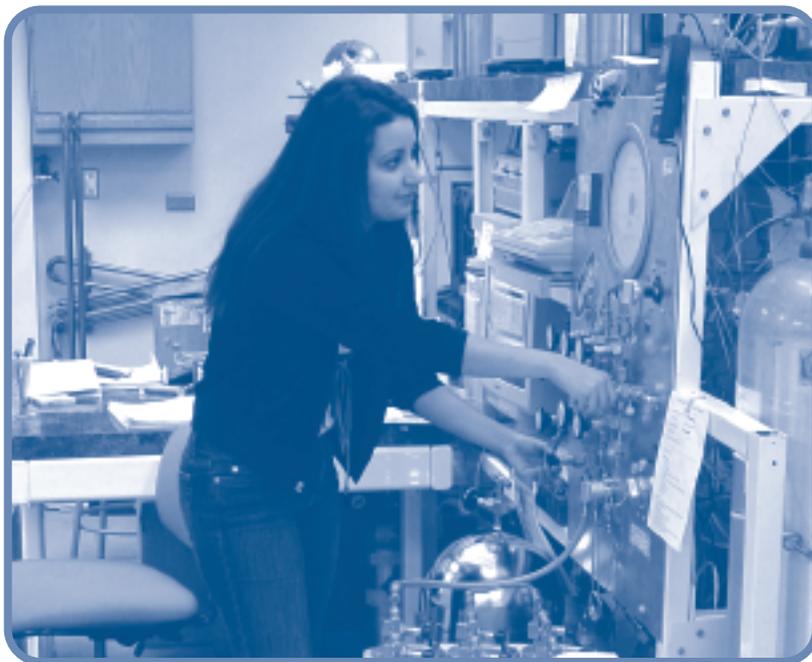


# SACNAS NEWS

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SPRING 2005

SOCIETY FOR ADVANCEMENT OF CHICANOS AND NATIVE AMERICANS IN SCIENCE



*Ms. Yanina Barrera, an undergraduate in chemical engineering at the University of California, Irvine, gets research experience in the Rowland/Blake laboratory at her home institution.*

*The goal of this SACNAS News is to be a resource for students and K–12 educators who are considering a summer research program. The articles combine personal insights, faculty advice, and answers to frequently asked questions regarding the exciting and rewarding opportunities for summer research. Many summer programs maintain application deadlines that may have past by the time of publication of this issue. However, SACNAS believes that the process of choosing a program is a year-long endeavor that begins with setting goals and carefully researching potential programs. We hope this issue helps provide the information you will need to decide on a program in the future.*

## Summer Research Programs

*By Martin Farias III, Ph.D.*

Some years ago, I was lost. With my bachelor's degree in biology in hand, I did not know my next move. Coming from the Rio Grande Valley in South Texas, being lost can be a death sentence. The Valley is like a tremendous black hole which seems to sweep up lost people. Inertia is hard to overcome, and crime, drugs and complacency can become someone's whole world. Then people become statistics—horrible statistics.

Was this my fate? Fortunately, I will never know because a beacon of light

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showed me the way out. The Bridge the Gap Program at the University of North Texas Health Science Center in Fort Worth was where I finally discovered my passion for science and the calling to help other folks find their way. I am now a senior post-doctoral fellow on the verge of completing my training, specializing in coronary blood flow physiology. None of this would have occurred without this research program, this beacon of light.

But if my story isn't convincing enough, following is a list of 10 reasons why summer minority research programs are important to minorities trying to get into science. These reasons came from many people of diverse backgrounds—people who found their way and now want to help others.

### 1. Awareness of Minority Issues in Science

What good is a beacon of light if it does not illuminate the obstacles in your path? It would be a wasted opportunity for a minority individual to attend a minority summer research program and not learn the issues facing minorities in science. Dr. Donna Nelson, Cherokee/Chikasaw, a physical organic chemistry professor at the University of Oklahoma, states, "If minority students can be brought into contact with mentors who understand the issues and barriers faced by minorities, it can be an opportunity for the students to become more prepared and improve their chances for success later on. If program managers do not understand the value of bringing students into contact with mentors and role models who have had life experiences similar to those of the students, the program will be of much less value." Her statement reveals a significant issue not usually stressed in minority summer research programs. A minority individual's awareness of their slight representation in science can motivate them to get into science and help others get in as well. This scenario can perpetuate minority involvement in science and also help the growth of science.



Dr. Martha Zuñiga, a professor at University of California, Santa Cruz, works with a research intern in her laboratory.

### 2. Understanding, Experiencing, and Preparing for the Rigors of Research

Along with confronting minority issues in science, students must learn about the high intellectual demands of research. This is extremely important because minority students often come into research ill prepared for the intensity and rigor of graduate level research. The reasons why are many and complex and deserve more research. This lack of preparedness can lead to low morale and the subsequent impetus to leave research. However, experiencing the rigor of research can precondition the student and facilitate success. Dr. Robert Kaman, associate dean and director of outreach at the University of North Texas Health Science Center (UNTHSC) since 1994, believes that summer minority programs can accomplish this preconditioning. "For students from undergraduate historically black colleges or Hispanic serving institutions, it provides an insight into the expectations that major research universities have of all their students. Frequently, students from undergraduate institutions may sail along making A's without needing the intensity that graduate education demands. This can be an invaluable insight."

The minority programs that Dr. Kaman has created take high school and undergraduate students and guide them all the way to doctoral candidacy. The ultimate goal is for these students to become principal investigators and faculty at major research universities. Dr. Kaman is excited to announce that his first program graduate, Harlan Jones, Ph.D., an African American, has returned to UNTHSC as an assistant professor, a testament that these programs are making a difference.

