



Funding Opportunities at NSF

Biological Sciences

Lucy C. Robinson
LSU Health Sciences Center- Shreveport

Presentation adapted from
Joyce Fernandes
Division of Biological Infrastructure

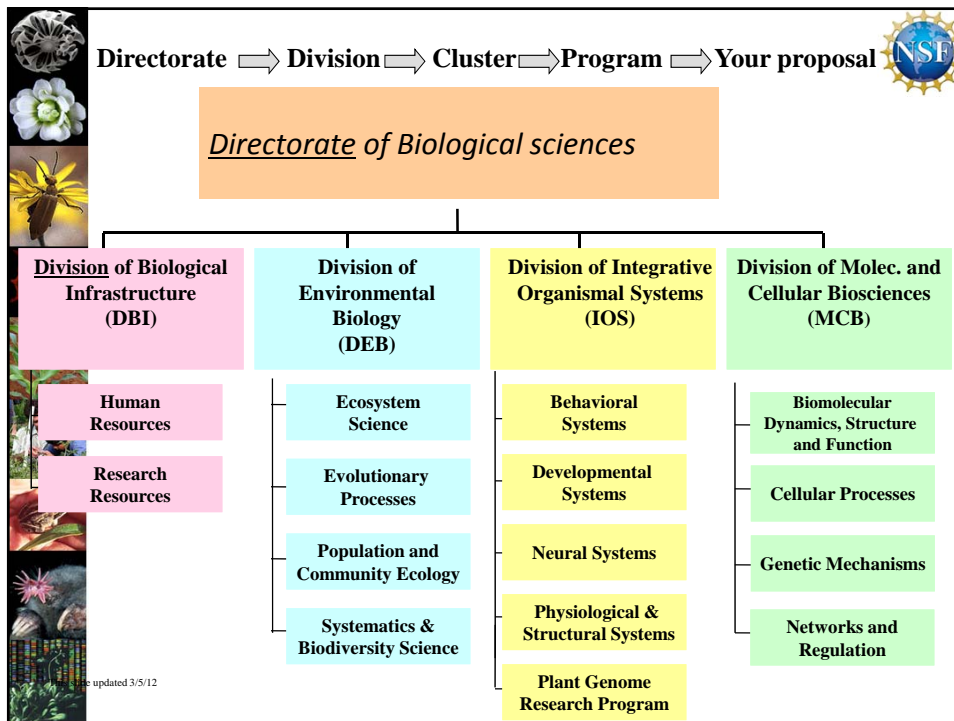


OUTLINE

- ✦ Overview of the NSF and the BIO Directorate
- ✦ Programs across the BIO directorate and NSF
- ✦ Types of Awards
- ✦ Navigating the NSF site- finding funding opportunities, using award databases, contacting your program officer
- ✦ NSF merit review criteria and the proposal review process
- ✦ More information, and keeping up to date

NSF vs NIH

	NSF	NIH
Research Mission	Basic Research	Biomedical
Award types	Research Grants	Research Grants
	Graduate Fellowships	Training Grants
	Post doctoral (limited)	Graduate Fellowships
	Exploratory	Post-doctoral
	Instrumentation	Exploratory / R21
	Education	Instrumentation
	RUI, REU	Education
		AREA
Deadlines	once a year	3 times a year
Review Criteria	Intellectual Merit	Significance
	Broader Impact	Investigator(s)
	<i>Additional Criteria</i>	Innovation
		Approach
		Environment
		<i>Additional Criteria</i>





Types of NSF Awards

✦ (Individual) Research Awards

- ✦ Faculty: Regular awards, CAREER
- ✦ Post-docs: Emphasis areas
- ✦ Graduate Students: Graduate Research Fellowships

✦ (Institutional) Awards

- ✦ Research Instrumentation
- ✦ Research Experiences for Undergraduates

✦ Supplemental Awards

- ✦ Research Experiences for Teachers
- ✦ Research experiences for High School Students
- ✦ Research Opportunity Awards



Types of awards in BIO

✦ Graduate Research Fellowships

✦ Post-doctoral Research Fellowships

✦ Investigator-initiated research awards

- ✦ Regular research grants, RUI, REU
- ✦ CAREER Faculty Early Career Development Program
- ✦ Research at Undergraduate Institutions

✦ Supplements to research awards

- ✦ RAHSS: Research Assistantships for high school students (broadening participation)
- ✦ Research Experiences for Teachers; Research Experience for Undergraduates



