

2006 Career Awards at the Scientific Interface

Bridging Support for Physical/Computational Scientists Entering Biology

Application Deadline: May 2, 2005

BURROUGHS
WELLCOME
FUND 

t 919.991.5100
f 919.991.5160

www.bwfund.org

Mailing Address:

Post Office Box 13901
Research Triangle Park, NC 27709-3901

Shipping Address:

21 T. W. Alexander Drive
Research Triangle Park, NC 27709

PROGRAM BACKGROUND

Advances in genomics, quantitative structural biology, and modeling of complex systems have created opportunities for an exciting research career at the interface between the physical/computational sciences and the biological sciences. Tackling key problems in biology will require scientists trained in areas such as chemistry, physics, applied mathematics, computer science, and engineering.

Recognizing the vital role such cross-trained scientists will play in furthering biomedical science, the Burroughs Wellcome Fund has developed Career Awards at the Scientific Interface. These grants are intended to foster the early career development of researchers with backgrounds in the physical/computational sciences whose work addresses biological questions and who are dedicated to pursuing a career in academic research.

Candidates are expected to draw from their training in a scientific field other than biology to propose innovative approaches to answer important questions in the biological sciences. Examples of approaches include, but are not limited to, physical measurement of biological phenomena, computer simulation of complex processes in physiological systems, mathematical modeling of self-organizing behavior; building probabilistic tools for medical diagnosis, developing novel imaging tools or biosensors, applying nanotechnology to manipulate cellular systems, predicting cellular responses to topological clues and mechanical forces, and developing a new conceptual understanding of the complexity of living organisms. Proposals that include experimental validation of theoretical models are particularly encouraged.

PROGRAM

Career Awards at the Scientific Interface provide \$500,000 over five years to support up to two years of advanced postdoctoral training and the first three years of a faculty appointment.

General Requirements

- During the postdoctoral and faculty periods, grants must be made to degree-granting institutions in the United States or Canada on behalf of the award recipient.
- The postdoctoral portion of the award should last a minimum of one and a maximum of two years, usually at the institution that nominates the candidate.
- Award recipients are required to devote at least 80 percent of their time to research-related activities.
- Indirect costs may not be charged against BWF grants.

Career Awards at the Scientific Interface provide the following levels of support:

Postdoctoral Period	Salary and Research	Administrative Fee	Annual Total
Year 1	\$75,000	\$5,000	\$80,000
Year 2	\$55,000	\$5,000	\$60,000
Faculty Period			
Year 1	\$110,000	\$10,000	\$120,000
Year 2	\$110,000	\$10,000	\$120,000
Year 3	\$110,000	\$10,000	\$120,000
Total			\$500,000

The Postdoctoral Portion of the Award

- Of the salary and research portion of the award, the maximum that can be used for the award recipient's salary is \$44,000 in year one and \$47,000 in year two. BWF expects that support must meet or exceed the NIH pay scale appropriate to the trainee's level of experience.
- Any equipment purchased by the award recipient is transferable to the institution providing the faculty appointment.
- Award recipients are encouraged to use funds for advanced course work in biology (at any institution) and should present a training plan in the proposal if they intend to use award funds for this purpose.
- If an award recipient moves to a faculty position in less than two years, the unpaid balance of the postdoctoral portion of the award will be added to the faculty portion of the award.

The Faculty Portion of the Award

- Most award recipients will accept a faculty position at a different institution.
- Before approving the faculty portion of the award, BWF requires the hiring institution to make a significant commitment to the award recipient's career development as represented by the financial and professional situation offered.
- BWF strongly prefers tenure-track faculty appointments, accompanied by salary support and support for starting up a laboratory.
- During the first year of the faculty period, the institution must provide at least 50 percent of the starting salary for the award recipient.
- Up to \$45,000 of BWF award funds may be used toward the award recipient's salary in the first faculty year. In years two and three of the faculty portion, the maximum amount that can be used for salary is \$49,000 and \$54,000 respectively.
- Award recipients must be given the opportunity to take an adjunct or joint appointment in a second department, if desired.

