

# MEANINGFUL MENTORING: NATIVE AMERICAN AND LATINO SUCCESS STORIES

Early and sustained interventions which strongly feature mentoring are essential in helping Native American and Latino students navigate an unfamiliar academic system that is dominated by majority culture and practices. Throughout students' educational progression and well into their initial strides upon donning the doctoral gown, they depend upon a clearly marked career map, research training opportunities, professional skills development, peer networks, and role models. These factors can mean the difference between successfully reaching their goals and taking missteps ending in an impassable career detour.  
By **Lin M. Hundt** and **Jenny Kurzweil**

"In a class of 100 students, I might have one minority student," says **Claudia Benítez-Nelson**, describing the abysmally low minority participation in even her most introductory marine science courses.

Benítez-Nelson, associate professor in the Department of Geological Sciences and undergraduate director for the Marine Science Program at the University of South Carolina (USC), could be relating statistics from a science program in most any field at any college in the nation. The low participation of Native Americans and Latinos in science research careers is no secret. According to the latest data available from the National Science Foundation, while Latinos, Native Americans, Alaska Natives, and Native Hawaiians/Pacific Islanders comprise nearly 17 percent of the population in the United States only 4 percent of the science and engineering Ph.D.s granted in 2004 went to Hispanic/Latinos and 0.3 percent to Native Americans/Alaska Natives (National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, 1997–2004. <http://www.nsf.gov/statistics/wmpd/tables/tabf-6.xls>). And, while significant shifts in participation continue to be elusive, many of the keys to change are in place thanks to national efforts and federally funded diversity programs at most institutions.

## Mapping the Path to a Science Career

Many minority students enter university with tremendous trepidation about whether they belong, doubts about their chances of success, and a conspicuous lack of knowledge about the college experience. **Talia Martin**, a Native American of the Shoshone-Bannock tribes and a recent graduate in chemistry from the University of Kansas (KU), was the first in her family to earn a college degree. Martin initially learned how to navigate college and approach faculty for mentoring support through the 500 Nations Bridges to the Future Program at Haskell Indian Nations University. One of the many multifaceted programs funded by the Minority Opportunities in Research (MORE) division at the National Institute of General Medical Sciences (NIGMS), the 500 Nations Bridges Program provides research opportunities in KU labs for students at Haskell who are interested in transferring to four-year research universities. Once Martin had transferred to KU, she got involved with the McNair Scholars Program that prepares traditionally underrepresented students for graduate study through continued research opportunities. Martin credits participation in mentoring-focused programs as critical to connecting her to faculty mentors and helping her succeed as an undergraduate. The mentors gave her direction. "I was never lost. They really helped me through, every step of the way—whether it be getting to class, passing my classes, or finding a goal in life and academia."

A lack of understanding of any number of decisions along the path can lead to lack of minority students' retention within the science education pipeline, not to mention indelibly affecting career options. To counter this lack of knowledge, **Debra E. Stalk**, Kahnawake Mohawk, created the Native American Mentoring Program (NAMP) of the Sackler Institute of Graduate Biomedical Sciences at the New York University (NYU) School of Medicine.

Reaching out nationally, NAMP helps Native American students become competitively prepared to enter graduate programs in their area of interest. She finds, however, that students aren't the only ones who lack an understanding of the current realities of a science education. She says, "Because the numbers of Native American students are so small **continued** »



Maria Elena Zavala, director for the California State University, Northridge Minority Access to Research Careers and Minority Biomedical Research Support programs.



Claudia Benítez-Nelson and son



Talia Martin

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- Careers in Neuroscience — October 26
- Focus on Diversity 3 — November 16

## Focus on Diversity

at undergraduate [institutions], oftentimes advisers are under this misimpression that these students will be eligible for any medical school or graduate training program they apply to, just by virtue of being a native student in college.” Thus, another facet of NAMP is providing training to undergraduate advisers, so that they can offer accurate career counseling to their minority students.

## Developing Science Research Expertise

The more generalized mentoring elements of programs like NAMP, Bridge, and McNair Scholars are accompanied in many instances by exposure of underrepresented minority students to hands-on research experience. In developing their scientific expertise in the lab, minority students lay the foundation for a research career by significantly increasing their chances of getting into competitive graduate programs.

**Maria Elena Zavala**, professor of biology at California State University, Northridge, is the program director for the CSUN Minority Access to Research Careers (MARC) and Minority Biomedical Research Support (MBRS) programs through MORE. Both MARC and MBRS focus on bringing students into the lab. MARC is a competitive honors program that provides lab research opportunities in addition to mentoring-focused workshops and curricula. MBRS funding, in general, allows faculty to establish research programs that create opportunities for students to work as part of a research team. Zavala notes that MARC/MBRS programs are like an apprenticeship. “The way we do science is by learning from others; it is easier if someone directs you in that hands-on approach. Having students work in the lab is one way of imparting knowledge; it is also a way of imparting behavior.”

