NIGMS MINORITY PROGRAMS
UPDATE
NATIONAL INSTITUTE OF GENERAL MEDICAL SCIENCES • WINTER 2003

INSIDE THIS ISSUE

Phyllis Wilson, a senior biology and pre-med major at Virginia State University, performs research in the university's Bridges to the Baccalaureate lab. For more on Wilson's recent activities, as well as those of other NIGMS minority program participants, see the News and Notes section on page 12.

ABRCMS COMMEMORATES
NIGMS Anniversaries

BY JILLIENE MITCHELL, NIGMS

Undergraduate and graduate students, postdoctoral fellows, and faculty members came from all over the country to attend the second Annual Biomedical Research Conference for Minority Students (ABRCMS), held November 13–16 in New Orleans, LA.

The conference brought together MORE program participants, academic administrators, grant officials, and other members of the scientific community to hear research presentations; attend professional development workshops, poster sessions, and exhibits; and network with each other. The meeting also marked the special occasion of the 40th anniversary of NIGMS and the 30th anniversary of the Institute's Minority Access to Research Careers (MARC) and Minority Biomedical Research Support (MBRS) programs.

The anniversary events began with a panel discussion by two Nobel laureates and a scientist who has been described as a potential laureate in the future. Dr. Thomas R. Cech of the Howard Hughes Medical Institute and Dr. Alfred G. Gilman of The University of Texas Southwestern Medical Center at Dallas discussed their Nobel-winning research and encouraged students to pursue research opportunities. Dr. Erich Jarvis of Duke University, an up-and-coming scientist who participated in the MARC and MBRS programs as an undergraduate student at the City University of New York, Hunter College, described his research on vocal learning in birds. Jarvis' honors include the prestigious Waterman Award from the National Science Foundation in 2002.

Jarvis also participated in a panel discussion on the scientific accomplishments and career pathways of MARC and MBRS alumni. The other speakers were Dr. Juliette Bell of Fayetteville State University, Dr. Luis Haro of the University of Texas at San Antonio, Dr. Yolanda Sanchez of the University of Cincinnati, Dr. Michael Anderson of The Johns Hopkins University, and Dr. Scottie Henderson of the University of Arizona.

The panelists shared their experiences and offered their advice to students.

Haro discussed the path that led him to a science career. Born into a family of migrant farm workers, he explained that he was the first in his family to attend college. He realized that he wanted to become a scientist while he was an undergraduate student participating in the MBRS program at the University of California, San Diego (UCSD).

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U.S. DEPARTMENT OF
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ABRCMS meeting participants had the opportunity to meet one another and share their experiences. Nearly 1,000 students made oral and poster presentations at the meeting, representing nine disciplines in the biomedical sciences.

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Anderson stressed the importance of having a mentor and emphasized that this was the most critical factor in helping him achieve his career goals. He urged students to find mentors who have their best interests at heart and told the students that mentors "don't necessarily have to look like you" to do this.

The anniversary activities concluded with a banquet marking the 30th anniversary of the MARC and MBRS programs. In the keynote address, the Honorable Louis Stokes, a strong supporter of the programs during his tenure as a Congressman from Ohio, noted the importance of honoring the efforts of the individuals who helped create these programs. Stokes particularly commended the hard work of the late Dr. Geraldine Pittman Woods, who played a pivotal role in the development of several NIH minority programs, particularly MARC and MBRS.

Stokes also urged students to help others in need. He encouraged the students to remember that, as far back as 30 years ago when the MARC and MBRS programs were developed, people were working to help underrepresented minority students pursue biomedical research careers.

Geraldine Woods Award Established

This year's ABRCMS meeting marked the establishment of the Geraldine Woods Award, which recognizes individuals who have had a significant impact in promoting the advancement of underrepresented minorities in biomedical science. The first recipients were three early advocates for NIGMS' minority programs: the Honorable Louis Stokes, Dr. Ruth L. Kirschstein, and Dr. Charles A. Miller.

Stokes was recognized for his support and ongoing commitment to the research training of underrepresented minorities. Stokes' efforts resulted in the creation of a number of NIGMS and NIH programs to support minority students and minority-serving institutions.

Kirschstein, currently a senior advisor to the NIH director, previously served as the deputy director of NIH. She was the director of NIGMS from 1974–1993, and she served as acting director of NIH from 1999–2002. Kirschstein was cited for her leadership, dedication, and commitment to the research training of underrepresented minorities while at the helms of NIGMS and NIH.

Miller, a former director of what at the time was the NIGMS Cellular and Molecular Basis of Disease Program Branch, was recognized for his work to encourage the research training of underrepresented minorities in the biomedical sciences. Miller served as a champion at NIH for such programs and led efforts to establish the MARC program at NIGMS.

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"You have the same obligation…to not only achieve your career and do it with excellence, but also at the proper point to reach back and help pull someone else up."

Dr. Marian Johnson-Thompson, director of education and biomedical research development at the National Institute of Environmental Health Sciences, paid further tribute to Woods, who was her mentor.

Dr. Clifton Poodry, director of the MORE Division, said "The recognition of the contributions of Geraldine Woods, with her family as guests in the audience, was very moving for me."

"If it weren't for the efforts of Dr. Woods and her colleagues, NIGMS' minority programs wouldn't be the success that they are today. I am proud we could honor such important individuals as we marked the 30th anniversary of MARC and MBRS," he added. ●

More information on the 2003 ABRCMS meeting, which will be held October 15–18 in San Diego, CA, can be found on the ABRCMS meeting Web site at http://www.abrcms.org.

Profiles of Excellence Available

ABRCMS attendees received a 16-page booklet highlighting six successful MARC and MBRS programs and the accomplishments of many current and former program participants. For free copies of the booklet, *Profiles of Excellence: MARC and MBRS Programs*, contact:

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Recipients of the Geraldine Woods Award (from left) the Honorable Louis Stokes, Dr. Charles Miller, and Dr. Ruth Kirschstein.

NIGMS Celebrates 40 Years of Discovery, Progress

BY ALISA ZAPP MACHALEK, NIGMS

Renee Hosang, a graduate student at Florida International University, benefited from a MORE program.

The year is 1962. John Glenn, Jr., becomes the first American to orbit the Earth, Sam Walton opens the first Wal-Mart, a first-class stamp costs 4 cents, and—most relevant here—NIGMS is created.

Established by Congress to support research and training in the "general or basic medical sciences," NIGMS has a strong record of supporting scientists at the forefront of their fields. In its 40-year history, more than 50 of its grantees have won Nobel Prizes for their groundbreaking research—including two in 2002.

