Harold Amos Medical Faculty Development Program
Formerly the Minority Medical Faculty Development Program

SUMMARY

The Harold Amos Medical Faculty Development Program awards four-year post-residency grants to support the research and career development of physicians and dentists from historically disadvantaged backgrounds.

The program, a long-running initiative of the Robert Wood Johnson Foundation (RWJF), is designed to increase the number of such faculty who achieve senior rank in academic medicine and dentistry and to foster the development of succeeding classes of such physicians and dentists.

CONTEXT

Racial and ethnic minorities have long been underrepresented in the medical profession. While the picture brightened slightly in the latter part of the 20th century, the gap between the proportion of minorities in the physician workforce and in the general population remained large.

In the early 1980s, for example, African Americans constituted almost 12 percent of the nation’s population but less than 3 percent of its practicing physicians. The pipeline offered some encouragement; 6.6 percent of students entering medical school in 1980 were African American. Still, the math was clear: medicine’s racial/ethnic imbalance was not about to go away.

This imbalance, which extended to dentistry, remains in the second decade of the 21st century. While underrepresented minorities are entering the medical and dental professions in greater numbers, the increase is not keeping pace with the growth in the nation’s minority populations, particularly among Hispanics.

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¹ Not all racial and ethnic minorities are underrepresented in the medical and dental professions. Asian Americans are not, for example. The precise list has changed over the years, but today the term *underrepresented minority* is generally understood to include Blacks, Hispanics, Native Americans (American Indians and Alaskan Natives), and Native Hawaiians and other Pacific Islanders.
(The Hispanic population more than doubled from 1980 to 2000 and increased another 40 percent between 2000 and 2010, growing to almost 17 percent of the U.S. population. By contrast, less than 5 percent of the nation’s physician workforce were Hispanic, according to American Medical Association data for 2008.)

**Impact on Care, Education, and Research**

Underrepresentation in the health care professions is not just an issue of career opportunity. Lack of diversity also has an impact on the care that underserved populations receive. As noted by a 2004 Institute of Medicine report, scientific evidence indicates:

- Minority physicians are more likely to practice among inner-city and other medically underserved populations, and to engage in primary care, a pressing need in many low-income areas.
- Medicine is a culturally sensitive area of human interaction, and people tend to seek out physicians of similar race and ethnicity.

Thus, a more diverse physician and dentist workforce can be expected to improve the ability of underserved populations to get care—and, importantly, care that is culturally compatible.

Greater numbers of medical faculty from underrepresented groups also affects the medical education received by members of those groups who can see people like them in positions of influence and power.

In addition, it results in greater diversity in medical research, both in topics researched that may more significantly affect members of underrepresented groups (such as sickle cell anemia), and in the inclusion of more subjects from underrepresented groups in clinical trials.

**RWJF’s Interest in This Area**

RWJF’s mission is to improve the health and health care of all Americans. Because minority physicians and other practitioners provide the bulk of the care to underserved minority populations, RWJF has long supported initiatives to increase the number of minorities in the health professions. Examples include:

- Funding need-based medical school scholarships for minority students
- Supporting historically black Meharry Medical College in Nashville, Tenn.

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Sponsoring an ongoing summer enrichment program to help undergraduates from disadvantaged backgrounds compete for medical and dental school admission

See Appendix 1 for more about these and other RWJF initiatives focused on diversifying the health care workforce.³

THE PROGRAM

A Strategy to Diversify Medical Faculty

In 1982 a team of RWJF program officers led by Ruby P. Hearn, PhD, recommended several new approaches to increasing the supply of minority physicians. Among them was a plan to stimulate an increase in the number of minority faculty at the nation’s medical schools.

The lack of diversity was even more pronounced in medical academia than in the profession as a whole. At the time, African Americans accounted for only 1.5 percent of the 31,000 physicians employed as full-time faculty at the nation’s 130 medical schools. All underrepresented minorities totaled a mere 2.5 percent.⁴ Hearn and her colleagues saw minority professors as role models with a significant influence both on minority students already in medical school and, importantly, on undergraduates considering career options. They believed that diversifying medical academia would lead to a more diverse medical school student body and, eventually, a more diverse physician workforce.

