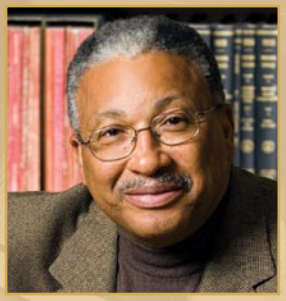
The Changing Face of Science





at the National Academies

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

The National Academy of Sciences is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. Upon the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Ralph J. Cicerone is president of the National Academy of Sciences.

The National Academy of Engineering was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. Charles M. Vest is president of the National Academy of Engineering.

The Institute of Medicine was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, upon its own initiative, to identify issues of medical care, research, and education. Dr. Harvey V. Fineberg is president of the Institute of Medicine.

The National Research Council was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purposes of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The Council is administered jointly by both Academies and the Institute of Medicine. Dr. Ralph J. Cicerone and Dr. Charles M. Vest are chair and vice chair, respectively, of the National Research Council.

www.national-academies.org

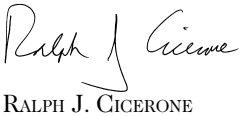
In these pages we celebrate people of diverse backgrounds who are changing the face of science, engineering, and medicine, and who have contributed to the work of the National Academies.

Each profile recounts a story of accomplishment. Many of these individuals have earned substantial recognition in their fields; others are building careers in science, engineering, or medicine. Their stories parallel the process of science itself: intellectual curiosity combined with determination, hard work, and a touch of serendipity, leading to new discoveries in science and advancement for society as a whole.

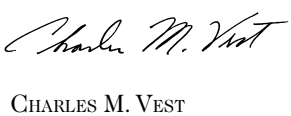
As part of the National Academies' service to the nation, we study issues of great importance to diverse racial and ethnic populations, such as access to health care, education, and employment. We greatly appreciate the contributions of the people highlighted here, as they have lent us the perspective of their life experiences along with their scientific achievements. We are also pleased to assist with the careers of emerging scientists and engineers through fellowship and internship programs.

We invite you to look at "Explore Further" at the end of this publication and to visit www.nationalacademies.org/fellowships to find out about the Academies' activities and reports concerning our nation's diverse populations.

The scientists, engineers, physicians, and students profiled here have enriched the lives of many people through their research and hard work. Many have overcome difficult circumstances to achieve success, and all have contributed to the well-being of this country. We are proud to be associated with them and greatly appreciate their contributions to research, scientific consensus, and policy at the National Academies.



Ralph J. Cicerone
President
National Academy of Sciences



Charles M. Vest
President
National Academy of Engineering

Harvey V. Fineberg
President
Institute of Medicine

Pioneers from diverse backgrounds in science and engineering

As a young girl growing up in Washington, D.C., **Shirley Ann Jackson** was fascinated by the bees in her backyard and collected them for study. She noticed that when the bees were first caught, they tried desperately to get away. Over time, though, they became more passive, even after she let them go. Later in life, she realized that people can similarly become conditioned to accept limitations to their future prospects. She would never let that happen to her.

Born into the post–World War II baby boom, Jackson's education was shaped by two historic developments. First was the Supreme Court's 1954 *Brown v. Board of Education* decision, which ordered public schools to integrate their student populations. This ruling made it possible for Jackson to attend a school near her home where previously she would not have been allowed to set foot—a school where her natural abilities could flourish.

Second, the 1957 launch of the satellite *Sputnik* by the Soviet Union sparked U.S. educators to focus much greater attention on math and science, subjects in which Jackson was very proficient. With the support of her parents and caring teachers, she excelled in her classes and further developed her scientific curiosity and natural leadership abilities throughout her school years.

Jackson received two scholarships to attend the prestigious Massachusetts Institute of Technology. But when she arrived on campus, she was one of only a very few African-American students, and most MIT students did not befriend or accept her. It was only after Jackson demonstrated her superior grasp of the subject matter in her mathematics and science courses that she was invited to study groups, and even then many white

"Now is your time.
Step through your window in time.
Look forward, not back. Look up, not down.

