





“WE WILL NOT LOSE SIGHT OF OUR PRIMARY RESPONSIBILITY—TO PROVIDE FUNDING TO SUPPORT THE BEST AND THE BRIGHTEST AS THEY FULFILL OUR MISSION OF ADVANCING THE BIOMEDICAL SCIENCES.”

2011 REPORT: Moving Forward

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Burroughs Wellcome Fund

21 T. W. Alexander Drive
P. O. Box 13901
Research Triangle Park, NC 27709-3901
919.991.5100
www.bwfund.org

About the Burroughs Wellcome Fund

THE BURROUGHS WELLCOME FUND is an independent private foundation dedicated to advancing the biomedical 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 biomedical sciences that are undervalued or in need of particular encouragement.

Financial support is channeled primarily through competitive peer-reviewed award programs. Grants are made primarily to degree-granting institutions on behalf of individual researchers. To complement these competitive award programs, grants are also made to nonprofit organizations conducting activities intended to improve the general environment for science.

BWF was founded in 1955 as the corporate foundation of Burroughs Wellcome Co., the U.S. branch of the Wellcome pharmaceutical enterprise, based in the United Kingdom. In 1993, BWF received a \$400 million gift from the Wellcome Trust to become a fully independent foundation.

Legacy The Wellcome enterprise was established in 1880 by two young American pharmacists, Henry Wellcome and Silas Burroughs, who moved to London to manufacture and sell “compressed medicines”—that is, pills—which they believed could replace the potions and powders of the day.

The firm prospered. After Burroughs died in 1895, Wellcome directed the growth of the company into an international network with subsidiaries in numerous countries on several continents. As the business grew, Wellcome held firm to his belief that research was fundamental to the development of excellent pharmaceutical products and established the industry’s first research laboratories.

When Wellcome died in 1936, his will vested all of the corporate shares in a new organization—the Wellcome Trust—devoted to supporting research in medicine and allied sciences and to maintaining museums and libraries dedicated to these fields. The Trust grew to become the world’s largest charitable foundation devoted exclusively to the biomedical sciences.

The importance of curiosity-driven research, as endorsed by Henry Wellcome, guides the mission of the Burroughs Wellcome Fund and its commitment to the belief that fostering research by the best and brightest scientists offers the fullest promise for improving human health.

Burroughs Wellcome Fund
Research Triangle Park, North Carolina



PRESIDENT'S MESSAGE

WE AT THE BURROUGHS WELLCOME FUND

are convinced, as is a growing percentage of the public, that science, technology, engineering, and mathematics (STEM) skills and literacy are a critical part of success for our citizens in the 21st century. We also believe that STEM can be an acronym for Strategies that Engage Minds, a rigorous yet enjoyable approach to learning that will help all our children tackle open ended problems and answer questions that they will confront not only in school and science class but throughout their lives.

At BWF we have for many years attempted to increase the understanding and appreciation of science by our school children in North Carolina. We helped create the North Carolina Science, Mathematics, and Technology Education Center, a policy and action group with a commitment to systematically improve preK-12 STEM education. We also run a number of programs in science education, including Career Awards for Science and Mathematics Teachers, a five year award that recognizes excellence in teaching, the Student Science Enrichment Program that provides hands on science for K-12 students, and Promoting Innovation in Science and Mathematics, a grant program to teachers for instructional materials and training. While STEM literacy is a national concern, we have chosen to focus our attention in North Carolina, feeling that a successful set of initiatives here can serve as a model for the rest of the United States, and benefit the children of our state.

We recognize that there is no quick fix that will transform our educational system and overnight make us once again world leaders in STEM education, but we will remain committed to making progress by providing hands-on, experiential inquiry for our students and by encouraging and recognizing the central role of our teacher professionals.



John E. Burris, Ph.D.

As we work to strengthen the pipeline of young men and women entering science, we remain focused on our primary mission of supporting biomedical research and education. This past year was a busy one for the Fund, as we conducted our longstanding competitive programs, and made the first large awards in preterm birth. Five individuals received these grants, each of \$600,000, to enable novel approaches to the difficult and costly, both financially and emotionally, problem of preterm birth. We hope that new perspectives, as well as the experienced eye and approaches of established investigators, will enable us to better understand the causes and ultimately the prevention of these often devastating birth events.

“As we work to strengthen the pipeline of young men and women entering science, we remain focused on our primary mission of supporting biomedical research and education.”

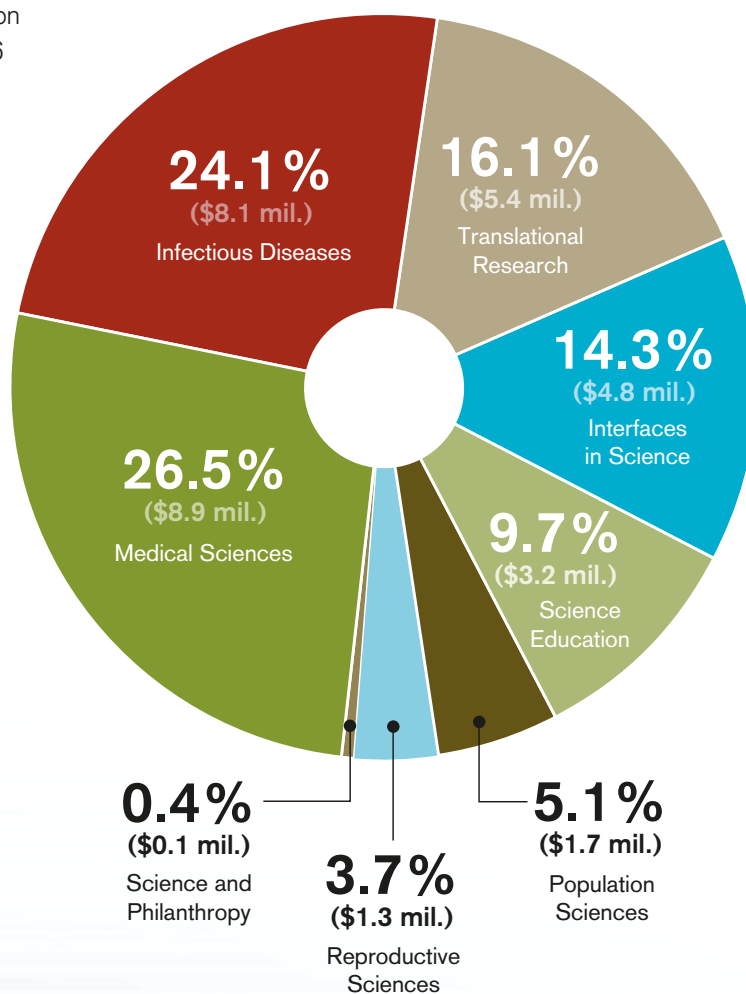
Most of our grant programs award young investigators (see included grant program summary, page 35). We suspended these programs in 2009-2010 because of the economic crisis, but were pleased when we restarted them this year to again have high application rates from well qualified candidates. We were able to fund 10 physician scientists in our Career Awards for Medical Sciences program. Here we select individuals preparing to transition to their first faculty position and give them support to continue novel approaches to research questions in their areas. This year's group reflected a trend of more M.D./Ph.D. and fewer M.D. awardees. The selected candidates are also growing older, as the combination of long clinical training and pursuit of a Ph.D. means that 36 is now the average age of our awardees.

In the Investigators in the Pathogenesis of Infectious Disease program 10 recipients were also named. These assistant professors, usually working at the intersection of human and microbial biology, will continue in a long tradition of the Fund's support of investigations of pathogenesis and a wide variety of pathogenic organisms ranging from viruses to eukaryotes. In the years since the beginning of this program, the careers of over 85 young scientists have been aided by this award.

BWF DISTRIBUTED \$33.5 MILLION IN GRANTS DURING FISCAL YEAR 2011.



For audited financial statements and evaluations of our grant programs, visit www.bwffund.org/annualreport or scan the QR code.

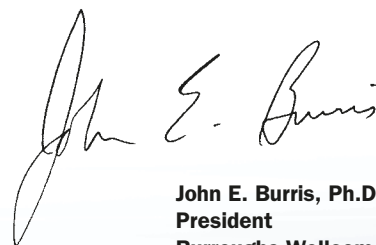


While supporting biomedical research, it has become clear to us that biologists need to interact with physical scientists, mathematicians, and engineers to combine the latest techniques with the insights of those outside biology to answer the most difficult problems of our time. The Career Awards at the Scientific Interface program provides an opportunity for postdoctoral fellows from the world of the physical and mathematical sciences to bring their insights to bear on perplexing biological problems. In this program BWF, for the first time, allowed self, open nominations for the ten awards. Although this application procedure generated a large increase in the number of applications, we were pleased with the diversity of approaches and the quality of applicants. We will continue this open nominations process in 2011-2012. We are also planning to fund two short courses designed to introduce biology and biological laboratory techniques to non-biologists.

Although no new awards were made in our Institutional Program Unifying Population and Laboratory Based Sciences, the three previous institutional recipients are working hard to implement this novel approach to training and have matriculated their first students. We are pleased with progress thus far and look forward to another round of applications in 2011-2012.

The Fund prides itself on being able to respond quickly to good ideas and often provide the difficult catalytic support to get a project moving forward. This year we again found ourselves in this role with small grants for meetings and for a large number of travel grants, as well as serving as the convener of workshops and discussions where the latest issues in science were discussed. We plan to continue to be nimble and responsive to concerns not just regarding scientific questions, but also the structure of the scientific enterprise, whether with regard to career choices or grant application techniques.

In these times of difficult funding and endless discussions about the world economy, it is tempting to focus on conservatively protecting our endowment. Although we will continue to prudently manage our assets, we will not lose sight of our primary responsibility—to provide funding to support the best and the brightest as they fulfill our mission of advancing the biomedical sciences.



John E. Burris, Ph.D.
President
Burroughs Wellcome Fund

INFORMATION FOR APPLICANTS

THE BURROUGHS WELLCOME FUND makes 90 percent of our grants through competitive award programs that support investigators in targeted areas of basic biomedical research relevant to human health.

Most of BWF's award programs are open only to citizens or permanent residents of the United States and Canada. (Programs with different requirements are noted in the descriptions that follow.) Awards are made with the advice of our advisory committees, which are comprised of scientists and educators selected for their expertise in the program areas.

Most grants are made only to degree-granting institutions on behalf of individual researchers, who must be nominated by their institution. Institutions receiving grants must be tax-exempt 501(c)(3) organizations. Government agencies, such as the National Institutes of Health and the Centers for Disease Control and Prevention, generally are not eligible for grants.

Throughout the following program descriptions, references to M.D. and Ph.D. degrees include all types of medical and scientific doctoral degrees.

BWF does not support activities that are primarily related to health care and health care policy. We generally do not provide support for research projects or other activities outside our competitive programs, nor do we generally support endowments, development campaigns, ordinary operating expenses, capital facilities and equipment, or publications.

BWF believes that diversity within the scientific community enhances the well-being of the research enterprise; therefore, we encourage applications from women and from members of underrepresented minority groups.

Visit www.bwfund.org for current information.

BIOMEDICAL SCIENCES

Research in the medical sciences provides a firm foundation for improving human health. The Burroughs Wellcome Fund is committed to fostering the development of the next generation of academic medical scientists. By providing funding to help bridge the gap between the postdoctoral and early faculty years, BWF hopes to bolster the careers of the most promising up-and-coming scientists. But BWF's support doesn't stop with its funding. Through biennial meetings and mentoring networks, BWF helps provide vital career advice to give scientists, early in their careers, the information they need to be successful.

CAREER AWARDS FOR MEDICAL SCIENTISTS

Five-year awards for physician scientists provide \$700,000 to bridge advanced postdoctoral/fellowship training and the early years of faculty service. This award addresses the on-going problem of increasing the number of physician scientists and will help facilitate the transition to a career in research.

COLLABORATIVE RESEARCH TRAVEL GRANTS

Provide up to \$15,000 in support for researchers from degree-granting institutions to travel to a laboratory to acquire a new research technique or to facilitate a collaboration. Consideration is given to applicants who hold a Ph.D. or are studying for a Ph.D. in mathematics, physics, chemistry, computer science, statistics, or engineering who are interested in investigating research opportunities in the biological sciences or to biologists interested in working with physical scientists, mathematicians, engineers, chemists, statisticians, or computer scientists to incorporate their ideas and approaches to answering biological questions.



CAREER AWARDS IN THE BIOMEDICAL SCIENCES (CABS), 1995-2006

The Career Awards in the Biomedical Sciences (CABS) program was approved by the BWF board in October 1993 and the first awards were approved in April 1995. It was modeled on the Markey Charitable Trust's Scholars Program.

The CABS program provided bridging support for young scientists to assist them in making the critical transition from postdoctoral fellows to independent investigators as assistant professors. The CABS program was part of the BWF grants portfolio from 1995 to 2006 and provided support to 241 young scientists for a financial commitment in excess of \$100 million.

There are currently 71 active CABS awardees and \$7.9 million still to be paid out. Only two awardees have yet to transition to a tenure-track faculty position and they have been given a grace period until July 1, 2012, otherwise their grants will be cancelled.

Eighteen awardees left the program before completing the award—six joined the intramural program at NIH, two took positions in the pharmaceutical industry, two went to Janelia Farms, three took faculty positions outside of North America, two became science writers, one left to work on Gates' Grand Challenges project, one left to attend law school, and one left the program because of family reasons.

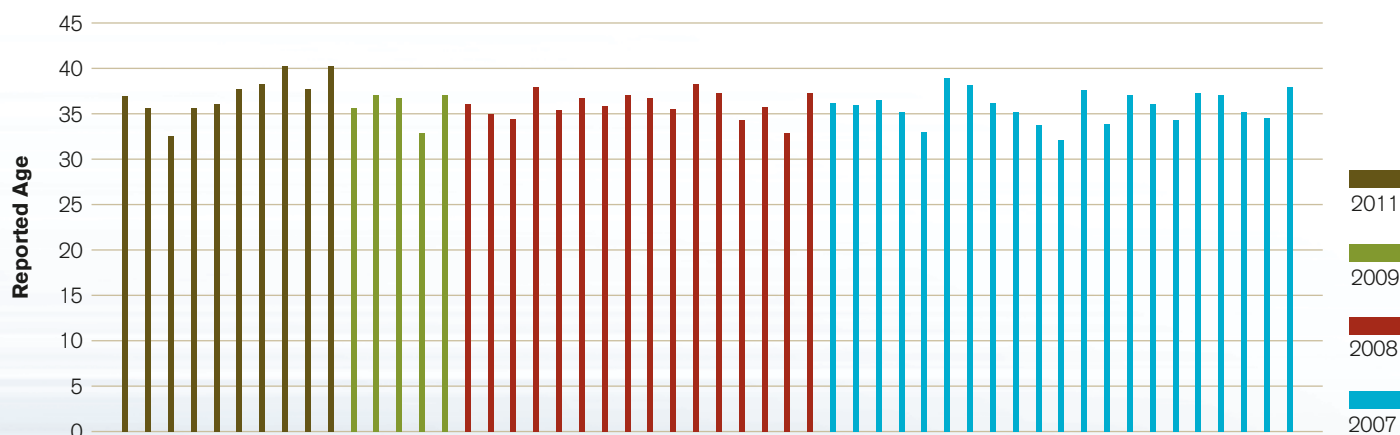
CAREER AWARDS FOR MEDICAL SCIENTISTS (CAMS), 2007-DATE

Because of NIH's Bridges to Independence program (K99/R00 award) which was introduced in 2006, the CABS program was reformulated to a physician scientist only program and renamed Career Awards for Medical Scientists (CAMS). The focus of the CAMS program is the physician scientist who is making the transition from a mentored position to that of an academic independent investigator. The program provides \$700,000 in support over five years.

The CAMS program has gone through four award cycles—2007, 2008, 2009, and 2011. The program was not run during the 2010 award cycle because of a downturn in the financial markets. For the four award cycles a total of 52 awards have been made. Two have left the program to enter private practice. Forty (80 percent) of the 50 active awardees have transitioned to tenure track faculty appointment. Twelve (30 percent) of the awardees who received faculty appointments have changed institutions.

Of the 50 active awardees, 44 are located in medical schools, two are at MIT, one is at a dental school, one is in a school of public health, and one is at Cold Spring Harbor. For those located at medical schools, 73 percent have their primary affiliation in one of three departments (Internal Medicine 41 percent, Neurology 16 percent, and Pathology 16 percent).