Today, NIGMS has one of the largest budgets at NIH, coming in at more than $1.7 billion. The Institute—which is almost entirely extramural— funds more than 4,000 research grants to universities, medical schools, hospitals, and other research institutions. Its broad interests lie in areas such as cell, molecular, developmental and computational biology; genetics; chemistry; and pharmacology. Basic studies in these and other areas covered by NIGMS increase our understanding of life processes and lay the foundation for advances in disease diagnosis, treatment, and prevention.

The Institute has a longstanding commitment to increasing the number and competitiveness of minority biomedical and behavioral scientists. Through the MORE Division, NIGMS has helped thousands of minority students pursue degrees in science and has enhanced research and training at minority-serving institutions throughout the country. Adding to the air of celebration at NIGMS, both of MORE's branches—MARC and MBRS—commemorated their 30th anniversaries in 2002.

Training Tomorrow's Scientists

Since its inception, NIGMS has been dedicated to teaching students how to become independent researchers. Nearly half of all NIH predoctoral trainees, and a large portion of postdoctoral trainees, receive their support from NIGMS.

Recognizing that the most significant biomedical investigations often involve and affect several different fields, the Institute designed its training programs to cut across disciplinary and departmental lines. In addition, NIGMS has several programs that address areas of critical scientific need. One of these, the Medical Scientist Training Program, leads to a combined M.D.-Ph.D. degree and prepares scientists to bridge the gap between basic and clinical research. Other programs train scientists to conduct research in the rapidly growing field of biotechnology and at the interface between chemistry and biology. The Institute also sponsors a Pharmacology Research Associate Program—its only intramural activity—that trains postdoctoral scientists in pharmacology in NIH and Food and Drug Administration laboratories and clinics.

Forging Paths into New Areas

In the late 1990s, NIGMS held meetings with leaders of the scientific community to get their advice and vision on new directions in science and the needs of researchers. A common theme emerged: Solving many of the most complex—and interesting—questions in biology requires interdisciplinary cooperation and multifaceted approaches. In response, NIGMS established collaborative and integrative grants (better known as "glue" grants) to bring together large groups of scientists from diverse fields to help tackle these complicated research problems.

Another area that benefits from NIGMS' emphasis on collaboration is pharmacogenetics, the study of how genes affect the way people respond to medicines. Already, more than a dozen NIGMS-sponsored research teams have begun unraveling why the same dose of a drug can help

some people, have no effect on others, and harm a few. This knowledge can allow physicians to tailor the doses of certain medications and save lives.

The Institute recognizes that vast scientific treasures are hidden within the burgeoning masses of genome sequence and other biological data. To mine these will require quantitative tools and approaches. Beginning in 1998, NIGMS created a set of initiatives to encourage mathematicians, physicists, computer scientists, and engineers to apply their expertise to biomedical research. In 2001, to serve as the focal point for such activities, NIGMS created its newest component, the Center for Bioinformatics and Computational Biology.

NIGMS has also capitalized on advances in genome sequencing through its Protein Structure Initiative. Launched in 2000, this project builds on the Institute's significant investment in structural biology. The goal is to solve the structures of 10,000 genetically unique proteins in 10 years, enabling scientists to produce an inventory of all the shapes that proteins can take in nature. This, in turn, will help make it possible to predict the structure of any protein based on its sequence.

To further advance the field of molecular structure determination, NIGMS funds the cutting-edge equipment and facilities necessary for these studies. In recent years, the Institute

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As part of its 40th anniversary celebration, NIGMS selected 40 topics that reflect its interests and accomplishments. Brief descriptions and illustrations of these topics are at http://www.nigms.nih.gov/anniversary/discovery/.

Banking on Cells

In 2002, NIGMS also celebrated the 30th anniversary of the Human Genetic Cell Repository, which plays a vital role in genetics research. Maintained by the Coriell Institute for Medical Research in Camden, NJ, the repository houses the world's largest collection of human cell cultures. It contains nearly 8,000 high-quality cell lines and DNA samples from people with various genetic disorders, their family members and unaffected people whose cells can be used as controls. (Strict policies ensure informed consent and confidentiality.) Every week, the repository ships about 100 cell lines and 1,000 DNA samples to scientists from any of 60 countries.

Cell cultures from the repository have already aided discovery of the genes associated with hundreds of diseases, including cystic fibrosis, Huntington's disease and retinitis pigmentosa. Repository materials are used extensively in studies of gene expression and mutagenesis, as well as in studies such as the HapMap project, which seeks to identify patterns of human gene variation. Information on the repository is available at http://locus.umdnj.edu/nigms. ●

At the Coriell Repository tank room, cells are stored in liquid nitrogen and are preserved virtually indefinitely.

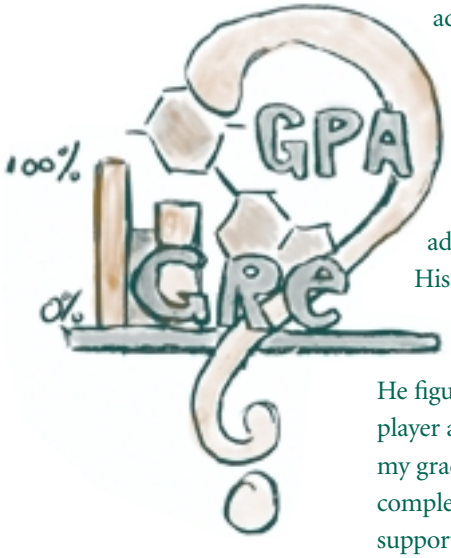
FROM THE MORE DIRECTOR

Taking the Risk Out of Taking Risks

BY CLIFTON POODRY, PH.D.

Directors of training grants or other student development programs want to have superior outcomes to show for their efforts, especially when the time comes to submit a grant renewal application. The obvious, "risk-averse" approach is to select students who appear to be the most likely to succeed. However, by doing so, we reduce the size and diversity of the pool by not accepting students with different credentials who may be capable of making major contributions to science. What strategy would minimize the risk and optimize the success of a program that is willing to accept the latter type of student?

As a scientist whose career started when a professor was willing to take a risk on me as a graduate student, I have a bias in favor of thinking broadly and boldly when considering students for admission to graduate programs. My undergraduate grade point average was just that—average. I am fortunate that a program took a risk in admitting me (and supporting me on an NIH training grant). Years later, I asked my graduate advisor why he had taken a chance on me. His response was that I had earned 98th and 99th percentiles on the GRE and As in organic chemistry and genetics. He figured that my being a football player as an undergraduate might have impacted my grades. He also saw that I was successfully completing a master's degree with no scholarship support (I took out loans).



