

Research Funding Service

206-685-8036 rfs@u.washington.edu <http://healthlinks.washington.edu/rfs/>

NATIONAL INSTITUTES OF HEALTH

The National Institutes of Health (NIH) are charged with promoting the physical and mental health of Americans. They are administered under the Public Health Service of the U.S. Department of Health and Human Services.

THIS HANDOUT CAN HELP YOU:

- Identify which Institute(s) will be interested in your research or research training.
- Identify the scientific program officer(s) who manages the program(s) most likely to fund your research training and advise you on preparing your application.
- Understand which funding mechanisms you are eligible for.
- Identify which program announcements your work will be responsive to.
- Learn what grants are already funded with a focus similar to your own, which Institutes have funded them, and what Study Section reviewed the proposal.
- Identify the Study Section you believe should review and score your application, and make note of its Scientific Review Administrator.

In addition to exploring information specific to NIH, it is a good idea to

- Write a brief, concise abstract of your research plan.
- Describe your research plan: its preliminary findings, significance, aims, rationale, methods, and expected results.
- Think about what you would like to discuss with NIH Program Officers before writing your proposal.
- Find out what resources are available to you. What are your colleagues' experience in grant writing and proposal review? Mentoring and research collaboration? What research equipment or services are available to you?

NIH INSTITUTES AND CENTERS

Link to each Institute or Center Homepage from <http://www.nih.gov/icd/>

National Cancer Institute (NCI)
National Eye Institute (NEI)
National Heart, Lung, and Blood Institute (NHLBI)
National Human Genome Research Institute (NHGRI)
National Institute on Aging (NIA)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)
National Institute of Allergy and Infectious Diseases (NIAID)
National Institute on Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
National Institute of Biomedical Imaging and Bioengineering (NIBIB)
National Institute of Child Health and Human Development (NICHD)
National Institute on Deafness and Other Communication Disorders (NIDCD)
National Institute of Dental and Craniofacial Research (NIDCR)
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
National Institute on Drug Abuse (NIDA)
National Institute of Environmental Health Sciences (NIEHS)
National Institute of General Medical Sciences (NIGMS)
National Institute of Mental Health (NIMH)
National Institute of Neurological Disorders and Stroke (NINDS)
National Institute of Nursing Research (NINR)
National Library of Medicine (NLM)
John E. Fogarty International Center
National Center for Complementary and Alternative Medicine (NCCAM)
National Center for Research Resources (NCRR)

AWARD MECHANISMS

It is important to know which NIH award mechanism(s) you are eligible for and what kinds of awards will suit your funding purpose. Listed below are selected mechanisms for postdoctoral research training and early career grants in the health sciences (<http://grants1.nih.gov/training/extramural.htm>), followed by a list of the most popular research (R) award mechanisms.

Ruth L. Kirschstein
National Research Service Awards
(Individual Postdoctoral Fellowships)
<http://grants2.nih.gov/training/nrsa.htm>

NRSAs (F32) provide an individual stipend for supervised postdoctoral training in biomedical or behavioral research. The grant is awarded for one, two, or three years with stipend based on years of postdoctoral experience (0 to 7+ years past the Ph.D., M.D. or equivalent degree). For more information see <http://grants1.nih.gov/grants/guide/pa-files/PA-03-067.html>

Application kit available at <http://grants1.nih.gov/grants/forms.htm#applications>

Deadlines are April 5, August 5, and December 5. Three letters of recommendation are required.

Career Development Awards
K Kiosk:
<http://grants1.nih.gov/training/careerdevelopmentawards.htm>

Career Development Awards support physicians, clinicians, and Ph.D.s who seek training for research independence, curriculum development, or to support ongoing research of senior scientists. Career Awards generally cover three to five years of salary ranging up to \$75,000 annually. The annual receipt dates are February 1, June 1, and October 1. It is **strongly recommended** that you call the Institute or Center of interest, as K Awards vary considerably between units at NIH. The following are the most common Career Award mechanisms:

Mentored Research Scientist Development Awards (K01) are generally reserved for those interested in switching to a new research field; those whose careers have been interrupted due to illness or pressing family responsibilities; and faculty at minority institutions who seek research independence. The K01 offers postdoctoral researchers an additional period of sponsored research experience, and enables training in an area new to the applicant or that will further develop the applicant's scientific career. The sponsoring institute determines the salary.

Independent Scientist Awards (K02) support newly

independent scientists with a need for a period of intensive research focus that will promote their research careers. The aim is to foster the development of outstanding scientists and boost their potential for making significant contributions to the field. The candidate must have peer-reviewed, independent research support at the time the award is made.