AGE OF CAMS AWARDEES AT TIME OF AWARD

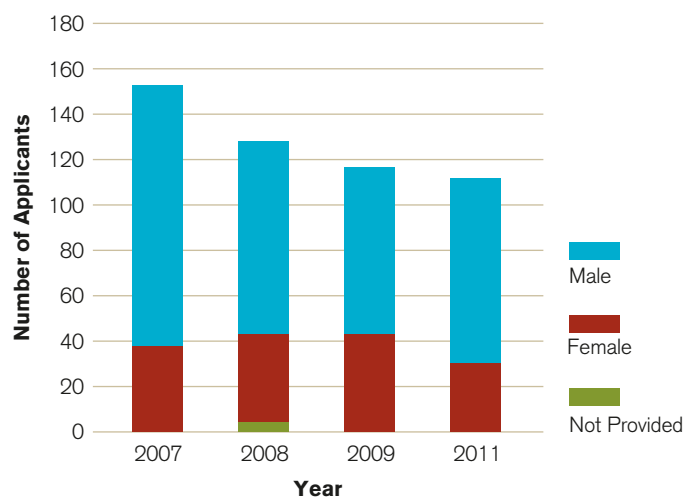


The range of research disciplines among the 50 active awardees is broad. Genetics (18 percent) is the largest discipline represented followed by Neuroscience (12 percent), Cell Biology and Regulation (10 percent), and Immunology (10 percent). M.D./Ph.D.s account for 79 percent of those receiving awards. The remainder are M.D.s except for one D.D.S., Ph.D.

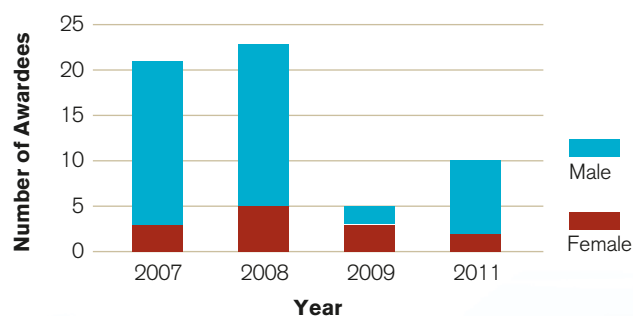
An interesting demographic is the age of the physician scientist at the start-date of the award. The average for the 52 receiving awards was 36 (range: 32 to 40). One would still need to add a year or more to determine the age at which one of these awardees would become an independent investigator.

The 52 awards were made to 20 institutions. Harvard led the way with 15 (29 percent), followed by University of Pennsylvania and Stanford with four (8 percent) each, then University of California-San Diego, University of California-San Francisco, University of Texas Southwestern, and Washington University with three (6 percent) each. The remaining institutions were Baylor (1), Case Western (1), Cold Spring Harbor (1), Columbia (1), Duke (2), Einstein (1), Johns Hopkins (1), MIT (2), UC-Davis (1), Michigan (1), University of North Carolina (1), and the University of Washington.

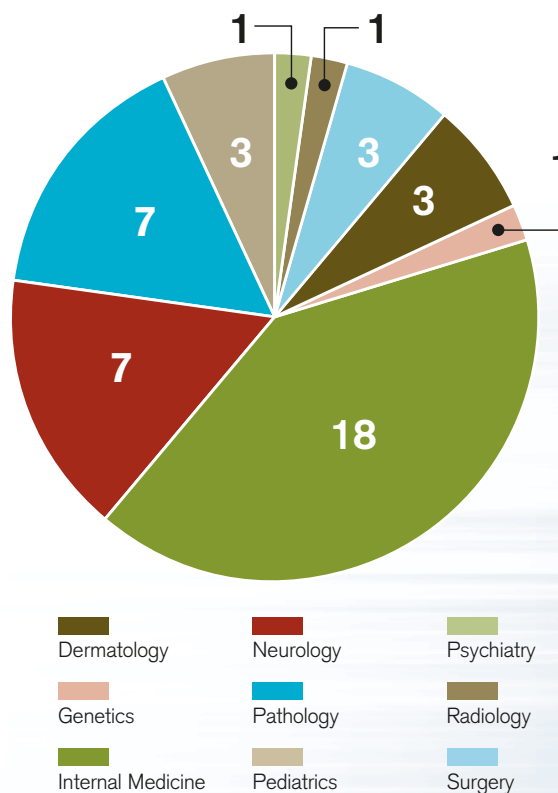
GENDER—ALL ELIGIBLE APPLICANTS



GENDER—AWARDEES



PRIMARY DEPARTMENTAL AFFILIATION OF ACTIVE AWARDEES AT SCHOOLS OF MEDICINE (N=44)



INFECTIOUS DISEASES

The Burroughs Wellcome Fund has supported research in infectious disease since 1981, when it began funding modern molecular approaches to understanding what have been called the great neglected diseases—malaria, the pathogenic fungi, and human parasites—that primarily affect people in underdeveloped countries. Since that time, much more attention has been paid to the urgent needs of these fields. In 2000, the Fund decided to turn its attention to the larger issues of human-pathogen interactions in these infectious diseases and others, opening the door for funding work in bacterial and viral diseases. BWF's Investigators in the Pathogenesis of Infectious Disease program is designed to incorporate elements of previously funded areas of research, and to focus primarily on the interaction of pathogens with their human hosts.

INVESTIGATORS IN THE PATHOGENESIS OF INFECTIOUS DISEASE

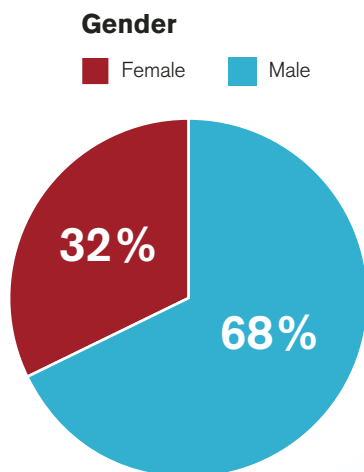
Five-year awards provide \$500,000 for opportunities for accomplished investigators at the assistant professor level to study infectious disease pathogenesis, with a focus on the intersection of human and microbial biology. The program is intended to shed light on the overarching issues of how human hosts handle infectious challenge. The awards are

intended to give recipients the freedom and flexibility to pursue new avenues of inquiry and higher-risk research projects that hold potential for advancing significantly the biochemical, pharmacological, immunological, and molecular biological understanding of how infectious agents and the human body interact.

HISTORIC OVERVIEW

The Pathogenesis of Infectious Disease program was launched after discussions that formed part of the 2000 terrain mapping. The program continues the Fund's long-term investment in infectious disease research, which has included support of both senior awardees, labeled scholars, and assistant professors, labeled New Investigators in earlier award programs and simply Investigators in the current program. The Scholars in Parasitology program, launched in 1980, aimed to bring strong researchers from other fields into parasitology. As the field grew stronger, the Parasitology program expanded to fund as New Investigators a generation of young faculty who had been trained by researchers like those the Scholars program funded. In 1995 the Board directed the launch of a program focused specifically on finding new approaches to malaria. The New Initiatives in Malaria Program funded researchers at any faculty level, and aimed both to allow faster progress in this lagging sub field and also to stimulate development of research capacity against malaria. Also in 1995, the Board extended the scholars/new investigators strategy to another lagging field, mycology.

At the 2000 Terrain Mapping, the Board decided to open the infectious disease program area further to include work in viral and bacterial pathogens, and to encourage the study of pathogenesis itself, rather than continue the program's focus on particular pathogens.



PATHOGENESIS OF INFECTIOUS DISEASE PROGRAM

Eighty-eight grants have been made to researchers chosen from 1063 applicants in eight cycles since the program was launched in 2002 for a total investment to date of \$41,900,000. The Investigators in the Pathogenesis of Infectious Disease program was not run in 2009-10.

PROGRAM STATISTICS

The Pathogenesis program's funding rate over the eight cycles is 8.2 percent.

Gender

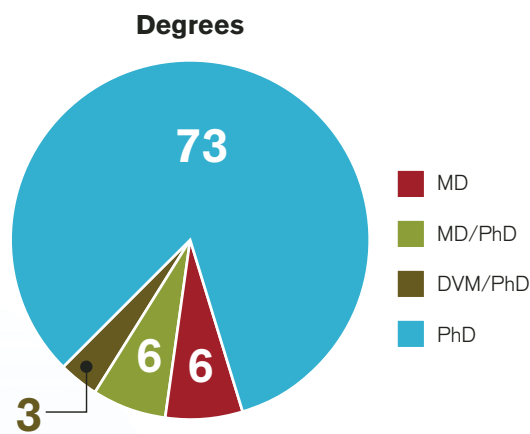
Eighty-eight Investigators in the Pathogenesis of Infectious Disease have been named since the program's inception, including 60 men and 28 women. This program as well as our discontinued New Investigators awards in Parasitology, Mycology, Toxicology, and Pharmacology have consistently had about 2/3 male awardees and 1/3 female awardees over time and in most single award years since the mid-1990s. Applicant pools have reflected a similar ratio over the same period. This year's new awardees include seven men and three women; last year's pool included four women and two men.

None of this year's new awardees work in Canada. With this new group, 72 awardees work in the United States and five in Canada. One awardee left the program several years ago to take a position in Switzerland.

Earlier this year we stated that, though the program has funded several under-represented minorities, many of them did not choose to indicate their race/ethnicity. This year's group of awardees includes yet another investigator who did not "check the box."

Degree

17 percent of pathogenesis awardees have a clinical degree and 83 percent are non-clinically trained Ph.D.s; 73 of the awardees are Ph.D.s; six are M.D.s, six hold M.D./Ph.D.s and three are D.V.M./Ph.D.s. This includes this years' new awardees, who were nine Ph.D.s and one M.D.



Research Areas

Staff have divided awardees into several broad thematic areas based on the microbes that are the focus of their work, but a researcher we have sorted as "Virus" does not necessarily consider himself or herself a virologist. Those labeled as "Immune system" are, in general, looking at how the immune system recognizes pathogens rather than how it interacts with a particular pathogen. One awardee has been labeled as "Regulatory." His work focuses on a regulatory element found in both prokaryotes and eukaryotes. Thirty-eight awardees are sorted as bacterial, 29 as viral, 10 as parasitical, six as immune system, four as fungal, and one as biochemical. The 10 investigators funded in 2011 are included in these numbers. This year BWF supported seven new awardees interested in bacterial problems and three interested in viruses.

OTHER ACTIVITIES

Catalytic Activity for 2009/2010 Cycle:

Development of a Panfungal Database

The newly built Panfungal database was launched on schedule in time for the fungal genetics meeting at Asilomar with 18, rather the promised 12, organisms loaded.

Veterinarian Scientists

In August 2011, we ran another round of the career development short course aimed at veterinarian scientists who are preparing for academic research careers. Participants included 12 D.V.M./Ph.D.s, including three assistant professors and several postdocs who will soon go on the job market.

Understanding the Early Careers of Faculty

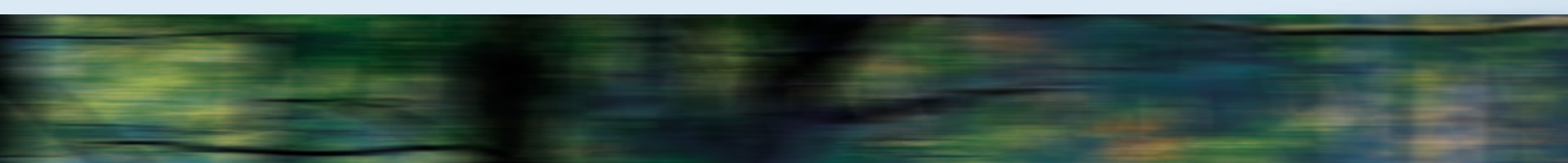
A major activity this year focused on tabulating career data on nearly 200 scientists whom BWF began supporting as assistant professors.

INTERFACES IN SCIENCE

The biological sciences are changing. Advances in genomics, quantitative structural biology, modeling of complex systems, and nanotechnology have opened up new realms of research for ambitious investigators with backgrounds in physics, mathematics, computer science, and engineering who want to explore the new frontier of biology. In recognition of the vital role such cross-trained scientists will play in furthering biomedical science, the Burroughs Wellcome Fund has made a major investment in the training and support of young investigators with backgrounds in the physical, chemical, or computational sciences whose work addresses biological questions and who are dedicated to pursuing a career in academic research.

CAREER AWARDS AT THE SCIENTIFIC INTERFACE

Five-year awards provide \$500,000 to bridge advanced postdoctoral training and the first three years of faculty service. These awards are intended to foster the early career development of researchers with backgrounds in the physical/mathematical/computational sciences whose work addresses biological questions. BWF has moved to a self-nomination format for this award only.



HISTORICAL OVERVIEW OF INTERFACES IN SCIENCE FOCUS AREA

The Interfaces in Science Focus area has had four competitive programs: the Career Awards at the Scientific Interface (CASI; ongoing since 2001), the Institutional Awards at the Scientific Interface (IASI; not awarded since 2000), the Interfaces Short Course Awards (ISCA, added this fiscal year), and the Innovation Awards in Functional Genomics, which were offered once in 2000. Since the program began in 1997, a total of \$71,987,980 million has been awarded through competitive programs and adhoc grants (Table 1).

In three IASI cycles (1996, 1998, 2000), a total of ten programs were funded for five years each, reaching a total of over four hundred individual trainees. Due to the time it took initially for programs to ramp up to steady state, as well as payment deferrals and no-cost extension requests, BWF was still paying out and/or tracking progress for two of these grants until FY 2009. Trainees from these programs were convened four times.

The CASI program was modeled closely on BWF's Career Awards in the Biomedical Sciences (CABS) program, but is distinguished by the requirement that applicants have doctoral level training or evidence of significant expertise in a

computational, theoretical, or physical science discipline outside of biology. The program began in 2001 but was suspended in 2003, and again in 2010. A total of 79 awards have been made to date, in nine cycles. The applicant pool has grown stronger during the years, as more institutions have hired faculty who work at this interface. During the last several years, the program advisory committee advocated strongly that BWF open the application process to allow self nominations.

At the direction of the BWF Board, a new competitive program, the Interfaces Short Course Awards (ISCA), was developed to be implemented during FY 2011. Proposals are being accepted by invitation only. A copy of the RFP is included in the supplemental materials, along with a list of those invited to submit a letter of intent (LOI) by August 15, 2011.

Lastly, the Innovation Awards in Functional Genomics were offered once in conjunction with BWF's building dedication in 2000. That program made 11 awards, which paid out until 2005.

Adhoc efforts in this focus area have included support for training and other programs that bring biologists and physical scientists together, support for career development sessions at professional society meetings, and support for analysis of federal funding in this area.

Table 1: BWF Investment to Date in Interfaces in Science Focus Area: FY 2011 and Cumulative

Program	FY 2011	Total Investment
Institutional Awards (IASI)	—	\$26,054,760
Career Awards (CASI)	\$5,000,000	\$39,656,000
Functional Genomics	—	\$3,010,150
Adhoc grants	\$309,000	(4.5%) \$3,267,070
Total	\$5,309,000	\$71,987,980

FY 2011 HIGHLIGHTS: CAREER AWARDS AT THE SCIENTIFIC INTERFACE (CASI)

For all of BWF's national programs, candidates were required to obtain one of a small number of nomination slots from a degree-granting institution. This approach has leveled the playing field for smaller institutions, and has also controlled the number of applications BWF receives for a small number of awards. While the applicant pool for CASI has grown stronger over time, the advisory committee felt that many worthy candidates were not making it through the institutional nomination screen, and that the program would benefit from a more open application process.

Table 2 provides data on the applicant pool, compared to prior years of the program (2003, 2005 and 2007 cycles are not shown). Just over 1850 applicants expressed interest in the program by taking the eligibility quiz, and just over 40 percent of these qualified. Of those, 376 (47 percent) actually submitted preproposals. Thus the applicant pool dropped by just under 16 percent from the prior cycle. Of note is the fact that the open process has not resulted in a greater proportion of women applying for the award. In 2008, an extra nomination slot was added, which resulted in an increase in female applicants from 23 percent to 29 percent. Putting this in context, the proportion of women earning doctoral degrees in CASI fields in 2007 (which would make them eligible for this year's program) was 24.2 percent¹. Thus, the proportion of

female applicants, with an open process, is probably about as expected. Among the 79 CASI awardees, 28 (35 percent) are women.

The proportion of underrepresented minority (URM) candidates for the program stood at 12 percent during the 2009 cycle, after years of allowing institutions an extra nomination slot. With the first year of self-nominations, the proportion dipped to 4 percent, the lowest in the history of the program. However, the proportion of underrepresented minorities in the second year of self-nominations rose to 6 percent, the same as in 2006. As a reference, underrepresented minorities comprised just 3.5 percent of the 2007 Ph.D. graduates in the CASI fields of chemistry, physics, and math/computer science, and engineering². Thus, while we can target outreach to minority trainees and to women for the next cycle, so that they are made aware of the opportunity, they cannot be considered underrepresented in the first two cycles using the self-nomination process. Among the 79 current CASI awardees, four (5 percent) are from URM backgrounds.