### 3. Non-Research Courses to Facilitate Entrance into Graduate School

Preparing for the rigors of research is very important, but one must first get into graduate school. Many minority summer research programs will help you get into their graduate school or into another institution. Dr. Martha Zuñiga, an associate professor of molecular, cell, and developmental biology at the University of California, Santa Cruz, believes in facilitating the minority individual's entrance into graduate school. "Most if not all of these

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## Expanded Horizons and New Opportunities *By Marigold Linton, Ph.D.*

Times are changing, and times are becoming incredibly more interesting and complex. As an undergraduate, I was one of the very few minority students who had an opportunity for a research experience at all. The picture (at right) shows me at about 20 years old working with a Sprague-Dawley rat that was a subject in a study on motivation. But this study took place at the University of California, Riverside, and it occurred right in the same building in which I took my psychology classes during the academic year. There may have been opportunities for students to go away for summer experiences, but I never heard of one. And I would probably have been afraid to travel so far. In fact, I was a young assistant professor at San Diego State University the first time I traveled professionally. I traveled to the East Coast (from California), to the U.S. Virgin Islands in the Caribbean, and then to Ethiopia in northeast Africa. This travel opened my eyes to the world as nothing else had.

Now, in the 21st century, the possibilities for summer research are endless. I hope that most of you faculty are exploring ways to provide summer research opportunities for your undergraduates. I hope that most of you undergraduate students are taking advantage of research experiences throughout the year at your college or university. If you aren't, you should seek out a professor in your area of interest and begin to do so. And whether you are involved in academic year research experiences or not, I would encourage each of you to seek a summer research experience—at another institution if this is within your range of comfort.

There is another set of summer research experiences—international opportunities. Less common than the usual research experiences available in the U.S., you may find some if you look around. One that makes me wish that I were a student again is the



Dr. Marigold Linton conducting research as an undergraduate at University of California, Riverside.

program offered by Dr. Eloy Rodriguez at Cornell University. His program provides the opportunity for students to participate in culturally relevant research in a foreign setting. Students who are accepted to this special project have the opportunity to conduct research in ethnobiology of natural medicines in the Amazon of Venezuela and the island of Dominica in the Caribbean. This experience is exceptional because it combines indigenous approaches to health with first-rate research. A summer spent with Dr. Rodriguez, or someone like him, will open your eyes to the wonders of research and have a transformational impact on your life.

Let us suppose that I have persuaded you to apply for a summer research experience. Where do you learn about the possibilities? Timing: most research opportunities are announced in the fall. Deadlines are usually (but not always) in January or February. Where do you look? A great place to begin is right here at SACNAS. The SACNAS website has a very fine listing of summer research opportunities. They include opportunities in many disciplines that are available at a surprising number of universities. There are all sorts of strategies for deciding which opportunity to pursue. Ask around. Ask friends. Encourage them to apply as well, but then, follow your heart.

Dr. Marigold Linton is the president of SACNAS and director for American Indian Outreach at the University of Kansas.

■ Dr. Matt Allison received the "Fellow to Faculty Transition Award" from the American Heart Association. This is a five-year career development award/grant that includes a research project that will examine the relationship between atherosclerosis in multiple vascular locations and cardiovascular health problems such as heart attack, stroke, and congestive heart failure.

■ Ms. Almaris N. Alonso, a microbiology Ph.D. candidate at the University of Massachusetts, Amherst, has been elected as student member for the SACNAS Board of Directors. Ms. Alonso was also the recent recipient of an Educational Grant Award from the Hispanic Engineer National Achievement Awards Corporation (HENAAC) during the 2004-05 academic year, to further her studies of biofilm formation by thermophilic actinomycetes. She will participate in an oral/poster presentation in the St. Jude Research Children Hospital Graduate Students Symposium in April 2005.

■ Mr. Raul Diaz, who recently graduated from the University of California, Berkeley, started a Ph.D. program at the University of Kansas in the Department of Ecology and Evolutionary Biology studying amphibian/frog morphology and systematics.

■ Dr. Martin Farias III has accepted a senior postdoctoral position in the Department of Physiology at the Louisiana State University Health Science Center in New Orleans starting June 2005.

■ Dr. Jorge Gardea-Torresdey, professor of chemistry at the University of Texas at El Paso (UTEP), was awarded the American Microchemical Society's prestigious 2004 A.A. Benedetti-Pichler Award for significant achievements in microchemistry.

■ A new website was launched for the premed of color community at <http://premedofcolor.org/>. The organization was founded by Quetzal Lopez and Marilyn Contreras-Pinegar in 1999.

■ Mrs. Jennifer Lynch, science educator at Jackson Middle School in Oklahoma City, was awarded the Outstanding Classroom Teacher Award from the Oklahoma Association of Environmental Educators for 2005. The recipients must be elementary or secondary educators who incorporate environmental education as a major focus in their curriculum. They should influence students/schools/community in environmental education, awareness, knowledge, and action.

■ Ms. Marchant M. Martinelli, a recent graduate of the University of Illinois Champaign-Urbana began an internship with the Champaign-Urbana Public Health District.

■ Dr. Teresa Petrino, associate scientist on the MBRS SCORE grant at Barry University in Miami Shores, Florida, received a FASEB travel award to present her research at the Experimental Biology Meeting in April 2004.

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## Summer Research as Catalyst for Graduate Education: A FAQ Guide

By Kika Friend

For many minority science students, the summer research experience proves to be the single most rewarding activity of their educational career and serves as a catalyst to advanced degree attainment. Faculty, by “guiding with wisdom and example,” serve as role models by sharing the passion they hold for their research projects. Summer programs expose students to higher education as a viable career, demystify the laboratory experience, and provide the perfect combination of application to theory. So, how does an undergraduate student go about participating in the “perfect” summer research opportunity?