Mentored Clinical Scientist Development Awards (K08) are an investment in the development of outstanding clinician researchers. The clinician undertakes specialized study on a research topic that has intrinsic research importance and sufficient scope for learning the methodology, theories, and concepts needed for research independence. This mentored award supports specialized study for a three, four or five year period. In most cases, this is for lab or bench research.

Mentored Patient-Oriented Research Career Development Awards (K23) encourage the career development of investigators who will focus their patient-oriented research in an area involving (a) mechanisms of human disease, (b) therapeutic interventions, (c) clinical trials, or (d) development of new technologies.

Midcareer Investigator Award in Patient-Oriented Research (K24) provide support for clinicians to allow protected time for patient-oriented research and to act as mentors for beginning clinical investigators.

Investigator-Initiated Research Awards

Small Research Grants (R03) provide pilot funding to test a new technique or gather data for an innovative, high-risk study that is likely to lead to a major research project. Applicants generally may request up to \$50,000 each year for one or two years. Not all institutes use this mechanism and may differ in how they use it.

<http://grants1.nih.gov/grants/guide/pa-files/PA-03-108.html>

Exploratory and Developmental Grants (R21) offer up to \$275,000 for up to two years, and serve as a funding source for novel research ideas with good potential for scientific significance.

<http://grants1.nih.gov/grants/guide/pa-files/PA-03-107.html>

Independent Research Project Grants (R01) are awarded for major research projects with a high likelihood for providing new scientific understandings and major contributions to the literature. Grant periods vary from three to five years and are renewable. The standard deadlines for unsolicited applications and ongoing Program Announcements are February 1, June 1 and October 1. (Deadlines differ for AIDS research.) Application deadlines for RFAs (Requests for Applications) vary by initiative.

NIH ON THE WEB

NIH Web Pages

The Research Funding Service web pages offer links for the most popular NIH sites (<http://healthlinks.washington.edu/rfs/nih.html>)

CRISP

<http://crisp.cit.nih.gov/>

One of the most useful tools for first-time researchers is the federal database known as CRISP. Here you'll find information about research funded by NIH and other federal agencies for the past 30 years. You'll first want to find out if your idea is unique. NIH by law can't fund a new project already funded or completed by someone else. Want to find out if anyone is doing your kind of research? You'll find out here. Want to identify potential Institutes to submit your proposal to? You'll find them here. Want to contact a colleague in your field? You'll find his/her name, abstracts, institution and email here. In short, CRISP is what you use to "scope out the competition." The information you learn here will help in your conversations with program officers and help strengthen your application.

The NIH Guide

Notices and Solicitations for grant applications are announced weekly in the NIH Guide for Grants and Contracts (<http://grants1.nih.gov/grants/guide/index.html>). Health scientists are encouraged to subscribe to a listserv for weekly email notification of the latest issue and its contents (<http://grants1.nih.gov/grants/guide/listserv.htm>)

Notices modify policy and procedure, while solicitations inform the scientific community of new research priorities or modify the scientific aims of ongoing programs.

Solicitations are offered in two forms:

Program Announcements (PAs) describe new research programs and update the scope of ongoing programs. Applicants whose work matches the scientific scope and research objectives of an ongoing program have some advantage when reviewed. This is a good place to find the names and contact information for program officers. (<http://www.nih.gov/icd/>).

Requests for Applications (RFAs) are one-time solicitations for applications that will be responsive to defined research objectives. Submission deadlines are specific to the RFA and awards are funded from a specified allocation. Scientific Review is done within the sponsoring Institute or Center.

Most applications to the NIH are not solicited. Many investigators become aware of NIH interests through NIH

Guide program announcements and talking with program officers.

APPLICATION AND REVIEW PROCESSES

The most frequent advice RFS gives to clients is to contact a program officer before you begin writing your proposal. Program Officers are themselves scientists who can answer questions and assist with early phases of the application process. They can support the preparation of an application, discuss what reviewers will look for, and advise on application format and content. Program Officers can, for example, recommend the appropriate Study Section for review, and comment on the potential interest of the NIH in the work to be proposed.

Standing advice from NIH Program Officers is

"...read the application instructions; write material that never assumes reviewers will know what you mean; refer to the literature thoroughly and thoughtfully; explicitly state the rationale of the proposed investigation; include well-designed figures and tables in the text; and present the reviewers with an organized, lucid write-up."

The UW requires internal review and approvals by routing the proposal with a GC-1, Request for Approval of Application for Grant or Contract. Once a grant is signed off on the GC-1 (see your department administrator), the grant proposal is sent to the **NIH Center for Scientific Review** where it is assigned for review and referred to a Program Officer at an Institute or Center. Here at the UW, the vast majority of P.I.'s submit their own grants. Other institutions handle this differently.