The CASI is the only BWF program that extends eligibility to foreign nationals holding temporary visas, because in the CASI fields, the majority (57 percent) of those earning Ph.D.s are temporary visa holders. We expected that this would be reflected in the self-nominated applicant pool and this year 40 percent of the applicants were temporary visa holders³. Among the 79 current CASI awardees, 17 (22 percent) are temporary visa holders.

Table 2: Profile of CASI Applicant Pool, 2002-2011

Applicants	2012 Cycle	2011 Cycle	2009 Cycle	2008 Cycle	2006 Cycle	2002 Cycle
Took Eligibility Quiz	1851	1713	n/a	n/a	n/a	n/a
Qualified	802	827	n/a	n/a	n/a	n/a
(Pre) Proposals Received	376	446	148	146	103	75
Eligible for Review	374	445 (99%)	142 (96%)	143 (98%)	97 (94%)	72 (96%)
Female Applicants	93 (25%)	122 (27%)	41 (29%)	34 (23%)	35 (34%)	17 (23%)
Temporary Visa Holders	151 (40%)	155 (35%)	50 (35%)	47 (32%)	30 (29%)	11 (15%)
Underrepresented Minorities	21 (6%)	17 (4%)	17 (12%)	13 (9%)	6 (6%)	4 (5%)

Note: 2003, 2005 and 2007 cycles not shown to save space.

2012 APPLICANT POOL: INSTITUTIONS

The number of institutions submitting candidates has almost doubled since the program's inception. In the past, applicants were nominated by degree-granting institutions (DGIs), and postdocs at independent research institutes could not apply unless they were offered a nomination slot from an associated DGI. Under the new self-nomination guidelines, postdocs based in non-DGI entities can apply, if the mentor has a faculty appointment at a DGI. Exceptions were made for applicants from NIH and HHMI's Janelia Farm Research Campus, as NIH and HHMI will cover costs of the postdoc portion of their awards. Of the 98 distinct institutions from which candidates self-nominated, 16 had not previously submitted applicants to the CASI program.

BWF anticipated that again a few institutions would dominate the applicant pool, and this proved to be the case. Table 4 lists the institutions from which ten or more pre-proposals were submitted. Harvard, Stanford, and MIT represent 29 percent of the applicant pool, compared to 18.6 percent last year. Half of the applicant pool came from just ten institutions, compared to fourteen last year. Number of submissions from these institutions from last year is shown in parentheses.

2012 APPLICANT POOL: DISCIPLINES

Table 5 shows the distribution of doctoral training disciplines within the 2012 preproposal applicant pool, compared to the first year of self nominations (2011), and to 2009 and 2008 when candidates were nominated by their institutions. The most noticeable difference is probably the reduction in the proportion of physicists applying, accompanied by a rise in the proportion of engineers applying.

¹*Science and Engineering Indicators 2010*, National Science Board. Appendix Table 2-28. Among those earning the Ph.D. in 2007, women represented 25 percent in math/computer science, 18 percent in physics, 37 percent in chemistry, and 21 percent in engineering.

²*Science and Engineering Indicators 2010*, National Science Board, Appendix Table 2-30. Underrepresented minorities (Black, Hispanic, Native American) received the following proportion of Ph.D.s in 2007: 3.2 percent in physics, 5 percent in chemistry, 3.1 percent in math/computer science, and 3.2 percent in engineering.

³*Ibid.* Foreign citizens on temporary visas earned the following proportion of US doctorates in 2007: math/computer science 55 percent, physics 51.7 percent, chemistry 43.8 percent, engineering 62.8 percent. In biological science, 29.6 percent.

Table 3: CASI Institution Submission Statistics

Institutions	2012 Cycle	2011 Cycle	2009 Cycle	2008 Cycle	2006 Cycle	2002 Cycle
Number Submitting Candidates	98	106	85	75	67	52
Canadian Institutions Submitting Candidates	4	7	7	2	2	1

Table 4: Institutions Submitting Ten or More Pre-proposals to CASI, 2012

47 (41)	Harvard	13 (20)	Yale
36 (28)	Stanford	11 (13)	UC-San Diego
26 (28)	MIT	10 (16)	UC-Berkeley
16 (10)	UC-San Francisco	10 (14)	U of Pennsylvania

Table 5: Doctoral Training Disciplines among CASI Applicants, 2008-2012

Doctoral Discipline	2012 Pre-proposals		2011(%)	2009(%)	2008(%)
	#	%			
Applied Math	5	1	4	6	4
Bioengineering	67	18	13	11	10
Bioinformatics	12	3	3	1	3
Biology	23	6	5	2	6
Biophysics	23	6	7	6	8
Chemistry	62	16	15	16	24
Computational Biology	15	4	2	1	2
Computational Neuroscience	4	1	1	1	NA
Computer Science	22	6	7	7	4
Engineering	77	21	19	19	10
Mathematics	5	1	2	4	3
Neuroscience	6	2	2	1	1
Other	3	1	1	NA	3
Physics	44	12	16	22	19
Bio/Statistics	6	2	1	4	3
Total	374	100	100	100	100

POPULATION AND LABORATORY BASED SCIENCES

The Burroughs Wellcome Fund launched an institutional award program in 2008 supporting graduate education in programs that will train students for simultaneous expertise in both population approaches (for example, epidemiology) and science done “at the bench.” These students should emerge well-positioned to take on complex problems currently beyond the reach of most traditionally trained individual investigators.

PROGRAM UNIFYING POPULATION AND LABORATORY BASED SCIENCES (PUP)

The three graduate programs have now completed their first year. The program’s second round was announced in August, with a letter of intent deadline of February 25 and full proposal deadline of May 21.

This year we will sharpen the program’s focus by concentrating in the fall and winter on the shape of careers of awardees trained at the interface of population and bench sciences. In October, a summit organized by NIEHS and the Society of Toxicology, will focus on education and the careers of those being trained in environmental toxicology. This vibrant field is bringing together additional molecular and population insights.

In early 2012, we will bring the leadership teams of the three already funded programs together at BWF to discuss needs of academia, government, and industry for those trained at this interface and to consider what added values should the programs deliver to best prepare awardees for future leadership in this area. We expect to include in this discussion high-level guests from local industry and from NIEHS.

REPRODUCTIVE SCIENCES

Many health and social problems in the United States can be attributed to preterm births. The Burroughs Wellcome Fund launched an award initiative in 2009 to expand the limited understanding of the biological mechanisms underlying childbirth and spontaneous preterm birth using multidisciplinary approaches.

RESEARCH CONSORTIUM ON PRETERM BIRTH

In 2007 the BWF board approved a \$600,000 grant to support the development of a series of international meetings to foster discovery in the area of preterm birth. To date two meetings have been held both in conjunction with the March of Dimes. The most recent meeting was held December 6-8, 2010, in Newport Beach, California. About 125 attended. Another meeting of the Research Consortium is scheduled for December 2012. Louis Muglia, M.D., Ph.D., University of Cincinnati, is leading this effort.

FRONTIERS IN REPRODUCTION (FIR)

BWF, along with National Institute of Child Health and Human Development, has funded Marine Biological Laboratory's Frontiers in Reproduction (Molecular and Cellular Concepts) course since its inception in 1997. FIR is a six-week long laboratory and lecture course designed for scientists-in-training who are interested in improving basic conceptual knowledge and methodological skills to pursue a research career in the reproductive sciences. About 20 young scientists are selected each year to attend the course.

The FIR board meets annually and this year the FIR board meeting was held at BWF.

PRETERM BIRTH INITIATIVE

In 2008 the board approved the BWF Preterm Birth Initiative competitive grant program. For the first round the awards were made in a two-step process. Ten \$50,000 planning grants were made and then, selected from the planning grant recipients five full \$600,000 grants were made. The ten planning grants were selected in June 2009 and the five full grants were selected in January 2011. Those receiving full grants were:

Kjersti M. Aagaard-Tillery, M.D., Ph.D.

Assistant Professor
Baylor College of Medicine
Contributions of maternal-fetal mitochondrial genome and microbiome interactions to preterm birth

Julie Baker, Ph.D.

Associate Professor
Stanford University
Genomic networks that guide trophoblast invasion and disease

Mala S. Mahendroo, Ph.D.

Associate Professor
University of Texas Southwestern Medical Center-Dallas
Assessment of cervical ripening by sodium magnetic resonance imaging

Jeffrey C. Murray, M.D.

Professor
University of Iowa
Genomic signatures of gene expression and alternative splicing in preterm birth

Indira Mysorekar, Ph.D.

Assistant Professor
Washington University School of Medicine
Occult infections in the etiology of preterm birth

The current commitment for this program is \$3.5 million.

The deadline for the second round will be December 1, 2012.

SCIENCE EDUCATION

Engaging children in science has been a focus of the Burroughs Wellcome Fund since it became an independent, private foundation in 1994. We are convinced that all children, regardless of their future career path, need basic science literacy to participate fully in civic life. We believe that the best method for achieving the goal of science literacy is to get students involved in the scientific process and let them do what comes naturally: ask questions and participate in hands-on activities and experiments that convey basic scientific principles.

CAREER AWARDS FOR SCIENCE AND MATHEMATICS TEACHERS

Five-year awards provide \$175,000 to eligible science or mathematics teachers in the North Carolina public primary and secondary schools. The purpose of this award is to recognize teachers who have demonstrated solid knowledge of science or mathematics content and have outstanding performance records in educating children. The award is a partnership between the North Carolina State Board of Education and BWF.

PROMOTING INNOVATION IN SCIENCE AND MATHEMATICS

Awards provide teachers with funding for materials, equipment, and training to conduct hands-on, inquiry-based science and mathematics projects in North Carolina public schools.

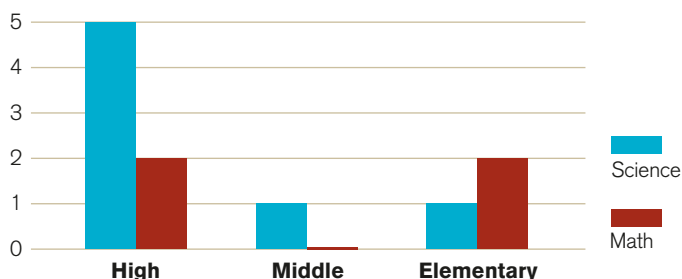
STUDENT SCIENCE ENRICHMENT PROGRAM

Three-year awards provide up to \$180,000 to North Carolina nonprofit organizations, including public/private schools, universities, colleges, and museums. This program supports creative inquiry-based science enrichment activities that occur outside the typical school day for K-12 students. The program's goals are to nurture students' enthusiasm about science, expose them to the excitement of scientific discovery, and interest them in pursuing careers in research or a variety of other careers in science.

SCIENCE EDUCATION FISCAL YEAR 2011 HIGHLIGHTS

The Burroughs Wellcome Fund (BWF) has invested over \$3 million this fiscal year to help build systemic reform in science, technology, engineering, and mathematics education in North Carolina. We focus on informal learning, formal learning, public policy, research, and capacity/partnership building.

In the formal education realm, BWF made grants to the second cohort of Career Awards for Science and Mathematics Teachers (CASMT). BWF committed over \$1 million this past year in grants to develop the careers of outstanding North Carolina science and mathematics teachers who are reaching hundreds of students. The CASMT program deadline was January 18, 2011. The CASMT Advisory Committee met in May 2011 to interview 10 finalist candidates—six high school teachers, two middle school teachers, two elementary teachers, six women, and four men. Six awards were made, bringing the total number of CASMT teachers to 10. Each awardee is provided a 12-month contract by the State Board of Education. We applaud these teachers and the commitment they have made to improve the lives of children. As you can see from the following chart, the majority of CASMT grant have been made to high school science teachers followed by mathematics teachers in high school and elementary schools. The awards have been spread across the state, representing eight different North Carolina counties—Winston-Salem (2), Buncombe (2), Warren, Cumberland, Haywood, Charlotte/Mecklenburg, Guilford, and Transylvania.

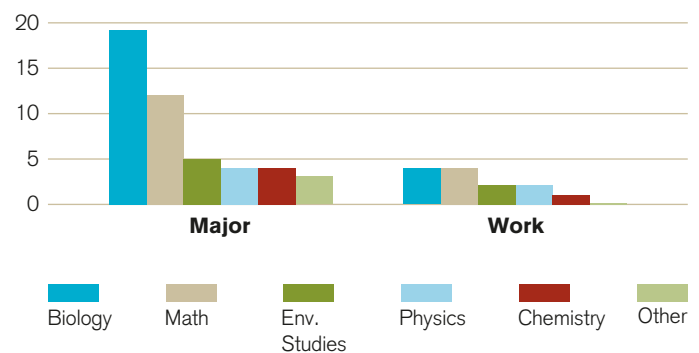


The most recent investment in teachers and students is through the Promoting Innovation in Science and Mathematics Award, a new program that will provide grants of up to \$3,000 to cover the costs of equipment, materials, and supplies to implement hands-on, minds-on science and mathematics curriculum in the classroom. Recognizing the need for training, additional funding up to \$1,500 may be requested for professional development related to the implementation of new equipment in the classroom. There are three deadlines for this online application program, December 5, 2011, March 5, 2012, and September 5, 2012. Teaching professionals must have the appropriate licensure in science, mathematics or general education (elementary teachers) and be employed in N.C. public schools to apply. Application materials are currently on the BWF website.

In March 2011, the BWF Board approved a grant of \$200,700 per year for six years making a total commitment of \$1.2 million to support the implementation of Singapore Math in elementary schools across North Carolina—Bladen County School District (Elizabeth Primary School and East Arcadia School), Eastfield Global Magnet School (McDowell County), Gallberry Farm Elementary School (Cumberland County), Murphey Traditional Academy (Guilford County), and North Wilkesboro Elementary School (Wilkes County). SMP will provide teacher training, curriculum materials for students, and networking opportunities for teachers, parents, local school boards, and other community stakeholders. BWF is partnering with the State Board of Education and the Department of Public Instruction to potentially scale this pilot beyond the selected school districts.

BWF partnered with the University of North Carolina General Administration to offer a program to identify and support undergraduate science and mathematics majors who are interested in teaching. The FastTrack program is designed to fund 120 scholars in their junior and senior years with the goal of graduating them with teaching certification within a four-year timeframe. Upon graduation the program provides \$5,000 salary supplements once these teachers enter the workforce.

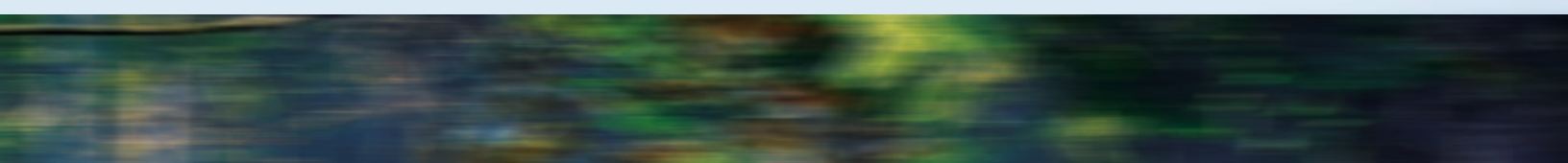
FastTrack scholarships have been awarded to 76 students on four UNC campuses, North Carolina Central University (3), North Carolina State University (20), UNC-Asheville (30), and UNC-Chapel Hill (23). We have 13 FastTrack teachers in the workforce with degrees in the sciences and mathematics as shown below, 45 scholars are still in school, and 45 scholarships pending.



TRANSLATIONAL RESEARCH

Physician-scientists play a crucial role in the continuum of research that ensures a free flow of information and new treatments from the laboratory to the patient and back again. BWF created the Clinical Scientist Awards in Translational Research to foster the productivity of independent physician-scientists at the mid-career level who will strengthen translational research in academic health centers, both through their own studies as well as their mentoring of the next generation of physician-scientist trainees. With the increase in federal support for translational programs, BWF discontinued the award in 2010.

BWF continues to support activities that impact the environment in which translational research is conducted. Of particular interest are efforts that provide career development resources to young investigators.



A. HISTORICAL OVERVIEW OF TRANSLATIONAL RESEARCH FOCUS AREA

When BWF launched its Translational Research focus area in 1997, translational research was a new idea. BWF entered this field ahead of others and helped to define it. Translational research—moving basic discoveries, which may have been inspired by clinical experience, into first-in-humans studies—was harder to fund and harder to do than pure basic science. The program area was a natural expression of BWF’s corporate legacy in the intelligent development of therapeutics—the sort of work that led to the Hitchings-Elion Nobel prize.