In making that case to the RWJF Board of Trustees, Hearn’s team pointed to polling data showing that minority medical students widely agreed with this statement:

If only we could see someone like us as a physician or faculty member, someone who proved we could be given recognition, and we could make it, someone who would be a model for us ....


⁴ The number of underrepresented minority medical faculty has since increased but still lags far behind population growth. In 2011, about 9 percent of U.S. medical school faculty were underrepresented minorities: Blacks 2.9 percent, Hispanics 4 percent, Native Americans and Hawaiians 0.2 percent and multiple race 1.9 percent, according to the Association of American Medical Colleges. In contrast, the U.S. Census Bureau estimated those groups totaled 31 percent of the nation’s 2011 population.
Providing Mentoring and Funding

In January 1983 the RWJF board authorized $2.9 million for a three-year test run of a fellowship program to remove barriers between young, talented minority medical residents and predominantly White academia. The initiative was christened the Minority Medical Faculty Development Program.

Hearn and her colleagues designed the program to address the two key challenges they had identified:

- The nation’s leading laboratories and researchers—traditionally the source of training for mainstream medical faculty—were largely inaccessible to young minority physicians interested in an academic career.

  Was it discrimination? Hearn saw the cause as something subtler—expectations. Medical schools, she explained in an interview, often assumed that minorities would become clinicians and practice in underserved areas—and were encouraged to do so because of the need there.

  “We were concerned that the minority students were not getting that … encouragement to go into biomedical careers,” she said.

  James R. Gavin III, MD, PhD, an African American physician scientist and long-time director of the RWJF program, characterized the chief culprit as indifference. Mainstream biomedical research programs, he said, were accustomed to training young physicians who already knew the landscape of academia and how to navigate their way to a faculty appointment—knowledge that minorities often did not possess.

  The problem was not that the research establishment did anything to minorities but that it did not do anything for them—“didn’t recognize that they had what might have been easily construed as unique needs,” Gavin said.

- The other major barrier identified by Hearn’s team was more straightforward: money, or rather the lack of it.

  The indebtedness burden at the end of residency training tended to fall more heavily on young minority physicians, exerting a strong pull to clinical practice, which promised to be more immediately lucrative than academic medicine.

In response, the Hearn team structured the new program to supply two ingredients that it deemed critical for success: mentorship and funding. (For more on the program’s genesis and early years, see the historic overview produced for the program’s 25th anniversary in 2008.)

Three Key Program Components

The program has undergone changes over the years, most notably the expansion into dental medicine in 2012. (See A Program Evolves and More Applicants Become
Eligible.) But the basic structure remains today as it was at the beginning. Now, as then, the program has three key components:

- **A four-year stipend to support research by young, competitively selected physicians and dentists from historically disadvantaged backgrounds who are committed to a career in academic medicine and show a strong likelihood of achieving a major academic position**

As of 2013, the annual stipend was $75,000, plus $30,000 a year to support the scholar’s research activities. RWJF makes the grant to the scholar’s educational or research institution, but the money follows the scholar during the four-year period—a feature designed to increase the young physician’s attractiveness as a faculty hire.

The number of scholars selected annually has fluctuated over the years. Initially set at eight and later raised to 12, the target as of 2013 was nine new scholars a year; beginning in 2012, one of those slots was generally reserved for a dentist. See Selecting the Scholars.

