

\$4.3 Million in Grants Awarded to Advance Careers of Physical, Chemical, and Computational Scientists Seeking Careers in Biology

In an effort to bring fresh perspectives into biomedical research, BWF has made \$4.3 million in grants to support eight postdoctoral scientists with backgrounds in physics, chemistry, or mathematics. The grants are intended to assist interdisciplinary scientists launching academic careers at the interface between the physical or computational and biological sciences.

Career Awards at the Scientific Interface (CASI) for 2002 provide \$538,000 over five years to support up to two years of advanced postdoctoral training and the first three years of a faculty appointment. The grants are made to degree-granting institutions in the United States or Canada on behalf of the award recipient.

"These awards provide an opportunity for outstanding postdoctoral scientists from the physical, chemical, and computational sciences to work on interesting and challenging biological questions," says BWF President Enriqueta C. Bond, Ph.D. "Through this grant program, the Fund is trying to jump-start the careers

of a new breed of scientist who will meet the quantitative challenges emerging in biology."

Examples of approaches include, but are not limited to, physical measurement of biological phenomena, computer simulation of complex processes in physiological systems, mathematical modeling of self-organizing behavior, building probabilistic tools for medical diagnosis, developing novel imaging tools or biosensors, applying nanotechnology to manipulate cellular systems, predicting cellular responses to topological clues and mechanical forces, and developing a new

conceptual understanding of the complexity of living organisms.

"Recent experimentation has provided results of unprecedented quantitative precision in numerous areas of biology," says BWF board member James Hudspeth, M.D., Ph.D., former cochair of the Interfaces Advisory Committee. "Assimilating these data into models and eventually into compact theories will require a generation of young researchers with detailed training in mathematics, physics, and chemistry, and with a willingness to move beyond the conventional

CASI Grants (Continued on page 8)

Matthias Gromeier's Fifteen Minutes of Fame

Pop artist Andy Warhol once quipped that in the future we will all be famous for 15 minutes. But he neglected to offer any advice on how to handle that moment of fame. Becoming the subject of media attention is an experience for which most scientists are not prepared. Dr. Matthias Gromeier's moment occurred in summer 2001 when his presentation on using an altered form of the polio virus to attack brain tumors caught the attention of the British Broadcasting Corporation (BBC). From the initial BBC report, word quickly spread and Dr. Gromeier, assistant professor of microbiology at Duke University Medical Center and 2000 Career Award in the Biomedical Sciences recipient, found himself the center of a media event. We asked him to reflect on his experience and to offer advice to others whose time in the spotlight has not yet come.

Briefly explain how your work came to the attention of the media?

I was "press released" twice; once through the National Academy after a

paper of mine was published in *Proceedings of the National Academy of Sciences* (PNAS), and once through the American Society for Microbiology when I was invited to speak at their general meeting in Orlando, Florida, in May 2001. [Both of these organizations sent out a news alert, or "press release" to the media about Gromeier's upcoming scientific report.]

What assistance, if any, did you receive from your university public relations office?

Assistance was wonderful, especially after a TV reporter from the BBC called the university president to inquire about my work. The PR office handled all press contacts, collected all stories, and arranged all interview requests. Very importantly, they shot a video that they sent out to dozens of TV stations, saving me the work of having to deal with them individually.

Gromeier (Continued on page 2)

The Focus of this Issue...

Burroughs Wellcome Fund awardees in the news.

In this issue of Focus, we introduce you to several BWF award recipients whose work has been making waves in the science community and in the press.

- Dr. Matthias Gromeier, M.D., gets 15 minutes of fame p. 1
- Sara Tishkoff, Ph.D., reveals new insight on malaria resistance p. 2
- Ram Sasisekharan, Ph.D., discovers important new role for sugars in controlling cancer p. 3
- Bryan Sutton, Ph.D., combines loves of science and bagpipes p. 4

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How many news items were generated? Where did they appear?

I had four television teams who interviewed and videotaped me in the lab. I gave around 20 interviews to various radio outlets and countless press interviews. I don't know how many items were generated from this material because my contacts involved large news agencies that sell their material worldwide (e.g. I was interviewed/taped by BBC, UPI, Reuters, FOX).