Prior to 1997, BWF offered a Scholar Award in Experimental Therapeutics that provided modest funding to mid-career investigators. In 1998, partially in response to the NIH Director’s Panel on Clinical Research, BWF launched a new program, Clinical Scientist Awards in Translational Research. In contrast to BWF’s other competitive programs, this program targeted established, independent investigators at the mid-career stage (having independent R01 funding was a prerequisite), and offered grants of \$750,000 over five years. The program advisory committee loosely defined “translational research” as that which would conceivably require IRB approval within the five-year award period. They worked hard to select candidates who had a clear vision for how basic, mechanistic discoveries might be advanced toward the testing in humans, and those

who were likely to serve as effective mentors for the next generation of physician scientists. The program made 97 awards, with a total financial commitment of \$72.75 million. The program selected the best physician scientists for this award, and we expected that they would go on to win other prestigious awards, as has been the case. Since 1998 BWF has also made 99 ad hoc grants in this focus area, totaling \$3,583,170, bringing the total investment to over \$76 million (Table 1).

Since the time BWF entered this area, the environment for Translational Research has changed dramatically. Notably a significant investment by NIH, in the form of a national network of Clinical and Translational Science Awards (CTSAs), provides infrastructure, training, and research support to 55 institutions nationwide. And in 2011, the NIH launched the National Center for Clinical and Translational Science (NCATS), which will include a reconfiguration of the CTSA program structure. These changes have meant that increasingly over the past five years, there has been much more support for ‘translation’ within academic health centers. This, combined with the economic recession, led the BWF board to discontinue making new awards in the Clinical Scientist in Translational Research award program for mid-career investigators, and to focus its efforts in this area through its investment in the early-career physician scientist who is working to move laboratory

Table 1: Investment to Date in Translational Research Focus Area: FY 2011 and Cumulative

Activity	New Awards FY 2011	Total FY98-FY11
Clinical Scientist Awards in Translational Research		\$72,750,000 97 grants (95.5%)
Ad hoc grants	\$125,000 5 grants	\$3,583,170 99 grants (4.7%)
Total	\$125,000	\$76,333,170

discoveries into human studies leading, potentially, to new therapeutics. The Career Awards in the Medical Sciences (CAMS) program already includes investigators who identify their work as ‘translational’, and roughly 40 percent of the awardees are conducting projects which require human subjects. BWF will continue to encourage applicants for CAMS who are interested in building this sort of career, and will thus continue to strengthen the pipeline for this type of investigator.

BWF still has a significant stake in the area of translational research, as we will continue to pay out over \$11 million for existing Clinical Scientist Awards over the next five years, and as already mentioned, nearly half of our CAMS awardees are pursuing translational research. At its February 2010 Board meeting, BWF determined that it would maintain its position of leadership and influence with an appropriate slate of ongoing career-development and policy activities, as well as by identifying specific areas under the broad umbrella of translational research for targeted BWF investment.

B. FY 2011 HIGHLIGHTS: TRANSLATIONAL RESEARCH

1. Regulatory Science

It has become clear that a critical area within translational research is regulatory science. Turning discoveries into innovative new approaches to therapies requires that the science of regulation keep up with the advances in biomedical science and technology. In recent years the FDA has become dramatically overburdened and underresourced, as outlined clearly in the 2007 FDA Science Board Report, *Science and Mission at Risk*.¹ Now responsible for regulating over \$2 trillion in consumer products across 150 countries, funding and manpower at the agency have not kept up with the rising responsibility. Of relevance to BWF, many of our awardees will depend on a modern regulatory science to enable the translation of their lab-based and pre-clinical work into innovative therapies. FDA Commissioner Margaret Hamburg has made regulatory science a centerpiece of the agency’s strategy for fostering innovation, and has called for the academic and foundation communities to take an active role in building this emerging field.

The area had come to BWF’s attention through our involvement in the IOM Forum on Drug Discovery, Development, and Translation, as well as the Health Research Alliance (HRA). In their October 2010 discussions, the BWF Board identified this area as one that BWF should explore for the possibilities of making a strategic investment. Consequently, outside speakers were invited to address the Board to build the rationale and provide ideas for BWF consideration.

These speakers included:

Feb. 2011: Susan Desmond-Hellmann, M.D., MPH, Chancellor, UCSF

May 2011: Margaret Hamburg, M.D., Commissioner, FDA; Janet Woodcock, M.D., Director, Center for Drug Evaluation and Research, FDA

An outcome of these conversations was that BWF would make a few short-term adhoc grants in the area and would also gather information about what types of mid- to long-term initiatives might best serve BWF’s mission and address this scientific need. Consistent with BWF’s primary strategy of supporting career development of scientists, our efforts will focus on developing investigators in this field. A summary of FY11 activities, which include two adhoc grants and staff effort follows.

HRA-FDA Distinguished Lectureship Program: BWF staff have worked directly with the FDA Commissioner and Chief Scientist to lay the groundwork for this program, through which external investigators would visit FDA to stimulate the formulation of new regulatory approaches in light of evolving science and technology. This area is of interest to many of the members of the HRA, and BWF took a leadership role by providing modest support (\$25,000) for the first two years of the program, which is part of HRA’s Regulatory Science Initiative. HRA members can nominate candidates to visit FDA scientists for a period of several days, and would be selected by a joint committee comprised of HRA and FDA representatives. The program would be jointly funded by HRA member organizations, which span disease areas and thus minimizes potential for conflict of interest.

Workshop: Strengthening a Workforce for Innovative Regulatory Science in Therapeutics Development: This workshop was convened at BWF initiative, as an activity of the IOM Forum on Drug Discovery, Development, and Translation. Nancy Sung served on the planning committee for the workshop, which took place in September 2011 and was attended by BWF staff.

2. Rare Diseases

Another area under the umbrella of translational research is research on rare diseases. Basic discoveries in rare disease areas are much less likely to be translated into therapies than are those in more common disease areas, which may guarantee a return on investment to industry investors, making this field undervalued. A good proportion of BWF awardees are working in rare disease areas. Further insight into the needs was gathered through Nancy Sung's participation on an IOM study committee in this area. BWF has no broad call for proposals in this area, but during FY11 was receptive to requests for meeting support that would convene investigators in rare disease areas in order to set scientific priorities and establish collaborations. Two such grants have been awarded through the adhoc mechanism—one in the area of mitochondrial diseases, and one in the area of chordoma.

3. Translational Research for Basic Scientists

Another emerging area under the Translational Research umbrella, as its funding and other resources are built up, is the increasing opportunity for basic scientists to become involved. As was reported at the February Board meeting, those proposing translational research are increasingly represented within the CASI applicant pool, and a number of our current awardees are conducting translational research. During FY 2011 BWF provided support for a FASEB effort to identify these opportunities more clearly, which included a summit on the topic that was hosted by HHMI in March. Several CASI awardees attended. A formal report from the meeting is still in preparation, with the goal that its recommendations will help shape future NIH funding mechanisms. During FY2011, BWF also provided support for a short course in translational research for basic scientists in cancer research, organized by the American Association for Cancer Research.

¹ FDA Science Board. 2007. FDA Science and Mission at Risk. Rockville, MD Report of the Subcommittee on Science and Technology.

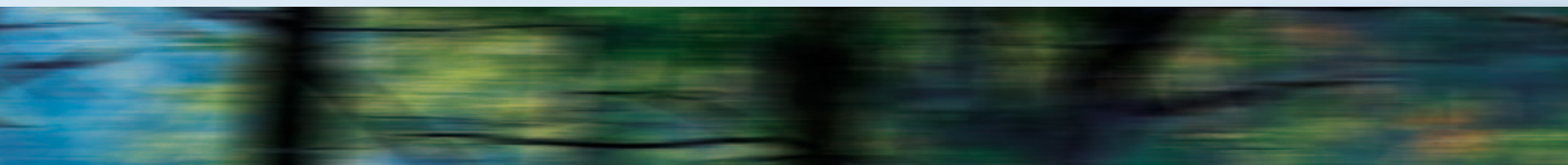
SCIENCE AND PHILANTHROPY

The Burroughs Wellcome Fund makes noncompetitive grants for activities and career development opportunities for scientists that fall outside of our competitive award programs, but are closely related to our targeted areas.

We place special priority on working with nonprofit organizations, including government agencies, to leverage financial support for our targeted areas of research, and on encouraging other foundations to support biomedical research. Proposals should be submitted to BWF by email. Mailed requests should be no more than five pages.

Applicants should describe the focus of the activity, the expected outcomes, and the qualifications of the organization or individuals involved; provide certification of the sponsor's Internal Revenue Service tax-exempt status; and give the total budget for the activity, including any financial support obtained or promised. Proposals are given careful preliminary review, and those deemed appropriate are presented for consideration by BWF's Board of Directors.

Applications are accepted throughout the year.



REPORT ON FINANCE

The Burroughs Wellcome Fund's investments totaled \$645.2 million at August 31, 2011, the end of our fiscal year. BWF's primary financial goal is to pursue an investment strategy that will support annual spending needs and maintain a constant real level of assets over the long term. To achieve this goal, a high percentage of our investments are placed in strategies that derive the bulk of their returns from exposure to U.S. and international capital markets. Hence, fluctuations in BWF's investment results will be due largely to variability in capital market returns.

BWF's investment policies are developed with the recommendations and review of the Investment Committee, which is appointed by and reports to BWF's Board of Directors. The committee, which meets three times a year, has five voting members, including three representatives from outside BWF and two representatives of our board. The board's chair, BWF's president, and BWF's vice president for finance also serve on the committee as nonvoting members.

As part of BWF's investment strategy, we have established "allocation targets"—that is, percentages of our total assets to be invested in particular asset classes. Investment managers hired by BWF pursue more focused mandates within each sector. As of the end of the fiscal year, BWF's asset mix and market values were:

- U.S. large capitalization equity assets had a market value of \$130.1 million. The sector's target allocation was 25 percent, and actual holdings stood at 20.2 percent.
- U.S. small capitalization equity assets had a market value of \$101.2 million. The sector's target allocation was 18 percent, and actual holdings stood at 15.7 percent.
- International equity assets had a market value of \$155.4 million. The sector's target allocation was 32 percent, and actual holdings stood at 24.1 percent.
- Fixed income assets had a market value of \$123.5 million. The sector's target allocation was 22 percent, and actual holdings stood at 19.1 percent.
- Cash equivalent assets had a market value of \$12.8 million. The sector's target allocation was 3 percent, and actual holdings stood at 2.0 percent.
- Alternative assets had a market value of \$122.2 million. The sector did not have a target allocation, and actual holdings stood at 18.9 percent. The maximum permitted allocation to alternative assets stood at 20.0 percent at cost.

The total market value of BWF's investments increased by \$37.2 million, or 6.1 percent, from the end of the previous fiscal year. This increase in assets was due mainly to strong returns for U.S. equities during the year. BWF's total investment return before investment management fees for the fiscal year was +12.9 percent. Returns in all three equity sectors as well as for bonds were positive for the fiscal year. The U.S. large capitalization equity sector returned +18.7 percent, the U.S.

small capitalization equity sector had a +23.6 percent result, the international equity sector posted a return of +11.0 percent for the fiscal year, and fixed income produced a +4.8 percent result.

As of August 31, 2011, BWF employed 10 marketable securities investment managers. In the U.S. large capitalization equity sector, the managers were State Street Global Advisors; LSV Asset Management; and Enhanced Investment Technologies. State Street Global Advisors, WCM Investment Management and Nuveen Asset Management managed U.S. small capitalization equities. Pacific Investment Management Company and Smith Breeden Associates were the fixed income managers. Capital Guardian Trust Company; Northern Cross; and Hansberger Global Investors managed international equities. BWF also held investments in seven venture capital

funds: Intersouth Partners IV, V and VI, Spray Venture Funds I and II, Mission Ventures II and A. M. Pappas Life Science Ventures II. Barlow Partners and Winston Partners managed funds of equity oriented hedge funds. Blackrock Alternative Advisors managed a fund of absolute return strategies. Pacific Investment Management Company managed an absolute return strategy. Finally, Hamilton Lane Advisors managed a fund of private equity strategies.

STATEMENTS OF FINANCIAL POSITION

August 31, 2011 and 2010

(All dollar amounts presented in thousands)

	2011	2010
Assets		
Cash and cash equivalents	\$ 18,460	\$ 41,048
Marketable securities	639,933	581,062
Accrued interest and dividends receivable	1,703	1,606
Federal excise tax receivable	—	92
Other assets	88	47
Property and equipment, net	9,673	10,017
Total assets	\$ 669,857	\$ 633,872
Liabilities and Net Assets		
Transactions payable, net	\$ 15,934	\$ 15,056
Accounts payable and other liabilities	995	960
Federal excise tax payable	588	—
Deferred federal excise taxes	645	—
Unpaid awards	83,538	91,519
Total liabilities	101,700	107,535
Unrestricted net assets	568,157	526,337
Total liabilities and net assets	\$ 669,857	\$ 633,872

STATEMENTS OF ACTIVITIES

August 31, 2011 and 2010

(All dollar amounts presented in thousands)

	2011	2010
Revenues and Realized Gains		
Interest and dividends, less investment expenses of \$3,237 and \$2,768 in 2011 and 2010, respectively	\$ 9,278	\$ 9,647
Net realized gain on sale of marketable securities	32,756	44,537
Total revenues and realized gains	42,034	54,184
Expenses		
Program services	24,979	2,721
Management and general	6,817	4,966
Total expenses before net unrealized appreciation and deferred federal excise tax	31,796	7,687
Net unrealized appreciation (depreciation) of marketable securities, net of provision for deferred federal excise taxes of \$645 and \$0 in 2011 and 2010, respectively	31,582	(8,156)
Change in net assets	41,820	38,341
Net assets at beginning of year	526,337	487,996
Net assets at end of year	\$ 568,157	\$ 526,337

For full audited financials visit bwfund.org/annualreport.

GRANTS INDEX

BWF makes all grants to nonprofit organizations. For most of the programs, the name of the individual on whose behalf the grant is made is listed first, the title of the award recipient's project is listed second, and the name of the organization that received the money is listed third.

For programs that may have coaward recipients, the award recipients and their organizations are listed first, followed by the project title. For grants made directly to organizations and not on behalf of an individual, the name of the organization is listed first, followed by the title of the project or a brief description of the activity being supported.

In addition to making competitive awards, BWF makes noncompetitive grants—Ad Hoc—for activities that are closely related to our major focus areas. These grants are intended to enhance the general environment for research in the targeted areas.

For full audited financials visit bwfund.org/annualreport

PROGRAM SUMMARY

August 31, 2011

	Approved	Paid	Transferred/ Cancelled*
Biomedical Sciences			
Career Awards in the Biomedical Sciences	\$ 558,204	\$ 4,017,316	\$ 252,451
Career Awards in the Medical Sciences	8,699,823	4,468,125	2,540,000
Research Travel Grant	253,714	250,750	—
Ad Hoc	126,000	140,100	—
Total	\$ 9,637,741	\$ 8,876,291	\$ 2,792,451
Infectious Disease			
Investigators in Pathogenesis of Infectious Disease	\$ 5,000,000	\$ 5,320,000	\$ —
Ad Hoc	2,225,000	2,749,348	—
Total	\$ 7,225,000	\$ 8,069,348	\$ —
Interfaces in Science			
Career Award at the Scientific Interface	\$ 5,708,743	\$ 4,448,743	\$ 874,500
Ad Hoc	334,000	351,000	—
Total	\$ 6,042,743	\$ 4,799,743	\$ 874,500
Population Sciences			
Institutional Program Unifying Population and Laboratory-Based Sciences	\$ —	\$ 1,692,000	\$ —
Total	\$ —	\$ 1,692,000	\$ —
Reproductive Sciences			
Preterm Birth Initiative	\$ 3,000,000	\$ 750,000	\$ —
Ad Hoc	\$ 311,500	\$ 500,150	\$ —
Total	\$ 3,311,500	\$ 1,250,150	\$ —

PROGRAM SUMMARY

August 31, 2011

	Approved	Paid	Transferred/ Cancelled*
Science and Philanthropy			
Science and Philanthropy	\$ 124,350	\$ 135,000	\$ -
Total	\$ 124,350	\$ 135,000	\$ -
Science Education			
Student Science Enrichment Program	\$ 109,277	\$ 1,382,801	\$ -
Career Award for Science and Mathematics Teachers	1,050,000	225,000	145,000
Ad Hoc	2,204,235	1,632,752	35,000
Total	\$ 3,363,512	\$ 3,240,553	\$ 180,000
Translational Research			
Clinical Scientist Award in Translational Research	\$ 525,000	\$ 5,250,000	\$ 525,000
Ad Hoc	145,000	155,000	590,000
Total	\$ 670,000	\$ 5,405,000	\$ 1,115,000
Grand Total†	\$ 30,374,846	\$ 33,468,085	\$ 4,961,951

* The "Transferred/Cancelled" totals reflect grants made to award recipients who changed institutions, modified the terms of their grant at their current institution, or both changed institutions and modified their grant. In these cases, BWF's policy has been to cancel the remaining portion of the original grant and, as necessary, approve a new grant, which is why in the following index an approved amount has been noted, but the recipient is not a new awardee. When the award recipient has changed institutions, the new grant is made to the new institution; when the award recipient has not moved but has modified the terms, the new grant is made to the current institution.