- **Linking of each program scholar to a mentor who has a record of producing outstanding medical faculty members and is committed to the scholar’s success**

In the Amos program the mentor—usually a senior faculty member at the scholar’s institution—is teacher, model, guide, advocate, and counselor. The mentor is expected to be the scholar’s advocate outside the lab as well as inside, using his or her contacts to open doors to potential faculty positions. This individual also:

  - Provides the scholar with a broad array of enriching research-related activities, inspires career choices, and lays out avenues for upward mobility
  
  - Helps compensate for any isolation that the minority physician may encounter or feel in academic and professional settings
  
  - Ensures that the scholar is able to spend at least 70 percent of his or her time on research, free from clinical and teaching obligations
  
  - Sends RWJF a letter each year briefly describing the scholar’s research accomplishments, problems encountered, and proposed solutions

Program applicants choose their mentors, but the selection process includes vetting the candidate’s proposed mentor as well as the candidate. “So it’s not just the

5 A relatively minor change involved nomenclature. Program participants were initially called fellows, but in 2004 the program switched to scholars to avoid confusion with post-residency specialty training fellowships. For simplicity, this report uses the term scholars throughout, regardless of chronology.

6 RWJF dropped the number of new scholars from 12 to 8 in 2010 as part of a general belt-tightening in response to the downturn in the national economy and its own investment portfolio. In 2012, RWJF added a ninth slot to accommodate the expansion into dental medicine. The actual number of new scholars selected in any year can fluctuate, based on available resources, the strength of the applicant pool, and other factors. In 2000, for example, 15 new scholars were selected.
individual we’re choosing. In some ways we’re choosing a scholar-mentor dyad,” says Krol, the RWJF senior program officer overseeing the program.

“That’s the thing that stands out to me—the importance of mentorship, the way it’s taken seriously in this program,” he adds. “And the idea that as these [scholars] make their way up the academic ladder, they will pay it back ultimately; they will become mentors.”

- A national advisory committee of highly respected scientists who play an integral role in the scientific and educational oversight of the program, including helping to select and guide the scholars, and monitor their progress

To chair the committee at the program’s outset, RWJF sought out Donald S. Fredrickson, MD, a well-known researcher in genetic disorders who was then vice president of the Howard Hughes Medical Institute and formerly head of the National Institutes of Health.

Hearn wanted the committee chair to be someone with a strong reputation as a no-nonsense scientist, she said later. “By choosing Don Fredrickson, we were sending a message that this program was not about social issues. It was a program about science.”

Initially six in number, the committee had 20 members as of 2013. See the list on the program’s website.

Each member takes responsibility for advising one or more scholars and monitoring their grant-supported research. While the program anticipates four years of funding, the committee reviews the progress of each scholar after the first two years to determine the appropriateness of continued support.

A Program Evolves and More Applicants Become Eligible

Since selection of the first scholar cohort in 1983, the program has undergone three key changes—each of which expanded applicant eligibility.

Adding Health Services Researchers

The program was initially designed to support young physicians involved in basic molecular research—bench science. Early on, some of the funded projects began drifting into clinical research—the study of treatment at the patient level. The difference can be a fine line, and crossing it did not cause a big stir among the national advisory committee members, who were firmly in the basic research camp.

That was not the case in 1990 when RWJF’s newly installed president, Steven A. Schroeder, MD, a self-described “generalist at heart,” proposed opening the program up to minority physicians interested in health services research—the study of how social
factors, financing systems, technologies and the like affect health care access, quality, and costs.

For some committee members—especially those who did not view this relatively new discipline as serious science—diverting program funding to support health services research at the expense of basic research was a bitter pill.

The uproar ended in compromise: RWJF expanded program eligibility to health services researchers but also increased the number of new fellowships from eight to 12 a year. There was no formula for divvying up the 12 slots. The advisory committee continued to select candidates strictly on ability and promise without regard to how they broke down by discipline, says Gavin, the program director.

Over the years, health services researchers have grown to be a significant portion of both the applicant pool and the funded scholars. In 2008, for example, almost one-third of the 59 applicants proposed projects in health services research.

To help evaluate the widened spectrum of applicants, the advisory committee added members from the health services field, starting in 1991 with J. Sanford Schwartz, MD, professor of medicine and health management and economics at the University of Pennsylvania.