### Frequently Asked Questions

#### When should I begin summer research?

Although readiness varies, students traditionally begin research the summer after their sophomore year. The most important thing is that students have completed their background science courses, so they can function in a laboratory setting. A few programs require some experience, while others welcome uninitiated researchers. When in doubt, apply. The program will tell you “No” if you don’t fit their qualifications. Remember, you will never qualify if you don’t apply!

#### What is the timeline for applying?

**Fall** – start researching programs

**Winter** – work on application, request letters of recommendation

**Spring** – submit applications

#### How do I select a program? What should I look for?

Select programs based on your personal research interest and apply to at least six programs. You will spend a lot of time in the lab—make sure it’s something that interests you!

#### How can I find out if a program meets my interests and needs?

Outline your goals to make certain each program you apply to meets those criteria. Visit the summer program’s website for more information. If you have questions, call the program director.

#### How do I get more information about the actual research I will be doing?

Visit the program’s website and research the principal investigator (PI) of the lab in which you are interested. Read articles published by the PI, lab members, and if available, former summer program participants. If you have further questions, email the PI, inform her/him that you are thinking about applying to the program, and ask your questions about her/his research. Don’t be hurt if the PI does not write back—faculty are always very busy. Connecting with PIs, program directors, and summer program participants at conferences (like SACNAS) ahead of time can provide valuable information and connections.

#### Is a high GPA needed?

A high GPA (above 3.0) is always a benefit, since many summer programs are looking for potential graduate students. However, if you have a lower GPA, it is still possible to attend a summer program. To counterbalance a lower GPA, it is especially important to have strong letters of recommendation and previous research experience. Remember, lab research and classroom performance can take a different set of skills. If you have a lower GPA, you should not be discouraged from applying.

#### How long are these programs? Are they paid?

Most summer programs are 8–10 weeks in duration, and all are paid. Almost all include round trip travel and a stipend. Others provide GRE and a select few, MCAT preparation.

Research facilitates the transition from classroom to an actual laboratory environment and provides a nurtured, mentored experience.

#### Should I apply to out-of-state or in-state programs?

It all depends on your ultimate goal. Try and go where you want to go graduate school, whether that is local or in another region.

##### Advantages for out-of-state research:

- Experience what research is like off your home campus
- See what your potential graduate school environment is like
- Live somewhere new for a short amount of time
- Have the opportunity to take advantage of lab resources that you don’t have at your campus

##### Advantages for research on your own campus:

- Do research with faculty who can write you excellent letters of recommendation
- Gain the opportunity to continue your research during the academic year
- Maintain family obligations

#### Will I fit in?

Although at first you may feel uncomfortable in a new setting, most summer research programs bring in many students from different parts of the country, and they will all be new to the experience. To have a friend, you must first be a friend. Become part of the departmental group and embrace the experience.

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## No Boundaries: Summer Research Programs and the Minority Student

By Khena Bullshields

I am a minority on three fronts: I am Native American, I am a single parent, and I am a woman. Statistics seem to indicate that I do not stand a chance of succeeding in my educational endeavors. But these are only boundaries—historical boundaries that are being broken every day by students such as ourselves—for despite my threefold minority status, I am succeeding as a junior in psychology with a minor in political science at Montana State University (MSU) in Bozeman. And I work year round under the mentorship of Dr. Mike Babcock in his neuroscience laboratory studying genetic manipulation of brain function in rodents.

...the most rewarding aspect of conducting summer research is working with people who have enriched my life with fellowship and knowledge.



Ms. Khena Bullshields working in the lab with her mentor, Dr. Mike Babcock.

In my years at MSU, with help from the American Indian Research Opportunity (AIRO) program, I have learned that there are opportunities everywhere. For undergraduate students, one of the finest is taking advantage of a summer research program. My experiences in a summer program have ultimately led to attending national meetings, winning an award, and becoming co-author on a manuscript, rare accomplishments regardless of the boundaries I may face.

When I started my summer research program, I was nervous about my lack of experience in what I was about to study. My undergraduate biology classes hadn’t taught me anything at the difficult level of genetics I was about to try to learn and eventually report on. After a lot of hands-on learning, I understood that it was patience and perseverance I was to learn—key skills for a future in science.

My summer research program also helped me understand the scientific process: beginning an experiment and seeing it through to completion. The process includes such tasks as obtaining results, recording significant statistics, and even something as elementary as organizing your daily schedule

around an experiment. One summer, I wandered around campus with an egg timer attached to my shirt collar so that I could get back from my coffee breaks in time to wash antibody off my tissue samples!

I have learned how to conduct a Western Analysis tissue homogenate experiment, cut a rodent brain into 50-micron tissue sections, and immunocytochemistry. But I have also learned how to handle disappointment. During the two years it took to complete my research, there were times when it just didn’t work. However, I found that I enjoy research because of overcoming these setbacks.

Although many students are encouraged to pursue summer research experiences away from their home institutions, because of my responsibilities as a mother, I needed to stay at MSU. The decisions I have made about my education hopefully balance with giving my daughter a healthy home environment as a foundation. My own mother created a solid foundation for me when I was a child, and I am reaping the benefits of this today.

I come from a family that has very little post-secondary education and a culture that is scarcely represented in the professional fields.

I am from the Blood Tribe in Standoff, Alberta, Canada, but have lived mostly in the remote states of Montana and Wyoming on and off Indian reservations. My family and I have been subject to the hardships that Indian people face, especially the youth. I have confronted prejudice, isolation, poverty, and educational indifference, yet through this I learned individualism, strength, and purpose. These lessons, this understanding, the pride I have in my background and what I have been able to accomplish because of it have helped me excel academically.