The notion of risk is very subjective. It involves an interplay between the probability that an adverse event will occur and the severity of its perceived consequences. There are high financial stakes when funds are committed to supporting a student for multiple years, which must be weighed against the risk of accepting a student who might not complete the course of study. Perhaps more important, the failure of a student is often traumatic and demoralizing, not only to the student and his or her advisor, but to the whole department. The risk of that trauma is reason enough for some to err on the side of selecting only those students who are likely to succeed. In such a case, the value of giving someone a chance is outweighed by the value of avoiding failure.

Assuming that we want to reap the potential benefits of accepting into our programs students who have unorthodox credentials, are there ways to minimize the risk of taking risks? I believe so, provided that three elements are in place:

- a plan to provide assistance;
- a clear measure of accomplishments; and
- a set of alternatives if satisfactory progress is not being made.

In order to provide the most effective assistance, it is necessary to determine the initial skill levels of the applicant and develop a plan for guiding needed improvements. Is the applicant a self-learner and a self-starter? Does he or she possess good critical-thinking skills? Is the applicant's background knowledge well-rounded? Does he or she have good communication skills? These and similar questions will help identify a student's relevant strengths and weaknesses and guide the development of an individually tailored course of study.

In order to ensure that progress is being made, take periodic measures of the student's skills to provide individualized, constructive feedback and reinforcement.

If a program takes risks, there will be a certain amount of fallout. Conscientious career guidance can help mitigate the trauma of failure and the distress this causes to the entire program. When students have multiple options before them, they will see that many paths can lead to success as long as they utilize their energy and talents. I knew that with my master's degree I could become a high school science teacher, which was a whole lot better than some other jobs I could imagine. One of the great skills of my advisor/mentor was his enthusiastic support that instilled self-confidence. He helped people see where they could make the best match between their dreams and realities. He did this for everyone—from students to technicians to postdocs—without passing judgment,

guiding individuals to their own decisions. He was taking risks, but calculated ones—he was admitting students of varying background levels and variable career trajectories, then helping them to become successful.

How can programs look beyond the "risk-free" student pool and take calculated risks with some students who have unconventional, but potentially valuable backgrounds? Should the quality of our training programs be judged on more than the high credentials of the incoming class and the high credentials of the graduating class? I invite your comments and suggestions on how the "value-added" aspects of a program could be evaluated and how risk-taking could be addressed in review and award criteria. ●

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Zlotnik Appointed MBRS Director

BY SUSAN ATHEY, NIGMS

Dr. Hinda Zlotnik, a microbiologist with extensive experience in grant and program administration, has been appointed chief of the MBRS Branch at NIGMS.

Zlotnik had been working as a program director in the MORE Division since 1999. She came to NIGMS from the University of Puerto Rico School of Medicine in San Juan, where she was director of the Office of Sponsored Research and a professor in the department of microbiology and medical zoology. During her academic tenure, Zlotnik's research focused on pathogenic actinomycetes (bacteria related to those that cause strep infections). In addition, she was active in training underrepresented minority students for careers in science, a major aim of the MORE Division.

"Dr. Zlotnik brings a solid science background and a sensitivity to the needs and concerns of the grantee community," said Dr. Clifton Poodry. "She has earned the respect of colleagues here at NIH as well as from the directors of MORE programs across the country."

Zlotnik succeeds Dr. Ernest Márquez, who directed the MBRS Branch from 1996–2002 and who is now associate director for special populations at the National Institute of Mental Health.

Zlotnik earned her undergraduate degree in biochemistry and microbiology from the Universidad Nacional Autónoma de México in Mexico City, and her Ph.D. in microbiology and immunology from Temple University in Philadelphia. She did postdoctoral work at Temple University's Skin and Cancer Hospital, as well as at the National Institute of Diabetes and Digestive and Kidney Diseases' (NIDDK) Laboratory of Enzymes and Biochemistry. In 1995, she spent 6 months as an NIH extramural associate, performing assignments with the MARC Branch and with the National Institute on Deafness and Other Communication Disorders.

Dr. Hinda Zlotnik

Zlotnik is a member of several scientific societies, including the American Association for the Advancement of Science, the American Society for Microbiology, the International Society for Human and Animal Mycology, and the Medical Mycological Society of the Americas. She served as president of the Puerto Rico Society of Microbiologists from 1991–1992 and editor of the Medical Mycological Society of the Americas newsletter from 1994–1997. ●

Profile NANCY URIZAR

This section profiles former MORE participants who have excelled in their fields. We hope that the profiles will give students an idea of the types of careers available with science degrees and the paths others have taken to achieve those careers.

A Bright Future for an Aspiring Scientist

BY JILLIENE MITCHELL, NIGMS

"I became interested in science after taking a high school biology class," said Nancy Urizar, a graduate student at Baylor College of Medicine in Houston, Texas.

"The instructor's enthusiasm for science led me to value both scientists and scientific discovery," she added.

Urizar recalls seeing the inside of a lab for the first time on a high school field trip to Baylor. This experience helped inspire her to pursue a scientific career and later prompted her to choose Baylor for graduate school.

"If you reach a point where something is not working after more than three or four tries, go and get help from an expert in that technique."

Encouraged by her parents to stay in the Houston area, Urizar received her undergraduate education at the University of Houston on a full scholarship. She got hands-on laboratory experience working part-time as a laboratory assistant at Baylor.

Urizar earned a bachelor's degree in biochemistry, but she knew that she wanted to further her education. After taking a year off from school, she applied to several graduate schools, including Baylor. Although she was accepted into other schools, Urizar did not get into Baylor, which was her top choice. Determined to go there, she continued working as a lab assistant at Baylor and then reapplied for admission. She was accepted the following year.

In addition to her strong will and determination, Urizar attributes much of her success to the MBRS program, which provided her with financial assistance and offered her the chance to go to meetings such as the Gordon Research Conference on Hormone Action, which she attended during her first year of graduate school.

"The Gordon Conference gave me the opportunity to meet many well-known scientists," Urizar said. "Seeing their excellent research motivated me to work even harder," she added.

Urizar also attributes her success to having a good mentor, Dr. David D. Moore. She currently works in his lab in the department of molecular and cellular biology, studying the role that FXR, a type of protein called a nuclear hormone receptor, plays in maintaining the balance of lipids in the body, especially cholesterol levels. Urizar was the first author on a paper in *Science* identifying a natural product that lowers cholesterol levels in an animal model (see the full citation in the Selected Publications section). This work received international attention.

Urizar credits Moore with helping her to become an independent researcher.

"When I go to Dr. Moore for help, he doesn't simply tell me what to do. Instead

he and I discuss ways to solve the problem," she explained.

Urizar advises students entering graduate school to seek assistance from advisors, instructors, postdocs, and other students.