- The institution must name at least one tenured faculty member in a discipline complementary to the award recipient's primary discipline who is willing to serve as an active collaborator.
- If an award recipient chooses to accept a faculty position at a research institute, the research institute must be closely affiliated with a degree-granting institution, and the degree-granting institution must offer the award recipient a joint tenure track faculty position with some commitment to the award recipient.
- If the institutional commitment to the award recipient is deemed inadequate, BWF reserves the right to terminate the faculty portion of the grant.

Administration of the Award

- If an institution's salary scale for either the postdoctoral or faculty position exceeds the amounts provided by the award, then the institution must supplement the award recipient's salary. In many cases, the institution pays part or all of the award recipient's salary, enabling more of BWF's support to be allocated for research expenses.
- The administrative fee is paid to institutions to cover an award recipient's fringe benefits, such as health insurance, vacation, and retirement, so the award recipient will not experience a reduction in salary to compensate for benefits not provided by the institution.
- Institutions that pay for fringe benefits from their own funds may keep the fee as reimbursement for administering the award or reallocate the fee to the award recipient's research expenses.
- The balance of the award is to be used to cover research expenses, at the discretion of the award recipient. These funds may be used flexibly for items such as equipment, consumable supplies, travel to scientific meetings, or laboratory personnel.

The absolute deadline for receipt of all application materials by BWF is 4 p.m. EST on May 2, 2005. BWF will interview finalists. Candidates will be notified by the end of August about interviews, which will be conducted on October 5 or 6, 2005. The awards will be announced in early November and will begin in January 2006.

Consult BWF's website at www.bwffund.org for any program updates and lists of frequently asked questions.

GUIDELINES

Candidate Eligibility Guidelines

- Candidates must hold a Ph.D. degree in one of the fields of mathematics, physics, chemistry (physical, theoretical, or computational), computer science, statistics, or engineering. Exceptions will be made only if the applicant can demonstrate significant expertise in one of these areas, evidenced by publications or advanced course work.
- Candidates must have completed at least six months but not more than 48 months of postdoctoral research at the time of application. **No exceptions to this requirement will be made.**
- Candidates must not hold, have accepted, or be in serious negotiations for a faculty appointment as a tenure-track assistant professor at the time of application.
- Citizens of the United States and Canada are eligible.
- Non-citizen Permanent Residents are eligible but must provide a copy of their Alien Registration card (green card) for the United States, or their Landed Immigrant Status form for Canada. A color copy of an unexpired foreign passport with an I-551 stamp is also acceptable documentation.
- Temporary residents holding H1B visas are eligible. Candidates must, at the time of application, present evidence (a copy of the I-797A approval notice and I-94 form; the I-797C is not acceptable) that their original H1B visa was granted no earlier than January 1, 2003. In addition, the candidate's employer must submit a statement indicating a commitment to support extension of the candidate's H1B visa status until December 31, 2007 or until the candidate moves to a faculty position, whichever comes first. **Applicants with questions about their eligibility on the basis of immigration status must contact BWF in advance of the application deadline. BWF will make no exceptions to its policies.**
- Temporary residents with J-1 or pending H1B visa applications are **not eligible**. This requirement is firm.
- All candidates must be nominated by accredited, degree-granting institutions in the United States or Canada.
- The research proposal must address questions in any area of biomedical science. Research methods may include any combination of experiment, computation, mathematical modeling, statistical analysis, or computer simulation.

Institutional Nomination Guidelines

- A degree-granting institution—including its medical school, graduate schools, and all affiliated hospitals and research institutes—**may nominate up to two candidates for the award**. Institutions currently administering a BWF-supported Interfaces training program may nominate up to three candidates.
- **No more than one** of an institution's nominees may be a temporary resident of the United States or Canada. **No exceptions will be made.**
- **Please read carefully the guidelines for temporary residents stated in "Candidate Eligibility Guidelines" above. Institutions with questions about the eligibility of nominees, on the basis of immigration status, must contact BWF in advance of the application deadline. BWF will make no exceptions to its policies.**
- BWF encourages institutions to nominate women and members of underrepresented minority groups for the award. Institutions that nominate at least one African-American, Hispanic, or Native American candidate **may nominate up to three total candidates**.

- The U.S. National Institutes of Health may nominate up to two candidates from its intramural program. The NIH will support these award recipients during the post-doctoral years, and BWF will support them for the faculty portion of the award only, for a total of \$360,000. Postdoctoral fellows at the NIH should contact its Office of Intramural Studies for information about its nomination procedures.
- Questions regarding institutional eligibility should be directed in advance to BWF by calling (919) 991-5100.