Graduate Research Fellowships



http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5444



NSF GRADUATE RESEARCH FELLOWSHIP PROGRAM (GRFP)

GRFP Application Period Now Open

The NSF Graduate Research Fellowship Program (GRFP) application period is now open! NSF is soliciting applications for the GRFP until the posted deadlines in early November 2013. Since 1952, GRFP has provided Fellowships to individuals selected early in their graduate careers based on their demonstrated potential for significant achievements in science and engineering. Three years of support is provided by the program for graduate study that is in a field within NSF's mission and leads to a research-based master's or doctoral degree. The NSF expects to award 2,700 Graduate Research Fellowships under this program solicitation pending availability of funds.

CONTACTS

The Graduate Research Fellowship Operations Center is responsible for processing applications and responding to requests for information. General inquiries regarding the Graduate Research Fellowship Program should be made to:

Graduate Research Fellowship Operations Center, telephone: 866-NSF-GRFP, 866-673-4737 (toll-free from the US and Canada) or 202-331-3542 (international), email: info@nsfgrfp.org

PROGRAM GUIDELINES

Solicitation 13-584

SYNOPSIS

The purpose of the NSF Graduate Research Fellowship Program (GRFP) is to help ensure the vitality and diversity of the scientific and engineering workforce of the United States. The program recognizes and supports outstanding graduate students who are pursuing research-based master's and doctoral degrees in fields within NSF's mission. The GRFP provides three years of support for the graduate education of individuals who have demonstrated their potential for significant achievements in science and engineering research.

EDUCATIONAL OPPORTUNITY

This program provides educational opportunities for Undergraduate Students, Graduate Students. Individuals interested in applying for funding should see the program guidelines above.

- Stipend (~32K/yr) + tuition
- Across all fields supported by NSF; specific areas emphasized, e.g., informatics recently added
- Only US citizens or permanent residents
- New announcement coming out soon - will not be very different



Post-doctoral Research Fellowships



http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503622



Directorate for Biological Sciences

POSTDOCTORAL RESEARCH FELLOWSHIPS IN BIOLOGY (PRFB)

CONTACTS

Name	Email	Phone	Room
Carter Kimsey	bio-dbi-prfb@nsf.gov	(703) 292-7170	
Diane J. Okamura	dbipgr@nsf.gov	(703) 292-4400	

PROGRAM GUIDELINES

Solicitation 12-497

SYNOPSIS

The Directorate for Biological Sciences (BIO) awards Postdoctoral Research Fellowships in Biology to recent recipients of the doctoral degree for research and training in *selected* areas supported by BIO and with special goals for human resource development in biology. The fellowships encourage independence at an early stage of the research career to permit Fellows to pursue their research and training goals in the most appropriate research locations regardless of the availability of funding for the Fellows at that site. For FY 2013, these BIO programs are (1) *Broadening Participation in Biology*; (2) *Intersections of Biology and Mathematical and Physical Sciences and Engineering*; (3) *National Plant Genome Initiative Postdoctoral Research Fellowships*; and (4) *International Postdoctoral Research Fellowships in Biology*. These areas change periodically as new scientific and infrastructure opportunities present themselves. For this reason, this solicitation will be changed as necessary to reflect the areas being funded.

The fellowships are also designed to provide active mentoring of the Fellows by the sponsoring scientists who will benefit from having these talented young scientists in their research groups. The research and training plan of each fellowship must address important scientific questions within the scope of the BIO Directorate and the specific guidelines in this fellowship program solicitation. International and teaching options are also offered. Because the fellowships are offered only to postdoctoral scientists early in their careers, NSF encourages doctoral advisors to discuss the availability of these postdoctoral fellowships in biology with their graduate students early in their doctoral programs. Fellowships are awards to individuals, not institutions, and are administered by the Fellows.

EDUCATIONAL OPPORTUNITY

This program provides educational opportunities for Postdoctoral Fellows. Individuals interested in applying for funding should see the program guidelines above.