"If you reach a point where something is not working after more than three or four tries, go and get help from an expert in that technique," Urizar said.

Although uncertain of the direction she wants to take in the future, Urizar knows she wants a career in science.

"I just have to find the career that's perfect for me," she said. ●

If you know an outstanding former MARC, MBRS, or Bridges participant who has excelled professionally and you would like to nominate that person as a future Update profile subject, please let us know. Your suggestions are always welcome.

Nancy Urizar (right) performs research with postdoctoral fellow Wendong Huang (left) and graduate student Jun Zhang in her lab at Baylor College of Medicine.

RESEARCH HIGHLIGHT

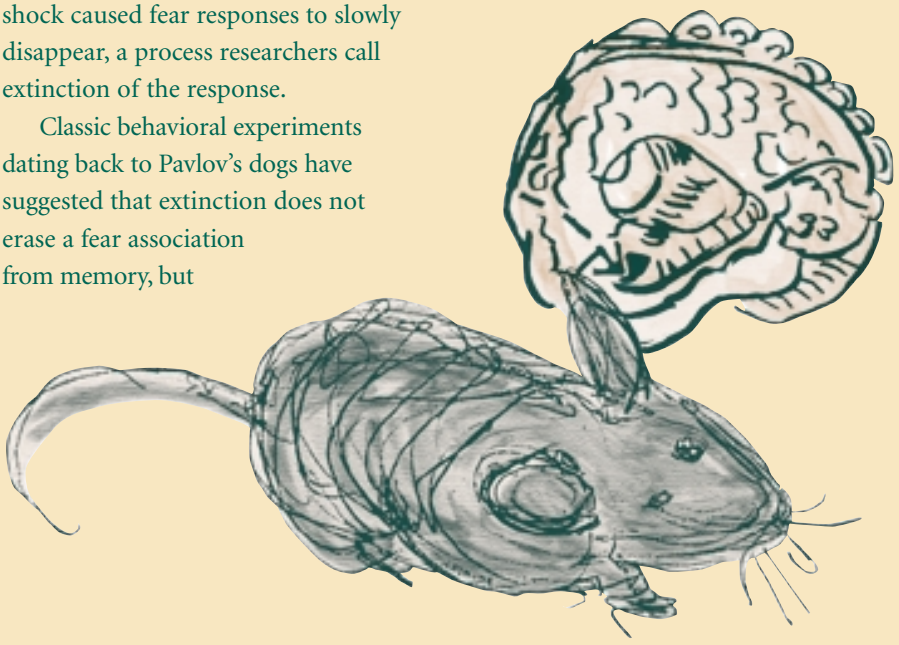
Study May Explain Fear Response in PTSD

Nearly all of us have had a traumatic experience at some point in our lives, but most of us can move on and go about our daily business. People with post-traumatic stress disorder (PTSD), however, experience recurrent fear and anxiety that never seems to go away, even long after the traumatic event is over. An MBRS-supported researcher in Puerto Rico was part of a team that identified one area of the brain that may be essential for learning how not to be afraid. The researchers suggest that people with PTSD may have impaired function in the front part of the brain, called the prefrontal cortex.

MBRS researcher Dr. Gregory Quirk and graduate student Mohammed Milad at the Ponce School of Medicine have studied this area of the brain by recording electrical activity in the prefrontal cortex of laboratory rats. The team conditioned the rats to fear a sound the scientists played while delivering a foot shock to the rats. They measured fear by the degree to which the rats became immobilized, known as the freezing response. Repeated presentations of the sound without the shock caused fear responses to slowly disappear, a process researchers call extinction of the response.

Classic behavioral experiments dating back to Pavlov's dogs have suggested that extinction does not erase a fear association from memory, but instead generates a new safety memory to block the fear response. According to this theory, some part of the brain must create the safety memory by increasing its activity after extinction. In the November 7, 2002, issue of the journal *Nature*, Milad and Quirk showed for the first time that nerve cells in the prefrontal cortex increased their activity in response to the sound only after extinction, creating what the researchers called a "safety signal." The team found that the more active this brain region was, the less afraid the rats were when they heard the sound. The rats with the most prefrontal cortex activity acted as if they had never been conditioned to fear at all. The scientists' findings lend support to the idea that fear reduction is an active process.

Milad and Quirk, who both receive funding from the National Institute of Mental Health, did more experiments with the rats and learned that stimulating one particular region of the prefrontal cortex diminished the rats' fear response. When the researchers electrically stimulated the prefrontal cortex in rats that had never exhibited extinction and paired the stimulation with the sound, the stimulated rats displayed little fear, acting as if their fear response had been erased. Later, these rats continued to be unafraid of the sound even without stimulation.



What could be going on?

The researchers speculate that since the prefrontal cortex sends signals to the amygdala, which is a cluster of nerve cells in the brain that stores memories, including those of fear, stimulating the prefrontal cortex may directly impact the ability to remember a fear response. The findings also suggest the exciting possibility that stimulating the prefrontal cortex could someday be used to strengthen the extinction response in people with anxiety disorders. ●

Reference: Milad MR, Quirk GJ. Neurons in medial prefrontal cortex signal memory for fear extinction. ***Nature*** *2002;420:70-4.*

Research Highlights features the research being done by current and former students and faculty in the MARC, MBRS, and other NIGMS minority programs. ***We welcome your story ideas and suggestions for future Research Highlights items.***

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has supported construction of the most powerful NMR magnets available (900 MHz) and, together with the National Cancer Institute, it is funding the design and construction of three beamlines at Argonne National Laboratory's Advanced Photon Source, the newest and most advanced synchrotron in the country.

A Bright Future

"The most important biomedical questions today—how genes are regulated, how cells and organisms develop and function, and what causes cellular processes to go awry—have not changed much in the last four decades," says Dr. Judith H. Greenberg, acting director of NIGMS. "But the level of detail at which we can answer these questions has changed dramatically. This progress not only helps us understand the biological basis of life, it has also been translated into new approaches to treating and preventing diseases."

For 40 years, NIGMS has been at the leading edge of supporting this progress. As it continues to champion basic research, to train future scientists, and to forge paths into new areas, its future promises to hold even more exciting and significant advances. ●

"NIGMS is a very special organization, dedicated to the expansion of knowledge that will lead to the prevention, diagnosis, treatment and hopefully, cure, of diseases that still plague humankind. The institute is not only supporting research at the forefront of the biological sciences, it is also drawing in valuable perspectives of the chemical, physical, and mathematical sciences."