We are living in a time when science research is drastically needed to mend mistakes our predecessors have made and to reveal new innovations yet to be discovered. As representatives of ethnic and racial minorities, we bring a different point of view. To become good, competitive, and valuable scientists for the future, we need to pursue more than just the standard degree program. Participating in a summer research program gives a competitive edge but, also, speaking from experience helps students know that they are part of something important and beneficial to our societies and cultures.

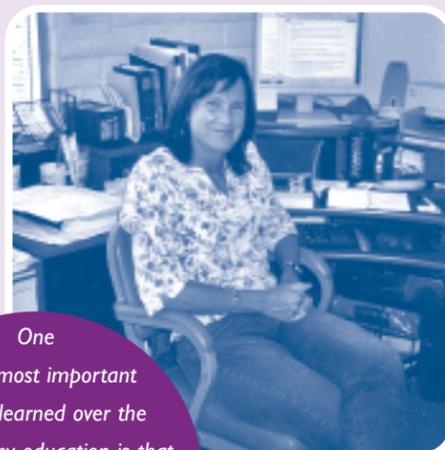
## Dr. Margaret Hiza – Geologist

By Stacy Hartman

Growing up half-Crow Indian in northern Wyoming in the 1950s and 1960s wasn't easy. I lived in a town that bordered a Native American reservation, and though I didn't always understand things that people said or did, now I realize that it was a very unfriendly place and that there was a lot of discrimination. I spent a lot of time on horseback, which was the only real source of peace in my life. I found being outdoors very comforting, and later, when I went back to college, these early experiences inspired me to persevere so that someday I could work to preserve the land I grew up on and help other people learn how to be good caretakers of the planet.

I didn't go to college until I was twenty-eight, after I had married a Navajo man, lived on the Navajo Nation for several years, and had three children. Life on the reservation was very difficult. I often felt like no one cared about what happened to my family and me, and the standard of living was very poor. But it was these circumstances that propelled me to change the direction of my life. For example, our water on the reservation was sometimes contaminated. I wanted to do something about it, so I entered the geology program at Northern Arizona University (NAU), with an emphasis in hydrogeology. College was a challenge because my pre-college education had not prepared me very well. My math skills were so poor that I had to start at the very basic, lowest math class and work my way up through calculus. Another obstacle was that because I'm a Native American woman, some professors clearly thought that I wasn't going to go very far. But I'm very stubborn, especially when someone treats me like a failure. Whenever a professor thought I couldn't do something, I'd say to myself, "Oh yeah, you don't think I can do this? Well, I'm going to prove you wrong!"

After I finished my degree at NAU, I



One of the most important things I learned over the course of my education is that who you are helps define how you look at the world and how you approach a problem.

received a scholarship from the National Science Foundation to study sedimentary discharges from volcanoes in the Earth sciences program at Montana State University (MSU). I got my master's at MSU, and then did research at the University of Washington (UW) in Seattle. While in Seattle, I met Dr. Anita Grunder, the woman who would eventually become my Ph.D. advisor at Oregon State University (OSU).

Dr. Grunder became a real source of inspiration for me. She's hardworking and intelligent, and she raised kids and worked as a professor at the same time. This was important to me because I was also raising three kids on my own and trying to go to school. Being a single mom in school is difficult in many ways, but it taught me something—family is very important. Moving around so much for school was hard, and often we were poor, but my kids were always a huge source of inspiration. I probably would not have gone so far in school if it hadn't been for them. I felt like I had to do something for their sake—to make the world better for them.

Fourteen years after I started college, I finished my Ph.D. at OSU. I now work for the U.S. Geological Survey, studying climate change on the Navajo Nation, especially the movement of sand dunes and the levels of certain elements in the water. I want to investigate

these problems using both the science I learned in graduate school and the Native knowledge that I have an interest in because of my cultural background. I talk with Navajo people about how the climate has changed over time and use that information to help answer questions about how and why it's changing now. I hope that the Navajo people will use the information that I collect to inform the way they want to live in the future in a way that will allow them to keep their cultural traditions and ways of life. But, to maintain these traditions, they're going to need scientists who want to live and work on the reservation. The future generation needs Indian people to be in the earth sciences, to be ecologists and geologists, so they can do these studies on Indian land across the country.

One of the most important things I learned over the course of my education is that who you are helps define how you look at the world and how you approach a problem. I believe that using traditional Native American knowledge is not just important from a scientific point of view but also from a cultural point of view. Traditional knowledge is what defines Indian people. It really depends on how you live on the land, what you do as a person, and how you treat the planet. We need people who approach problems from this perspective in the sciences so that we can learn—and hopefully teach others—how to be better stewards of the land.

*Ms. Stacy Hartman served as the SACNAS Biography project intern in the fall of 2004. She is a senior in Women's Studies at the University of California, Santa Cruz.*

*Started in 1996, the SACNAS Biography project averages 120,000 visitors a year (<http://64.171.10.183/biography/default.asp>). It has become an invaluable tool for students and educators who are interested in the accomplishments of Chicano/Latino and Native American scientists. The SACNAS Biography project is available on CD-ROM. For more information please contact Jenny Kurzweil at [jenny@sacnas.org](mailto:jenny@sacnas.org) or call (831) 459-0170 ext. 227.*

Summer Research Programs...continued from page 2

programs usually provide students with other services, such as GRE preparation courses, writing courses, and other courses that better prepare these students for their future educational and professional careers."

Many minorities do not have the opportunity or the resources to take courses that better their GRE scores or writing or math skills. Summer programs that provide these opportunities are extremely valuable.