Have confidence in yourselves.
Take care of yourselves and your families.
And when you are feeling tired, discouraged, or just plain disgusted, think of the bridges you already have crossed, the mountains you already have climbed."

Shirley Ann Jackson

Shirley decided to stay at MIT for graduate studies and work toward making the "dream" of Dr. Martin Luther King, Jr., a reality at MIT.

students shunned her socially. She immersed herself in her studies, and later research, and found enjoyment in volunteer work at Boston City Hospital and membership in the Delta Sigma Theta sorority.

An engrossing class in physics persuaded Jackson that this was the field she should pursue. She continued at MIT for graduate work in theoretical physics—but also for another reason. MIT needed to welcome more minority students, and Jackson wanted to bring about that change. She helped found the Black Students' Union and guided the group through the development of well-researched and well-reasoned proposals for recruiting and integrating African-American students into MIT.

Jackson presented the group's proposals to the associate provost, who respected her polite, persistent advocacy. A task force on educational opportunity was formed, and Jackson was named its student leader. Among many other accomplishments, the task force in its first year increased the number of entering African-American freshmen from 5 to 57. Jackson became the first African-American woman to receive a Ph.D. in any field from MIT.

Dr. Shirley Ann Jackson has been a pioneer on many fronts: discoveries in theoretical physics; development of national nuclear policy; progress in global energy policy and education; and advancement of all, including women and African-Americans, in science, technology, engineering, and mathematics.

After graduation Jackson went to work at the Fermi National Accelerator Laboratory in Batavia, Illinois. She lived in Chicago and made a long daily commute to work because landlords in the Batavia area refused to rent to African-Americans (one landlord gave as his reason that he had once had a bad experience renting to a Hispanic doctor). On a fellowship, she spent a year in the theory division at the renowned European Organization for Nuclear Research (CERN) in Geneva, Switzerland.

After many years at AT&T Bell Laboratories and Rutgers University, Jackson received a call to national service: she was named chairman of the U.S. Nuclear Regulatory Commission by President Clinton. At a time when the public was alarmed about nuclear plant safety, she launched policies to protect nuclear workers who reported safety concerns and held public meetings to help people become better informed about nuclear power. She also spearheaded the formation of an international nuclear regulators association, involving heads of nuclear safety organizations of eight countries. Because of the leadership Jackson had demonstrated throughout her career, Rensselaer Polytechnic Institute in Troy, New York, offered her the post of president.

Jackson was the first African-American woman to be elected to membership in the National Academy of Engineering. For the National Academies, she served on the

committee that authored *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*. Requested by Congress, this report explores how to preserve and bolster U.S. capacity and leadership in science and technology and meet our needs for energy.

Calling her a "national treasure," the National Science Board selected her as its 2007 Vannevar Bush Award recipient for "a lifetime of achievements in scientific research, education, and senior statesman-like contributions to public policy." She is the first African-American woman to receive this prestigious honor.

Dr. Shirley Ann Jackson has been a pioneer on many fronts: discoveries in theoretical physics; development of national nuclear policy; progress in global energy policy and education; and advancement of all, including women and African-Americans, in science, technology, engineering, and mathematics.

Recognition Then and Now

In February 2007, Percy Lavon Julian was introduced to a new generation of Americans in a special report on public television's NOVA program, titled "Forgotten Genius." More than three decades earlier, in 1973, Julian had become the second African-American elected to the National Academy of Sciences. Julian pursued his career at a time when professional doors were closed to people of color, yet he managed to become a renowned chemist, successful inventor and entrepreneur, and founder of a research institute. The grandson of a slave, Julian earned a bachelor's degree from DePauw University, a master's degree from Harvard, and a Ph.D. from the University of Vienna, Austria. He developed ways to produce medicines to treat glaucoma and Alzheimer's disease, and his 115 patented inventions include a fire-extinguishing foam used during World War II. At his death in 1975, he was praised for his generosity, grace, and wit.

Percy Julian is among those recognized in the National Academies' Portrait Collection of African-Americans in Science, Engineering, and Medicine. Many of the photos were taken at the studio of Addison Scurlock, a Washington, D.C. photographer who chronicled African-American intellectual and cultural life over six decades. The portrait collection is on view periodically at the Keck Center of the National Academies.