Did the resulting stories portray your work accurately? Were any better than others?

I was surprised at the quality of the journalistic work. Many of the journalists with whom I worked were very well prepared, had a scientific background, and were very eager to learn. The poorest quality reporting was generally TV. They were very intent, of course, to produce appealing visual material which is very difficult in a lab. Their questions frequently sounded like: "...What does this discovery mean to you personally?...". I was occasionally uncomfortable with the "personal touch" TV reporters tried to infuse. Radio interviews were always very professional with excellent reporters. Also, I was very satisfied with the quality and accuracy of newspaper interviews. Most frequently, quality coincided with the reputation of the news agency. My best interview was with the BBC. Interestingly, by far the worst report was from *Nature*, the scientific journal.

Did you learn anything surprising about the effects of getting media attention for your work?

I was surprised at the effect media coverage had on my status within the university. I had talked previously about my work to administrators and senior colleagues, yet I got the distinct feeling that the coverage significantly enhanced my status. Also, I was amazed at the response from patients. I experienced the global reach of the media. Stories about our work were featured in major Chinese,

Career Awardee Mounts Ambitious Effort to Study Genetic Diversity in Africa

While a postdoctoral fellow, Sara Tishkoff, Ph.D., had an idea to combine her interests in evolutionary biology, human genetics, and anthropology to trace the evolution of human resistance to the malaria parasite. But such an ambitious effort would require locating collaborators on three continents and not least, the funding to launch the effort.

A 2000 BWF Career Award in the Biomedical Sciences allowed Dr. Tishkoff, now assistant professor of biology at the University of Maryland-College Park, to undertake the project.

Dr. Tishkoff and her colleagues studied mutations in the gene for an enzyme called glucose-6-phosphate dehydrogenase (G6PD), which are known to confer a resistance to the malaria parasite. The defect can also trigger bouts of severe anemia in affected persons, who number 400 million worldwide. By sampling the blood of 747 people from Africa, Europe, and the Middle East, the scientists were able to calculate when the mutation first arose in the human population. One form

Tishkoff (Continued on page 3)

Russian, and Indian media outlets. Accordingly, I had truckloads of requests from patients, physicians, etc. for further information on the status of clinical trials.

Did the press attention have an impact, positive or negative, on your research?

I had an overwhelmingly positive impact from the media coverage. It certainly helped to garner interest from the biotechnology community. In the months following the news release, my research program received several very substantial gifts from private individuals with a personal interest in our progress. However, I can not gauge how I would have fared without media coverage, because I already had a rather enthusiastic response to the first publication and oral presentation of our findings.

What advice do you have for your colleagues when the press come calling?

It is very important to involve your university press office early on. Initially, I was completely crushed by the workload resulting from constant interview requests, etc. The press office at Duke regularly reports to administration officials about their activities and having my own

work prominently featured in their portfolio was extremely helpful.

What, if anything, would you do differently next time you work with reporters?

It is very difficult to prepare for this kind of thing. I learned how to deal with reporters while I was giving interviews. The most useful skill is to prepare ahead of time to communicate complex scientific concepts in lay language.

Is there anything else you'd like to add about your experience?

Most reporters will press scientists into making statements that overextend their findings. For example, our research addresses a very specific malignant disease, malignant glioma, and I have staunchly refused to state that our research may one day (or even sooner) benefit all cancer patients. Reporters have to tell a story based on scientific findings, and occasionally that will involve over-interpretation of experimental results. It is crucial to point out the exact status of a research project (in terms of clinical application), its limitations, and its possible drawbacks. It is very helpful to be self-critical in these things, even though most reporters will not encourage this position and rather focus on the sensational or overly optimistic.

Tishkoff (Continued from page 2)

of the gene, which is most prevalent in Africans, likely arose between 4,000 and 12,000 years ago. Another form, found in the Near East and Mediterranean, arose more recently, between 1,600 and 6,600 years ago. Dr. Tishkoff correlated these results to other work and suggested that the malaria parasite became a major problem for humans relatively recently in our evolutionary history. In July 2001, Dr. Tishkoff and her colleagues published their initial findings in the journal *Science*.

"My award from BWF was instrumental to the success of these projects," says Dr. Tishkoff.