†To more accurately reflect the total amount that BWF approved in actual "new" dollars during this fiscal year, the "Transferred/Cancelled" total must be deducted from the "Approved" total.

Biomedical Sciences

CAREER AWARDS IN THE BIOMEDICAL SCIENCES

Derek W. Abbott, M.D., Ph.D.

Case Western Reserve University School of Medicine
Regulation of innate immunity via non-traditional ubiquitin linkages

Karl Mark Ansel, Ph.D.

University of California-San Francisco
Endogenous RNA interference and gene silencing in T cell differentiation

Diana M. Bautista, Ph.D.

University of California-Berkeley
Molecular and cellular mechanisms of mechanotransduction in mammalian sensory neurons

Thomas G. Bernhardt, Ph.D.

Harvard Medical School
Coordinating cell division and chromosome segregation in *Escherichia coli*

Bradley E. Bernstein, M.D., Ph.D.

Harvard Medical School
Proteomic studies of post-translational histone modifications

Michael D. Blower, Ph.D.

Harvard Medical School
Analysis of the role of RNA in spindle assembly

David L. Brody, M.D., Ph.D.

Washington University School of Medicine
Amyloid-beta and apolipoprotein E in traumatic brain injury

Mark M. Churchland, Ph.D.

Columbia University Medical Center
Experimental study of settling neural processes in the primate brain

William (Bil) M. Clemons, Ph.D.

California Institute of Technology
Structural studies of complexes involved in protein translocation and synthesis

Leah E. Cowen, Ph.D.

University of Toronto Faculty of Medicine
Hsp90 and the evolution of pathogens and their hosts

Seth J. Field, M.D., Ph.D.

University of California-San Diego School of Medicine
Comprehensive analysis of phosphoinositide function

Levi A. Garraway, M.D., Ph.D.

Dana Farber Cancer Institute
Linking genetic alterations to tumor dependencies in human melanoma

Erin C. Gaynor, Ph.D.

University of British Columbia
Molecular basis of colonization and invasion in the foodborne enteric pathogen *Campylobacter jejuni*

Matthew C. Gibson, Ph.D.

Stowers Institute for Medical Research
Design principles in metazoan epithelia: the molecular control of growth and form

Ira M. Hall, Ph.D.

University of Virginia School of Medicine
Investigation of DNA copy-number fluctuation and epigenetic inheritance using genomic microarrays

Chyi-Song Hsieh, M.D., Ph.D.

Washington University School of Medicine
Determining the antigen specificity of CD25+ CD4+ regulatory T cells

Leslie S. Kean, M.D., Ph.D.

Emory University School of Medicine
Innate immunity and transplantation tolerance: Defining the role of natural killer (NK) cells in allograft rejection

Tobias R. Kollmann, M.D., Ph.D.

University of British Columbia Faculty of Medicine
Induction of protective immunity to listeria in neonates

Mondira Kundu, M.D., Ph.D.

University of Tennessee Health Science Center College of Medicine
Role of Ulk1 and autophagy in erythroid maturation

Cheng-Yu Lee, Ph.D.

University of Michigan-Ann Arbor
Genetic regulation of neural stem cell self-renewal

Yaping Joyce Liao, M.D., Ph.D.

Stanford University School of Medicine
Neurophysiological dysfunction in calcium channelopathies

George Y. Liu, M.D., Ph.D.

University of California-Los Angeles
Role of Group B *Streptococcal* hemolysin/cytolysin and pigment in the pathogenesis of invasive neonatal infections

Stephen B. Long, Ph.D.

Memorial Sloan-Kettering Cancer Center
Atomic structures of open and closed voltage-dependent potassium channels and other eukaryotic membrane proteins

Aaron W. McGee, Ph.D.

University of Southern California Keck School of Medicine
Inhibition of plasticity in the adult central nervous system by Nogo-66 receptor signaling

Marc D. Meneghini, Ph.D.

University of Toronto Faculty of Medicine
Regulating chromatin domains in yeast and during animal development

Suzanne M. Noble, M.D., Ph.D.

University of California-San Francisco School of Medicine
Identification of virulence genes in *Candida albicans*, a diploid, commensal human fungal pathogen

Stephanie A. Pangas, Ph.D.

Baylor College of Medicine
Defining the role of TGF β superfamily in ovarian cancer through mouse models

Feroz R. Papa, M.D., Ph.D.

University of California-San Francisco
Connection between endoplasmic reticulum stress and type 2 diabetes

Michael G. Poirier, Ph.D.

Ohio State University
Study of DNA accessibility within nucleosome arrays

Matthew H. Porteus, M.D., Ph.D.

Stanford University School of Medicine
Regulation of gene targeting in vertebrate somatic cells

Oliver J. Rando, M.D., Ph.D.

University of Massachusetts Medical School
Time scales of epigenetic inheritance: How and why

Kyu Y. Rhee, M.D., Ph.D.

Weill Medical College of Cornell University
Enzymes of intermediary metabolism in *Mycobacterium tuberculosis*: Anti-mycobacterial targets of nitric oxide

Noah A. Rosenberg, Ph.D.

Stanford University
Efficient genome-based inference of ancestry for use in genetic association studies

Pardis C. Sabeti, M.D., D.Phil.

Harvard University
Evolutionary genomics and its applications to human disease

Sara L. Sawyer, Ph.D.

University of Texas-Austin
Using rapid evolution to identify intracellular proteins interacting with retrotransposons in yeast

Michael D. Shapiro, Ph.D.

University of Utah
Genetic and developmental basis of skeletal diversity in ninespine sticklebacks

Donald C. Sheppard, M.D.

McGill University
Isolation and characterization of genes involved in morphogenesis and virulence of *Aspergillus fumigatus*

Benjamin P. Tu, Ph.D.

University of Texas Southwestern Medical Center-Dallas
Logic of the yeast metabolic cycle

Loren D. Walensky, M.D., Ph.D.

Harvard Medical School
Targeting protein interactions in vivo using chemically reinforced helical peptides

David M. Weinstock, M.D.

Harvard Medical School
Defining individual DNA double-strand break repair capacity using zinc-finger nucleases

Jennifer A. Zallen, Ph.D.

Memorial Sloan-Kettering Cancer Center
Molecular analysis of dynamic cell rearrangements in *Drosophila*

Karen M. Zito, Ph.D.

University of California-Davis
Regulation of synapse formation in the mammalian cortex

CAREER AWARDS IN THE MEDICAL SCIENCES

Antonios O. Aliprantis, M.D., Ph.D.

Harvard Medical School
Novel regulators of the osteoclast differentiation program

Robert Baloh, M.D., Ph.D.

Washington University
Mechanism of peripheral neuropathy from Mitofusin 2 mutations

James Elliott Bradner, M.D.

Harvard Medical School
Design and characterization of highly potent inhibitors of HDAC6

Kathleen H. Burns, M.D., Ph.D.

Johns Hopkins University School of Medicine
Investigating the role of retrotransposons in hematopoietic neoplasias

Daniel P. Cahill, M.D., Ph.D.

University of Texas M.D. Anderson Cancer Center
Translational molecular genetic analyses of chemotherapeutic resistance in human brain tumors

Clark C. Chen, M.D., Ph.D.

Harvard Medical School
Molecular basis and therapeutic implications of genome instability during brain tumor progression

Alice Siau-In Chen-Plotkin, M.D.

University of Pennsylvania School of Medicine
Genomic approaches to frontotemporal dementia

Sandeep Robert Datta, M.D., Ph.D.

Harvard Medical School
Characterization of neural circuits that drive innate behaviors

Arlene Dent, M.D., Ph.D.

Case Western Reserve University
Acquisition of immunity to blood stage *Falciparum* malaria in infants

Mahalia Sabrina Desruisseaux, M.D.

Albert Einstein College of Medicine of Yeshiva University
Neuroparasitology: neurological complications of cerebral malaria

Jay F. Dorsey, M.D., Ph.D.

University of Pennsylvania
Identification of mSin3b and Mad4 as novel p53 target genes directing p53-mediated transcriptional repression

Chester Drum, M.D., Ph.D.

Massachusetts Institute of Technology
Protein nanoparticles for small molecule drug delivery

Benjamin Levine Ebert, M.D., Ph.D.

Harvard Medical School
Genomic approaches to disorders of erythroid differentiation

Brian Todd Edelson, M.D., Ph.D.

Washington University
Macrophage and dendritic cell development

Karin Elisabeth Finberg, M.D., Ph.D.

Duke University School of Medicine
Identification of Novel Genetic Regulators of Mammalian Iron Homeostasis

Rene L. Galindo, M.D., Ph.D.

University of Texas Southwestern Medical Center-Dallas
Genetic dissection of the Rhabdomyosarcoma initiator PAX-FKHR and PAX-related signaling in skeletal muscle development

Karunesh Ganguly, M.D., Ph.D.

University of California-San Francisco
Control of a Complex Neuroprosthetic Device using Electrocorticography

Wendy Sarah Garrett, M.D., Ph.D.

Harvard School of Public Health
Novel effectors and regulators of inflammation, chronic infection, and carcinogenesis in the colon

Pradipta Ghosh, M.D.

University of California-San Diego
Modulation of G-protein activity during oncogenic and metastatic progression

Darnell Kaigler, D.D.S., Ph.D.

University of Michigan-Ann Arbor
Cell therapy for the treatment of alveolar bone defects

Douglas Sun Kwon, M.D., Ph.D.

Harvard Medical School
New technologies for the study of HIV mucosal immunity and compartmentalization in the female genital tract

Lu Quang Le, M.D., Ph.D.

University of Texas Southwestern Medical Center-Dallas
Cell of origin and tumor microenvironment in NF1-associated neurofibroma development

Michael Z. Lin, M.D., Ph.D.

Stanford University School of Medicine
Elucidating mechanisms of synaptic plasticity and learning by visualizing and controlling local protein turnover

Roger Lo, M.D., Ph.D.

University of California-Los Angeles
Melanoma in the skin: initiation, progression, and crosstalk with dermal fibroblasts

Heather Christy Mefford, M.D., Ph.D.

University of Washington School of Medicine
Novel genomic rearrangements in developmental pediatric disorders

Eric Matthew Morrow, M.D., Ph.D.

Brown University
Identification of autism genes in special founder populations using high-density SNP microarrays

Nikhil Vilas Munshi, M.D., Ph.D.

University of Texas Southwestern Medical Center-Dallas
Genomic Approaches to Understanding the Cis-Regulatory Architecture of the Atrioventricular Node

Ken Nakamura, M.D., Ph.D.

University of California-San Francisco
Physiologic and pathologic interactions of alpha-synuclein with mitochondria in Parkinson's disease

Christopher Newton-Cheh, M.D.

Harvard Medical School
Genomic dissection of QT interval duration and sudden death

Dao Nguyen, M.D.

McGill University
Stringent response in *Pseudomonas aeruginosa* biofilm formation and antibiotic tolerance

Quyen T. Nguyen, M.D., Ph.D.

University of California-San Diego
Testing surgery guided by molecular fluorescence imaging

Robert M. Plenge, M.D., Ph.D.

Harvard Medical School
Genotype-phenotype studies of rheumatoid arthritis susceptibility genes

David Tevis Pride, M.D., Ph.D.

University of California-San Diego
Bacteriophage communities in oral health and disease

Frank J. Probst, M.D., Ph.D.

Baylor College of Medicine
Generation of mouse models for X-linked diseases

Stacey Lynn Rentschler, M.D., Ph.D.

University of Pennsylvania
Role of notch signaling in preexcitation and arrhythmias

Miguel Nicolas Rivera, M.D.

Harvard Medical School
Characterization of a novel X-linked tumor suppressor, WTX, in pediatric cancer

Joshua Marc Shulman, M.D., Ph.D.

Harvard Medical School
Exploring the Genetics of Parkinson's Disease in Humans and *Drosophila*

Agata Smogorzewska, M.D., Ph.D.

Rockefeller University
Role of the Fanconi Anemia and other DNA crosslink repair pathways in genome maintenance and cancer prevention

Eric Lee Snyder, M.D., Ph.D.

Massachusetts Institute of Technology
Regulation of lung cancer progression by the cell fate determinant Nkx2.1

Christopher Ryan Vakoc, M.D., Ph.D.

Cold Spring Harbor Laboratory
Identifying epigenetic vulnerabilities in chemotherapy-resistant leukemia

Matthew Vander Heiden, M.D., Ph.D.

Massachusetts Institute of Technology
Metabolic control of cancer cell proliferation by pyruvate kinase M2

Kevin Chun-Kai Wang, M.D., Ph.D.

Stanford University
Mechanisms of transcriptional regulation by long noncoding RNAs in partnership with chromatin modifying complexes

Duane Robert Wesemann, M.D., Ph.D.

Harvard Medical School
Extramedullary B Cell Development in the Gut Lamina Propria

Mark Nan Wu, M.D., Ph.D.

Johns Hopkins University School of Medicine
Identification of novel genes that regulate sleep in *Drosophila melanogaster*

Ann C. Zovein, M.D.

University of California-San Francisco
Hemogenic endothelium: hematopoietic stem cell emergence from the vasculature

RESEARCH TRAVEL GRANT

Ariana Anderson, Ph.D.

University of California-Los Angeles
Modeling of Autocorrelations and Hemodynamic Responses in fMRI Data Analyses

Maria-Grazia Ascenzi, Ph.D.

University of California-Los Angeles
Hierarchical simulation of mouse bone: the ultimate data analysis of mechanical behavior

Moriah Rene Beck, Ph.D.

Wichita State University
Palladin and regulation of actin dynamics

Laurent A. Bentolila, Ph.D.

University of California-Los Angeles
Super-Resolution and Dynamic Microscopy of Cytoplasmic Mammalian P bodies

John Alexander Berges, Ph.D.

University of Wisconsin-Milwaukee
Understanding cell death using agent-based models of algal systems

Louis Bouchard, Ph.D.

University of California-Los Angeles
RF Pulse Waveforms for Probing Dynamical Instabilities in Chemical Bioreactions

Rhima M Coleman, Ph.D.

Weill Medical College of Cornell University
Fluorophore-Assisted Carbohydrate Electrophoresis (FACE) Analysis of Glycosaminoglycan Structure during Cartilage Calcification

Joseph Robert Crosswell, Ph.D. Candidate

University of North Carolina-Chapel Hill
Impacts of industrial and sewage wastewater on carbon cycle dynamics in the Danshuei River Plume and Coastal Sea, Taiwan; a CO₂ source or sink in one of the world's highest carbon-emitting regions per capita?

Colleen Nicole Feriod, Ph.D. Candidate

Yale University School of Medicine
O-GlcNAcylation of InsP3R: Linking nutrient sensing with hepatic steatosis

Mark Goldman, Ph.D.

University of California-Davis
Oculomotor Mechanisms of Neural Integration

Oliver Gunther, Ph.D.

University of British Columbia
Cross-platform biological data integration and network analysis

Kristina Marie Herbert, Ph.D.

Yale University
Regulation of microRNA biogenesis through the core Microprocessor components

Max Jan, B.A.

Stanford University
Presentation at 2011 International Society for Stem Cell Research annual meeting

Maria Kamenetska, Ph.D. Candidate

Columbia University
Quantifying Histone Control over DNA Transcription Using Single Molecule Force Spectroscopy

Phillip E Klebba, Ph.D.

University of Oklahoma
Bioenergetics of Bacterial Membrane Transport in Antibiotic Development

Yanna Liang, D.Phil.

Southern Illinois University-Carbondale
Linking engineering with biological science: grant for attending a summer course

Pinghua Liu, Ph.D.

Boston University
Anti-Malarial Marine Natural Products

Hongshen Ma, Ph.D.

University of British Columbia
Microfluidic devices for studying the mechanics of red cells infected with *P. falciparum*

Lee M. Miller, Ph.D.

University of California-Davis
Advanced Techniques in Neuroimaging with EEG and fMRI

James Monaco, Ph.D.

Rutgers, the State University of New Jersey-New Brunswick
Pathology Training and Collaboration between Rutgers and University of Michigan

Jessica Marie Oakes, Ph.D. Candidate

University of California-San Diego
Multiscale Modeling of Particle Deposition in Animal Specific Lung Simulations

Herbert Pang, Ph.D.

Duke University
Next Generation Sequencing (Advanced course): Wellcome Trust Genome Campus, Hinxton, Cambridge, UK

Joshua Levi Payne, Ph.D.

Dartmouth College
Robustness, Evolvability, and Reproductive Isolation in the Signal-Integration Space of Gene Regulatory Networks

John Powers, Ph.D.

Harvard Medical School
Lin28 induction of blast crisis in a murine model of Ph+ Chronic Myeloid Leukemia

Callie Preast, B.S.

Emory University School of Medicine
Analysis of ZC3H14, an RNA binding protein required for proper brain function

Anca Ruxandra Radulescu, Ph.D.