*From Minority to Historically Disadvantaged—and a New Name*

Affirmative action policies to increase enrollment of racial and ethnic minorities in higher education came under increasing political and legal attack during the 1980s and 1990s, raising concern within RWJF that its faculty development program might draw a court challenge.

In a landmark 2003 ruling on two University of Michigan cases, the U.S. Supreme Court said race-and ethnicity-conscious admissions policies can be permissible under certain conditions, but must be narrowly tailored and give substantial weight to other diversity factors.

In the wake of the ruling, RWJF broadened the program’s eligibility from underrepresented minorities to “physicians from historically disadvantaged backgrounds,” which was defined to include disadvantage due to socioeconomic and educational factors as well as race and ethnicity.

The repackaging had little actual impact on the program itself and definitely not on the quality of the scholars selected, according to program staff. But at the time, the change was highly controversial within the national advisory committee, where support for affirmative action was strong.
A New Name

Along with the broadened eligibility language, RWJF gave the program a new name, dropping the word minority and making it the Harold Amos Medical Faculty Development Program in honor of a key figure in the program’s history.

Harold Amos, PhD, was professor of microbiology and molecular genetics at Harvard Medical School and the school’s first African American department chair. A tireless recruiter and mentor of minority and disadvantaged students in medicine and science, Amos served on the program’s inaugural advisory committee and directed the program from 1989 to 1993. He died in 2003.

Dental Medicine

In 2012, as part of an increased focus on oral health and interprofessional collaboration, RWJF opened the program to dentists. Most of the underrepresented minorities teaching in dental schools were on the clinical side and RWJF hoped that access to the Amos program would increase the number taking a research track.

“Our nation’s dental schools face a serious diversity gap. By expanding the mission of the Harold Amos Medical Faculty Development Program, we aim to narrow this gap, help meet the oral health needs of the country’s most vulnerable individuals, and contribute to pioneering oral health research,” RWJF President and CEO Risa Lavizzo-Mourey, MD, MBA, said at the time.

Anticipating the selection of one dentist a year, RWJF added one more funded slot. It also added two advisory committee members from academic dentistry.7

Dental candidates must have a master's degree or PhD or have completed advanced dental education. Uncertain how many qualified applicants the new opportunity would draw, RWJF and program personnel reached out to national dental organizations to help promote interest.

In 2012, the first year, nine dentists applied; one made it to the final stage but in the end was not selected. Consequently, as of the spring of 2013, when this report was prepared, no dentist had yet joined the program.

“This year we’re hoping there are twice as many or more [dental] applicants, and that we get one and maybe even two who are highly qualified,” Krol, the program officer, said in early 2013 before the application deadline.8

7 Francisco Ramos-Gomez, DDS, MS, MPH, professor, University of California, Los Angeles School of Dentistry; and George W. Taylor, DMD, DrPH, professor and chair of the Department of Preventive and Restorative Dental Sciences, University of California, San Francisco School of Dentistry
Other Changes

Partnership With American Society of Hematology

In 2006, as part of a minority recruitment initiative, the American Society of Hematology (ASH) began partnering with the program. Each year ASH funds at least one additional slot, which is reserved for a hematologist from an historically disadvantaged background who is committed to research.9

ASH Scholars, as they are called, have the same benefits and obligations as the program’s other participants, and the selection criteria and process are identical. The national advisory committee includes an ASH representative.

Alumni Involvement

Over the years former scholars have taken an increasingly active role in the program’s guidance and operation. Six of the 20 national advisory committee members are alumni.

Alumni also return as mentors of new scholars and provide an informal mentoring network for one another as well as for participants. “Because we’ve got critical mass, there is much more opportunity now for interaction among the different generations of awardees,” says program Deputy Director Nina Ardery, MA, MBA.