#### 4. Investigating and Refining a Career Path

Once you are in graduate school, you must decide on your area of study and your career path. Knowing what you want is imperative in any endeavor, especially your career. Not knowing can lead to frustration and derailment of a young career. Minority research programs can offer insights into what you may want to do down the line. Dr. Rudy Martin Ortiz, a newly appointed assistant professor of biology at the University of California, Merced, describes how these programs can refine a career or research path. "Many times a summer program can stimulate a scientific interest in an area with which you are unfamiliar and thus lead to a new academic path. At an early stage in your academic and research careers, it is important to be exposed to as many different areas of research as possible to enable you to make a well-informed decision regarding your research interests. Therefore, participating in many and different research programs offers this opportunity."

Dr. Cassandra Reyes-Delgado, a post-doctoral fellow in the Department of Physiology under the Fellowships in Research and Science Teaching Program at Emory University School of Medicine, has a similar view on this matter: "Summer research experiences also help to determine your research interests. As an undergraduate, you may not have a chance to try out different areas of research. Having a short-term project introduces you to a topic and gives you a taste of something that may lead you



*Ms. Talia Martin, a chemistry major at the University of Kansas.*

down a career path or give you a chance to keep looking." Minority summer research programs may be just the right place to refine your career path and avoid potential frustration.

#### 5. Networking

While traveling your career path, you will meet many people. Meeting new people, such as students, faculty, and other research figures, can help broaden your career immensely. Dr. Ortiz and Dr. Reyes-Delgado share important insight into this aspect of minority summer research programs. Dr. Ortiz states, "Collaborations developed while working in a lab for a short period can prove to be extremely beneficial down the road. Many times, summer programs introduce students to future mentors. Also, some of the other students in your program may eventually become close colleagues with whom strong academic ties can be made."

Dr. Reyes-Delgado says, "Networking is one of the more important skills in any career these days. The relationships you make with the future scientists (your fellow students), principle investigators, and fellow researchers you meet on your summer research project can lead to professional relationships down the road. Who knows, the person you met studying oncology while you studied drug interactions may lead to a collaboration that finds the cure for cancer!"

Although networking and interacting may not be a science, they are very important facets of science. Collaborations can lead to good science, and knowing the right people can lead you to great places.

#### 6. Peer Interaction and Support

Networking and interacting with scientists is great, but you also want to interact with peers who are from similar backgrounds. Dr. Reyes-Delgado believes, "Being in an environment with other minority students conducting research is like having role models in your own peer group. As people who have been underrepresented in the sciences, whether we are of non-white ethnic background or women, we have to get over any idea that we are token minorities that might not be up to mainstream standards. Summer research experiences give credibility and legitimacy to our qualifications as we become top-notch scientists." Thus, interacting with people of the same ethnic background and socioeconomic status tells us that we are not the only ones out there and that something is being done about the problem.

#### 7. A Sense of Belonging

Along with peer interaction, students also want to feel like they are a part of something big. Which brings us to a point rarely mentioned: these programs create a sense of belonging, a sense that you are involved in something important. Eric Gonzales, a graduate student at the University of North Texas Health Science Center in the Department of Pharmacology states, "When you are working in a lab on a project that is important to everyone on the team, that's a different feeling. That feeling of team work is something that isn't always there at the undergraduate level." This feeling could be instrumental to the morale of students and may help them decide on a research career.

#### 8. A Learning Opportunity without Distractions

Distractions are a normal part of undergraduate and graduate school. Besides doing research, you will have to juggle classes, family life, and odd jobs. Dr. Zúñiga describes how these programs can let you do your work with little distraction: "Summer research programs provide minority students

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## Summer Research Programs for Teachers and Students

Many universities and science museums throughout the country offer summer research programs for K-12 teachers and students. If you are interested in staying close to home for the summer, contact the science, mathematics, or engineering department of your local college/university.

### Summer Programs for Students

#### Minority Introduction to Engineering, Entrepreneurship, and Science (MITE\_S)

**Organization/Location:** Massachusetts Institute of Technology, Cambridge, MA  
**Applicants:** High school juniors  
**Subject:** Science, engineering, entrepreneurship  
**Details:** Scholarship-based program. Six-week summer residential academic enrichment for juniors.  
**Website:** [http://web.mit.edu/mites/www/home\\_page.html](http://web.mit.edu/mites/www/home_page.html)

#### Quest Scholars Program

**Organization/Location:** Stanford University, Stanford, CA  
**Applicants:** Middle/high school  
**Subject:** Science, leadership  
**Details:** Free, five-year long leadership and science program for underrepresented and low-income students. Begins with a five-week summer residential program.  
**Website:** <http://questscholars.stanford.edu/>

#### Summer High School Apprenticeship Research Program (NASA SHARP)

**Organization/Location:** National Aeronautics and Space Administration (NASA), various locations  
**Applicants:** High school  
**Subject:** Science, technology  
**Details:** Paid, eight-week internship program. One of the program's objectives is to encourage the career paths of pre-college students who have been traditionally underrepresented in STEM fields.  
**Website:** <http://www.nasasharp.com/>

#### Summer Science Program (SSP)

**Organization/Location:** Summer Science Program (SSP)  
**Applicants:** High school  
**Subject:** Astronomy, calculus, programming, physics  
**Details:** Six-week residential enrichment program. Gifted high school students complete a challenging, hands-on research project in celestial mechanics.  
**Website:** <http://www.summerscience.org/home/index.php>

### Summer Programs for Teachers

#### Explorations in Biomedicine

**Organization/Location:** American Physiological Society, various locations  
**Applicants:** Middle/high school  
**Subject:** Biology, physiology  
**Details:** Explorations in Biomedicine Program provides professional development opportunities for middle and high school science teachers and tribal college faculty who teach Native American students. Stipend and expenses paid.  
**Website:** <http://www.theaps.org/education/expl/research.htm>