University of Colorado-Boulder
Dynamical System Approach to Brain Profiling in Schizophrenia, Based on Imaging Data

Darren Roblyer, Ph.D.

University of California-Irvine
Understanding the Biological Basis of Optical Tumor Measurements

Daniel John Saltzberg, Ph.D. Candidate

Boston University
Ligand Induced Conformational Change of beta-Phosphoglucomutase via Solution X-ray Scattering

Miguel A. Santiago Cordoba, Ph.D. Candidate

Pennsylvania State University
Coupling whispery gallery modes with surface plasmon polariton

Edward Holmes Snell, Ph.D.

State University of New York-Buffalo
Introducing dynamics to structure

Sharon Soucek, B.S.

Emory University School of Medicine
Role for poly(A) binding proteins in mRNA splicing

Marjolein Christine van der Meulen, Ph.D.

Cornell University
Effect of Loading on Dkk1 Deficient Mice

Amy Jaye Wagoner Johnson, Ph.D.

University of Illinois
Collaborative Research Travel Grant to Promote Collaboration at the Interface of Engineering and Biology: The Role of Mechanical Engagement of Cadherins in Bone Cell Function

Clay Wang, Ph.D.

University of Southern California
Genome Mining of Secondary Metabolites in Actinomycetes

Christopher Shawn Weitzel, Ph.D.

Brandeis University
Modulating Nucleoid Organization and Condensation in Escherichia coli

Hongliang J Xu, Ph.D.

State University of New York-Buffalo
Mathematical Innovations for Structure Determination from Micro-Crystals

Amal Zouaq, Ph.D.

Royal Military College of Canada
Data Mining and Ontology Engineering for Biomedical Data

AD HOC

American Physician Scientists Association

Support for the annual meeting

American Society for Cell Biology

Support for the 50th annual meeting

American Society for Clinical Investigation/Association of American Physicans

Support for the 2011 joint meeting

Association of Military Surgeons of the United States

Support for the Sir Henry Wellcome Medal and Prize (2009-2013)

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National Postdoctoral Association

Support for the 14th annual National Institute of Environmental Health Sciences (NIEHS)/NIEHS Trainees Association (NTA) Biomedical Career Fair

Society for Neuroscience

Support for postdoctoral travel awards to the annual meeting

Society for the Advancement of Chicanos and Native Americans in Science

Support for travel scholarship awards for the National Conference

University of California-San Francisco

Support for developing an Individual Development Plan web module

University of Colorado-Boulder

Support for the 6th biennial Single Molecule Biophysics conference

University of North Carolina-Chapel Hill Center for Faculty Excellence

Support for a multidisciplinary workshop designed to help researchers better communicate their research to the public

University of North Carolina-Chapel Hill Lineberger Cancer Center

Support for the symposium, "Cell Metabolism and Cancer"

Infectious Diseases

INVESTIGATORS IN PATHOGENESIS OF INFECTIOUS DISEASE

David M. Aronoff, M.D.

University of Michigan-Ann Arbor
Prostaglandin E2 synthesis and signaling in the pathogenesis of puerperal Group A Streptococcus infections

David Artis, Ph.D.

University of Pennsylvania
Tracking helminth-specific immune responses in vivo

Jody L. Baron, M.D., Ph.D.

University of California-San Francisco School of Medicine
Understanding immunopathogenesis of Hepatitis B virus

Gregory M. Barton, Ph.D.

University of California-Berkeley
Interactions between TLRs and intracellular pathogens

Choukri Ben Mamoun, Ph.D.

Yale University
Function and regulation of host and parasite nutrient transporters during malaria infection

Richard J. Bennett, Ph.D.

Brown University
Phenotypic variation and host adaptation by the human fungal pathogen *Candida albicans*

Helen E. Blackwell, Ph.D.

University of Wisconsin-Madison
Interception of bacterial quorum sensing with synthetic ligands

Julie Magarian Blander, Ph.D.

Mount Sinai School of Medicine
Innate immune recognition of vita-PAMPs: a new class of pathogen associated molecular patterns that signifies microbial viability

Matthew S. Bogyo, Ph.D.

Stanford University School of Medicine
Chemical mapping of proteolytic networks involved in *Toxoplasma gondii* pathogenesis

Miriam Braunstein, Ph.D.

University of North Carolina-Chapel Hill
Identification of in vivo-secreted proteins of *Mycobacterium tuberculosis* with roles in host-pathogen interactions

John H. Brumell, Ph.D.

University of Toronto
Recognition of bacteria in the cytosol of mammalian cells by protein conjugation systems

James R. Carlyle, Ph.D.

University of Toronto
MHC-independent recognition of infected cells by natural killer cells of the innate immune system

Benjamin K. Chen, M.D., Ph.D.

Mount Sinai School of Medicine
Dissemination of HIV through virological synapses

Sara R. Cherry, Ph.D.

University of Pennsylvania
Systems biology of Alphavirus infection

Jen-Tsan Ashley Chi, M.D., Ph.D.

Duke University Medical Center
Sequence determinant of the *Plasmodium falciparum* gene regulation by human microRNAs

Blossom Damanian, Ph.D.

University of North Carolina-Chapel Hill
Role of viral signaling proteins in the pathogenesis of Kaposi's sarcoma-associated herpes virus (KSHV)

Andrew Darwin, Ph.D.

New York University School of Medicine
Mechanisms of *Pseudomonas aeruginosa* tolerance to secretin-induced stress during host infection

K. Heran Darwin, Ph.D.

New York University School of Medicine
Ubiquitin-like proteins in bacterial pathogens

Dana A. Davis, Ph.D.

University of Minnesota-Twin Cities
Control of phenotypic switching and pathogenesis by the Mds3 protein

Tatjana Dragic, Ph.D.

Albert Einstein College of Medicine of Yeshiva University
Entry and intracellular trafficking of Hepatitis C virus

Manoj T Duraisingh, Ph.D.

Harvard School of Public Health
Epigenetic control of virulence gene expression in *Plasmodium falciparum*

Jonathan Dworkin, Ph.D.

Columbia University
Characterization of a novel family of receptors mediating metazoan recognition of microbes

Peter J. Espenshade, Ph.D.

Johns Hopkins University
Oxygen-sensing and adaptation to host tissue hypoxia in the human fungal pathogen *Cryptococcus neoformans*

Michael R. Farzan, Ph.D.

Harvard Medical School
Parallel identification of obligate viral receptors

Michael J. Gale, Jr., Ph.D.

University of Washington
Control of hepatitis C virus replication

Stephen Girardin, Ph.D.

University of Toronto
Nod-like receptor Nod9 links mitochondrial dynamics and innate immunity to bacterial pathogens

Britt Glaunsinger, Ph.D.

University of California-Berkeley
Global modulation of cellular gene expression by an oncogenic human herpesvirus

Michael S. Glickman, M.D.

Memorial Sloan-Kettering Cancer Center
Role of regulated intramembrane proteolysis in controlling *Mycobacterium tuberculosis* virulence and cell envelope composition

Karen J. Guillemin, Ph.D.

University of Oregon
Regulation of gut epithelial cell homeostasis by the microbiota

Chuan He, Ph.D.

University of Chicago
How *Staphylococcus aureus* senses host immune defenses

Ekaterina Heldwein, Ph.D.

Tufts University School of Medicine
Structural mechanism of herpesvirus egress

Kent L. Hill, Ph.D.

University of California-Los Angeles
Cell-cell communication and social motility in pathogenesis and development of African trypanosomes

Lora V. Hooper, Ph.D.

University of Texas Southwestern Medical Center-Dallas
Innate immune responses to commensal bacteria at gut epithelial surfaces

Akiko Iwasaki, Ph.D.

Yale University
Stromal cell contributions in innate and adaptive immune responses to mucosal viral infection

Eckhard Jankowsky, Ph.D.

Case Western Reserve University
Molecular mechanisms of pathogen identification by the pattern recognition receptors RIG-I and MDA5

Robert F. Kalejta, Ph.D.

University of Wisconsin-Madison
Cellular and viral determinants of human cytomegalovirus lytic and latent replication cycles

Barbara I. Kazmierczak, M.D., Ph.D.

Yale University
Role of injury in *Pseudomonas aeruginosa* pulmonary infection

D. Borden Lacy, Ph.D.

Vanderbilt University Medical Center
Structural mechanisms of *Helicobacter pylori* pathogenesis

Manuel Llinas, Ph.D.

Princeton University
Global analysis of the *Plasmodium falciparum* metabolome

John D. MacMicking, Ph.D.

Yale University School of Medicine
Immune control of human phagosomal pathogens by a novel GTPase superfamily

Sarkis K. Mazmanian, Ph.D.

California Institute of Technology
Novel probiotic therapy for microbial infections

Yorgo Modis, Ph.D.

Yale University
Cell entry and innate immune recognition of flaviviruses

Denise M. Monack, Ph.D.

Stanford University
Host-pathogen interactions during persistent *Salmonella* infection

Joseph D. Mougous, Ph.D.

University of Washington
Breaching the commensal barrier to infection with type VI secretion

Kim Orth, Ph.D.

University of Texas Southwestern Medical Center-Dallas
VopL, a *Vibrio* effector that nucleates actin

John S. Parker, BVMS., Ph.D.

Cornell University College of Veterinary Medicine
Reovirus-induced apoptosis: the role of the viral outer-capsid protein $\mu 1$

Lalita Ramakrishnan, M.D., Ph.D.

University of Washington School of Medicine
Forward genetic screens in the zebrafish to identify host determinants of susceptibility to tuberculosis

Ana Rodriguez, Ph.D.

New York University School of Medicine
The role of hypoxanthine degradation in malaria-induced pathogenesis

Maya Saleh, Ph.D.

McGill University
Regulation and molecular mechanisms of NLR-mediated innate immunity

Erica O. Saphire, Ph.D.

Scripps Research Institute
Arenavirus GP: architecture, receptor binding sites, and immune recognition

Karla Fullner Satchell, Ph.D.

Northwestern University
Mouse model for the role of toxins in cholera pathogenesis

Luis M Schang, D.V.M., Ph.D.

University of Alberta
Silencing and antisilencing in the regulation of viral gene expression

Neal Silverman, Ph.D.

University of Massachusetts Medical School
Intracellular bacterial recognition in the *Drosophila* innate immune response

Eric Skaar, Ph.D.

Vanderbilt University Medical Center
In vivo identification of *Staphylococcus aureus* proteins that defend against host neutrophils.

Gregory A. Smith, Ph.D.

Northwestern University Feinberg School of Medicine
Coordination of herpesvirus assembly and transport in axons of sensory neurons

Justin L. Sonnenburg, Ph.D.

Stanford University School of Medicine
Mechanisms of intestinal microbiota-conferred protection from enteric pathogens

Vanessa Sperandio, Ph.D.

University of Texas Southwestern Medical Center-Dallas
Interkingdom signaling in bacterial pathogenesis

Adrie J.C. Steyn, Ph.D.

University of Alabama-Birmingham
Carbon monoxide and *Mycobacterium tuberculosis* persistence

Timothy L. Tellinghuisen, Ph.D.

Scripps Research Institute
Subversion of a host kinase and vesicle trafficking components for the production of infectious hepatitis C virus

Benjamin R. tenOever, Ph.D.

Mount Sinai School of Medicine
Small RNA-mediated control of microbes

Billy Tsai, Ph.D.

University of Michigan Medical School
How cholera toxin hijacks cellular machineries to transport across the ER membrane

Raphael H. Valdivia, Ph.D.

Duke University
Role of secreted bacterial proteases in chlamydial pathogenesis

Linda F. van Dyk, Ph.D.

University of Colorado Health Sciences Center
Analyzing the role of tumor suppressors in the control of virus infection and inflammation

Russell Vance, Ph.D.

University of California-Berkeley
Innate immune cytosolic immunosurveillance pathways for sensing bacterial pathogens

Andres Vazquez-Torres, D.V.M., Ph.D.

University of Colorado at Denver
and Health Sciences Center-Fitzsimons Campus
Effects of nitrosative stress on bacterial two component regulatory systems in innate host defense

David Wang, Ph.D.

Washington University School of Medicine
Genomics-based approach to novel viral etiologies of diarrhea

Sean P. Whelan, Ph.D.

Harvard Medical School
Exploration of the interaction of RNA viruses with their host cells

Marvin Whiteley, Ph.D.

University of Texas-Austin
Mechanistic insight into host modulation of bacterial group activities

Dong Yu, Ph.D.

Washington University School of Medicine
Modulation of the DNA damage response by human cytomegalovirus

Ning Zheng, Ph.D.

University of Washington
Viral hijacking of host ubiquitin ligase machinery

AD HOC

Albert Einstein College of Medicine of Yeshiva University

Support for awardee Sara Cherry to present a seminar

Albert Einstein College of Medicine of Yeshiva University

Support for the Workshop on Opportunistic Protists (IWOP)

American Society for Microbiology

Support for the ASM Kadner Institute and the ASM Scientific Writing and Publishing Institute for 2011

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Support for the 59th Annual Meeting

American Society of Tropical Medicine and Hygiene

Support for the American Committee of Molecular, Cellular and Immunoparasitology's scientific program of the 2010 annual meeting

American Society of Tropical Medicine and Hygiene

Support for three years of the BWF/ASTMH Fellowship in Tropical Infectious Diseases program 2012-2014

Association for Women in Science

Support for the Intern fund and corporate membership dues

Fraunhofer IGB - Federation of European Biochemical Societies

Support for the 4th Advance Lecture Course "Human fungal pathogens (HFP): molecular mechanisms of host-pathogen interactions and virulence"

Foundation for the National Institutes of Health

Support for the 2011 Ecology and Evolution of Infectious Diseases meeting travel scholarships

Genetics Society of America

Support for the 26th Fungal Genetics Conference

Gordon Research Conferences

Support for the conference on malaria

Gordon Research Conferences

Support for "Tropical Infectious Diseases: From Bench to Field"

Gordon Research Conferences

Support for the 2011 Viruses and Cells conference

Grants Managers Network

Support for the Grants Managers Network

Institute of Medicine

Support for activities of the Forum on Microbial Threats for three years

Iowa State University College of Veterinary Medicine

Support for a conference "Membrane Ion-channels in Helminth Parasites: Resistance and Sites of Action for Anthelmintics"

Keystone Symposia

Support for the 2011 conferences: Tuberculosis: Immunology, Cell Biology and Novel Vaccination Strategies (J3); Immunologic Memory, Persisting Microbes and Chronic Disease (B6); Immunity in the Respiratory Tract: Challenges of the Lung Environment (X6)

Marine Biological Laboratory

Support for the Molecular Mycology course 2009-2011

Marine Biological Laboratory

Support for the Biology of Parasitism Course

Marine Biological Laboratory

Support for three years of renewed support for the Molecular Mycology: Current Approaches to Fungal Pathogenesis (MOMY) course 2012-2014

McGill University

Support for the 11th International Congress on Toxoplasmosis

McGill University

Support for awardee David Artis to present a seminar

McGill University

Support for awardee Denise Monack to present a seminar

McGill University

Support for an awardee to present a seminar

Medical College of Wisconsin

Support for awardee Heran Darwin to present a seminar

Medical University of South Carolina

Support for the 8th International Conference on Cryptococcus and Cryptococcosis

New York University School of Medicine

Support for awardee Vanessa Sperandio to present a seminar

Northwestern University

Support for awardee Russell Vance to present a seminar

Scripps Research Institute

Support for awardee Blossom Damania to present a seminar

Society of Toxicology

Support for the 50th Anniversary meeting

University of British Columbia

Support for the 16th International Workshop on Campylobacter, Helicobacter, and Related Organisms

University of California-Santa Cruz

Support for awardee Julie Magarian Blander to present a seminar

University of Florida College of Veterinary Medicine

Support for the Merial -NIH National Veterinary Scholars Symposium

University of Florida College of Veterinary Medicine

Support for the BWF/Merial short course 'Becoming faculty: a short course on launching a scientific career'

University of Georgia

Support for students to attend the pathogen bioinformatics training workshop

University of Michigan

Support for the 18th annual Midwest Microbial Pathogenesis Conference

University of Minnesota College of Veterinary Medicine

Support for the BWF/HHMI partnership veterinary student training program—2010 BWF-HHMI Fellow, Jill Schappa/Mentor Jaime Modiano

University of North Carolina-Chapel Hill

Support for awardee Barbara Kazmierczak to present a seminar

University of North Carolina-Chapel Hill

Support for awardee Neal Silverman to present a seminar

University of North Carolina-Chapel Hill

Support for awardee Denise Monack to present a seminar

University of North Carolina-Chapel Hill

Support for awardee David Bloom to present a seminar

University of Notre Dame

Support for the organization of a Midwest Neglected Diseases meeting

University of Pennsylvania

Support for the development of a Pan Fungal data resource

University of Wisconsin-Madison School of Veterinary Medicine

Support for the BWF/HHMI partnership veterinary student training program—2010 BWF-HHMI Fellow, Meghan Vermillion and mentor Thaddeus Golos, Ph.D.