The results made headlines and encouraged her to expand her project to include a larger study of genetic variation among the many ethnic groups in Africa.

"There is a lot of genetic heterogeneity among populations in Africa," says Dr. Tishkoff. "Yet little is known about African genetic diversity. Most of what is known about human genetics has been done with diseases that affect primarily Europeans. There is a need to study these under-represented Africans in order to reconstruct human evolutionary history, as well as for the study of infectious diseases and the genetic basis of diseases prevalent in African-Americans, such as hypertension and diabetes."

Dr. Tishkoff has begun to organize the effort by enlisting interested human geneticists at a workshop held during the American Society of Human Genetics meeting in October 2001.

"We are also organizing a shared African genetic database that would be made public," she says. "I'm also interested in collaborating with African scientists and enhancing their ability to do some of this work in their own countries."

Her work was recently recognized by the Packard Foundation, which named her a Packard Fellow in 2001.

This additional support will help Dr. Tishkoff begin a project that intersects with another BWF-funded endeavor: the sequencing of the malaria parasite genome, which is nearly completed. Dr.

Tishkoff says she hopes to collaborate with scientists interested in the *Plasmodium* genome to study coevolution of the human and parasite genomes.

"It is a long-standing interest of mine to understand the genetic tug of war going on between parasite and host," she says. "How are they each escaping the other, and how are they coevolving?"

As a first step, Dr. Tishkoff spent the summer of 2001 in Tanzania collecting blood samples from individuals infected with malaria and uninfected controls. The samples will be part of a larger project to

study the genetic basis of resistance to malaria.

In the larger picture, Dr. Tishkoff hopes that these initial studies will help scientists track down other genes that gave human ancestors an evolutionary edge, but that also increase the risk of common disorders such as diabetes, heart disease, and obesity.

"There is a lot of interest right now in finding genes that increase risk for common diseases, but these are hard to find," she says. This method may help narrow the search.

A Spoonful of Sugar Is the Medicine in BWF New Investigator Discovery

In the world of postgenomics and proteomics science, BWF New Investigator in the Pharmacological Sciences Ram Sasisikharan, M.D., is pointing the way to an understudied idea: glycomics, or the study of sugar structure and function in living organisms. Dr. Sasisikharan recently made a public splash when he reported in the January 22, 2002, issue of the *Proceedings of the National Academy of Sciences* that the sugar content of tumor cell surfaces could hold a key to halting cancer progression.

Dr. Sasisikharan's research was widely reported in the news media, including the *Wall Street Journal*, *Newsday*, CNN, Fox News and several international news organizations.

What made the research newsworthy, explains Dr. Sasisikharan, is that no one had ever shown that a sugar could dramatically influence the behavior of tumor cells. The research, conducted using mouse models, tested the role of different forms of heparan sulfate on tumor cells. One form of the sugar caused tumor growth, while another dramatically slowed the growth of skin and lung tumors. Dr. Sasisikharan, associate professor of bioengineering and environmental health at the Massachusetts Institute of Technology, proposed the unconventional study in his 1999 BWF grant application.

He proposed to determine if the sugars that coat the surface of cells could have an affect on tumor cell growth. Until that point little was known about this process, and the proposal was a pilot study to see if the idea had merit.

"We wanted to understand how sugars influence cell behaviors," he says. "It turns out that the family of sugars we study is related to the drug heparin, which has been used therapeutically for many years as an anticoagulant. It suggests a sugar-based therapy that could be brought to the clinic rather quickly."

He says that there are several distinct possible ways to exploit his findings therapeutically.

Various types of sugars are found on all cell surfaces, explains Dr. Sasisikharan. The sugar coating influences the way the cell behaves. The sugar "signature" helps define the cell type, such as pancreas cell, liver cell or kidney cell. Various signaling molecules use the sugar signature as a molecular flag to identify the cell type. By altering the sugar content of the cell, Dr. Sasisikharan and his colleagues hope to change the cell's behavior. In the case of the tumor cell, they hope to change its characteristics to make it less aggressive and even to target it for destruction.

Glycomics (Continued on page 8)

Profile: Roger Bryan Sutton, Ph.D.

by Susanna Smith, communications intern

What began as an unusual hobby became a life-directing pursuit for Roger Bryan Sutton, Ph.D., a 2000 BWF Career Awards in the Biomedical Sciences recipient.

