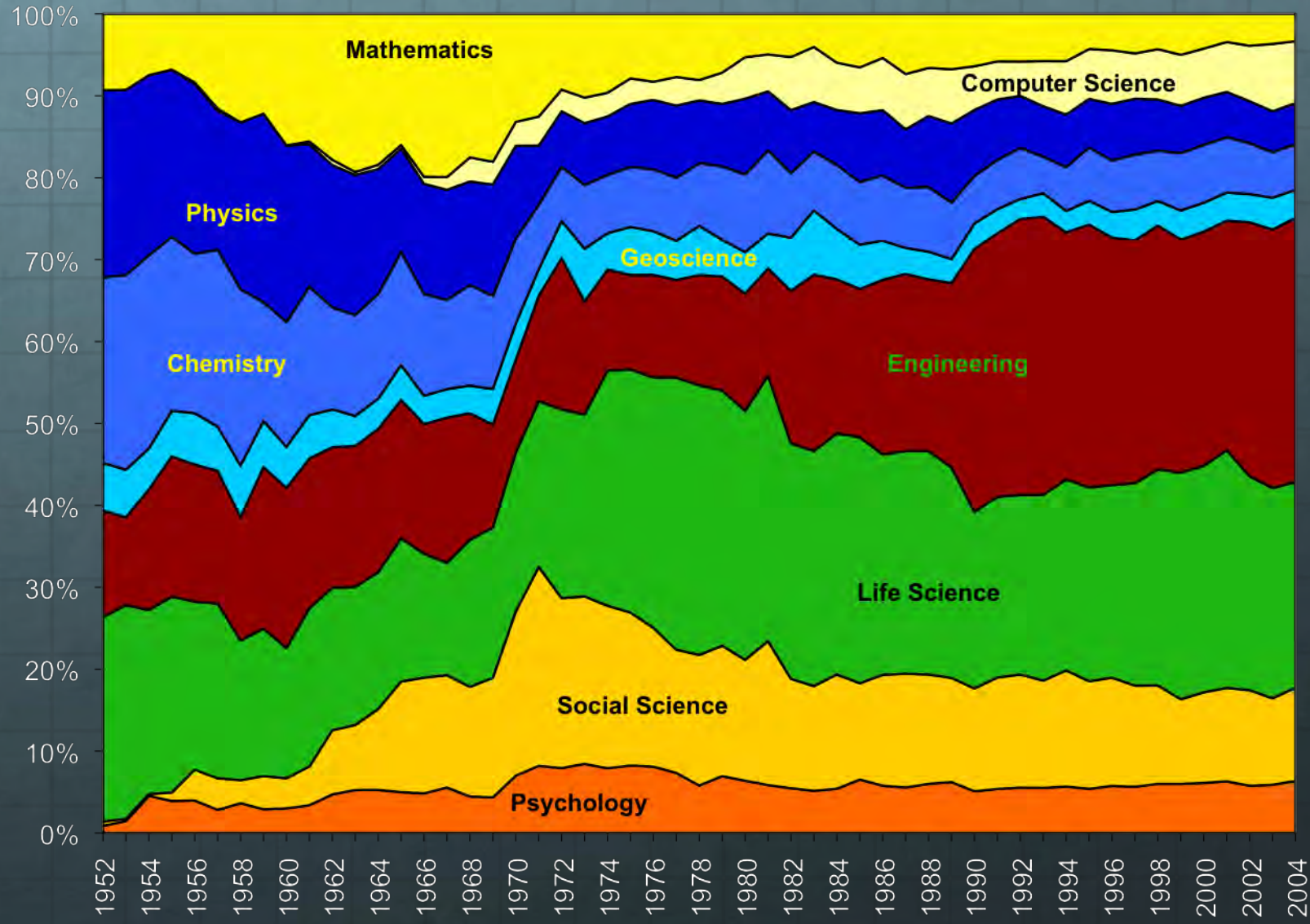
NSF-Supported Disciplines

- Chemistry
- Computer and Information Science and Engineering
- Engineering
- Geosciences
- Life Sciences
- Mathematical Sciences
- Physics and Astronomy
- Psychology (non-clinical)
- Social Sciences (non-clinical)
- STEM Education

Some Areas Not Supported

- Clinical work
- Counseling
- Business
- Management
- Social work
- Practice-oriented professional degree programs
- Joint science-professional degree programs (MD/PhD and JD/PhD)
- Medical, dental, law, or public health programs

Changes in Disciplinary Distribution



Intellectual Merit Criterion

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?

- Academic performance & background (grades, curricula, GRE)
- Awards/honors
- Communication skills
- Research experience
- International experience
- Independence/creativity
- Publications/presentations
- Research plan
- Choice of institution
- References

Broader Impacts Criterion

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?

- Prior accomplishments
- Community outreach
- Impact on society and connectivity
- Future plans
- Leadership potential
- Individual experiences
- Integration of research and education
- Potential to communicate to diverse audiences

Application Materials
GRFP FastLane

Personal Statement Essay (2 pgs incl figs)

Previous Research Experience Essay (2 pgs incl figs)

Proposed Plan of Research Essay (2 pgs incl figs)

Completed Graduate Study Essay (For Level 4)

Three Letters of Reference

Transcripts

(GRE Scores NOT ACCEPTED!)

Personal Essay

Two pages—often the hardest thing to write

Make certain to discuss:

- Your motivation for research and choice of field
- Examples of leadership skills and unique characteristics you bring (avoid arrogance)
- How the GRFP will assist you with career goals

Opportunity for evaluators to see you as a person

Opportunity to respond to broader impact merit criterion

Previous Research Essay

Emphasize experience relevant to your proposal but include all examples of “research”, even if not in field

List experience with hypothesis formulation and testing, experimental design, data management and analysis, interpretation of results, dissemination of findings

Highlight what you did (independence) but discuss collaborators (teamwork) and leadership

List any publications, posters, presentations, prizes, awards, grants, special recognition, etc.

Proposed Research Essay

Introduce general theory/area of study and importance - a few references will demonstrate understanding of field

Describe your motivation to go into that area

Discuss plans to prepare for that field of study - mention school(s), degree programs, potential advisor, etc.

Spell out specific details of your research and study plan but avoid jargon, specific experimental details, etc.

Comment on the broader impacts of your activities

Let the reader know of your career plans, even if tentative

Demonstrate flexibility (“plan B”)

Letters of Reference

Three required - should know you as scientist and person

Will compare you with NSF Graduate Research Fellows & other successful students they have known based on: potential to make unique contributions to discipline; ability to conduct original research; leadership potential; productive member of scientific community; originality of plan of study

Will state their role in assisting with the application

Provide referees sufficient time; share application materials with them; ask for advice

Track letters on FastLane - remind referees about deadline

Panel Review of Applications

Evaluated by Level, no limit on numbers from each Level.

Long term success: Level 1>Level 2>Level 3>Level 4.

Panelists are experts in general field; *may not* be experts in your specific research specialty - avoid jargon

Evaluated by 2 panelists, additional review for top applications - scored, then ranked by avg. of scores

Panelists complete rating sheet on intellectual merit and broader impacts criteria highlighting strengths and areas for improvement - provided to eligible applicants

NSF uses ranking and other factors (e.g., URM) to determine awardees and honorable mention

Contact Information

NSF GRF description, solicitation (08-593), and links:

http://www.nsf.gov/grfp/

Online Application, User Guides, and Official Announcements:

http://www.fastlane.nsf.gov/grfp/

Operations Center, Outreach, Helpdesk:

http://www.nsfgrfp.org

866-NSF-GRFP (673-4737) help@nsfgrfp.org