SELECTION

The Interfaces Advisory Committee (listed on p. 6) will review all applications, interview finalists, and make recommendations for awards to the Fund's board of directors. Selection will be based on:

- Depth and rigor of training in a scientific discipline other than biology.
- Importance of biological questions identified in the proposal, and innovation in the approaches chosen to answer them.
- Interdisciplinary nature of research plan.
- Potential of candidate to establish a successful independent research career.
- Quality of proposed collaborations.

Candidates not selected may be renominated in the next award cycle, provided they still meet the eligibility requirements. BWF does not provide critiques of unfunded proposals.

APPLICATION INSTRUCTIONS

Candidates must be nominated by the dean or department chair at the degree-granting institution where they will take their postdoctoral training under the award. Applications must be approved by an official responsible for sponsored programs (generally from the grants office, office of research, or office of sponsored programs) at the degree-granting institution. Candidates should contact one of these offices for information about the nominating process at the institution.

Applications must be organized, in order, as follows:

1. Application Form

Forms should be obtained and filled out on-line (www.bwffund.org/apply.htm). If you do not have Internet access, you can obtain printed application forms by contacting BWF at (919) 991-5100. Once the forms have been completed, you must print them and have them signed by the sponsoring department chair or dean and the institutional official responsible for the sponsored program before submission. Mail one original completed and signed application form (and 16 copies) to BWF with your application package.

As noted above, candidates who are not citizens of the United States or Canada must provide documentation of their immigration status. See eligibility guidelines for exact requirements. Include a copy of the documentation after the application form. Candidates who are U.S. or Canadian citizens need not provide proof of citizenship.

2. Curriculum Vitae (no more than three pages)

When preparing your CV for this application, include only those items that are relevant to your qualifications for this award. Use the categories listed below as a general outline. Within each category, order all information from present to past. For education and postdoctoral training, provide the name and location of the institution, the dates of study or training, and degrees conferred.

- A. Name and position title
- B. Education
- C. Doctoral and postdoctoral research
- D. Grants and fellowships (include terms still in effect)
- E. Professional associations
- F. Honors
- G. Bibliography (papers published and in press)

3. Proposal Summary (one page)

Describe your proposed work and summarize past research. This abstract should be understandable by a multidisciplinary group of scientific reviewers and should include your name, the name of your nominating institution, and your project title.

4. Research Plan (no more than six pages, including figures)

In the order listed below, your plan should describe:

- A. Scope and significance of your postdoctoral research
- B. Work you plan for the faculty years
- C. Career objectives, including how the award will help you achieve these objectives. If you plan to take additional course work in biology, describe here.

5. Reprints

Provide **up to three** publications or manuscripts accepted for publication (17 copies) that demonstrate relevant research accomplishments. If you submit manuscripts, please send double-sided copies, if possible.

6. Statements of Collaboration (optional)

Forging collaborations with other well-established investigators can add significantly to the award recipient's productivity as an interdisciplinary researcher. You are therefore encouraged to include a one-page statement or letter and two-page CV for **up to two** proposed collaborators. (17 copies)

7. Letters of Support

A. Faculty Sponsor. The faculty member under whom you will work during the postdoctoral portion of the award should describe your qualifications and potential for contributing to biomedical science, highlighting specific skills or expertise in a scientific discipline other than biology. The letter also should describe the research environment in which you will work, the number of graduate students and postdoctoral fellows in the sponsor's laboratory, and the supporting services to be provided by the institution, including health care benefits.

B. Graduate Advisor. Candidates who hold a Ph.D. degree should provide a supporting letter from the individual with whom they took the degree.

Faculty sponsor and graduate advisor letters (the original and 16 copies) should be included with the application.

C. Additional Letters of Support. You must arrange to have letters from **no more than two** additional faculty members who know your work well sent directly to BWF. These letters are intended to be confidential and you are not to review them. These letters may be included with the application in a sealed envelope.