Juanita Merchant, MD, PhD, a former scholar and now professor of internal medicine and molecular and integrative physiology at the University of Michigan, has been a mentor and also serves on the advisory committee. “One of the important things that I think all of the [scholars] benefit from is the family feel of the program,” she says. Merchant believes that “warm and fuzzy” feel draws back many former scholars long after their grant funding has ended.

Diversification

Demographically the program has broadened over the years. The scholars in the initial cohort were all African American men. The 2012 cohort, in contrast, was almost equally divided by gender (five men, four women) and included four Hispanics and a native Hawaiian along with four African Americans.

The grantee institutions have also become more diverse. While always heavy with the names of elite, research-intensive medical schools—such as Harvard, Johns Hopkins, and

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8 After the interview was conducted, six dentists applied for the program. Scholars had not been chosen as of July 2013.
9 The program cohort chosen in 2011 included two ASH scholars, but otherwise there has to date been one a year. The ASH slot is in addition to the RWJF-funded positions. Thus in 2013 the program expected to select a total of 10 new scholars—nine (eight physicians and one dentist) funded by RWJF plus one by ASH.
the University of California at San Francisco—the list has increasingly included state universities that were absent in the program’s early years.

One reason for the change is that RWJF and program staff made a concerted effort to broaden the applicant pool in response to recommendations made by outside evaluators in 1995. See Program Evaluation.

Another is that the definition of underrepresented minority has broadened. Most importantly, the term initially included two specific Hispanic groups: Mexican Americans and mainland Puerto Ricans. But in 2003 the Association of American Medical Colleges adopted a new, more flexible definition that encompasses all Hispanics regardless of national or geographic origin. Ineligible at the program’s outset, Hispanic physicians of Colombian, Bolivian, and other backgrounds have since applied and been accepted.

**How the Program Works**

**Program Management**

The program has had a number of administrative homes over the years but since 2007 has been housed at the Indiana University School of Medicine in Indianapolis. The school sought the program as part of an effort to enhance the school’s standing generally and with prospective minority students specifically.

Gavin, a specialist in diabetes care and author of numerous publications, has directed the program since succeeding Amos in 1993. During his tenure, he has simultaneously held leadership positions in a number of unrelated academic, research and professional organizations. He lives in Atlanta.

Ardery, the long-time deputy director, is the nuts-and-bolts person. Full time in the program office in Indianapolis, she handles the myriad logistics that accompany the selection process and annual meeting.

David S. Wilkes, MD, a program alumnus now professor and executive associate dean for medical research at Indiana University, who has assisted in the national program office, will be taking over as program director in October 2013. Gavin will remain on the national advisory committee.

For a list of operational lessons learned by the program staff over the years, see Appendix 2.

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10 Gavin’s positions have included senior scientific officer at the Howard Hughes Medical Institute and president of Morehouse School of Medicine. He has also served on the RWJF Board of Trustees.
**Selecting the Scholars**

In addition to a historically disadvantaged background, candidates must have excelled in their formal education and be committed to:

- Pursuing an academic career
- Serving as a role model for students and faculty from historically disadvantaged backgrounds
- Improving the health status of the underserved, and/or
- Decreasing health disparities

They also must be U.S. citizens or permanent residents and either be completing or have completed formal clinical training, with preference going to those who have finished recently.

Using an online application system, candidates outline their research proposal, identify the institution where they intend to use the award, and specify their mentors’ area of interest. After screening the written submissions, the program invites about 20 applicants a year to in-person interviews with the national advisory committee. The program was averaging 68 applicants a year at the time this report was prepared.

The scholars are publicly announced in December and begin the program the following year. See the program website for further details of the selection criteria and procedure.

**Protected Time**

Program scholars are expected to spend 70 percent of their time in research activities, limiting patient care, teaching, and other institutional duties to 30 percent. It is a split that the program staff and advisory committee members ensure that the scholars and—most importantly—their universities respect.

This so-called *protected time* is what makes the program particularly attractive to young researchers. The “grant was critical in protecting my time so I could really develop my career as a scientist,” says Sherita Hill Golden, MD, MHS, a 2000–2004 scholar and now associate professor of medicine and epidemiology at Johns Hopkins.