We seek ways to improve the lives of diverse populations

How can our nation assure that minority populations have access to health care, education, and all the advantages of our society? How can our universities and corporations increase minority participation in science, engineering, and medicine?

In its role as science adviser to the nation, the National Academies explores important questions about racial and ethnic minorities in America. We examine not only how public policy can improve their lives but also how the country can benefit from their talents and expertise. Through our research and publications, we heighten awareness of disparities in educational and workforce opportunities, offer recommendations for equalizing access to services and opportunities, and identify ways to increase minority participation in addressing the nation's issues.

Before our nation can address disparities based on race or ethnicity, we need to understand their scope and dimension. **Marta Tienda** is a pioneer in the use of quantitative techniques to analyze social problems and ferret out their underlying causes. Now a tenured professor at Princeton, Tienda is studying on a broad scale the problems she lived through personally as the daughter of a Hispanic immigrant family.

Although the Tiendas worked hard, the family struggled with desperate poverty. Marta once picked vegetables with her family to get through a particularly tough time. But her father encouraged his children to pursue education as the way to a better life. In school in the Detroit suburbs, Tienda enjoyed learning math and science, and she began to discern meaning behind the numbers.

To find out why some Hispanic groups did better than others, Marta and two of her graduate students interviewed people in various Chicago communities.

Tienda's grades were excellent and she worked hard, but her highest ambition was to become a beautician—until a teacher suggested that she could get a scholarship for college. Another turning point came after Tienda's junior year at Michigan State University, when she worked for the summer at a government office assisting Mexican-American migrant workers. Their precarious lives mirrored her own early experiences, and she started wondering how to help them.

Tienda eventually earned a Ph.D. in sociology, with partial support from the Ford Foundation. While she taught sociology at the University of Wisconsin, she served as an adviser on the first-ever national survey of Mexican-Americans and helped produce a report that is still regarded as a seminal source of information on the topic.

Tienda's reputation as one of the top sociologists in the United States led the Academies to ask her to lead a project on Hispanics in America, which produced the report *Multiple Origins, Uncertain Destinies: Hispanics and the American Future*. The report describes how Hispanics are transforming the country as they disperse geographically, and it projects long-term trends in social disparities and social mobility that will shape the Hispanic experience.

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The companion volume, *Hispanics and the Future of America*, is a rich source of data and information on the Hispanic population in America from the perspectives of history, demography, education, and employment.

Discrimination against Hispanics, African-Americans, and Native American populations has occurred throughout the course of American history. The National Academies has explored the need to accurately assess the presence and the effects of this discrimination in the report *Measuring Racial Discrimination*, which examines how researchers can best define ethnicity and race in America today and recommends practical ways to identify and measure discrimination.

Bridging the Technical and the Traditional

The report *Multiple Origins, Uncertain Destinies*, coauthored by Marta Tienda, looks carefully at the diverse populations in the United States encompassed by the term "Hispanic," representing immigrants and their children and grandchildren from nearly two dozen Spanish-speaking countries.

Similarly, there are more than 500 different American Indian tribes in the United States. "Most people think there are typical characteristics of American Indians, and there may be a few," says **Sandra Begay-Campbell**. "But there are also great differences."

Begay-Campbell is an engineer and a member of the Navajo nation. Her family lives on tribal lands near Gallup, New Mexico. As a young girl, she became very interested in architecture, but she also enjoyed math and solving problems.

Her mother earned a degree in nursing, which required Sandra and her sister to stay at a boarding school for some of the time when her mother worked toward that degree. Begay-Campbell says she learned from that experience what kind of sacrifices need to be made to get an education. Young Sandra went to a private school, and although her aptitude for science and math was recognized and encouraged, her white teachers lacked an understanding of the native culture when teaching American Indian children.

Begay-Campbell is now a principal of the technical staff at Sandia National Laboratories in Albuquerque, New Mexico, where she leads projects in the Renewable Energy Program.

When she was a junior in high school, Begay-Campbell was introduced to the field of civil engineering and realized that an engineering career would allow her to solve problems, work with architects, and pursue projects that would enable her to give back to the community. Both of her parents expected Begay-Campbell and her siblings to complete college, which was not always the case in her community.