—Dr. Ruth Kirschstein, Senior Advisor to the NIH Director, who directed NIGMS for 19 years (1974–1993)

NIGMS Brochure Available

NIGMS recently published a new brochure titled *From Molecules to Medicines: Research and Training Programs of the National Institute of General Medical Sciences.* The booklet provides a brief overview of the Institute's mission, including a list of key research areas supported by NIGMS and a sampling of research advances. The booklet is available online at http://www.nigms.nih.gov/moleculestomeds/. Free copies of the booklet can be requested by contacting:

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NEWS *and Notes*

• **Dr. N. Kent Peters** and **Dr. Brian Pike** recently joined NIGMS as scientific review administrators in the Office of Scientific Review, where they manage the review of applications to the MORE Division as well as other selected grant applications.

Peters was formerly a program director for metabolic biochemistry at the National Science Foundation. Before that, he was a professor in the department of chemistry and biotechnology at the Agricultural University of Norway. He earned a bachelor's degree in biological sciences from Indiana University and a Ph.D. in cellular and molecular biology from the University of Michigan. He conducted postdoctoral research at Stanford University.

Pike was formerly a research assistant professor in the department of neuroscience at the University of Florida College of Medicine in Gainesville. He earned a bachelor's degree in psychology and a Ph.D. in biological psychology from Virginia Commonwealth University in Richmond. He conducted postdoctoral research in the department of neurosurgery at the University of Texas Health Science Center at Houston.

• **Dr. Barry R. Komisaruk**, a program director in the NIGMS MORE Division, received a 2002 National Role Model Mentoring Award. The award was presented by Minority Access, Inc., a nonprofit educational organization that assists Federal agencies, universities, and corporations to improve their recruitment, retention, and training of minority researchers.

Komisaruk was cited for his 17 years of service on NIGMS' MBRS grant at Rutgers, The State University of New Jersey. During his affiliation with the MBRS program at Rutgers, including 14 years as the grant's principal investigator, Komisaruk mentored more than 100 minority students.

Komisaruk was among 10 individuals selected for a mentoring role model award. He received the award during a ceremony at the National Role Models Conference in Washington, DC, in September.

• **Dr. Thomas Landefeld**, the MARC and Bridges to the Baccalaureate program director at California State University, Dominguez Hills (CSUDH), received the 2002 Society for Advancement of Chicanos and Native Americans in Science (SACNAS) Undergraduate Institution Mentor Award at the society's annual meeting in September. The award recognizes individuals who have dedicated themselves to science, education, and mentoring and who serve as role models for the next generation of minority scientists. Landefeld is associate dean of the College of Arts and Sciences and is a professor of biology at CSUDH.

• **Dr. Victoria Luine** and **Dr. Carol Woods Moore** were honored as Outstanding Women Scientists in November by the New York Metropolitan Chapter of the Association for Women in Science. Luine is a professor of psychology and an MBRS program director at the City University of New York (CUNY), Hunter College. Moore, a medical professor, is a principal investigator on an MBRS grant at the Sophie Davis School of Biomedical Education of the CUNY Medical School. Both were recognized for the exceptional quality of their scientific research and for their outstanding mentoring of women.

• **Barry University** in Miami Shores, FL, marked the 20th year of its MARC program with a research symposium at the university in February. The symposium included research presentations by some of the 100-plus current and past MARC students. For more on the symposium, see http://www.barry.edu/marcsymposium.

• Participants in the American Indian/Alaska Native Bridges to the Doctorate program at the **University of Minnesota-Twin Cities** met in October for their second annual project retreat. The retreat featured student and faculty research focused on Indian health. This Bridges program provides both cultural and academic support to students pursuing a Ph.D. in nursing.

• **Sederick C. Rice**, a former MBRS program participant at the University of Arkansas at Pine Bluff (UAPB), was selected as one of *Ebony* magazine's "Young Leaders of the Future." Rice was featured in the magazine's February issue among the top 30 individuals aged 30 and younger who have "excelled in sports, the arts, religion, medicine, business, and education."

Rice earned his bachelor's degree in biology from UAPB in 1994. He went on to earn a master's degree in biology from Delaware State University in 1996, and is currently pursuing his Ph.D. in the department of pediatrics at UVM's College of Medicine. Rice's research focuses on the genetic effects of chemotherapy in children with acute lymphocytic leukemia.

• Among the student participants in NIGMS' minority programs who earned degrees recently are:

Seven MARC undergraduate students at Delaware State University received their bachelor's degrees in May and entered Ph.D. programs with scholarships this fall. **Denise Davis** received a degree in biology and is attending Yale University; **Patrice Green** received a degree in physics with an engineering emphasis and is attending the University of Delaware; **Yvette Green** received a degree in biology and is attending Rutgers, The State University of New Jersey/The University of Medicine and Dentistry of New Jersey; **Shari Lee** received a degree in biology and is attending the University of Pennsylvania; **Darius Sanders** received a degree in physics with an engineering emphasis and is attending Virginia Polytechnic Institute and State University; **Melissa Tamburo** received a degree in psychology and is attending Rutgers, The State University of New Jersey; and **Aaron Williams** received a degree in physics and is attending North Carolina State University.

Two MBRS program participants at CUNY received doctoral degrees in biology. They are **Angel Pimentel**, who attended City College, and **Melania Mercado Pimentel**, who attended City College and Lehman College. Both began postdoctoral fellowships at the University of Arizona in September.

Three MBRS program participants at the University of California, San Francisco (UCSF), received doctoral degrees during spring and summer commencement ceremonies. **Abraham Anderson** received a Ph.D. in bioengineering and is now a bioinformatics scientist at Torrey Mesa Research Institute in San Diego; **Keith Reiling** received a Ph.D. in biophysics and is performing postdoctoral research at the University of California, Berkeley; and **Christopher Reyes** received a Ph.D. in biophysics and is performing postdoctoral research at UCSD.

Two former MBRS program participants at Chicago State University who received Ph.D.s are **Reginald Teverbaugh**, whose Ph.D. in chemistry is from Northwestern University, and **Chris Withers**, whose Ph.D. in physics is from the University of Miami.

Angela Erazo and **Kester K. Haye**, both MARC undergraduate students at CUNY, Brooklyn College, received bachelor's degrees in biology this past June.