To enhance chances that the Referral Officer will assign your application to the desired Study Section, write your title and abstract to accurately capture the essence of your project and the methods you will use. Applicants may suggest in a cover letter which Institute (s) to assign their proposal to and potential Study Sections that they think have appropriate expertise to review the project.

REVIEW PROCESS

<http://www.csr.nih.gov/REVIEW/peerrev.htm>

1. Applications are received at the NIH Center for Scientific Review (CSR), date-stamped and logged into the NIH database.
2. Referral Officers assign grant to an Integrated Review Group (IRG) for subsequent assignment to one of the constituent Study Sections (SS) within the IRG and also to an Institute or Center for potential funding.
3. A unique application number is assigned to each application.

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4. Applicant receives a letter listing the Study Section and potential funding Institute.
5. Study Section members receive applications approximately six weeks before the Study Section meeting.
6. Typically, two or three members are assigned to provide written reviews of each application with one or two additional discussants. The Study Section membership is frequently supplemented by temporary members and written outside opinions.
7. Applicants may, **WITH PERMISSION**, submit supplementary materials well ahead of the Study Section meeting.
8. One week before the Study Section meets, the SRA solicits from all members a list of R01 applications believed to not rank in the top half for scientific merit. Those R01 applications in the lower half are “streamlined”. These are not discussed at the Study Section meeting but applicants do receive written critiques.
9. At the meeting, the assigned reviewers and discussants provide their evaluations and any outside opinions are read. After general discussion, members privately assign their priority scores.
10. Shortly after the meeting, computer generated priority scores and percentiles are mailed to applicants.
11. About six weeks after the meeting, written summary statements are sent to the applicants and to the appropriate NIH Institute for funding consideration. The SRA’s control over the review of those applications ends.
12. The second level of NIH peer review is conducted by the Institute Advisory Councils, which meet three to four months after the Study Section meetings to consider the Study Sections’ recommendations. Successful applicants receive funding several months later.

REVIEW CRITERIA

Scientific reviewers are instructed to score applications for R01, R03, and R21 grants according to five criteria:

- **Significance**-Does the work address an important problem? If the aims of the application are achieved, how will scientific knowledge be advanced? What will be the effect of these studies on the concepts or methods that drive this field?
- **Approach**-Are the conceptual framework, design, methods, and analyses adequately developed, well integrated, and appropriate to the aims of the project? Does the applicant acknowledge potential problem areas and consider alternative tactics?
- **Innovation**-Does the project employ novel concepts, approaches or methods? Are the aims original and innovative? Does the project challenge existing paradigms or develop new methodologies or technologies?
- **Investigator**-Is the investigator appropriately trained to carry out this work? Is the proposed work appropriate to the investigator’s experience?
- **Environment**-Does the scientific environment in which the work will be done contribute to the probability of success? Do the proposed experiments take advantage of unique features of the scientific environment or employ useful collaborative arrangements? Is there evidence of institutional support?

Other criteria include (a) the adequacy of plans for clinical studies to include both genders, minorities and children (where appropriate), (b) the equity of the proposed budget, and duration of the project in relation to the proposed work, (c) the adequacy of protection for humans, animals or the environment, as appropriate, and (d) scientific or budget overlap with existing NIH grants.

Full announcements in the NIH Guide for Grants and Contracts include discussions of scientific scope, research objectives, recommended study topics, application instructions, additional criteria of review, and the sponsoring Program Officer and Extramural Fiscal Manager who will oversee awards.

Remember, reviewers look for:

- Aims focused, not diffused
- Logical flow of the research plan
- Rationale for the methods chosen
- Research priorities clearly indicated
- Sufficient experimental detail
- Alternative approaches addressed
- Appropriate mechanism of award
- “Descriptive data gathering” avoided

LOCAL SUPPORT

Applicants are encouraged to have a person experienced in grant writing read and comment on their application. UW Health Sciences faculty are among the top contenders in the country for NIH funding. In addition to their roles as principal investigators, many have served locally as mentors and training directors, and nationally as NIH peer reviewers.

The Research Funding Service can also help. Check the RFS web site <http://healthlinks.washington.edu/rfs/> for more information on Grant\$ for Lunch programs, Grant Writing Workshops, Database Searching classes and our monthly Funding Bulletin.

For assistance in finding funding sources for your research project, meet with a funding consultant at the Research Funding Service in T-311 Health Sciences Library. Make an appointment by using our on-line consultation form at <http://healthlinks.washington.edu/rfs/forms/consult.html>

RFS Staff: Janet Rasey, Director; Martha Means, M.L., Research Consultant; Ramona Hensrude, Funding Consultant, Editor (206-685-8036; rfs@u.washington.edu).