- Small program (60-80 awards per year)
- Salary plus research allowance
- Applications must fit an area of emphasis: always broadening participation, plant genome, international experience; new 4th area to be announced for 2014 fall deadline



Latest publication from MCB for investigator-initiated proposals

nsf13-510



Faculty Early Career Development Program (CAREER)

- supports teacher-scholars who will become the academic leaders of the 21st century
- supports plans that effectively integrate research and education
- BIO minimum of \$100,000 / year for 5 years
- No Pre-proposal; due on July's CAREER deadline



Identifying Relevant NSF Programs: *Web Search, Contact a Program Director*

- ✦ What is the “intellectual center of gravity” in my project?
 - ✦ Population, Community, Ecosystem Structure, Dynamics?
 - ✦ Structure and Function of Organisms?
 - ✦ Molecular and Cellular Structures and Processes
 - ✦ Research Infrastructure, Human Resources
- ✦ Examine the websites of the relevant division(s)
 - ✦ Try to identify more than one relevant programmatic Cluster
 - ✦ Contact one of the listed Program Directors to ask about the relevance of your project to their program focus
- ✦ ***Get feedback from your colleagues on your ideas and text!!!!***



MCB funds yeast research

- ✦ Cellular Dynamics and Function
- ✦ Genetic Mechanisms
- ✦ Molecular Biophysics
- ✦ Systems and Synthetic Biology



MCB web page provides program emphasis guidance



http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503626

- ✦ The Division of Molecular and Cellular Biosciences (MCB) supports quantitative, predictive, and theory-driven fundamental research and related activities designed to promote understanding of complex living systems at the molecular, subcellular, and cellular levels. MCB is soliciting proposals for hypothesis-driven and discovery research and related activities in four core clusters:
 - ✦ Molecular Biophysics
 - ✦ Cellular Dynamics and Function
 - ✦ Genetic Mechanisms
 - ✦ Systems and Synthetic Biology
- ✦ MCB gives high priority to research projects that use theory, methods, and technologies from physical sciences, mathematics, computational sciences, and engineering to address major biological questions. Research supported by MCB uses a range of experimental approaches--including in vivo, in vitro and in silico strategies--and a broad spectrum of model and non-model organisms, especially microbes and plants. Typical research supported by MCB integrates theory and experimentation. Projects that address the emerging areas of multi-scale integration, molecular and cellular evolution, quantitative prediction of phenotype from genomic information, and development of methods and resources are particularly welcome.



Recent award titles can be helpful



- ✦ <http://www.nsf.gov/awardsearch/advancedSearchResult?ProgEleCode=1112,1114,1144,8011&BooleanElement=ANY&BooleanRef=ANY&ActiveAwards=true&>



Important notes about proposal preparation-format differs from NIH applications

SUMMARY

Overview, Intellectual merit, Broader Impacts

PROJECT DESCRIPTION

Align with program solicitation guidelines

DATA MANAGEMENT PLAN

Storage, Access, Sharing

POST-DOC MENTORING PLAN

Tailor to the individual

Grant Proposal Guide

http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg



NSF Review Process





NSF Review process

- Review Panels composed of scientists with broad range of expertise (~ 15-20/panel)
- Non-standing panel
- Ad hoc reviews requested from outside the panel; written reviews only
- Panel considers panelist reviews (2-3) plus ad hoc reviews (2-5)
- Each submission is considered new- no official resubmission



NSF Merit Review Criteria

Established by the National Science Board

Intellectual Merit: The Intellectual Merit criterion encompasses the potential to advance knowledge; and

Broader Impacts: The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.



Evaluation of Merit



1. What is the potential to advance knowledge and understanding? Benefit society or advance desired societal outcomes?
2. Does the project explore creative, original, or potentially transformative concepts?
3. Plan: well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success? For post-doctoral proposals, training potential?
4. Qualifications of the individual, team, or organization? For graduate and post-doctoral proposals, mentoring component here (required section for mentor in post-doctoral proposals)
5. Are resources adequate?



BIO Directorate- Updates




The screenshot shows the NSF BIO website with a navigation bar (BIO HOME, BIO FUNDING, BIO AWARDS, BIO DISCOVERIES, BIO NEWS) and a main content area with several news items and a sidebar with links to various programs and resources.


www.nsf.gov
Search
organization list


GOOGLE

Now on Twitter! http://twitter.com/NSF_BIO



Dear Colleague Letters





National Science Foundation
WHERE DISCOVERIES BEGIN

QUICK LINKS

SEARCH

HOME | FUNDING | AWARDS | DISCOVERIES | NEWS | PUBLICATIONS | STATISTICS | ABOUT NSF | FASTLANE

NSF 14-044

Dear Colleague Letter: BRAIN EAGERS to Enable Innovative Neurotechnologies to Reveal the Functional and Emergent Properties of Neural Circuits Underlying Behavior and Cognition