• Many participants in NIGMS' minority programs spent the summer of 2002 performing research away from their home institutions. The participants and their summer institutions are listed below, grouped by home institution:

Barry University: **Maria Abreu**, Baylor College of Medicine; **Constanza Berger**, Western Kentucky University; **Eauly Brautigam**, University of Maryland, Baltimore County (UMBC); **Melanie Camacho**, Emporia University; **Nikeisha Chin**, Colorado State University; **Paola Colmenares**, University of the West Indies, Jamaica; **Dominique Florville**, University of California, Los Angeles (UCLA); **Empress Hughes** and **Nahshan St. Bernard**, The Hormone Research Center, Korea; **Ivette Lopez**, University of Miami; **Raquel Peralta**, Mt. Sinai School of Medicine; **Kevin Peterson** and **Amber Siler-Knogl**, Columbia University; **Roody Pierre-Charles**, Stazione Zoologica, Italy; **Erica Ramos**, Northern Arizona University;

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Dick Salihah, Cornell University; **Christina Stujenske**, California Institute of Technology; **Florence Taylor**, University of California, Berkeley; and **Gesulla Toussaint**, University of Florida.

Chicago State University: **Keyona Fletcher**, University of Michigan; **Jeremy Harrison**, Purdue University; **Kara Scott**, University of Alabama; **Corpia Smith**, Chicago State University; **Stephen Smith**, University of California, Berkeley; and **Tiffany White**, Northwestern University.

CUNY, Brooklyn College: **Allyson Bunbury**, National Institute on Aging, NIH; **Tamara Edwards**, Rutgers, The State University of New Jersey; **Ismaele Jacques**, Weill Medical College of Cornell University; **Ufeta Om'Iniabohs**, UCSD; and **Shella Saint Fleur**, Harvard Medical School.

CUNY, Hunter College: Ten MARC and MBRS students participated in the Hunter College/Columbia University Health Sciences summer research program. They are **Lauriaselle Afanador**, **Jeanne Amuta**, **Jayson Bastien**, **Alain Berthold**, **Candice Etson**, **Lavonne Hunter**, **Randy Jackson**, **Sidonie Jones**, **Tracy Robinson**, and **Julane Thompson**.

Delaware State University: **Diana Ackah**, Yale University; **Joyce Addo**, **Joel Copper**, **Michele LaMarr**, and **Jenel Nixon**, University of Pennsylvania; **Anthea Aikins**, **Carrie Belfield**, **Jeniter Hughes**, and **Rozie Townsend**, University of Virginia; **David Charlot**, College of William and Mary; **Mastingor Desir**, University of Miami; **Tiffany Hawkins**, UCSF; **Dorcey Jones**, Harvard Medical School; **Donté Jones** and **Victoria Williams**, Rutgers, The State University of New Jersey; **Emeka Omereh**, University of Delaware; **Meron Solomon**, Cornell University; **Alicia Sherrell**, UMBC; **Dara Waiters**, Brown University; **KaTonna Williams**, The Johns Hopkins University; and **Jessica Witherspoon**, Stanford University.

Jefferson State Community College: **Bridgett Hill**, University of Alabama at Birmingham.

North Carolina A&T State University: **Manza Atkinson**, University of Iowa; **Jennifer Davis**, The Coca-Cola Company, Atlanta; **Shylise Griffiths** and **Franki Faulkner**, University of North Carolina at Chapel Hill; and **LaKisha Partman**, University of South Carolina.

University of Arizona, Tucson: **Irene Alvarez**, National Heart, Lung, and Blood Institute, NIH; **Alex Barela**, NIDDK, NIH; **Nanibaa Garrison**, Pasteur Institute, Paris, France; **Linda Mobula**, The Johns Hopkins University; **Humberto Sirvent**, University of Notre Dame; and **Jennifer Thompson**, UCSD.

UCLA: **Charisse Crenshaw**, University of Florence, Italy.

Virginia State University: **Phyllis Wilson**, Strategic Petroleum Reserve, New Orleans.

- The following participants in NIGMS' minority programs made presentations about their research at recent scientific meetings:

Benedict College: MBRS program participants **Nafeesa Ahamed**, **Shannel MacKall-Moore**, and **Ndiya Ogba** presented at the 2002 Annual Meeting of the South Carolina Alliance for Minority People in Columbia, SC, in August.

CSUDH: MARC undergraduate students **Bernice Aguilar**, **Ibette Lemus**, **Jerome Nwachukwu**, and **Susana Rodriguez** presented at the SACNAS annual meeting in September. **Jerome Nwachukwu** presented at the XIII Undergraduate Research Symposium in Puerto Rico in October. **Dr. Thomas Landefeld**, the MARC program director at CSUDH, served as the meeting's keynote speaker.

Medgar Evers College-Kingsborough Community College: Bridges to the Baccalaureate program participants **Sherise Warner**, **Shawlorna Morris**, **Kawasi Lett**, **Turkesha Huggins**, **Candice King**, and **Ayodeji Nicholson** presented at the 35th annual Metropolitan Association of College and University Biologists Conference in October.

North Carolina A&T State University: MARC students **Shylise Griffiths**, **Manza Atkinson**, **Jennifer Davis**, **LaKisha Partman**, and **Franki Faulkner**

presented at the First Annual North Carolina Alliance to Create Opportunity Through Education Conference, held in September on the campus of North Carolina State University.

• In recent months, we have received word about the following current and former student participants in NIGMS minority programs • **Sherrice Allen**, **Sue Carson**, and **Roberto Frontera-Suau**, former participants in the Institutional Research and Academic Career Development Award program at the University of North Carolina at Chapel Hill, have gone on to faculty positions. Allen is a botany instructor at North Carolina State University, Carson is an assistant professor of biology at Fayetteville State University, and Frontera-Suau is an assistant professor of biology at Elizabeth City State University • **Cheryl Anderson**, a former MBRS program participant at the University of Washington in Seattle, is an assistant professor of epidemiology at the University of Pennsylvania School of Medicine • **Diana M. Avila**, a former MARC trainee at St. Mary's University and MARC predoctoral fellow at the University of Texas Health Science Center at Dallas, has joined the faculty of St. Mary's University as an assistant professor in the department of biological sciences • **Carol Bristol**, a former MARC participant at CUNY, Brooklyn College, graduated with a bachelor's degree in psychology in June 2000 and is in her second year of studies for an M.P.H. degree at George Washington University • **Alexis Epps**, an MBRS program participant at the University of Missouri-Columbia, has received a fellowship from the National Science Foundation/Missouri Alliance for Graduate Education and the Professoriate. The award will provide Epps with 5 years of support to pursue a doctoral degree in parasitology at the university • **Julio C. Gonzalez**, a former MARC trainee at San Jose State University (SJSU), earned an M.D.-Ph.D. from the University of Michigan and is now a fellow in the department of infectious diseases at the University of Washington Medical Center-Roosevelt • **Nathan Mata**, a former MBRS and MARC program participant at the University of Texas at San Antonio, is now an assistant professor of ophthalmology at UCLA • **Liz Reynoso Paz**, a former MARC trainee at SJSU, received her Ph.D. in immunology from the University of California, Davis. She plans to start her own biotech company after completing postdoctoral work at the university • **Elizabeth B. Torres**, a former MARC trainee at SJSU, received her Ph.D. in cognitive science from UCSD and is now completing a postdoctoral fellowship at the California Institute of Technology. •

We are always interested in hearing about NIGMS minority program faculty, alumni, and students.
Photographs of your students, research labs, and activities are also welcomed and encouraged.
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SELECTED PUBLICATIONS
by MORE Faculty and Students *(listed by institution)*

UNIVERSITY OF ARIZONA

Kavarana MJ, Trivedi D, Cai M, Ying J, Hammer M, Cabello C, Grieco P, Han G, Hruby VJ. Novel cyclic templates of alpha-MSH give highly selective and potent antagonists/agonists for human melanocortin-3/4 receptors. **J Med Chem** 2002;45:2644–50.