After earning a master's degree from Stanford University, she worked at both the Lawrence Livermore and the Los Alamos National Laboratories. She then served as executive director of the American Indian Science and Engineering Society, which is dedicated to increasing the number of American Indian scientists and engineers. During her term as a member of the University of New Mexico Board of Regents, she says she needed to be "more vocal than I like to be" to ensure that her voice on behalf of native peoples would be heard.

Now a principal of the technical staff at Sandia National Laboratories in Albuquerque, New Mexico, Begay-Campbell leads projects in renewable energy. Her work includes bringing solar power and other renewable energy systems to Navajo and other tribes, bridging the technical world of the Sandia engineers with the traditional native cultures.

The National Academies asked Begay-Campbell to participate in studies on increasing the numbers of American Indians in engineering and the sciences. She served on a committee of the National Academy of Engineering (NAE) that produced the report

Engineering Studies at Tribal Colleges and Universities. The report explored the most effective ways to attract American Indians to engineering studies, such as enlisting tribal elders to encourage students to consider engineering careers.

Begay-Campbell was a member of an NAE committee that produced the report *Diversity in Engineering: Managing the Workforce of the Future*, which examined best practices in managing diversity and advancing women and underrepresented minorities in engineering careers. This report presented the frank views of employers, human resource managers, educators, and others who work with engineering professionals. At present she is a member of the Academies' Committee on Underrepresented Groups and the Expansion of the Science and Engineering Workforce Pipeline for the Committee on Science, Engineering, and Public Policy.

Health Center Pioneer

H. Jack Geiger, M.D., has demonstrated that a commitment to improving the lives of minority populations is not limited to people of color. Professor emeritus at the City University of New York Medical School and member of the Institute of Medicine, he has devoted much of his career of more than 60 years to the defense of minority rights.

As a teenager in New York, Geiger befriended and was mentored by actor Canada Lee and poet Langston Hughes, whom Geiger describes as "two of the great black leaders of that era. They gave me my first good look at the struggles of minority communities." He also had the opportunity to meet and associate with prominent African-American figures such as writer Richard Wright and actor Paul Robeson.

During World War II, Geiger joined the Merchant Marines because it was the only branch of the services that was integrated. After a stint as a science journalist following the war, Geiger entered medical school, hoping that medicine could be a means for social change. Among other life-shaping experiences, he studied community health centers in apartheid South Africa, where he saw parallels with racial discrimination in the United States. Later, he founded health centers in rural Mississippi and inner-city Boston and pioneered the American health center movement, which has built more than 1,000 centers that serve more than 25 million people around the country. This achievement earned him the Institute of Medicine's Lienhard Award.

Geiger was a founding member of the Congress of Racial Equality and led campaigns to end racial discrimination in hospitals and medical schools in the 1940s and 1950s. In

Jack Geiger and Dr. John W. Hatch at the construction site of the Delta Health Center in 1968.

the 1960s he provided medical care to civil rights workers in the South. He helped found and served as president of Physicians for Human Rights and Physicians for Social Responsibility. He has traveled internationally to consult on human rights matters and has written extensively on the health consequences of the use of nuclear weapons. His awards include the U.S. Department of Health and Human Services' first annual 21st Century Equity Award for his campaign against health care disparities among racial and ethnic groups.

The National Academies has explored the complexities surrounding minority access to health care and has released a number of important reports offering recommendations. Jack Geiger was an expert reviewer for the Institute of Medicine publication *Examining the Health Disparities Research Plan of the National Institutes of Health: Unfinished Business*.

Geiger also contributed a major commissioned paper to the Institute of Medicine report *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*. This report examined the evidence that racial and ethnic groups receive health care of lesser quality even after their different socioeconomic conditions are taken into account. Among other measures, the report recommends that health care professionals receive cross-cultural training and make more use of evidence-based health guidelines in making decisions about care.

We encourage a new generation of diverse scientists

There are many stories of minorities engaged with the National Academies, but many more are bound to unfold because of support from fellowship programs and other opportunities offered through the Academies.