Because most of her Latino and Native American students haven’t grown up with professional scientists as parents, prior to entering her mentoring program Zavala’s students haven’t had someone to make the general guidelines for pursuing the scientific career path clear to them. Thus, Zavala’s mentoring introduces her students to research as an intellectual and social pursuit, including concepts of scientific ethics, responsibility, and appropriate conduct.

Important research opportunities for minority science students are also available outside the traditional academic setting through industry internships and fellowships. **Lino Gonzalez**, a research scientist at Genentech, believes that these research opportunities are particularly important for Latino and Native American students who have had little, if any, exposure to the high technology world and how science is conducted in such an environment. Therefore, Gonzalez believes that “diversifying [students’] scientific experiences during the undergraduate years with both academic and industrial research can help shape life-long goals for their graduate and professional lives.” In his experience, for students interested in industry, the connections they develop during internships can be invaluable. “I have seen many former intern students return after they complete their graduate studies to apply for full-time positions,” says Gonzalez.

The All Nations Louis Stokes Alliance for Minority Participation program (All Nations LSAMP), funded through the National Science Foundation (NSF), is another endeavor to engage underrepresented minority students, specifically Native Americans, in research. All Nations LSAMP, housed at Salish Kootenai College, serves as a funding clearinghouse for 25 tribal colleges and 11 other predominantly Native American-serving universities, to start up and sustain science and research programs that meet the particular needs of the communities they serve. “For example,” **Zetra Wheeler**, Blackfeet, the program manager for All Nations LSAMP, explains, “Salish Kootenai College used the previous phase LSAMP funds to help develop its four-year forestry program since the reservation is covered in timber and is a source of income.”

For Native American students on reservations and in rural areas that want to pursue a career in academia or industry, participating in conventional lab research is crucial for their next steps. These careers, however, will take them away from home, a compromise that as Wheeler explains many Native American students are reluctant to make. As the most underrepresented group within the scientific arena, Native American communities have a deep need for increased representation within the mainstream scientific work force. At the same time, there is a significant gap in scientific expertise to tackle pressing concerns within the community, such as management of tribal lands and natural resources, and culturally relevant health care and public health awareness. Through the diversity of the programs funded by All Nations LSAMP, Native American students are provided opportunities for scientific preparation that address both areas of concern. **continued »**

**All Nations Louis Stokes Alliance for Minority Participation (All Nations LSAMP)**  
www.anamp.org

**American Indian Science and Engineering Society (AISES)**  
www.aises.org

**Annual Biomedical Research Conference for Minority Students (ABRCMS)**  
www.abrcms.org

**California State University, Northridge**  
www.csun.edu

**David Geffen School of Medicine, University of California, Los Angeles**  
www.dgsom.healthsciences.ucla.edu

**Genentech, Inc. College Programs**  
www.gene.com/gene/careers/college/programs.jsp

**Haskell Indian Nations University**  
www.haskell.edu/haskell

**Institutional Research and Academic Career Development Award (IRACDA) Program**  
www.nigms.nih.gov/Training/Mechanisms/CareerDev/MOREInstRes.htm

**Minority Access to Research Careers (MARC)**  
www.nigms.nih.gov/Minority/MARC

**Minority Biomedical Research Support (MBRS)**  
www.nigms.nih.gov/Minority/MBRS

**National Institute of General Medical Sciences, Minority Opportunities in Research Division**  
www.nigms.nih.gov/Minority

**National Postdoctoral Association**  
www.nationalpostdoc.org

**National Science Foundation**  
www.nsf.gov

**National Science Foundation Graduate Teaching Fellows in K-12 Education (GK-12) Program**  
www.nsf.gov/funding/pgm\_summ.jsp?pims\_id=5472

**Native American Mentoring Program (NAMP), Sackler Institute of Graduate Biomedical Sciences, New York University School of Medicine**  
www.med.nyu.edu/sackler/namp

**University of Pennsylvania (Penn) Biomedical Postdoctoral Programs (BPP)**  
www.med.upenn.edu/postdoc

**Salish Kootenai College**  
www.skcc.edu

**ScienceQuest Program, University of South Carolina**  
www.geol.sc.edu/cbnelson/ScienceWeb/index.htm

**Society for Advancement of Chicanos and Native Americans in Science (SACNAS)**  
www.sacnas.org

**SACNAS Minority Postdoc Community**  
www.minoritypostdoc.org

**University of Kansas (KU)**  
www.ku.edu

**University of Kansas 500 Nations Bridges to the Future Program**  
www2.ku.edu/~bridge

**University of Kansas McNair Scholars Program**  
www2.ku.edu/~mcnair

Focus on Diversity

Professional Skills for Professional Advancement

In addition to the scientific preparation that mentors and mentoring programs offer, doctorates and doctoral aspirants alike need training in the professional (nonbench) skills that form a foundation to science career advancement. In the University of Pennsylvania's Biomedical Postdoctoral Programs (BPP), this translates to ongoing workshops that start with conventional aspects of professionalism from communication skills for grant writing and job interviews to leadership skills for managing a lab and working with a research team. The program also addresses fundamentals that minority postdocs may never even have considered to be part of their professional training—like which utensils to use during the course of a business lunch.