Vanderbilt University

Support for awardee Sean Whelan to present a seminar

Vanderbilt University

Support for awardee David Wang to present a seminar

Vanderbilt University Medical Center

Support for awardee Billy Tsai, to present a seminar

Yale University

Support for awardee Barbara Kazmierczak to present a seminar at the Cedars-Sinai Graduate Student Association (GSA) invited speaker series

Interfaces in Science

CAREER AWARD AT THE SCIENTIFIC INTERFACE

Emre Aksay, Ph.D.

Weill Medical College of Cornell University
Neural mechanisms for control of eye position

David Biron, Ph.D.

University of Chicago
Understanding small neural circuits

Julie S. Biteen, Ph.D.

University of Michigan-Ann Arbor
Superresolution imaging in live cells using single-molecule active-control microscopy

Paul C. Blainey, Ph.D.

Stanford University
From single cells to populations: using microfluidics, genomics, and culture to better understand infectious disease in the post-genomic era

Jasna Brujic, Ph.D.

New York University
Mechanical networks in biology: from proteins to cells

Nicolas E. Buchler, Ph.D.

Duke University
Gene duplication and the evolution of function in regulatory networks

Lynette Cegelski, Ph.D.

Stanford University
Mapping the structural and functional landscape of the microbial extracellular matrix

Yann R. Chemla, Ph.D.

University of Illinois-Urbana-Champaign
Single-molecule study of bacteriophage DNA packaging and mitochondrial protein import

L. Stirling Churchman, Ph.D.

University of California-San Francisco
Regulation of the RNA polymerase motor mechanism *in vivo*

Lindsay G. Cowell, Ph.D.

University of Texas Southwestern Medical Center-Dallas
Novel statistical approach to deducing the function of regulatory DNA: examples from analyses of recombination signal sequences

Derek Cummings, Ph.D.

Johns Hopkins University
Natural and vaccine-induced immunity and spatiotemporal dynamics of epidemic dengue

Rhiju Das, Ph.D.

Stanford University
High resolution prediction of new RNA folds

Shawn Michael Douglas, Ph.D.

Harvard Medical School
Self-assembled DNA devices for nanoscale manipulation of immune signal transduction

Alfredo Dubra-Suarez, Ph.D.

Medical College of Wisconsin
Understanding glaucoma through structural and functional *in vivo* cellular imaging of the retina

Alexander Dunn, Ph.D.

Stanford University
Single molecule characterization of the energetic landscape underlying myosin force generation

Surya Ganguli, Ph.D.

University of California-San Francisco
Expression and acquisition of sequence memory in neuronal networks

Margaret L. Gardel, Ph.D.

University of Chicago
Dynamic force generation in cell migration

Timothy J. Gardner, Ph.D.

Boston University
Tracking neural programs for song

Maria Neimark Geffen, Ph.D.

University of Pennsylvania School of Medicine
Perception and neural encoding of textured sounds

Keisuke Goda, Ph.D.

University of California-Los Angeles
Development of high-throughput blood screening technology for real-time noninvasive cancer diagnostics and therapy

Andrea Mitchell Goforth, Ph.D.

Portland State University
Bimodal, luminescent/magnetic nanoparticle assemblies targeted to alpha-4-beta-1 integrin for tumor imaging and therapy

Daniel I. Goldman, Ph.D.

Georgia Institute of Technology
Dynamic locomotion on challenging substrates

Ming Hammond, Ph.D.

University of California-Berkeley
Large-scale discovery and analysis of regulatory RNAs using computational and chemical approaches

Christopher D. Harvey, Ph.D.

Princeton University
Neural circuit mechanisms underlying decision-making in mice

Christine E. Heitsch, Ph.D.

Georgia Institute of Technology
Combinatorial and computational approach to deciphering the biological information encoded by single-stranded nucleotide sequences

Alan Horsager, Ph.D.

University of Southern California
Using genetically-targeted neural modulation to examine retinal circuits and restore vision in the blind

Ajit P. Joglekar, Ph.D.

University of Michigan Medical School
Building a mechanistic model of the structure and function of a kinetochore-microtubule attachment

Eleni Katifori, Ph.D.

Rockefeller University
Robustness and optimality in loopy biological distribution networks

Harold D. Kim, Ph.D.

Georgia Institute of Technology
Understanding the mechanisms of sensitivity in gene expression

Gavin M. King, Ph.D.

University of Missouri-Columbia
Dynamic structural biology of ion channel proteins: an ultra-stable atomic force microscope study

Mary L. Kraft, Ph.D.

University of Illinois-Urbana-Champaign
Composition analysis of the influenza virus pre-envelope by multiple isotope imaging mass spectrometry (MIMS)

Mark A. Kramer, Ph.D.

Boston University
Population rhythms of epilepsy

Edo L. Kussell, Ph.D.

New York University
Evolution of microbial physiologies

Alison L. Marsden, Ph.D.

University of California-San Diego
Engineering new treatments for cardiovascular disease via optimal design and physiologic simulation

Laura A. Miller, Ph.D.

University of North Carolina-Chapel Hill
Developmental and evolutionary biofluid dynamics: case studies in locomotion and heart development

Celeste M. Nelson, Ph.D.

Princeton University
Biophysical dynamics in the regulation of tissue morphogenesis

Dana Pe'er, Ph.D.

Columbia University
Systems approach to elucidate integration of signal and decision in cells

Joshua B. Plotkin, Ph.D.

University of Pennsylvania
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

Arjun Raj, Ph.D.

University of Pennsylvania
Stochastic gene expression in development: from phenomena to function

Benjamin J. Raphael, Ph.D.

Brown University
High-resolution analysis of tumor genome architectures

Aviv Regev, Ph.D.

Massachusetts Institute of Technology
From modules to mechanisms: the function and evolution of molecular networks

Tobias J. D. Reichenbach, Ph.D.

Rockefeller University
Low-frequency hearing in mammals

Jason T. Ritt, Ph.D.

Boston University
Active sensing in natural and robotic organisms

Michael Rust, Ph.D.

Harvard University
Nonlinear dynamics underlying the cyanobacterial circadian clock

Sridevi Vedula Sarma, Ph.D.

Johns Hopkins University
Improved therapies for Parkinson's disease using advanced engineering methods

Eva-Maria Schoetz, Ph.D.

Princeton University
Biophysical approaches to study stem cell dynamics during regeneration in planarians

Georg Seelig, Ph.D.

University of Washington
Nucleic acid logic circuits for conditional gene regulation

Eric T. Shea-Brown, Ph.D.

University of Washington
Neurobiological dynamics of timing and decisions

Alexander Sher, Ph.D.

University of California-Santa Cruz
Investigation of retinal processing through large-scale multielectrode recordings

Hadley D. Sikes, Ph.D.

Massachusetts Institute of Technology
Well-defined, supramolecular assemblies of redox enzymes via templated self-assembly for use in mechanistic electron transport studies and targeted apoptosis

Jonathan Rodolfo Silva, Ph.D.

Washington University
Applying molecular spectroscopy to derive multi-scale cardiac bioelectricity models

Jan M. Skotheim, Ph.D.

Stanford University
A systems level approach to cell cycle control: from molecules to motifs to physiology

Megan T. Valentine, Ph.D.

University of California-Santa Barbara
Establishing the mechanism of kinesin processivity

Daniel A. Wagenaar, Ph.D.

California Institute of Technology
Neural circuitry and mechanisms of multisensory integration in a predatory invertebrate

Lauren J. Webb, Ph.D.

University of Texas-Austin
Electrostatic fields at the protein-protein interface

Joshua S. Weitz, Ph.D.

Georgia Institute of Technology
Evolutionary ecology of bacterial viruses

AD HOC

Biophysical Society

Support for a special symposium for young researchers and the postdoc and graduate student breakfasts at the 55th Annual Meeting

City University of New York

Support for a semester-long program in spring 2011—"Theoretical Physics and the Phenomena of Life: Optimization and Emergent

Georgia Institute of Technology

Support for a soft matter workshop

**Kavli Institute for Theoretical Physics
Regents of the University of California**

Support for the KITP Interdisciplinary Biology Initiative

Marine Biological Laboratory

Support for the course "Physiology: Modern Cell Biology Using Microscopic, Biochemical and Computational Approaches" for three years (2011-2013)

Rutgers, The State University of New Jersey

Support for an international DIMACS conference titled "Effects of Genome Structure and Sequence on the Generation of Variation and Evolution"

University of California-San Diego

Support for the 7th International Congress of Biological Physics

Population and Laboratory Based Sciences

INSTITUTIONAL PROGRAM UNIFYING POPULATION AND LABORATORY-BASED SCIENCES

Emory University

Kenneth L. Brigham, M.D.

Human health: molecules to mankind (M2M)

University of Texas-Houston Health Science Center

C. Thomas Caskey, M.D.

Houston laboratory and population sciences training program
in gene-environment interaction

University of California-Los Angeles

Simin Liu, M.D., Sc.D.

University of California-Los Angeles inter-school program
in metabolic diseases

Reproductive Science

PRETERM BIRTH INITIATIVE

Kjersti M. Aagaard-Tillery, M.D., Ph.D.

Baylor College of Medicine
Contributions of maternal-fetal mitochondrial genome and microbiome interactions to preterm birth

Julie Baker, Ph.D.

Stanford University
Genomic networks that guide trophoblast invasion and disease

Mala S. Mahendroo, Ph.D.

University of Texas Southwestern Medical Center-Dallas
Assessment of cervical ripening by sodium magnetic resonance imaging

Jeffrey C. Murray, M.D.

University of Iowa
Genomic signatures of gene expression and alternative splicing in preterm birth

Indira Mysorekar, Ph.D.

Washington University School of Medicine
Occult infections in the etiology of preterm birth

AD HOC

Marine Biological Laboratory

Support for the 2010-2012 sessions of the Frontiers in Reproduction course

Marine Biological Laboratory

Support for the 2011 FIR symposium

McGill University

American Society of Andrology
Support for the XXI North American Testis Workshop "Testicular Determinants of Reproductive Success"

Society for Gynecologic Investigation

Support for the 58th annual meeting

Society for the Study of Reproduction

Support for Minority Affairs Committee activities at the annual meeting

Society for the Study of Reproduction

Support for Science Education Outreach Day

Teratology Society

Support for co-sponsorship of the poster session reception during the 51st annual meeting

University of California-San Francisco

Support for the 2010 Reproductive Scientist Development Program scholar's annual research conference/retreat

University of California-San Francisco School of Medicine

Support for a Reproductive Scientist Development Program junior faculty

Vanderbilt University School of Medicine

Burroughs Wellcome Fund research consortium on preterm birth

Science Education

CAREER AWARD FOR SCIENCE AND MATHEMATICS TEACHERS

Wendy Elizabeth Bartlett

Winston-Salem Forsyth County Schools
Using Technology to Engage Students in the Mathematics Classroom

Michael J. Bowman, Ed.D.

Buncombe County Schools
From Inquiry To STEM, Reforming My Classroom, My School, My District.

Gregory Scott Fisher

Winston-Salem Forsyth County Schools
Strengthening the Math Instruction in Forsyth County

William Hendrickson

Warren County Schools
Science at New Tech, the Impetus for a New Future for Warren County

Heather M. Kaiser

Cumberland County Schools
Simulations that Stimulate Student Scientists

Stuart Thomas Miles

Evergreen Community Charter School

Amanda Northrup

Haywood County Schools
Enriching Elementary STEM Teaching and Learning Through Professional Development and Science Equipment Rooms

Claudia Isabel Walker

Guilford County Schools
Murphey's Math and Technology Initiative

Jennifer Williams

Transylvania County Schools
Brevard High School

STUDENT SCIENCE ENRICHMENT PROGRAM

Bladen County Schools

Excite Sci Summer Science Epic

Boys and Girls Club of Pitt County

Science Alive

Carolina Electric Vehicle Coalition

EV Challenge: Promoting Science Education through Renewable Transportation Technologies

Catawba College

Catawba Conservation Camp

Cherokee Boys Club, Inc.

Sensational Science Saturdays at Cherokee Elementary School

Cherokee Middle School

Cherokee Science Investigation

Durham Academy

MONS (Mars Outreach for NC Students)

Durham Public Schools

Scientifica: DPS Nurturing Future Scientists

Elizabeth City State University

Teaching Earth Science to Inspire New Geologist

Foundation of the Carolinas

Sixth Grade Science Sleuths

Girl Scouts-North Carolina Coastal Pines

Girl Scouts Design and Discover

North Carolina Central University

Students Making Another Science Success Story (SMASSS)

North Carolina School of Science and Mathematics Foundation

Labs For Learning

North Carolina Society of Hispanic Professionals

Good Stewards of the Environment Program

North Carolina State University

North Carolina Floating Classroom Program

Orange County Schools

iWalk on the Eno

Pisgah Astronomical Research Institute

Space Science Lab

Sampson Early College High School

Inspiring Science

Scotland County Schools

Project QuEST (Quality Education through Science Teams)

Shodor Education Foundation Inc.

Computing MATTERS: Sowing the Seeds of SUCCEED

Southeastern Community College

Summer Science Camp in Invasive Species

University of North Carolina-Chapel Hill

Climate Leadership and Energy Awareness Program

University of North Carolina-Pembroke

Advanced Science Scholars Program

Wake Forest University

Cherokee MedCaT Academy Medical Career and Technology:
Enriched Student Experiences in Health Careers

Webb A. Murray Elementary School

Adventure de Ciencia: Connecting science content to our world!

West Marion Elementary School

G.O.A.L.—Get Outside And Learn

AD HOC

Afterschool Alliance

Continued support for the Afterschool Alliance STEM activities

American Sociological Association

Support for the Minority Fellowship Program

Association of American Colleges and Universities

Support for the integration of Project Kaleidoscope

Association of American Colleges and Universities

Support for travel costs for North Carolina K-16 faculty to the annual conference, Engaged STEM Learning, Miami

Bladen County Schools

Singapore Math Pilot

Cape Fear High School

Support for professional development activities for 2011-12

Contemporary Science Center

Supplemental travel support for schools to attend the Field Studies program

Crest Middle School of Technology

Support for professional development activities for 2011-12

Cumberland County Schools

Singapore Math Pilot Project at Gallberry Farm Elementary

Daniel Center for Math and Science

Support for after school/summer camp tutoring programs for at risk and economically disadvantaged youth, ages 5-12

East Carolina University

Support for a teacher workshop on Rocks and Minerals

Four Oaks Middle School

Support for the Barrett Rose Scholarship

**Friends of the North Carolina State Museum
of Natural Sciences**

Continued support for the Nature Research Center

**Friends of the North Carolina State Museum
of Natural Sciences**

Support for the 2011 North Carolina International Science Challenge

Grantmakers for Education

General support for 2011-12

Grantmakers for Education

Support for a feasibility study on the creation of a STEM Funders Network

Guilford County Schools

Support to participate in the Student Spaceflight Experiments Program

Guilford County Schools

Singapore Math Pilot at Murphey Traditional Academy

Health Research and Education Foundation

Project SEED

Hickory High School

Support for professional development for the 2011-12 school year

James B. Hunt Jr. Institute for Educational Leadership

Support for the Hunt Institute's efforts to promote North Carolina's adoption and effective implementation of the next generation science standards under development by the National Research Council and Achieve

McDowell County Schools

Building a Strong Math Foundation Through Constructing, Drawing, and Solving, a proposal by Eastfield Global Magnet School

McDowell County Schools

Support for the mathematics-science partnership Teachers and Administrators Partnering for Mathematics Learning (TAP Math)

Morehead Planetarium and Science Center

Support for the 2011 Science Festival

Morgridge Institute for Research

Support for the expansion and development of the Institute's educational materials and programs

North Carolina Association of School Administrators

Support for professional development of school administrators and the annual conference

National Association of Academies of Science

Support for the Breakfast with Scientists for American Junior Academy of Science students at the AAAS meeting

North Carolina Chamber

Support for the Second Annual Education Summit

North Carolina Chamber

Support for the Third Annual Education Summit

North Carolina New Schools Project

Support for the City of Medicine Anchor School and Health/Life Sciences Cluster

North Carolina Principal and Assistant Principals' Association

Support for the Distinguished Leadership in Practice program

North Carolina School of Science and Math

Support for the Summer Leadership and Research Experience

North Carolina School of Science and Mathematics Foundation

Support for participation in the Singapore International Science Challenge in May 2011

North Carolina School of Science and Mathematics Foundation

Continued support for the Student Academy of Science

North Carolina Science Leadership Association

Support for year two of the the NCSLA Fellows program for 2009-11

North Carolina Science Teachers Association

Support for the North Carolina Science Teacher Association meeting

North Carolina Science Teachers Association

Support for the 2011 NCSTA Professional Development Institute

North Carolina State University

Support for the K-12 outreach conference

Public School Forum of North Carolina

Support for the Institute for Educational Policymakers and the International Travel

Public School Forum of North Carolina

Support for 2011

Public School Forum of North Carolina

Support for the North Carolina Center for Afterschool Program for 2011-12

Public School Forum of North Carolina

Support for the Institute for Educational Policymakers

Salisbury High School

Support for professional development activities for 2011-12

Society for In Vitro Biology

Support for a workshop at the Society for In Vitro Biology Annual Meeting introducing the latest technologies to high school and undergraduate science educators.