#### Laboratory Science Teacher Professional Development Program

**Organization/Location:** U.S. Department of Energy, Office of Science, various locations  
**Applicants:** K-12  
**Subject:** Various  
**Details:** Three-year summer program working with mentor scientists in laboratory setting. Community college faculty also eligible.  
**Website:** <http://www.scied.science.doe.gov/scied/LSTPD/about.htm>

#### Pre-Service Teacher (PST)

**Organization/Location:** U.S. Department of Energy, Office of Science, various locations  
**Applicants:** College students  
**Subject:** Various  
**Details:** For undergraduate/graduate science students who plan to become classroom teachers. Ten-week paid internships working in a lab with a scientist or engineer and the support of master teacher mentors.  
**Website:** <http://www.scied.science.doe.gov/scied/PST/about.htm>

#### Summer Institute

**Organization/Location:** The Exploratorium, San Francisco, CA  
**Applicants:** K-12  
**Subject:** Physics, middle school general science, life science, mathematics  
**Details:** Four-week program. Stipend paid.  
**Website:** [http://www.exploratorium.edu/ti/programs/#summer\\_program](http://www.exploratorium.edu/ti/programs/#summer_program)

The following websites provide searchable databases to help locate both regional and national programs:

- **Science Services** (database of 300+ programs): <http://www.sciserv.org/stp/>
  - **EduNet** (select a program type, such as research internships, science camps, professional development): <http://www.sciedunet.org/explore/index.cfm>
  - **The National Association of Health Science Education Partnerships:** <http://www.nahsep.org/profiles.html>
- At left is a sampling of the range of opportunities to choose from.

## SACNAS National Conference 2005

### Science for America's Future

Denver, Colorado  
 September 29 –  
 October 2

**June 17th:**  
 Financial Aid Deadline  
 SACNAS Award Nominations Deadline

**July 15th:**  
 Program and Abstracts Volume  
 Advertisement Deadline

**July 20th:**  
 Abstracts Submission Deadline

**July 26th:**  
 Exhibit Booth Registration Deadline (to appear in conference program)

**For more information and to register online:**  
[www.sacnas.org](http://www.sacnas.org)

important deadlines

## The St. Francis College Summer Science Academy...

By Kathleen A. Nolan, Ph.D., and Jill Callahan

### ... or How to Survive During a Hot New York Summer!

For the past four summers, between 20 and 35 New York City high school students have braved the heat and attended the three-week-long St. Francis College Summer Science Academy. They have been a very diverse group, hailing from South America, Asia, the Caribbean, and Eastern Europe, as well as all five boroughs in New York City. During one of our ice-breakers, the students ask each other questions such as, "Were you born in another country?" The answer is affirmative at least fifty percent of the time.

Programs such as ours that emphasize classroom activities and field trips help urban students to see science in an applied way. K-12 summer programs in science and math are important because they present a different kind of learning for the student. The material is presented in a more relaxed way with much less pressure because grades are not given. The programs aim to enforce curricula learned during the academic year and enrich this experience with concrete examples. From our evaluations, we can tell that the students enjoy this type of program and are learning "on the sly." They appreciate having college students involved as counselors/mentors and enjoy getting to know the teachers in a more personal way.

Our program focuses mostly on the topics of nutrition and biodiversity. Every other day, the newspaper has an article about how many Americans are obese and how we do not eat nutritiously. Also, because of the increase in our world population size, there is concern among scientists about a loss of biodiversity because of agriculture and the encroachment of people. Since all of our students come from urban backgrounds, there is a "disconnect" for them from the environment and biodiversity. Thus, in order to promote better nutrition practices



Photo: Jill Callahan

K-12 summer programs in science and math are important because they present a different kind of learning for the student.

Students in the lab at the St. Francis College Summer Science Academy.

and stewardship of the environment, these two themes are the focal points of our program. We use basic principles of biology, chemistry, and math to enhance these themes, and the students also learn how to acquire and analyze data via computer assisted technology. K-12 teachers could readily adapt some of these activities to their own classrooms and partake in similar field trips that are suited to their own locales.

An example from our nutrition curriculum is the "Survivor Game," in which the students work in teams to design a healthy diet for a three-day period. They are given a mock \$75, take a "field trip" to either a conventional grocery store or to a health food store, and pick out their meal plan. Then they go to online calorie and nutrition sites, complete a written report, design PowerPoint presentations, and present on the last day for judgment by the teaching assistants. The cultural diversity of our students has become apparent when we have witnessed their menu plans! We have prizes for the best team.

Our biodiversity unit provides great opportunities for getting out and exploring. We conduct microscopic examinations of water samples collected on field trips—in our case, a pond from the Bronx! We also interact with the water in other ways: we partook in a three-hour "Gon' Fishin'" program with staff on the Schooner Pioneer from the South Street

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■ Dr. Damaris Ponciano-Jackson, a post-doctoral fellow at the National Human Genome Research Institute, gave birth to Angeliqe Janeese Jackson on January 20, 2005. She weighed 8lbs. 6oz. and was 20 inches long.

■ Mrs. Teresa Randall, Oklahoma City Community College (OKCCC) adjunct biology professor, was accepted into the environmental science Ph.D. program at Oklahoma State University. Her dissertation will explore educators' attitudes towards genetic engineering and biotechnology. She gave two presentations at national conferences (North American Association of Environmental Educators: October, 2004; and National Science Teachers Association: March, 2005) on the college's BB Discovery Project, whose purpose is to increase the number of qualified high school students, especially minority students, enrolling in the biotechnology program at OKCCC. Also, she will participate in a field-study course entitled "Honduras: Linkages between People and the Land" in March. While in Honduras, she will teach one day in a local high school science classroom.