Date: March 7, 2014

The National Science Foundation (NSF) is a partner in President Obama's "Brain Research Accelerated by Innovative Neurotechnologies" ("BRAIN") Initiative. As part of a broader range of activities related to the BRAIN Initiative, the Divisions of Integrative Organismal Systems (IOS) and Biological Infrastructure (DBI) in the Biological Sciences Directorate (BIO) seek Early Concept Grants for Exploratory Research (EAGER) proposals with the potential to transform our ability to analyze brain function underlying behavioral and cognitive processes.


NSF's interests lie in highly innovative projects in their early stages that utilize new and untested but potentially groundbreaking approaches and neurotechnologies that bridge multiple spatial, temporal, and organizational scales to provide fundamental insights into the emergent properties of neural circuitry that ultimately lead to behavior and cognition.

Behavior derives from the emergent properties of a large collection of overlapping neural circuits. A primary challenge in neuroscience is that these circuits incorporate neuronal activity at a variety of spatial and temporal scales. Additionally, circuit plasticity and temporal dynamics occur over time-scales significantly longer than the proximate behavior. Identification of relevant neural ensembles underlying cognitive behaviors thus requires new neurotechnologies, including new reagents, instrumentation, analytic tools, modeling techniques and theoretical frameworks.

This Dear Colleague Letter is aimed at identifying opportunities to leverage and synthesize technological and conceptual innovation across disciplines and scales to accelerate progress toward an integrated understanding of neural circuits in behavior and cognition, or more simply "catching circuits in action". The neuroscience research community and specialists in other areas including, but not limited to genetics, physiology, synthetic biology, engineering, physics, mathematics, statistics, behavior and cognition are encouraged to work across disciplines to develop new approaches and neurotechnology focused on understanding the properties of circuits that underlie behavior and/or cognition in any organism. Projects that take advantage of existing DBI investments in informatics, computing and other infrastructure, such as the Neuroscience Gateway, in novel ways are also eligible.




Sign up to get emails!



nsf.gov - National Science Foundation - US National Science Foundation (NSF) - Internet Explorer Provided by National Science F

http://www.nsf.gov/



Navigating NIH funding

Sue Biggins

sbiggins@fhcrc.org

Full Member, Division of Basic Sciences
Fred Hutchinson Cancer Research Center
Member, NIH NCSD study section

Yeast Genetics Meeting 2014 Bootcamp

Lorette Javois, Ph.D.

National Institutes of Health

Eunice Kennedy Shriver National

Institute of Child Health and Human

Development (NICHD)

JavoisL@mail.nih.gov

301-792-7664 (mobile)

The National Institutes of Health

NIH's mission is to seek fundamental **knowledge** about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce the burdens of illness and disability.

*Seek other funding sources if you cannot make your work broadly relevant to health

NIH Grant Mechanisms (aka Activity Codes)

- R21: Exploratory/Developmental Research Grants
- R03: Small Grants
- R15: Academic Research Enhancement Awards [AREA awards]
- R01: Traditional Research Project Grants
- P01: Program Project Grants
- Supplement Programs (Diversity, Administrative, and Competitive Revisions)
- And others...F's (fellowships), K's (mentored career development)

NIH grants for pre and post-docs

Pre-doctoral:

F31

The purpose of the Ruth L. Kirschstein National Research Service Award (NRSA) Individual Predoctoral Fellowship (Parent F31) is to enable promising predoctoral students to obtain individualized, mentored research training from outstanding faculty sponsors while conducting dissertation research.

Post-doctoral:

F32

The purpose of the Ruth L. Kirschstein National Research Service Award (NRSA) Individual Postdoctoral Fellowship (Parent F32) is to support promising applicants during their mentored postdoctoral training under the guidance of outstanding faculty sponsors. The integrated program of research and training should enhance the individual's potential to develop into a productive, independent researcher.