One such story is that of **John Carlos Garza**, who went from high school dropout to Phi Beta Kappa member and tenured professor. Garza remembers announcing to his family at age 4 that he wanted to become a research scientist and perform the first brain transplant. He grew up in the inner city, in a family dependent on public assistance. The circumstances of his life almost prevented him from achieving his early ambition to become a scientist: he dropped out of school in the 9th grade and became involved in what he calls "destructive situations."

Around age 19 he decided that "I had to do something because I wouldn't be able to stay there for the rest of my life, and I knew that the solution was education." He then enrolled in the San Diego City Community College. Admitted to the University of California, San Diego, under an affirmative action program, Garza graduated in the top 4 percent of his class. He went on to earn a Ph.D. at the University of California, Berkeley.

Garza was able to obtain his education with support from the Ford Foundation Fellowships for Minorities program, administered by the National Academies. This program was established to increase the number of underrepresented minorities on the faculties of the nation's colleges and universities. More than 2,700 fellowships have been awarded since the Academies began administering the program in 1980. In

2005 the Ford Foundation extended eligibility for these fellowships to all U.S. citizens who show a commitment to diversity in academe.

In graduate school many of Garza's fellow students were from upper-middle-class or academic households that offered much more support than he could expect from his impoverished family. Most of the people he grew up with had not even graduated from high school. The Ford fellowship allowed Garza to pursue his interest in evolutionary biology rather than switch to a field with better job prospects, like medicine, a common concern among minority scholars for whom "poverty is a difficult memory."

In addition to receiving financial support, the Ford fellows can attend the annual Conference of Ford Fellows, where they network informally and participate in

The Ford fellowship allowed Garza to pursue his interest in evolutionary biology rather than switch to a field with better job prospects, like medicine . . .

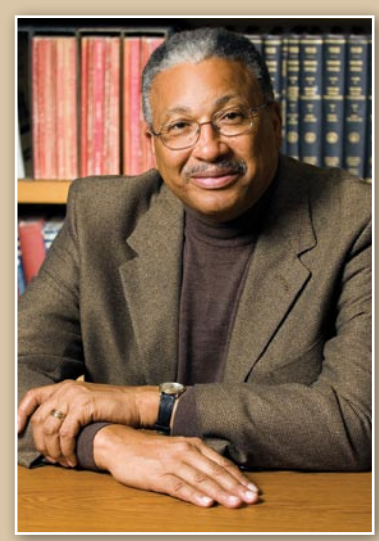
workshops and professional development sessions to advance their academic careers. In a 2005 survey of fellows, most respondents said their rate of career advancement was on a par with that of their colleagues or was even faster. They said that becoming part of a "community of scholars," one that crosses disciplinary lines, was a critical outcome of the fellowship experience. Garza says of his ongoing contacts with Ford fellows, "We've continued to support each other, and we acknowledge each other's trials and tribulations."

Now a supervisory research geneticist at the Southwest Fisheries Science Center of the National Oceanic and Atmospheric Administration, Garza leads a team of scientists who study the genetics of natural populations of marine organisms to answer questions about their ecology, evolution, and conservation. He is also an adjunct professor of ocean sciences at the University of California, Santa Cruz.

Garza works with the Society for the Advancement of Chicanos and Native Americans in Science to encourage minority students to pursue biology in its varied applications. He says, "We need to have diversity in discipline as much as cultural diversity if we really want to make an impact."

From Janitor to Institute Director

As a young man in the Midwest, James S. Jackson began to study engineering but soon changed to psychology. The first in his family to attend college, he earned a bachelor's degree from Michigan State University, supporting himself by working at an auto plant and as a janitor. After beginning graduate school in psychology, he dropped out to become a family counselor in juvenile court. He eventually earned a Ph.D. in social psychology from Wayne State University.



Jackson became the first full-time African-American faculty member in psychology at the University of Michigan. He directed the National Survey of Black Americans, in which he pioneered new methods and approaches to studying black populations, including the Wide Area Sampling Procedure, a new approach to identifying survey participants.