■ The American Indian Science & Engineering Society (AISES) has named Ms. Pamela M. Silas as the new executive director.

■ Dr. Raul Yzaguirre, former head of the Washington-based National Council of La Raza, has moved to Arizona State University to develop a Hispanic-based community development institute and bolster the school's efforts to raise money, recruit minority faculty and students, and accelerate partnerships with minority groups.

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## notes

The SACNAS News, published three times a year, explores current issues within the minority scientific community, celebrates the achievements and contributions of members, and provides resources for academic and professional development.

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## upcoming

### Newsletter Themes

**Summer 2005**  
Minority Scientists & the Corporate World

**Fall 2005**  
Science for America's Future

**Submission Deadline**  
Items for Community News and New Ph.D.s for the summer issue are due Friday, May 20, 2005.

# 2005

Summer Research Programs...continued from page 7

access to research opportunities without the distractions of their course work so that they may focus on research. In this way, undergraduate students can experience the research process itself and begin to discover whether they have the ability, motivation, creativity, and skills that are required for a satisfactory career in research."

Although distractions will always be a part of your life, you can at least have this one opportunity to do research without them. This type of focus can be instrumental in preparing for research and science.

### 9. Mature as an Individual

Minority programs can also be the stimulus for maturity. Many minorities have not had the opportunity to conduct cutting edge research or interact with scientific professionals. Being immersed in such an environment will eventually have the student thinking like a scientist and a professional. Gonzales shares this sentiment: "A student has the unique opportunity to mature as both a person and as a scientist in a minority summer research program." Not only do you learn about the rigor of research; you also learn how to deal and communicate with people effectively, manage your time, and become a bit wiser. Learning these intangible aspects are important components of becoming a successful principal investigator and an asset to the scientific community.

### 10. Few Minorities Get This Chance

Even though there is a big push to get minorities into science, opportunities can be scarce. Talia Martin, Shoshone-Bannock, a chemistry major at the University of Kansas, says, "Sometimes minorities do not have the kind of opportunities that others have, and we are fortunate that there are scientists that want to give underrepresented students these kinds of opportunities." Indeed, very few minorities get the chance to explore research careers. Thus, it is in our utmost interest to promote these programs.

Whether it is the rigors of science, the details of research, the issues facing minorities in science, or providing a sense of belonging, summer minority research programs are bea-

cons of light that lead minorities to safe ground—a career in science. Now that I am close to shore, it is my turn to offer guidance and create beacons of light for others. Science and our cultures will depend on us to give back.

*Dr. Martin Farias III is a post-doctoral fellow at the University of Washington in Seattle.*

## General Guides to Summer Research Programs

- SACNAS internships and summer resources page: <http://www.sacnas.org/summerprog.html>
- An interdisciplinary guide of summer opportunities for minority undergraduate students: <http://www.doorsofopportunity.org/>
- Sonoma State University, Department of Physics and Astronomy has put together an exhaustive list of all scientific undergraduate summer research opportunities: <http://www.phys-astro.sonoma.edu/advisor/UndergradResearch.html>

### Who Funds Minority Summer Research Programs

- NIH (National Institutes of Health)
- NSF (National Science Foundation)
- CDC (Centers for Disease Control)
- DOE (Department of Education)
- NASA (National Aeronautics and Space Administration)
- AAAS (American Association for the Advancement of Science)
- Major Research Universities (State Funds)

### What to Look For

- A major research university
- A research area that interests you!
- Geographic location
- Know the requirements of the program
- Overall goal of the program and what it offers
- Graduate school preparation (GRE, etc.)
- Length of the program
- Full financial support (stipend, expenses paid)
- Professional people who care
- Chance to attend their graduate school

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## What should I expect from my research advisor/PI?

Your advisor should provide close supervision and support, assist you to understand necessary methodologies in order for you to investigate and report on your topic, and guide you through and advise you on strategies for presenting your research. Your faculty advisor or his/her post docs will help you establish realistic, attainable research goals. Expect your advisor to establish clear guidelines and honor commitments. The relationship must be based on mutual respect, discretion, and trust.

## What will the summer experience entail?

The structure and requirements vary from program to program. But, for all summer programs, participation is a full-time commitment. Generally there are 40 hours a week of lab work, and then extra-curricular events such as field trips, team building exercises, and whatever else your summer program director, PI, and labmates cook up!

## What should I bring to the research experience?

Learn all you can: bring an open mind to your project and an open mind to the relationship you are about to embark upon; respect and embrace differences in people; give 150% to every project; be passionate about life and relish its impermanence; smell the roses as you go through life as there is no assurance that you will be able to walk this same road again.

*Ms. Kika Friend directs the NSF-funded California Alliance and Minority Participation Program, CAMP, and the U.S. Department of Education-funded TRIO/McNair Programs at the University of California, Irvine.*

## MEET THE NEW PH.D.s OF SACNAS

### Dania Alarcon-Vargas, Ph.D.

[dvargas@aecom.yu.edu](mailto:dvargas@aecom.yu.edu)  
**Institution:** Ruttenberg Cancer Center, Mount Sinai Graduate School of Biological Sciences

**Dissertation Title:** *Mechanisms Underlying the Regulation of c-myc Protein Stability Under Normal Growth Conditions and After Stress Stimuli*

**Thesis Advisor:** Dr. Ze'ev Ronai

**Research Interests:** Cancer oncogenes and tumor suppressors, transcriptional regulation, drug targets in cancer

**Current Position:** Postdoctoral fellow in the lab of Dr. Ganjam Kalpana at Albert Einstein College of Medicine of Yeshiva University, Department of Molecular Genetics, Bronx, New York