University of North Carolina General Administration

Support Science Education “Fast Track” Initiative

University of North Carolina-Chapel Hill

Support for the annual North Carolina Alliance to Create Opportunity through Education (NC OPT-ED) Alliance Day

University of North Carolina-Chapel Hill

Support for the 2011 DNA Day

University of North Carolina-Chapel Hill

Support for the 10th annual NC OPT-ED Alliance Day Conference

University of North Carolina-Chapel Hill School of Education

Support for the evaluation of the Career Award for Science and Mathematics Teachers program

Watauga Education Foundation

General support

Wilkes County Schools

Singapore Math Project—North Wilkesboro Elementary School

Wilson County Schools

Support for the NC Leadership and Assistance for Science Education Reform (LASER) Demonstration and Professional Development

Translational Research

CLINICAL SCIENTIST AWARD IN TRANSLATIONAL RESEARCH

Jayakrishna Ambati, M.D.

University of Kentucky
Target-independent suppression of angiogenesis by siRNAs

Mark Stuart Anderson, M.D., Ph.D.

University of California-San Francisco
Translating AIRE-control of immune tolerance to human autoimmunity

Richard J. Auchus, M.D., Ph.D.

University of Texas Southwestern Medical Center-Dallas
Pharmacogenomics of hypertension

Arul M. Chinnaiyan, M.D., Ph.D.

University of Michigan-Ann Arbor
Autoantibody profiles for cancer diagnosis, prognosis, and therapy

Bruce E. Clurman, M.D., Ph.D.

University of Washington
Diagnostic and therapeutic approaches to cell cycle-associated cancer

Kathleen Loretta Collins, M.D., Ph.D.

University of Michigan-Ann Arbor
Viral mechanisms of persistence in HIV infected people

Kenneth R. Cooke, M.D.

Case Western Reserve University School of Medicine
Acute lung injury after SCT: from laboratory insights to novel strategies for diagnosis and treatment

Laurence J Cooper, M.D., Ph.D.

University of Texas M.D. Anderson Cancer Center
Tumor-specific alloantigen-aneergic donor-derived T-cell therapy after hematopoietic stem-cell transplantation

James E. Crowe, Jr., M.D.

Vanderbilt University School of Medicine
Immunology and cell biology of human metapneumovirus infections

Kenneth Cusi, M.D.

University of Texas Health Science Center-San Antonio
Non-alcoholic fatty liver disease in type 2 diabetes: a novel intervention strategy targeting metabolic & molecular defects

Michael R. DeBaun, M.D.

Vanderbilt University
Cysteinyl leukotriene receptor inhibitors: a target for decreasing sickle cell disease-related morbidity

Michael S. Diamond, M.D., Ph.D.

Washington University
Epitope-based immunogens and diagnostics for dengue virus

Dean W. Felsher, M.D., Ph.D.

Stanford University School of Medicine
Pre-clinical validation of g-quadruplex drugs that target MYC to treat cancer

Joseph G. Gleeson, M.D.

University of California-San Diego School of Medicine
Causes and pathogenesis of cerebellar malformation syndromes in humans: bedside to bench

Jeffrey S. Glenn, M.D., Ph.D.

Stanford University School of Medicine
Hepatitis C virus: from molecular virology to effective pharmacologic eradication

William M. Grady, M.D.

University of Washington
Novel biomarkers for the prevention and treatment of colon cancer

Thomas Richard Hawn, M.D., Ph.D.

University of Washington
Variation and regulation of innate immunity to Mycobacteria

Robert O. Heuckeroth, M.D., Ph.D.

Washington University
Genetic and non-genetic risk for Hirschsprung disease

Anna Huttenlocher, M.D.

University of Wisconsin-Madison
Diagnosis and treatment of autoinflammatory disease

S. Ananth Karumanchi, M.D.

Harvard Medical School
Soluble endoglin in the pathogenesis and prediction of preeclampsia

Francis Lee, M.D., Ph.D.

Weill Medical College of Cornell University
Role of BDNF in therapeutic strategies for affective disorders

Ernst Robert Lengyel, M.D., Ph.D.

University of Chicago
Development of novel therapeutic and diagnostic strategies for ovarian cancer

Dean Y. Li, M.D., Ph.D.

University of Utah
Therapeutic potential of vascular guidance cues

Ali J. Marian, M.D.

University of Texas Health Science Center-Houston
Molecular genetics and pathogenesis of human arrhythmogenic right ventricular cardiomyopathy/dysplasia

Daniel L. Marks, M.D., Ph.D.

Oregon Health and Science University
Maternal nutrition and fetal metabolic programming

Ari M. Melnick, M.D.

Weill Medical College of Cornell University
Differentiation therapy for B-cell lymphomas

Branch Moody, M.D.

Harvard Medical School
Human T-cell responses to CD1 and lipid antigens from
M. tuberculosis

Richard J. O'Brien, M.D., Ph.D.

Johns Hopkins University School of Medicine
Alzheimers disease and synaptic transmission

Jonathan R. Pollack, M.D., Ph.D.

Stanford University
Pathogenesis and diagnosis of clinically-indolent prostate cancer

Kerry J. Ressler, M.D., Ph.D.

Emory University
Neurobiology of fear, neuroplasticity and posttraumatic stress disorder

Annabelle Rodriguez, M.D.

Johns Hopkins University School of Medicine
Deficiency of the lipoprotein receptor, scavenger receptor class B
type I, in women with infertility

Theodora S. Ross, M.D., Ph.D.

University of Michigan-Ann Arbor
Abnormal HIP1 and cancer biology

Charles M. Rudin, M.D., Ph.D.

Johns Hopkins University
Novel therapeutic strategies for small cell lung cancer

Jean E. Schaffer, M.D.

Washington University
Lipotoxic cardiomyopathy: from molecular mechanisms to
human disease

Norman E. Sharpless, M.D.

University of North Carolina-Chapel Hill
The p16INK4 a tumor suppressor in stem cell aging

Warren D. Shlomchik, M.D.

Yale University
Memory T cells for improved immune reconstitution and GVL in
allogeneic hematopoietic stem cell transplantation

Pradeep Singh, M.D.

University of Washington
Gallium as an antimicrobial and anti-biofilm agent: a trojan horse
strategy that disrupts bacterial iron metabolism

Jeffrey A. Toretsky, M.D.

Georgetown University
Novel cancer therapeutics based upon oncogenic fusion-protein
transcription factors

Russell Van Gelder, M.D., Ph.D.

University of Washington
Pathogenesis of inflammatory eye disease

Stephanie Ware, M.D., Ph.D.

University of Cincinnati
Uncovering novel genetic causes and risks in congenital heart disease
patients

Edus Houston Warren, M.D., Ph.D.

University of Washington
Toward immune therapy for colon cancer: identification of antigens
recognized by CD8+ T lymphocytes on colon cancer stem cells

William A Weiss, M.D., Ph.D.

University of California-San Francisco
Combination therapy against EGFR and PI3-kinase in glioma

Cassian Yee, M.D.

University of Washington
Adoptive therapy of cancer: strategies to augment the antigen-specific
T cell response

Kang Zhang, M.D., Ph.D.

University of California-San Diego
Define novel genes for diabetic microvascular complications

AD HOC

Association for Clinical Research Training

Support for the 2011 annual meeting

Chordoma Foundation

Support for the Third International Chordoma Research Workshop

Clinical Research Foundation

Support for the Clinical Research Forum and Clinical Research Foundation annual meeting and for patient advocacy group programs for 2011

Health Research Alliance

Support for the Regulatory Science Initiative for 2011-2012

Institute of Medicine

Support for the Forum on Drug Discovery, Development, and Translation

Institute of Medicine–National Academy of Sciences

Support for the IOM workshop titled “Strengthening a Workforce for Innovative Regulatory Science in Therapeutics Development”

United Mitochondrial Disease Foundation

Support for the annual symposium

University of Western Ontario

Support for the 2010 Clinician Investigator Trainee Association of Canada’s general meeting and international workshop

Science and Philanthropy

American Association for the Advancement of Science

Support for AAAS Mass Media Science and Engineering Fellowship Program for 2011

Contemporary Science Center

Support for ScienceOnline2011

Council on Foundations

Support for 2011

Foundation Center

Support for 2010-11

Friends of the Mountains to Sea Trail

General support for 2011-12

Health Research Alliance

Support for 2011

National Humanities Center

Support for the "On the Human" website

Neuse River Golden Retriever Rescue

General support in 2011-12

North Carolina Community Foundation/North Carolina Network of Grantmakers

Support for 2011-12

Science Spark

Support for a SciCheer exhibit at the U.S.A. Science and Engineering Festival

University of North Carolina Foundation

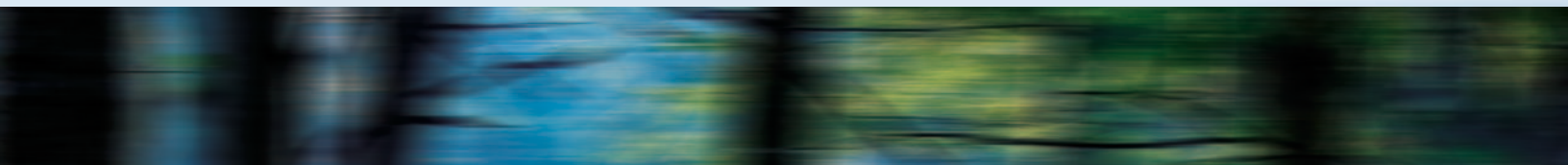
Support for the inauguration of Tom Ross as president of the University of North Carolina System

University of California-San Francisco Foundation

Support for the Graduate Student Internships for Career Exploration program

ADVISORY COMMITTEES

The Burroughs Wellcome Fund uses advisory committees for each competitive award program to review grant applications and make recommendations to BWF's Board of Directors, which makes the final decisions. We select members of these committees for their scientific and educational expertise in the program areas. In addition, BWF uses a financial advisory committee to help in developing and reviewing the BWF's investment policies. This committee is appointed by and reports to the Board of Directors.



CAREER AWARDS AT THE SCIENTIFIC INTERFACE

William Bialek, Ph.D.

John Archibald Wheeler/Battelle Professor, Department of Physics
Associate Director, Lewis-Sigler Institute for Integrative Genomics
Princeton University

Emery Brown, M.D., Ph.D.

Professor, Computational Neuroscience and Health Sciences
and Technology
MIT-Harvard Division of Health Science and Technology
Massachusetts Institute of Technology
Professor of Anaesthesia
Harvard Medical School

Nancy J. Kopell, Ph.D.

William Goodwin Aurelio Professor of Mathematics and Science
Boston University

John Kuriyan, Ph.D.

Investigator, Howard Hughes Medical Institute
Chancellor's Professor
Department of Molecular and Cell Biology
Department of Chemistry
University of California-Berkeley

Wendell Lim, Ph.D.

Professor
Department of Cellular and Molecular Pharmacology
Department of Biochemistry and Biophysics
University of California-San Francisco

Gene Myers, Ph.D.

Group Leader
HHMI Janelia Farm Research Campus

Rob Phillips, Ph.D.

Professor of Applied Physics and Bioengineering
California Institute of Technology

Alan S. Perelson, Ph.D.

Senior Fellow
Los Alamos National Laboratory

Stephen R. Quake, Ph.D.

Professor and Co-chair
Department of Bioengineering
Stanford University

Shankar Subramaniam, Ph.D.

Joan and Irwin Jacobs Endowed Chair in Bioengineering and Systems
Biology
University of California-San Diego

Julie A. Theriot, Ph.D.

Associate Professor
Department of Biochemistry
Department of Microbiology and Immunology
Stanford University School of Medicine

Michelle D. Wang, Ph.D.

Investigator, Howard Hughes Medical Institute
Professor of Physics
Cornell University

Raimond L. Winslow, Ph.D. (Chair)

Director, Institute for Computational Medicine
Professor, Department of Biomedical Engineering
Johns Hopkins University

CAREER AWARDS FOR SCIENCE AND MATHEMATICS TEACHERS

Hon. Larry Bell

North Carolina General Assembly
House of Representatives

Enriqueta C. Bond, Ph.D.

Past President
Burroughs Wellcome Fund

Angela Quick, Ed. S.

Deputy Chief Academic Officer
State Board of Education

Pat Shane, Ph.D. (Chair)

Associate Director
University of North Carolina-Chapel Hill
Center for Mathematics and Science Education

Dave Smith

Director
Center for Inquiry Based Learning

CAREER AWARDS FOR MEDICAL SCIENTISTS

Jack Antel, M.D.

Professor of Neurology and Neurosurgery
McGill University

Gail H. Cassell, Ph.D.

Visiting Professor
Department of Global Health and Social Medicine
Harvard Medical School

Aravinda Chakravarti, Ph.D.

Director, Center for Complex Disease Genomics
McKusick - Nathans Institute of Genetic Medicine
Johns Hopkins University School of Medicine

Tamara L. Doering, M.D., Ph.D.

Professor, Dept. of Molecular Microbiology
Washington University School of Medicine
BWF Career Awardee in the Biomedical Sciences – 1996

H. Shelton Earp, III, M.D.

Professor and Director, Lineberger Comprehensive Cancer Center
University of North Carolina-Chapel Hill School of Medicine

Kelsey C. Martin, M.D., Ph.D.

Chair and Professor
Dept. of Biological and Chemistry and Dept. of Psychiatry and
Biobehavioral Sciences
University of California-Los Angeles
BWF Career Awardee in the Biomedical Sciences – 1997

Martin M. Matzuk, M.D., Ph.D.

Stuart A. Wallace Chair and Professor
Dept. of Pathology and Molecular & Cellular Biology
Baylor College of Medicine

Elizabeth McNally, M.D., Ph.D. (Co-Chair)

Professor of Medicine and Human Genetics
University of Chicago
BWF Clinical Scientist Awardee in Translational Research – 2001

Louis Muglia, M.D., Ph.D.

Co-Director, Perinatal Institute, Division of Neonatology
University of Cincinnati Children's Hospital Medical Center
Director, Center for Preterm Birth Research
Professor, UC Dept. of Pediatrics
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Investigator, Howard Hughes Medical Institute
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Ellison American Cancer Research Professor
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University of Pennsylvania School of Medicine

Daniel E. Goldberg, M.D., Ph.D.

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Washington University School of Medicine

William E. Goldman, Ph.D.

Professor and Chair, Microbiology and Immunology
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Tufts University School of Medicine

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Albert Einstein College of Medicine of Yeshiva University

Anne Moscona, M.D.

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Weill Medical College of Cornell University

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Jeffrey A. Whitsett, M.D.

Chief, Section of Neonatology, Perinatal and Pulmonary Biology
University of Cincinnati Children's Hospital

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Acting Deputy Division Director
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School of History, Technology and Society
Georgia Institute of Technology

Brenda Wojnowski, Ed.D.

Consultant
Wojnowski and Associates

Terri L. Woods, Ph.D.

Associate Professor of Geology
East Carolina University

Margaret M. Young, Ph.D.

Associate Professor
Department of Biology
Elizabeth City State University

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Betsy Stewart

Administrative Assistant

Program Contact Information

BIOMEDICAL SCIENCES; REPRODUCTIVE SCIENCES

Rolly Simpson

Senior Program Officer
rsimpson@bwfund.org

Debra Holmes

Senior Program Associate
dholmes@bwfund.org

INFECTIOUS DISEASES; POPULATION AND LABORATORY BASED SCIENCES

Victoria P. McGovern, Ph.D.

Senior Program Officer
vmcgovern@bwfund.org

Jean A. Kramarik

Senior Program Associate
jkramarik@bwfund.org

INTERFACES IN SCIENCE; TRANSLATIONAL RESEARCH

Nancy S. Sung, Ph.D.

Senior Program Officer
nsung@bwfund.org

Debra A. Vought

Senior Program Associate
dvought@bwfund.org

SCIENCE EDUCATION

D. Carr Thompson

Senior Program Officer
cthompson@bwfund.org

Melanie B. Scott

Senior Program Associate and Database
Specialist
mscott@bwfund.org

COMMUNICATIONS/MEDIA

Russ Campbell

Communications Officer
news@bwfund.org

PROGRAM INFORMATION

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Burroughs Wellcome Fund

21 T. W. Alexander Drive

P. O. Box 13901

Research Triangle Park, NC 27709-3901

919.991.5100

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