A Ford fellowship allowed Jackson to live in Europe to study immigration and migration issues and make policy recommendations to top political leaders. He credits the fellowship with opening up a range of career opportunities for him, including additional research in Europe, the Caribbean, and Brazil. "This program really lives the values of diversity," he says, "the way it eases relationships with people from many different backgrounds." He adds that the annual Conference of Ford Fellows can bring a sense of renewal—in particular to minority scholars, who sometimes feel alone in their graduate programs and professional posts.

Jackson is now director of the Institute for Social Research at the University of Michigan, and is also a member of the Institute of Medicine.

Promising Students Explore Science Policy at the National Academies

At the high school and college levels, the National Academies nurtures minority scientists through the Anderson-Commonweal Internship Program, funded by the Rose-Marie and Jack R. Anderson Foundation, the Commonweal Foundation, and the Kaiser Family Foundation. This program funds summer internships for select graduates of Benjamin Banneker Academic High School in Washington, D.C., and Albert Einstein High School in Kensington, Maryland.

The chosen students spend a 10-week paid internship at the Academies, contributing to reports, traveling to professional meetings, and working on Web sites. Most return each summer during their college careers.

Fateema Blackwell is graduating from the Virginia Commonwealth University School of Mass Communications with a concentration in broadcast journalism. She interned at the National Academies for three summers. Originally intending to major in forensics, Blackwell became interested in a career in media journalism because of her experiences during the internship.

Blackwell spent one summer working in the news office, where she learned how to write media releases about complex scientific subjects and findings. Assigned during another summer to the Water Science and Technology Board, she attended a professional

"This internship opportunity taught us leadership and put us out on the forefront to communicate with leaders in the scientific community."

Fateema Blackwell

meeting in Ontario, Canada, on water regulation of Lake Ontario and the St. Lawrence River. While working for the board, she was also able to assist in editing reports for publication. During a stint in the IOM communications office, she collected data for the Institute of Medicine's new marketing materials.

"The Academies showed me that I could link science and the media," Blackwell says. "This internship opportunity taught us leadership and put us out on the forefront to communicate with leaders in the scientific community."

The National Academies also administers the Christine Mirzayan Science & Technology Policy Graduate Fellowship Program. These fellowships engage graduate students in different fields—science, engineering, medicine, business, public policy, law—in the process that informs national policy making for science and technology. The students develop basic skills essential to working in the world of science policy. While not strictly for minorities, the program has given many minority students opportunities for professional development.

José Zambrana, Jr., is among the beneficiaries of the Mirzayan program. He went to medical school at Cornell University for one year but decided medicine was not for him. He worked as a musician in New York City for several years but throughout that time still enjoyed learning about science. He took a graduate class and, with

"When I was teaching, I brought a sensitivity to issues that my colleagues didn't have. The Hispanic students were excited that I was there teaching and getting a doctorate, and it was inspiring. Now, I feel I need a way to give back, to be a model."

José Zambrana, Jr.

encouragement from his professor, decided to leave music and return to school. Eventually he received a Ph.D. in inorganic chemistry from the City University of New York.

Zambrana got acquainted with the field of science policy at a meeting of the American Association for the Advancement of Science (AAAS). Near the end of his Ph.D. work, he successfully applied for a Mirzayan fellowship, where he assisted in preparing the report *The Future of U.S. Chemistry Research: Benchmarks and Challenges*. "It was only 10 weeks," he says, "but it was a substantive experience, a chance to get my feet wet." Zambrana currently works for the National Center for Environmental Research of the U.S. Environmental Protection Agency as an AAAS Science & Technology Policy Fellow.

Zambrana was one of very few minority students in his doctoral program, and there were very few minority professors. He says, "When I was teaching, I brought a sensitivity to issues that my colleagues didn't have. The Hispanic students were excited that I was there teaching and getting a doctorate, and it was inspiring. Now, I feel I need a way to give back, to be a model."

At the National Academies we are pleased to focus attention on diversity in science, engineering, and medicine and on the policies that guide the scientific enterprise. We are proud of our many reports and programs that have helped make America's opportunities and resources available to people of diverse backgrounds. We hope this publication has heightened your interest, and we invite you to take advantage of the resources listed here to learn more.