It was not his science, but rather his interest in playing the bagpipes, that drove his search for a university faculty position. As a dedicated bagpipe player, Dr. Sutton decided every place he applied had to have a good bagpipe band.

Dr. Sutton, who is currently a research associate in the department of molecular and cellular physiology at Stanford University Medical Center, began playing the pipes in college at North Carolina State University.

"I knew I wanted to play an instrument; and I wanted to play something different," Dr. Sutton explains. "As much as I like science, it is stressful. When I'm playing the pipes I don't think of science or writing grants or experiments."

He became interested in science in junior high school when he joined the junior curator program at the North Carolina Museum of Natural Science in Raleigh, North Carolina.

"It was my first break into science," he says of the program, "along with the television show *Cosmos*. Carl Sagan was infectious in the way he presented popular science. I think he spawned a lot of careers."

As an undergraduate, Dr. Sutton majored in biochemistry and worked in various labs.

"I worked in the genetics department doing dishes, then making buffers," Dr. Sutton says. "Eventually, I was doing developmental biology with *Drosophila*."

After graduating, Dr. Sutton took a job as a lab technician in Houston at the University of Texas Health Science Center. Within a short time, a more attractive position at the University of Texas Southwestern Medical Center in Dallas captured his attention.

"I heard that a structural biology lab at Southwestern needed a technician, so I interviewed for a job there and got it,"

Dr. Sutton explains. "I very quickly crystallized two proteins: ANNEXIN IV and ANNEXIN VI."

Structural biology ignited Dr. Sutton in a way developmental biology never had. He had stumbled upon his field of interest.

"My boss at Southwestern threw a graduate school application at me and told me to fill it out," Dr. Sutton explains. "There is a certain personality and temperament required to do structural biology, and there is an aspect of fortune-telling to it. I've been very successful at finding my niche and enjoying what I do."

While understanding how flies developed held little intrigue for Dr. Sutton, deducing the structure of a protein fascinated him.

"When I succeed at developing a structure that no one in all humanity has ever seen, I get a thrill from it," Dr. Sutton says. "It's the feeling of discovery that all scientists crave, either the direct feeling or the desire to have that feeling again."

After completing his Ph.D. in biochemistry at the University of Texas Southwestern Medical Center-Dallas, Dr. Sutton went on to do postdoctoral research at Yale University and then accepted his current position at Stanford. At present, he is working to uncover the structure of an enzyme that is responsible for the functions of neurons in the brain.

When a protein enters a neuron it is introduced in the form of a vesicle. The vesicle must fuse with the cell in order to unload its contents into the neural channel. The SNARE complex proteins enable membrane fusion between the outer vesicle membrane and the inner neural membrane. Dr. Sutton is trying to crystallize the ATPase enzyme responsible for disassembling SNARE complex proteins.

"I am trying to understand the landscape of the neuron," Dr. Sutton explains. "Once we understand how it works, we can design drugs to control fusion events. This will lead to the design of better therapeutic drugs for neurological diseases, in which there is a great deal of interest.



Dr. Bryan Sutton, in full regalia, performs on the bagpipes.

But only when we know what's going on at an atomic level will we really be able to help. Right now it's pretty much a shotgun design.

My research is fundamental to neurobiology and to understanding the larger picture."

The BWF career award opened up a lot of opportunities, he says.

"Hiring committees value the BWF award and put me at the top of the pile," Sutton says. "It's very competitive out there; good faculty positions are few and far between. This award gave me a lot of negotiating possibilities."

"I've been incredibly fortunate," he says. "I've been put with people who are really bright. My own experience is important, but the people you collaborate with are a large fraction of any success you may have. I've been lucky at Yale and Stanford to be surrounded by these people all the time, as well as having access to great facilities."

Questions for Roger Bryan Sutton, Ph.D.



Read this profile online at BWF 24x7
www.bwfund.org/news_bwf24x7.htm

BWF award: 2000 Career Award in the Biomedical Sciences

Academic title: research associate, Department of Molecular and Cellular Physiology

Affiliation: Stanford University Medical Center

What kind of advice would you give a scientist just entering academic research?