Alternatively, referees may send the original letter and 16 copies (17 copies total) **by express courier** to: Burroughs Wellcome Fund, 21 T.W. Alexander Dr., Research Triangle Park, N.C. 27709. Sending letters by the U.S. postal service is not recommended. Faxed copies of letters will not be accepted. **All letters must be received by 4 p.m. EST on May 2, 2005.**

COMPLETING THE APPLICATION*

Application must be typed (single-spaced, using 12-point font size) on standard 8 1/2 by 11 inch white paper with one inch or larger margins on all sides. Number each sub-section separately. Double-sided copies are strongly preferred.

*Before applying, check with the institution regarding their candidate nomination process.

Have you included? ...

- Signed application form
- If a non-citizen permanent resident of the United States or Canada: copy of Landed Immigrant Status form for Canada; copy of Alien Registration card (green card) or color copy of unexpired foreign passport with I-551 stamp for United States.
- If a temporary resident on H1B visa: I-797A approval notice and I-94 form **and** statement from employer regarding intent to support extension of H1B visa until 12/31/07 (see eligibility guidelines)
- Curriculum vitae (three pages maximum)
- Proposal summary (one page maximum)
- Research plan (six pages maximum)
- Reprints
- Statement(s) of collaboration (optional)
- Letter from faculty sponsor
- Letter from graduate advisor
- Two additional letters of support (may be sent separately)
- One extra copy of the proposal summary (placed on top of the entire package)

Collate the application (including reprints) so that the original and each of the 16 copies is complete. Fasten each copy with *one* rubber band or *one* binder clip. Do **not** enclose a cover letter.

Do not use:

- staples
- paper clips
- folders
- colored paper
- non-BWF cover sheets

Important! Applications that do not adhere to the stated application procedure, or that contain more than the specified number of pages, letters, or reprints, will be rejected out of fairness to candidates who adhere to the guidelines. In addition, applications that are not properly organized or that do not include all of the requested materials will be rejected. **All materials, including letters of support, must be received by 4 p.m. EST on May 2, 2005.**

Send an original and 16 copies (17 copies total) to:

For delivery by express courier service:

Burroughs Wellcome Fund
Career Awards at the Scientific Interface
21 T. W. Alexander Drive
Research Triangle Park, N.C. 27709
(919) 991-5100

For delivery by U.S. Postal Service:

Burroughs Wellcome Fund
Career Awards at the Scientific Interface
P. O. Box 13901
Research Triangle Park, N.C. 27709-3901

TERMS

Grants are made to institutions on behalf of the named award recipients. The institutions are responsible for disbursing the funds and for maintaining adequate supporting records and receipts of expenditures. Indirect costs may not be charged against the grants.

Award recipients must provide BWF with an annual progress report, and institutions must provide an annual financial report, using forms provided by BWF. Continued funding will depend on both the timely submission of these reports and their favorable review by BWF and its program advisory committee.

Award recipients may obtain funds from other sources for research in the same or similar areas as that conducted under these grants, so long as there is no conflict with meeting the terms of BWF's award. Award recipients may not hold concurrent BWF Career Awards in the Biomedical Sciences.

The support allocated for research is under the control of the award recipient and may be used flexibly for such items as equipment, consumable supplies, travel to scientific meetings, and laboratory personnel working with the award recipient. Prior approval by BWF is required when, within an award year, purchases of equipment exceed \$20,000 or travel costs exceed \$8,000.

During the award period, unused research funds may be carried over to the succeeding year. Any unused funds held by institutions when grants expire or are terminated must be returned to BWF, unless the Fund has granted prior permission to retain the funds. Award recipients may receive a no-cost extension of up to 24 months; requests explaining why an extension is needed must be submitted in writing at least four months prior to the end of the award.

For award recipients in the United States, the administrative fee is intended to cover the cost of medical insurance and other benefits, such as retirement. For award recipients in Canada, the fee is to be used as a contribution to the employer's benefit plan.

BWF acknowledges that most postdoctoral fellows will receive offers from and will move to new institutions to begin their independent research careers; therefore, this award is "portable." Written approval from BWF is required, however, in order for the grant to be transferred to the new institution. Requests must be received at least

four months prior to any move, and approval will be based on whether the move will enhance the award recipient's scientific growth and development, and whether the hiring institution demonstrates adequate commitment to the award recipient's career. Award recipients who change institutions may take with them any equipment or supplies purchased under the award, as well as the balance of any unused award funds.