Ivonne Vidal Pizarro, the former recruitment and diversity coordinator for BPP, categorizes shortfalls in professional training opportunities and support services for postdocs as the missing links in the minority science

“The value of peer-to-peer networks is to ameliorate the difficulties that minorities can face in majority settings by sharing experiences with and finding empathy from sympathetic colleagues.”

—Alberto Roca



In the trajectory of a successful scientific career, communicating one's research results goes hand in hand with establishing aptitude in conducting that research. Annual minority science conferences, such as the Society for Advancement of Chicanos and Native Americans in Science (SACNAS), the American Indian Science and Engineering Society (AISES), and the NIGMS-funded Annual Biomedical Research Conference for Minority Students (ABRCMS), provide excellent multidisciplinary forums for students to receive guidance in the art of public speaking and the craft of scientific inquiry.

Gustavo Miranda, a research scientist at the David Geffen School of Medicine at the University of California, Los Angeles, chairs the student poster presentations program at the SACNAS conference, where over 500 students present their work annually. He affirms that conferences like SACNAS provide “early training for how to handle the nuances of professional presentations.” Miranda has observed that when attending large, discipline-specific conferences minority students can get lost in the crowd, feel insignificant and out of place. “At conferences like SACNAS, students connect with mentors and role models from their same ethnic background and progressive majority scientists.” In Miranda's view, these interactions with mentors, that recognize the value of underrepresented minority communities in producing a competitive scientific work force, provide minority students with scientific preparation that they cannot get elsewhere.

Peer-to-Peer Networking on a National Scope

Efforts at individual institutions to support the needs of the burgeoning postdoctoral community have been joined by a growing number of national programs and organizations. Many are self-initiated by postdocs desperate for support. The National Postdoctoral Association (NPA) was formed in 2003 to provide advocacy for and national coalescence among postdoctoral scholars. Similarly, the SACNAS Postdoc Committee and Minority Postdoc Community website are the conception of SACNAS postdocs, resulting in postdoctoral networking activities and an interactive virtual community across geographical barriers.

Whether enhancing their skills via postdoctoral research, on the hunt for employment, or settling into a newly acquired faculty or investiga-

pipeline. According to Vidal Pizarro, who is now at the American Association for Cancer Research in the position of scientist, program administrator, the postdoctoral stage is overlooked by those looking at the advancement of Native Americans and Latinos in the sciences. “If you really want to bump up the numbers of faculty members that come from underrepresented minority groups, then you need to address postdoctoral issues.”

And those issues are by no means uncomplicated. Recent recipients of a doctorate often find themselves, in fact, at one of the most precarious junctures in their career. While postdoctoral training has become practically a requirement for academic employment in many fields, the large majority of postdocs will be unable to obtain a faculty position at the end of their postdoctoral tenure. In such a tight job market, for Latino and Native American scientists, postdoctoral appointment choices and planning, professional skills development, and support systems are especially crucial.

tor role, minority scientists are regularly culturally isolated as the only minority in their professional world. Alberto Roca, founding member of the SACNAS Postdoc Committee believes, “The value of peer-to-peer networks is to ameliorate the difficulties that minorities can face in majority settings by sharing experiences with and finding empathy from sympathetic colleagues.”

Full Circle: Ph.D. to Precollege

In order for increasing numbers of Native Americans and Latinos to arrive at the point where they are seeking a faculty, federal, or industry research position, they must have seen the possibility of such a career well before college entrance exams.

Benítez-Nelson from USC became involved in precollege education, forming the USC ScienceQuest program based on a national model, to address minority students' lack of awareness about and interest in science careers. Having identified the need to reach out to precollege students when they are still quite open to the enjoyment of scientific investigations, Benítez-Nelson focused her after-school science enrichment program on grades four through six.

Benítez-Nelson perceives a direct link between the involvement of minority professional scientists in K-12 education and the promotion of a vibrant minority scientific work force. “If all you see are people who don't look like you, who don't act like you, who don't come from your background, it never occurs to you that it is possible to do these things, too.” ScienceQuest, funded by NSF, is recording positive results for the student participants in terms of grades, behavior, and performance in all subject areas, including science. Benítez-Nelson's graduate students are also enriched by the experience; many become inspired to extend their experience in precollege teaching by becoming involved in USC's NSF Graduate Teaching Fellows in K-12 Education (GK-12) Program.

Enduring Needs

Minority mentoring on a national scale is working...to a certain degree. Latino and Native American students are matriculating into and graduating from science programs at an increasing rate; and opportunities at research corporations and federal laboratories are building inroads for nonacademic science careers. Nonetheless, within the echelons of tenure-track faculty at leading research universities, there remains a noticeable lack of change in the representation of minority scientists. Fresh approaches and commitments at the professoriate level, in concert with programs that encourage minority participation in science throughout the education process, may hold the final key to success.

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