Be aware that what you do early may not translate into what you do later. In graduate and undergraduate school I studied ion channels and it bored me. But now looking at the structural end I am getting intimate with ion channels.

It is important to ally yourself with people you respect. They can help you avoid a lot of pitfalls. Gone is the day of the gentleman scientist. Science is a very political endeavor. If you know people who have successfully navigated the political minefields then you should try to pattern your career after these successful scientists.

If you had unlimited resources, what one big scientific question would you pursue?

Structural biology and membrane proteins desperately need to be understood, but it requires quite a bit of time and resources. I wish I could continue to work simply on membrane proteins.

What do you feel is your greatest accomplishment? Why?

Getting involved in the field I am in right now and becoming successful at it. Structural biology is not an easy field to get into. As an undergraduate student there is not a lot of training in structural biology. It is more mathematical and on the fringe of biology.

Who do you admire? Why?

In general I admire people who are technically excellent in anything. For a big part of my life I have been involved with music. I enjoy the music of people who express the music technically well. It's the same in science; to be technically excellent really impresses me.

What do you do for fun?

I play the bagpipes. The pipes also have a cultural heritage connection for me because my family came from Britain.

What do you plan to do when you retire?

I still want to play the bagpipes; I will play them forever. I'd like to be an emeritus faculty member who still hangs out in the department, knows the literature, and is interested in the undergraduates. I realize that science is a very progressive field, and I would like to continue to keep up with the newest science. I plan to have a cup of coffee every day and talk to the newest faculty members. And I'll play golf.

What is your favorite book?

Civil Disobedience by Henry David Thoreau, which I read in western literature class in college. It was the book that meant the most to me; it had the most impact. After reading that book it was clear that you don't have to take things as they are presented to you. The government is not a stone monument to be worshipped; you can change it if you want to.

www.bwfund.org

VISIT BWF'S WEB SITE:

- Directory of current awardees
- 2003 Career Awards at the Scientific Interface brochure
- BWF 24/7, our monthly feature profiling BWF awardee accomplishments
- Interactive on-line application forms
- More FAQs for our programs
- Special reports, newsletters, grant announcements, and much more!

BWF/ASTMH Fellows in Tropical Infectious Diseases Research Announced

Aric Gregson, M.D., of the Center for Vaccine Development at the University of Maryland-Baltimore School of Medicine and Regina LaRocque, M.D., M.P.H., of Massachusetts General Hospital and Harvard Medical School have been selected as Burroughs Wellcome Fund/American Society for Tropical Medicine and Hygiene (ASTMH) Postdoctoral Fellows in Tropical Infectious Diseases for 2002. These physicians each will receive \$25,000 in research support for a 12-month period. The award enables trainees currently enrolled in an infectious diseases fellowship program to perform field research in the tropical developing world for at least three months of the award period.

Dr. Gregson received his B.S. in biology from the University of California-Santa Cruz and his M.D. from the University of California-Los Angeles. He did his internship and residency at Harbor-UCLA Medical Center and is currently a clinical fellow in infectious diseases at the Department of Medicine at the University of Maryland-Baltimore. He will work with Dr. Chris Plowe from the University of Maryland and Dr. Ogobara Boumbo from the University of Mali to study how subclinical levels of chloroquine or pyrimethamine-sulfadoxine resistance alters the infectivity of resistant strains of malaria in sub-Saharan Africa.

Dr. LaRoque earned her undergraduate degree at Emory University and her M.D. at Duke University Medical Center, taking two years between college and medical school to study the uptake and metabolism of sphingolipids. After medical school, she spent a year as a Howard Hughes Medical Institute Scholar at the Laboratory of Human Immunogenetics at the National Institutes of Health. She did her internship and residency in internal medicine at Brigham and Women's Hospital and earned an M.P.H., with concentration in international health at Harvard School of

Public Health. She is currently an infectious diseases fellow at Brigham and Women's Hospital. She will study immune responses to cholera in Bangladesh, working with Dr. Stephen Calderwood and Dr. Firdausi Qadri at the International Center for Diarrheal Disease Research in Dhaka.