When hiring a BWF award recipient to a tenure-track faculty position, the hiring institution must state in writing its intention to support an application for permanent residency if requested by the award recipient and if the permanent residency would take effect during the period of employment by the institution.

BWF prefers that award recipients do not move from one institution to another during their three years of faculty service. Special training opportunities that require faculty-level award recipients to spend up to a year away from their base institution may be considered; award recipients must submit to BWF a written request that explains why the training is needed.

Scientific publications or presentations that result from these awards should acknowledge the award recipient's receipt of a Burroughs Wellcome Fund Career Award at the Scientific Interface. Copies of journal articles and other publications should be sent to BWF along with the annual progress report.

Award recipients should follow their institutions' patent, copyright, and intellectual property policies regarding discoveries that result from research conducted under these awards. Award recipients are expected to adhere to all federal, state, and local regulations regarding the participation of human subjects, and the use of animals, radioactive and hazardous materials, and recombinant DNA in their research projects. BWF expects that appropriate federal, state, and local guidelines with regard to scientific misconduct are in place and enforced at all institutions with which BWF award recipients are affiliated.

Award recipients should share scientific findings in a timely manner via the standard means of scientific communication, including publications and/or presentations in scientific forums. BWF will not retain any rights to published results or patents that result from the research.

PROGRAM ADVISORY COMMITTEE

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***Two additional members will be added to the committee. Check the BWF website at www.bwffund.org for the latest information.**

2005 PROGRAM AWARD RECIPIENTS

Emre Aksay, Ph.D.
Princeton University
Neural mechanisms for control of eye position

Rachel Brem, Ph.D.
University of Washington
Genetics of transcription in budding yeast

Yann R. Chemla, Ph.D.
University of California-Berkeley
Single-molecule study of bacteriophage DNA packaging and mitochondrial protein import

Oksana Cherniavskaya, Ph.D.
Columbia University
Exploring the spatial interactions in cytoskeletal proteins using nanoscale bioarrays

Timothy J. Gardner, Ph.D.
Massachusetts Institute of Technology
Tracking neural programs for song

Robert H. Havlin, Ph.D.
National Institutes of Health
Snapshots of proteins in action: elucidating freeze-trapped intermediates with solid state nuclear magnetic resonance

Christine E. Heitsch, Ph.D.
University of Wisconsin-Madison
Combinatorial and computational approach to deciphering the biological information encoded by single-stranded nucleotide sequences

Joshua B. Plotkin, Ph.D.
Harvard University
Novel methods to compute selection pressures on proteins at the genome-wide scale

Astrid A. Prinz, Ph.D.
Emory University
Models of activity-dependent homeostatic regulation in neural networks on the basis of brute force exploration of high-dimensional parameter spaces

Benjamin J. Raphael, Ph.D.
University of California-San Diego
High-resolution analysis of tumor genome architectures

Megan T. Valentine, Ph.D.
Stanford University
Establishing the mechanism of kinesin processivity

BURROUGHS WELLCOME FUND

The Burroughs Wellcome Fund is an independent private foundation dedicated to advancing the medical sciences by supporting research and other scientific and educational activities. Within this broad mission, BWF seeks to accomplish two primary goals—to help scientists early in their careers develop as independent investigators, and to advance fields in the basic medical sciences that are undervalued or in need of particular encouragement.

With its endowment of over \$600 million, BWF makes approximately \$25 million in grants annually in the United States and Canada. BWF's financial support is channeled primarily through competitive peer-reviewed award programs, which encompass five major categories—basic biomedical sciences, infectious diseases, interfaces in science, translational research, and science education. BWF makes grants primarily to degree-granting institutions on behalf of individual researchers, who must be nominated by their institutions. To complement these competitive award programs, the Fund also makes grants to nonprofit organizations conducting activities intended to improve the general environment for science.

BWF is governed by a Board of Directors composed of distinguished scientists, educators, and business leaders. The Fund was founded in 1955 as the corporate foundation of the pharmaceutical firm Burroughs Wellcome Co. In 1993, a generous gift from BWF's sister philanthropy in the United Kingdom, the Wellcome Trust, enabled the Fund to become fully independent from the company, which was acquired by Glaxo in 1995. BWF has no affiliation with any corporation.

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