“If you don’t have a grant to support your research time, you have to make up those dollars by doing clinical time. If you do too much clinical time, you don’t have enough for research,” she says. Read more about Golden and her program experience online.

Her comments are echoed by Levi Garraway, MD, PhD, a 2006–2010 scholar who is now assistant professor of medicine at Boston’s Dana-Farber Cancer Institute, where he researches genomic alterations that contribute to cancer.
“Having the Harold Amos award was crucial for me early on,” he says. “When you’re an early-career investigator, it’s hard to free up discretionary money to try new things. So the program allowed me to spend time trying new directions. And, of course, it was also a real point of leverage in getting other grants to help move our research forward.” Learn more about Garraway’s research online.

**Annual Meeting**

Each fall the program brings all scholars together to discuss their research and careers with each other, advisory committee members, and invited guests. The two-and-a-half-day meeting is the highlight of the program year—and mandatory; failure to attend can be grounds for discontinuance of the RWJF funding. In the scholar’s first two years, their mentors also attend.

“The annual meeting was one meeting I looked forward to—to get to hear the amazing things that other people are doing, and to be awed that I was asked to be part of that group,” says Giselle Corbie-Smith, MD, MSc, a 2002–2006 scholar and now professor of social medicine and medicine at the University of North Carolina, Chapel Hill.

During the meeting:

- First-year scholars meet with their mentors and their assigned national advisory committee advisors to discuss their progress and plans.
- Second-year scholars and their mentors give presentations on their research, and fourth-year scholars make valedictory remarks.
- An invited program alumnus gives the Edward Hook Memorial Lecture (named in honor of a national advisory committee member who died in 1998).
- Outside experts conduct career-development workshops. How scholars can best use their limited nonresearch time is a recurring topic.

That’s the formal agenda, but informal discussion and networking are also a key part of the meeting—and one of the main benefits of the program overall, according to former scholars.

“It was really nice to get together with the folks at the meetings to sort of share stories about how to make it through, because it’s not easy being a junior faculty. That’s the hardest time,” says Kenneth D. Aldape, MD, a 1998–2002 scholar who is now professor of pathology at the University of Texas MD Anderson Cancer Center.

Aldape explains that junior investigators face a high bar as they compete for limited grant funding against veteran researchers with established track records. “So it was nice to share strategies about how to be successful—and also just to feel like you weren’t all alone.” Read about Aldape’s research and career in his story.
Program Evaluation

In 1995, in preparation for a reauthorization by the Foundation’s Board of Trustees, RWJF commissioned an evaluation of the program’s impact. The evaluators interviewed and gathered written information from former and current scholars, program staff, and advisory committee members, and attended a candidate interview session and an annual meeting.

The evaluators reported to RWJF that the program was fulfilling its objective, and that scholars, mentors, and committee members were pleased overall. However, the team:

- Found a decrease in the annual number of applications and a concentration of applicants from a handful of medical schools. The evaluators recommended increasing the program’s visibility in order to broaden the applicant pool.
- Identified several operational improvements to address respondents’ comments—including strengthening the mentoring component and enhancing the scientific content of the annual meeting

RWJF and program staff made changes in response to the evaluators’ recommendations.

(Although not an evaluation, in 2006–2008 researchers at Yale School of Medicine interviewed and surveyed former scholars about their program experiences and subsequent careers. The purpose was to identify components of the Amos program that might translate into policy strategies to attract, retain, and support minority physicians on medical school faculties. See Program Results Report.)

A New Evaluation

In late 2012 RWJF awarded a two-year grant to Children's Hospital of Philadelphia Research Institute to conduct a second evaluation of the program. The objective is to determine if and how program scholars and applicants who were not selected differ in scientific productivity and career progression and to understand how they view the importance of mentoring, career-development training, and networking opportunities.