The fellowship was established in late 2000 to stimulate interest in tropical disease research and to support individuals who are planning a long-term commitment to infectious disease research pertinent to tropical or developing areas of the world. This is the second year of a three-year commitment from the Fund to support this program. An independent committee comprised of researchers and physicians reviewed the proposals and recommended the awards.

ASTMH is currently running a competition for the third offering of this award. The application deadline is September 15, 2002. Application information is available at <http://www.astmh.org/funding/application.rtf> or by writing to ASTMH, 60 Revere Drive, Suite 500, Northbrook, IL 60062; e-mail: astmh@astmh.org.

So What's New?

BWF wants to expand communications about the research conducted by the scientists we support.

We therefore encourage award recipients to notify us of papers you are about to publish, major lectures you will make, patents you will receive, or any other notable achievements that have resulted, totally or in part, from BWF-funded research. We would like to hear about such items as early as possible.

Also, if your institution's public-information officer has reported on your work, or if it has been described in a local publication, please send us copies of the articles.

Spreading the word about your work, through FOCUS and other media outlets, is one way BWF can help make the case for supporting basic medical research. We'd like your assistance in this important task. We will, of course, check with you before releasing any information.

Send the information to the FOCUS editor at the address on page 8.

Program Deadlines for 2003

Basic Biomedical Sciences

Career Awards in the Biomedical Sciences	October 1, 2002
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Infectious Disease

Investigators in Pathogenesis of Infectious Disease	November 1, 2002
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Interfaces in Science

Career Awards at the Scientific Interface	May 1, 2002
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Science Education

Student Science Enrichment Program	April 10, 2002
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Translational Research

Clinical Scientist Awards in Translational Research	September 1, 2002
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From Candidate to Award: How to Prepare for a BWF Interview

by Victoria McGovern, Ph.D., program officer

The Burroughs Wellcome Fund uses a peer review process to select recipients for our competitive grant programs. Award recipients are recommended by advisory committees composed of distinguished scientists who evaluate the written proposals and interview finalists. This process is used for the Career Awards programs, Investigators in Pathogenesis of Infectious Disease, and Clinical Scientists Awards in Translational Research.

We are frequently asked why we conduct interviews and how candidates can best prepare for them. We believe that writing grants—even using the Fund’s relatively short application format—gives applicants an opportunity to lay out their background, ideas, and future directions in a very formalized way. The Fund’s interviews, which include a short talk, give applicants another chance to show off their best work. The short talk is always followed by a very interactive question-and-answer session where members of the Fund’s advisory committees are able to follow up on ideas from the grant, and, more importantly, to see first-hand the candidate’s enthusiasm, breadth of knowledge, and ability to think on his or her feet.

Some applicants are, very reasonably, concerned that they may be at a disadvantage in an interview. After all, some very confident scientists—just like most people in the general population—are nervous about public speaking. Applicants who speak English as a second language also express concern that their accent or inability to find the perfect English word in answering a question may be to their disadvantage. However, what we have seen in our interviews over the last several years lets us reassure candidates: come in, tell your story: the committees are listening for the science, not for your accent or the quiver in your voice.

Here are some tips for preparing for a Burroughs Wellcome Fund interview.

- **Pay close attention to the talk guidelines you are sent.** Different programs have interviews of different lengths. Some programs require slides, while others use a chalk-talk format that does not allow slides at all.
- **Make sure that each slide or visual works well for you.** Don’t use too many slides—if you have nearly as many slides as there are minutes in your talk, you’re probably showing too many. Don’t cram the slide from edge to edge with data, either—they quickly become unreadable.
- **Work hard to improve your skills at giving short talks.** Short talks have to pack a powerful punch into just a few words. To give them well, you must develop a strategy for using your podium time effectively. Think about your work: what is the most compelling thing you can tell a group of scientists about what you’re doing, why it’s important, and where it’s taking you? In a 10 to 15 minute talk, you probably only have time to touch on three important ideas, and really only have time to focus on one of them. Finding the best focus is critical for giving a short talk.
- **Watch out for common roadblocks.** Don’t let jargon, abbreviations, or your own familiarity with your work get in the way. In most short talks, including the BWF interviews, your audience won’t be completely up to speed on your work. Start with what you know the audience knows and build from there. For the BWF interviews, where the committee will have read your written grant, keep in mind that we review many grants, and that you can’t assume the audience remembers the details of yours—especially if similar or contradictory work has been proposed by another applicant.
- **Think about why you are giving a Burroughs Wellcome Fund interview.** When you come to interview at a BWF advisory committee meeting, you are getting a chance to “sell” your work and your potential to a committee of top experts with broad knowledge in your general field. Your interview gives you a chance to convince this panel that your work is not only going to be good science but also to move your field forward in new directions.
- **Show your work to its best advantage.** You need to show that your scientific question is important, that your techniques are working, and that you are well enough equipped in creativity, intellect, training, and career maturity to be able to use a BWF award to do things you might not be able to do with other funding. The Fund encourages risk: we want to see bold new ideas, and we know creative science doesn’t always come with guarantees.