K99/R00 pathway to independence Award

Purpose of the Award

- Increases and maintains a strong cohort of new and talented NIH-supported independent investigators

- Facilitates a timely transition from a mentored intramural or extramural postdoctoral research position to a stable independent extramural research position with independent NIH or other independent research support at an early stage

- Provides opportunity for promising postdoctoral scientists to receive both mentored and independent research support from the same award

Other funding sources for pre- and post-docs

Pre-doctoral:

NSF

American Heart Association

Department of Defense

HHMI

Post-doctoral:

American Heart Association

Jane Coffin Childs

Damon Runyon

Helen Hay Whitney

Leukemia and Lymphoma

ACS

Life Sciences

Susan Komen

*Many require US
residency or citizenship

Websites list funding opportunities

http://sciencecareers.sciencemag.org/tools_tips/how_to_series/how_to_get_funding

The National Institutes of Health



27 different Institutes and Offices

- Illness-specific: cancer, allergy
- Organ-specific: heart/lung, CF
- Other: aging, genome, nursing, minority health, child health, environmental health sciences

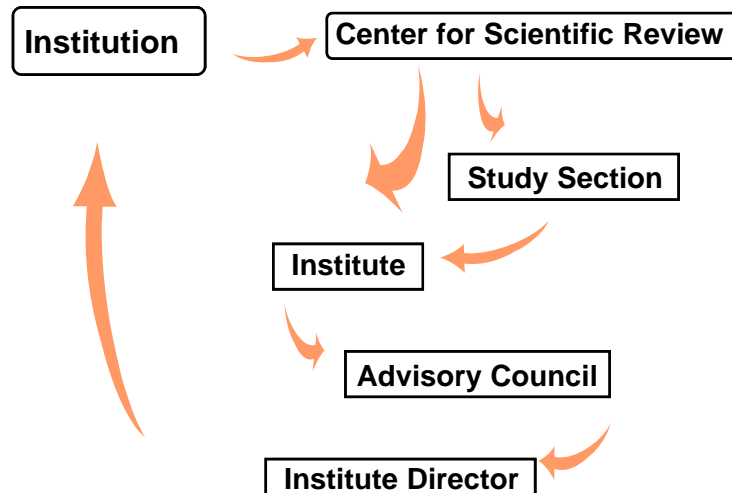
*Most yeast work will be funded by GM (general medicine)

What You Need to Know

Policies and operating structures vary across the different Institutes

- Become familiar with the NIH website
- Talk with a Program Officer
 - advice on best Institute for your science
 - assistance in navigating the NIH
 - suggestions for appropriate funding mechanisms

How Does the Process Work?



What is a Program Officer?

- a scientist and an administrator who works for an NIH IC
- manages grants, contracts, cooperative agreements
- identifies needs in scientific areas of special interest and works to fulfill needs
- monitors research progress
- *advocates for the best science*

What is a Scientific Review Officer?

- a scientist and an administrator who works for CSR or an IC
- manages the review of grants, contracts, cooperative agreements
- Appoints members to initial review groups/study sections/special emphasis panels
- Prepares summary statements

What is a study section?

- *group of experts in an area (about 20 people)
- *3 members are assigned to review an application
- *members usually rank-order their grants
- *critiques and preliminary scores submitted before meeting
- *members meet to discuss and prioritize grants (usually top 50% are discussed)
- *final scores and critiques decided at the meeting

What are the criteria assessed?

- *fellowship applicant
- *sponsors, consultants, collaborators
- *research training plan
- *vertebrate animals
- *biohazards

What are the scores?

- 1-3, high impact
- 3-6, medium impact
- 6-9, low impact

What are the keys to getting good scores?

- *research plan must be solid- the science should be done
- *Training plan is key- you must have a good one
 - be detailed and specific (list courses, etc)
 - state you are taking ethics training, not just that it is available
- *For K99 grants, needs to convince them that you need additional training- it is not a reward for doing well
 - learn a new technique or switch organisms, etc.

Additional Tips

- *apply earlier than later
 - typical post-doc fellowships are 3 years, so they will reduce the # of years if you get award later
- *Many private post-doctoral fellowships require that you apply in first year
- *Don't forget that your application needs to be submitted by OSR (office of sponsored research)

Post-Review Strategies

- **Contact your PO**
 - POs do not see the written reviews until they are released to you
 - POs often hear the discussion, but aren't necessarily willing to talk until the summary statement is released
- **PO input on resubmission**
 - Was there anything brought up or emphasized in discussion that is not apparent in the written reviews?
 - Resubmission timing and responding to reviews
 - Is more preliminary data needed?
 - Which concerns should be addressed by changes and which by further explication?
 - Many POs are willing to read your Introduction (response to reviews) and new specific aims page