Quinones HI, List AF, Gerner EW. Selective exclusion by the polyamine transporter as a mechanism for differential radioprotection of amifostine derivatives. **Clin Cancer Res** 2002;8:1295–300.

Reed C, Sturbaum GD, Hoover PJ, Sterling CR. *Cryptosporidium parvum* mixed genotypes detected by PCR-restriction fragment length polymorphism analysis. **Appl Environ Microbiol** 2002;68:427–9.

Saengsirisuwan V, Perez FR, Kinnick TR, Henriksen EJ. Effects of exercise training and antioxidant R-ALA on glucose transport in insulin-sensitive rat skeletal muscle. **J Appl Physiol** 2002;92:50–8.

BARRY UNIVERSITY

Lee JM, Petrucelli L, Fisher G, Ramdath S, Castillo J, Di Fiore MM, D'Aniello A. Evidence for D-aspartyl-beta-amyloid secretase activity in human brain. **J Neuropathol Exp Neurol** 2002;61:125–31.

BAYLOR COLLEGE OF MEDICINE

Urizar NL, Liverman AB, Dodds DT, Silva FV, Ordentlich P, Yan Y, Gonzalez FJ, Heyman RA, Mangelsdorf DJ, Moore DD. A natural product that lowers cholesterol as an antagonist ligand for FXR. **Science** 2002;296:1703–6.

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

Yaspelkis BB III, Saberi M, Singh MK, Trevino B, Smith TL. Chronic leptin treatment normalizes basal glucose transport in a fiber type-specific manner in high-fat-fed rats. **Metabolism** 2002;51:859–63.

Yaspelkis BB III, Singh MK, Trevino B, Krisan AD, Collins DE. Resistance training increases glucose uptake and transport in rat skeletal muscle. **Acta Physiol Scand** 2002;175:315–23.

CHICAGO STATE UNIVERSITY

Erhart MA, Lekgothoane S, Grenier J, Nadeau JH. Pattern of segmental recombination in the distal inversion of mouse *t* haplotypes. **Mamm Genome** 2002;13:438–44.

CITY UNIVERSITY OF NEW YORK, YORK COLLEGE

Rockhill RL, Daly FJ, MacNeil MA, Brown SP, Masland RH. The diversity of ganglion cells in a mammalian retina. **J Neurosci** 2002;22:3831–43.

Rosenthal BS, Wilson WC. Relations of psychological distress with objective individual, family, and neighborhood characteristics of urban adolescents. **Psychol Rep** 2002;90:371–86.

UNIVERSITY OF THE DISTRICT OF COLUMBIA

Choudhary MA, Mazhar M, Ali S, Song X, Eng G. Synthesis, characterization, and biological activity of dimethyltin dicarboxylates containing geranium. **Metal Based Drugs** 2002;8:275–81.

Eng G, Desta D, Biba E, Song X, May L. Specification of some triorganotin compounds in sediments from the Anacostia and Potomac Rivers, Washington, DC, using Mössbauer spectroscopy. **Appl Organomet Chem** 2002;16:67–71.

Song X, Cahill C, Eng G. Crystal structure of triphenyltin 4-methoxybenzoate. **Main Group Metal Chem** 2002;25:177–8.

Song X, Cahill C, Eng G. The crystal structure of tricyclohexyltin N-n-butyl dithiocarbamate. **Main Group Metal Chem** 2002;25:13–4.

NORTH CAROLINA A&T STATE UNIVERSITY

Sappington PL, Yang R, Yang H, Tracey KJ, Delude RL, Fink MP. HMGB1 B box increases the permeability of caco-2 enterocytic monolayers and impairs intestinal barrier function in mice. **Gastroenterol** 2002;123:790–802.

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

Canman JC, Sharma N, Straight A, Shannon KB, Fang G, Salmon ED. Anaphase onset does not require the microtubule-dependent depletion of kinetochore and centromere-binding proteins. **J Cell Sci** 2002;115:3787–95.

Hammond L, Castanotto D, Rice SR, Nimgaonkar VL, Wirshing DA, Rossi JJ, Heston LL, Sobell JL. Alteration of branch site consensus sequence and enhanced pre-mRNA splicing of an NMDAR1 intron not associated with schizophrenia. **Am J Med Genet** 2002;114:631–6.

Shannon KB, Canman JC, Salmon ED. Mad2 and BubR1 function in a single checkpoint pathway that responds to a loss of tension. **Mol Biol Cell** 2002;13:3706–19.

Shannon KB, Salmon ED. Chromosome dynamics: new light on aurora B kinase function. **Curr Biol** 2002;12:R458–60.

Thompson JT, Kier WM. Ontogeny of squid mantle function: changes in the mechanics of escape-jet locomotion in the oval squid, *Sepioteuthis lessoniana lesson.* **Biol Bull** 2002;203:14–26.

Wilkins HR, Ohneda K, Keku TO, D'Ercole AJ, Fuller CR, Williams KL, Lund PK. Reduction of spontaneous and irradiation-induced apoptosis in small intestine of IGF-I transgenic mice. **Am J Physiol Gastrointest Liver Physiol** 2002;283:G457–64.

Williams KL, Fuller CR, Fagin J, Lund PK. Mesenchymal IGF-I overexpression: paracrine effects in the intestine, distinct from endocrine actions. **Am J Physiol Gastrointest Liver Physiol** 2002;283:G875–85.

PONTIFICAL CATHOLIC UNIVERSITY OF PUERTO RICO

Hales NW, Yamauchi K, Alicea A, Sundaresan A, Pellis NR, Kulkarni AD. A countermeasure to ameliorate immune dysfunction in *in vitro* simulated microgravity environment: role of cellularnucleotide nutrition. **In Vitro Cell Dev Biol Anim** 2002;38:213–7.