In the end, the BWF seeks to identify the best candidates for our award programs. We are in the business of advancing the medical sciences and the best resource we can support are the researchers who are making that happen.

Additional helpful information may be found on the BWF web site at www.bwffund.org. There you will find FAQs about our programs, lists of award recipients and successful proposals, and more detailed information about each award program.

CASI Grants (Continued from page 1)

boundaries of those fields and into the realm of biology. It is to attract these investigators, and to facilitate their transition into new disciplines at the boundaries of biology, that the Career Awards at the Scientific Interface have been introduced."

The CASI awards are designed to complement BWF's Institutional Awards at the Scientific Interface, which support graduate and postdoctoral training programs at degree-granting universities in the United States and Canada.

The new CASI award recipients will join a growing community of scientists who study biological problems using the tools of mathematics and physics. As part of BWF's commitment to support this growing field, we supported a meeting held January 5-10, 2002, in Santa Fe, New Mexico. The meeting, organized by the Program in Mathematics and Molecular Biology at Florida State University, provided an opportunity for scientists from all of BWF's interfaces training programs, as well as trainees sponsored by the Alfred P. Sloan Foundation, the National Science Foundation, and the U.S. Department of Energy to present their work and make professional contacts in the interfaces arena.

A second round of the CASI program is now underway, with a deadline of May 1, 2002. Complete program information and application forms for the 2003 Career Awards at the Scientific Interface are available on BWF's Web site at www.bwfund.org

2002 CASI recipients**Michael B. Elowitz, Ph.D.**

Rockefeller University
In vivo modeling: a synthetic approach to regulatory networks

Lisa J. Lapidus, Ph.D.

National Institutes of Health
Dynamics of polypeptides from measurement of intramolecular contact formation

Patrick W. Nelson, Ph.D.

University of Michigan
A theoretical study of HIV-1 pathogenesis: from primary infection, through latency, to effective drug therapy or progression to AIDS

Todd E. Peterson, Ph.D.

University of Arizona
Ultrahigh-resolution in vivo imaging

Jianghong Rao, Ph.D.

University of California-San Diego
Imaging gene expression and protein phosphorylation in living organisms

Ronald S. Rock, Jr., Ph.D.

Stanford University
Exploring the protein folding energy landscape at the single molecule level

Brent R. Stockwell, Ph.D.

Massachusetts Institute of Technology
Chemical profiling of cellular disease states

Keith R. Weninger, Ph.D.

Stanford University
Single molecule study of the role of SNARE protein-assisted membrane fusion in calcium-triggered neurotransmitter release

Glycomics (Continued from page 3)

"This sugar-based therapy has the potential to be very tissue-specific," he says.

Dr. Sasisikharan says given the potential of the new therapy, much more work needs to be done to understand the role of sugars in cells. He and his colleagues are introducing the idea of studying the glycome as a complement to the proteome.

"This study not only provides a framework for the development of polysaccharide-based anti-cancer molecules, but also underscores the importance of

understanding a cell's polysaccharide array, in addition to its protein complement, to understand how genotype translates to phenotype in this postgenomic age," writes Dr. Sasisikharan in his PNAS article.

Meanwhile, MIT is actively in negotiations with several pharmaceutical companies to bring the results of the study to the clinic.

"This is an exciting time," he says. "The whole notion of sugar having a key role in cancer is fascinating and is creating new interest among scientists who study glycobiology."

FOCUS

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Information about BWF and our award programs is available at www.bwfund.org.