### Noe Galvan, Ph.D.

[noeg@berkeley.edu](mailto:noeg@berkeley.edu)

**Institution:** Department of Environmental Toxicology, University of Wisconsin, Madison

**Dissertation Title:** *Role of Cytochrome P4501B1 in Bone Marrow Toxicity of Polycyclic Aromatic Hydrocarbons*

**Thesis Advisor:** Drs. Colin R. Jefcoate, Charles J. Czuprynski

**Research Interests:** Molecular toxicology, immunotoxicology, and carcinogenesis

**Current Position:** Postdoctoral fellow in the Molecular Epidemiology and Toxicology Laboratory (METL) Division of Environmental Health Sciences School of Public Health, University of California, Berkeley

### Sergio O. Gonzalez, Ph.D.

[gonzalez@mail.chem.tamu.edu](mailto:gonzalez@mail.chem.tamu.edu)

**Institution:** Department of Chemistry, Texas A&M University  
**Dissertation Title:** *Dendritic and Linear Polymers for Separations*

**Thesis Advisor:** Dr. Eric E. Simanek

**Research Interests:** Synthesis, modification, and new applications of synthetic and natural polymers

**Current Position:** Postdoctoral position at United States Department of Agriculture, National Center for Agricultural Utilization Research (USDA-NCAUR)

### Lisa Gough, Ph.D.

[llgough@ucdavis.edu](mailto:llgough@ucdavis.edu)

**Institution:** Cell and Developmental Biology Graduate Group, University of California, Davis

**Dissertation Title:** *Dissecting the Functions of the Golgi-Localized Spectrin, Syne-1*

**Thesis Advisor:** Dr. Kenneth Beck  
**Research Interests:** Cell biology, science communication

**Current Position:** Editor, state-wide Integrated Pest Management (IPM) Office, University of California, Davis

### Elda E. Sánchez, Ph.D.

[elda.sanchez@tamuk.edu](mailto:elda.sanchez@tamuk.edu)

**Institution:** Universidad Central de Venezuela

**Dissertation Title:** *Aislamiento y Caracterización de Desintegrinas Presentes en el Veneno de Serpientes de los Estados Unidos de America y Venezuela*

**Thesis Advisor:** Dr. Alexis Rodríguez-Acosta

**Research Interests:** Effects of venom toxins on hemostasis and their uses in biomedical applications

**Current Position:** Assistant director of the Natural Toxins Research Center at Texas A&M University-Kingsville

### Manuel J. Torres, Ph.D.

[mjtorres53@comcast.net](mailto:mjtorres53@comcast.net)

**Institution:** Department of Genetics, University of California, Davis

**Dissertation Title:** *Construction of an Annotated Sequence Database to Advance Molecular Genetic Investigations of Triphysaria versicolor, a Parasitic Angiosperm*

**Thesis Advisors:** Drs. John I. Yoder, Peter Tonellato, Jeff Gregg

**Research Interests:** Application of computational tools to the analysis, annotation, and interpretation of data derived from genomic scale investigations of biological systems

**Current Position:** Working as an independent consultant, looking for a postdoctoral research position in a research institute

### David J. Vigerust, Ph.D.

[David.vigerust@stjude.org](mailto:David.vigerust@stjude.org)

**Institution:** Department of Pathology, Vanderbilt University School of Medicine

**Dissertation Title:** *HIV-1 Nef Mediated Regulation of the Macrophage Mannose Receptor*

**Thesis Advisor:** Dr. Virginia L. Shepherd

**Research Interests:** Interactions between viral pathogens and the innate immune system, pediatric cancer

**Current Position:** Post-doctoral fellow, Department of Infectious Diseases, St. Jude Children's Research Hospital

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Seaport Museum. The students collected crabs, mussels, flounder, and other fish in an otter trawl, learned how to read charts, conducted water chemistry experiments, and raised the sails.

Our Beachcomber Ecology unit is also popular, in which the students identify sea shells by their Latin names and estimate the species richness and diversity of the habitats from which the shells were collected. We currently have collections from Florida, Cape Cod, Coney Island, and the Salt Marsh Nature Center (the latter two are Brooklyn sites). The students themselves amassed the salt marsh collection over the years.

Another activity that celebrates Native American heritage (and thus human biodiversity) was a workshop held at the Staten Island Institute of Arts and Sciences on the Lenape Native Americans. The students were shown examples of artifacts used by these early peoples, such as sinew for bows and fastening tomahawks, and various skins of animals that were hunted for food and clothing.

There are summer science programs across the country for both students and teachers (see page 9). These programs are a valuable resource for both urban and rural youth and help show students the impact of science in our daily lives.

*Ms. Jill E. Callahan received her B.A. in biology from St. Anselm College in New Hampshire. She has taught high*

*school science and currently teaches biology labs at St. Francis College.*

*Dr. Kathleen A. Nolan received her B.S. in biology from Northeastern University in Boston, and her M.A. and Ph.D. in biology from the City College of New York of City University. She has taught biology at Yeshiva University and Columbia University, and currently teaches at St. Francis College. She teaches high school students in the after school program in the Creative Arts and Sciences program at the American Museum of Natural History, and has been the director of the St. Francis College Summer Science Academy for the past four years.*

## SACNAS NEWS

is expanding

Starting with the summer newsletter, the SACNAS News will expand from 12 to 32 pages. New features will include:

- Longer in-depth feature articles
- Additional resources for students, professionals, and K-12 educators
- Advertising opportunities

## advertising

To advertise in the premiere issue, contact Tanya Beat, Exhibits/Marketing Manager at 831-459-0170 ext. 241 or [tanya@sacnas.org](mailto:tanya@sacnas.org)

Space reservation deadline for the July issue is May 18, 2005.



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