EXPLORE FURTHER …

Links to all of these projects and reports are available at www.nationalacademies.org/fellowships.

Strong Force: The Story of Physicist Shirley Ann Jackson

People Person: The Story of Sociologist Marta Tienda

African-Americans in Science, Engineering, and Medicine: A Portrait Collection of the National Academy of Sciences (www.nas.edu/aahm/portrait.html)

Ford Foundation Diversity Fellowship Programs (www.nationalacademies.org/fellowships)

Anderson & Commonweal Internship Program (www.dels.nas.edu/acip)

Christine Mirzayan Science Technology Graduate Fellowships Program (www.nationalacademies.org/policyfellows)

NATIONAL ACADEMIES REPORTS CITED

Learn more about all of the reports listed here at www.nap.edu.

The Future of U.S. Chemistry Research: Benchmarks and Challenges (2007)

Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future (2007)

Multiple Origins, Uncertain Destinies: Hispanics and the American Future (2006)

Hispanics and the Future of America (2006)

Measuring Racial Discrimination (2004)

Examining the Health Disparities Research Plan of the National Institutes of Health: Unfinished Business (2006)

Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care (2002)

Engineering Studies at Tribal Colleges and Universities (2006)

Diversity in Engineering: Managing the Workforce of the Future (2002)

OTHER RELEVANT NATIONAL ACADEMIES REPORTS

Health Care

Speaking of Health: Assessing Health Communications Strategies for Diverse Populations (2002)

Emerging Issues in Hispanic Health: Summary of a Workshop (2002)

Critical Perspectives on Racial and Ethnic Differences in Health in Late Life (2004)

Social Issues

America Becoming: Racial Trends and Their Consequences, Volumes I and II (2001)

Measuring Housing Discrimination in a National Study: Report of a Workshop (2002)

Science, Engineering, and the Health Care Workforce

The Right Thing to Do, The Smart Thing to Do: Enhancing Diversity in the Health Professions (2001)

Minorities in the Chemical Workforce: Diversity Models that Work: A Workshop Report to the Chemical Sciences Roundtable (2003)

In the Nation's Compelling Interest: Ensuring Diversity in the Health Care Workforce (2004)

Assessment of NIH Minority Research and Training Programs: Phase 3 (2005)

Opportunities to Address Clinical Research Workforce Diversity Needs for 2010 (2006)

Understanding Interventions that Encourage Minorities to Pursue Research Careers: Summary of a Workshop (2007)

Transportation

Diversity Training Initiatives (2003)

Civil Rights in Transportation Projects (2003)

Effective Methods for Environmental Justice Assessment (2004)

Management of Disadvantaged Business Enterprise Issues in Construction Contracting (2005)

Tribal Transportation Programs (2008)

OTHER INITIATIVES AT THE NATIONAL ACADEMIES

Cardozo High School Transtech Academy (www.nationalacademies.org/transtechacademy)

Committee on Environmental Justice in Transportation (www.nationalacademies.org/environjustice)

Committee on Native American Transportation (www.nationalacademies.org/nativeamerican)

Diversity Builders' Toolbox: Successful Models in the Chemical Sciences (www.nationalacademies.org/diversitytoolbox)

Committee on Emerging Research Institutions (www.nationalacademies.org/emergingresearch)

Health Literacy Community Youth Mapping (www.nationalacademies.org/healthliteracy)

Engineering Workforce Diversity (www.nationalacademies.org/workforcediversity)

Roundtable on Health Disparities (www.nationalacademies.org/healthdisparities)

Support for this publication was provided by the Presidents' Circle Communications Initiative of the National Academies.

Credits:

Except as noted, all photographs are courtesy of the individuals pictured.

Front cover *(top)*, spiral staircase in the National Academies' Keck Center: JD Talasek; front cover *(far left)* and page 3, Shirley Ann Jackson: Nuclear Regulatory Commission; front cover *(second from left)* and page 9, Marta Tienda: David Joel; page 4, Shirley Ann Jackson on steps: MIT Museum; page 7, exhibit visitor: James Gormley; page 10, Marta Tienda: Billy Goodman; page 15, Jack Geiger and John Hatch: Dan Bernstein Photography.

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