PRAIRIE VIEW A&M UNIVERSITY

Harris G, Doctor VM. The effect of 6-aminohexanoic acid and fucoidan on the activation of glutamic plasminogen by streptokinase. **Blood Coagulation & Fibrinolysis** 2002;13:355–9.

UNIVERSITY OF PUERTO RICO, HUMACAO

Alegria AE, Cordones E, Santiago G, Marcano Y, Sanchez S, Gordaliza M, Martin-Martin ML. Reductive activation of terpenylnaphthoquinones. **Toxicol** 2002;175:167–75.

Montanez-Clemente I, Alvira E, Macias M, Ferrer A, Fonceca M, Rodriguez J, Gonzalez A, Barletta G. Enzyme activation in organic solvents: co-lyophilization of subtilisin Carlsberg with methyl-β-cyclodextrin renders an enzyme catalyst more active than the cross-linked enzyme crystals. **Biotechnol Bioeng** 2002;78:53–9.

STATE UNIVERSITY OF NEW YORK, COLLEGE AT OLD WESTBURY

Hoyte RM, Zhang JX, Lerum R, Oluyemi A, Persaud P, O'Connor C, Labaree DC, Hochberg RB. Synthesis of halogen-substituted pyridyl and pyrimidyl derivatives of [3,2-c]pyrazolo corticosteroids: strategies for the development of glucocorticoid receptor mediated imaging agents. **J Med Chem** 2002;45:5397–405.

UNIVERSITY OF TEXAS AT SAN ANTONIO

Mata NL, Radu RA, Clemmons RS, Travis GH. Isomerization and oxidation of vitamin A in cone-dominant retinas: a novel pathway for visual-pigment regeneration in daylight. **Neuron** 2002;36:69-80.

YALE UNIVERSITY SCHOOL OF MEDICINE

Dragon F, Gallagher JE, Compagnone-Post PA, Mitchell BM, Porwancher KA, Wehner KA, Wormsley S, Settlage RE, Shabanowitz J, Osheim Y, Beyer AL, Hunt DF, Baserga SJ. A large nucleolar U3 ribonucleoprotein required for 18S ribosomal RNA biogenesis. **Nature** 2002;417:967–70.

Wehner KA, Gallagher JE, Baserga SJ. Components of an interdependent unit within the SSU processome regulate and mediate its activity. **Mol Cell Biol** 2002;22:7258–67.

Send in your references for inclusion in Selected Publications. *We would appreciate your contribution to this section in order to represent as many MARC and MBRS programs as possible. Complete bibliographical citations can be phoned, faxed, mailed, or e-mailed to the Editor (see page 2).*

UPCOMING *Meetings*

APRIL
11–15, 2003
FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY
EXPERIMENTAL BIOLOGY 2003
San Diego Convention Center
San Diego, CA
CONTACT: Office of Scientific Meetings and Conferences
9650 Rockville Pike
Bethesda, MD 20814-3998
Tel: 301-530-7010
eb@faseb.org
http://www.faseb.org

MAY
18–22, 2003
AMERICAN SOCIETY FOR MICROBIOLOGY
103RD GENERAL MEETING
Washington Convention Center
Washington, DC
CONTACT: ASM
1752 N Street, NW
Washington, DC 20036
Tel: 202-942-9356
meetingsinfo@asmusa.org
http://www.asmusa.org

JUNE
12–18,2003
MORE PROGRAM DIRECTORS' MEETINGS
June 12–14 BRIDGES MEETING
June 15–18 MARC/MBRS MEETING
Granlibakken Conference Center
Lake Tahoe, CA
CONTACT: MORE Division, NIGMS
45 Center Drive MSC 6200
Bethesda, MD 20892-6200
Tel: 301-594-3900
http://www.nigms.nih.gov/minority

RECENT *Awards and Fellowships*

PREDOCTORAL FELLOWSHIPS FOR MINORITY STUDENTS
(listed by fellow and graduate institution)

Ana R. Adham
Rice University, Houston, TX

Brittnaie J. Bell
University of South Carolina, Columbia

Ma Margie Borra
Oregon Health and Science University, Portland

Mark Del Campo
University of Miami, FL

Nikki A. Delk
Rice University, Houston, TX

Emily Derouen
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Cincinnati Children's Hospital Medical Center, OH

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University of Pennsylvania, Philadelphia

Celeste A. Roney
University of Texas Southwestern Medical Center at Dallas

Julie L. Tubbs
Scripps Research Institute, La Jolla, CA

Wanda H. Vila-Carriles
Baylor College of Medicine, Houston, TX

Igor Vivanco
University of California, Los Angeles

Jason Watts
University of Pennsylvania, Philadelphia

BRIDGES TO THE FUTURE AWARDS
(listed by institution and principal investigator)

Bridges to the Baccalaureate

California State University, San Marcos
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Francis Marion University, Florence, SC
Julia E. Krebs

Harold Washington College, Chicago, IL
Uthman O. Erogbogbo

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Arthur Zeitlin

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David C. Usher

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Bonnie K. Lustigman

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Allyn Howlett

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Anthony C. Capomacchia

MBRS RISE AWARDS
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Robert R. Madsen

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MBRS SCORE AWARD
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MARC ANCILLARY TRAINING ACTIVITIES AWARD
(listed by institution and principal investigator)

American Association for the Advancement of Science, Washington, DC
Shirley M. Malcom

University of North Carolina at Chapel Hill
Walter E. Bollenbacher

MARC U*STAR AWARDS
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Fernando P. Monroy

Savannah State University, GA
Harpal Singh

University of Minnesota, Duluth
Benjamin L. Clarke

INSTITUTIONAL RESEARCH AND ACADEMIC CAREER DEVELOPMENT AWARD
(listed by institution and principal investigator)

University of Kansas, Lawrence
C.R. Middaugh

ACRONYMS USED IN THIS ISSUE

ABRCMS	Annual Biomedical Research Conference for Minority Students
CSUDH	California State University, Dominguez Hills
CUNY	City University of New York
GRE	Graduate Record Examinations
MARC	Minority Access to Research Careers
MBRS	Minority Biomedical Research Support
MORE	Minority Opportunities in Research
NIDDK	National Institute of Diabetes and Digestive and Kidney Diseases
NIGMS	National Institute of General Medical Sciences
NIH	National Institutes of Health
PTSD	Post-Traumatic Stress Disorder
SACNAS	Society for Advancement of Chicanos and Native Americans in Science
SJSU	San Jose State University
UAPB	University of Arkansas at Pine Bluff
UCLA	University of California, Los Angeles
UCSD	University of California, San Diego
UCSF	University of California, San Francisco
UMBC	University of Maryland, Baltimore County
UVM	University of Vermont

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