Funding Recommendation Process

- **Scores/percentiles are important, but not the only thing**
 - NIH program staff examine applications, overall impact scores, percentile rankings (if applicable) and summary statements - consider these against the IC's needs
 - Program relevance, portfolio balance, New PI status, and many other factors involved
- **Funding recommendations are made by POs, Branches and Divisions, and finally by the IC Director**
 - The Advisory Board/Council also considers the IC's goals and needs and advises the IC director
 - Council does not make funding plans, although at some IC's they review them in detail

How to Find Programs/Program Officers

Through the Institute/Center websites:

- "About Us" "Organization"
- "Extramural Research Programs"
- "Offices, Divisions, Branches"

NIH RePORTer

<http://report.nih.gov/index.aspx>

- Abstract and Aims
- Funding Institute/Center
- Program Officer contact information

How Else to Find a Program Officer

- Look at list of Scientific/Research Contact(s) on Funding Opportunity Announcements (FOAs)
- NIH POs from different ICs work together on many Trans-NIH committees and initiatives

Start somewhere (contact Lorette!)
She will get you to the right person

What to ask a Program Officer

- Is your IC interested in this type of research?
- Are there any open FOAs for this topic?
- Does your IC use the mechanism I'd like to use?
- Can you help me determine the most appropriate study section?

A Word about Review Groups

- Assignment to an IC and a review group are separate processes
- Assignments are made by Division of Receipt and Referral (DRR) at the Center for Scientific Review (CSR)
 - **Cover letter:** Requests for IC (name PO) and Study Section assignment are generally honored
- Descriptions and rosters of standing study sections are on the CSR website

International Funding Sources

(i.e., for research outside the US or non-US citizens)

European Research Council (ERC) <http://erc.europa.eu/funding-schemes>

ERC grants support individual, independent researchers of any nationality and age. The ERC encourages in particular proposals that cross disciplinary boundaries, pioneering ideas that address new and emerging fields and applications that introduce unconventional, innovative approaches.

EMBO Fellowships (Short-Term Fellowships fund research visits of up to three months to laboratories in Europe and elsewhere in the world; Long-term Fellowships promote international exchange and support post-doctoral research visits of up to two years to laboratories throughout Europe and the world): <http://www.embo.org/funding-awards/fellowships>

Human Frontier Science Program (HFSP) <http://www.hfsp.org/funding>

HFSP postdoctoral fellowships encourage early career scientists to broaden their research skills by moving into new areas of study while working in a new country. The Career Development Award (CDA) funds HFSP fellows who return to their home country or move to an HFSP member country to establish their independent laboratory.

German Academic Exchange Service (DAAD) <https://www.daad.de/deutschland/en/>

Several funding opportunities for foreigners wishing to do research in Germany and for Germans wishing to do research abroad.

Deutsche Forschungsgemeinschaft (DFG; German Research Foundation)

http://www.dfg.de/en/research_funding/programmes/index.jsp

Several funding programmes and prizes for researchers at varying stages.

Alexander von Humboldt Foundation (postdocs, early-career researchers, PIs; varying lengths/amounts for research or collaboration in Germany):

<http://www.humboldt-foundation.de/web/programmes-by-target-group.html>

Boehringer-Ingelheim Fonds (PhD fellowships and travel grants for training for Europeans to work anywhere, or for non-Europeans to work in Europe)

<http://www.bifonds.de/fellowships-grants/our-programmes.html>

European Commission funding opportunities

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/index.html>

Beginner's Guide to EU Funding (free download):

<http://bookshop.europa.eu/en/beginners-guide-to-eu-funding-pbKV3111332/>

Marie Curie Fellowships (PhD and postdoctoral, both European and global):

http://ec.europa.eu/research/mariecurieactions/about-msca/quick-guide/index_en.htm

U.S. government internship and fellowship opportunities for graduate students and postdoctoral fellows (N.B. some may be only for US citizens)

<https://www.science.gov/internships/graduate.html>

National Science and Engineering Research Council of Canada (NSERC)

http://www.nserc-crsng.gc.ca/Students-Etudiants/index_eng.asp

NSERC offers scholarships and fellowships for every stage of study, from undergraduate to postdoctoral.

Canadian Institutes of Health Research (CIHR) <http://www.cihr-irsc.gc.ca/e/37788.html>