The evaluation team—led by James Patrick Guevara, MD, MPH, associate professor of pediatrics and epidemiology at the Perelman School of Medicine at the University of Pennsylvania—is focusing on the 2003–2007 application years. The team is conducting phone interviews, collecting data on faculty rank and scholarly activities, and consulting national benchmarks for academic career advancement and research funding. Results are expected in late fall 2014.

11 The 1995 evaluators were Lloyd H. Smith Jr., MD, at the University of California, San Francisco, School of Medicine; and Kenneth Bridges, MD, at Harvard Medical School.
12 ID# 70412 ($200,000, November 15, 2012–November 14, 2014)
RESULTS OF THE PROGRAM

- As of October 2012, 241 scholars had completed all four years of the program, and more than three-quarters remained in academic medicine. According to the program office, the alumni included 57 professors, 76 associate professors, and 56 assistant professors.

RWJF has published profiles of a number of former Amos program scholars, focusing in some instances on their research interests and in some on their career paths. For a list of these profiles, see Scholar Profiles.

- Program alumni have become influential leaders in health care.
  
  - Three former scholars direct institutes at the National Institutes of Health (the scholar’s cohort year—the year of selection—is in parenthesis):
    
    - **Gary H. Gibbons, MD** (1988), director of the National Heart, Lung, and Blood Institute
    
    - **Roderick Ivan Pettigrew, MD, PhD** (1983), director of the National Institute of Biomedical Imaging and Bioengineering
    
    - **Griffin Rodgers, MD** (1983), director of the National Institute of Diabetes and Digestive and Kidney Diseases. Read about Rodgers’ career in his story.
  
  - Ten alumni have been elected to the Institute of Medicine. In addition to the three NIH directors above, they are:
    
    - **Emery Neal Brown, MD, PhD** (1991), professor of anesthesia at Harvard Medical School and professor of computational neuroscience and professor of health sciences and technology at Massachusetts Institute of Technology
    
    - **John Carethers, MD** (1996), professor and chair of internal medicine at the University of Michigan
    
    - **Lisa A. Cooper, MD, MPH** (1995), professor of medicine at Johns Hopkins University School of Medicine. Read her story.
    
    - **Michael DeBaun, MD, MPH** (1995), professor of pediatrics at Vanderbilt University School of Medicine and Director of the Vanderbilt-Meharry Center for Excellence in Sickle Cell Disease
    
    - **Kevin B. Johnson, MD, MS** (1997), professor and chair of biomedical informatics and professor of pediatrics at Vanderbilt University School of Medicine. Read about Johnson’s work in medical informatics in his story.
    
    - **Juanita Merchant, MD, PhD** (1987), professor of internal medicine and of molecular and integrative physiology at the University of Michigan. Read more about her in her story.
- **Selwyn Vickers, MD** (1994), professor and chairman of surgery at the University of Minnesota
  
  - Two program alumni became medical school presidents:
    - **David M. Carlisle, MD** (1992) has been president of Charles R. Drew University of Medicine and Science in Los Angeles since 2011.
    - **William F. Owen Jr., MD** (1985) was president of the University of Medicine and Dentistry of New Jersey from 2007 until December 2011. He was previously chancellor of the University of Tennessee Health Science Center in Memphis.
  
- **Former scholars have received hundreds of awards and honors.** Two examples illustrate their breadth:
  
  - In 2007, **Lisa A. Cooper, MD, MPH**, the Johns Hopkins professor noted above, received a $500,000 MacArthur Fellowship—popularly known as a “genius” grant. The award recognized her efforts to improve health outcomes for minorities by analyzing and developing new approaches to patient-physician communication. Read more about Cooper’s work in her story.
  
  - **Robert Lee Satcher Jr., MD, PhD** (2003), was selected by NASA for astronaut training in 2004 and in 2009 flew aboard the shuttle Atlantis on an 11-day mission to the International Space Station. An orthopedic surgeon and PhD in chemical engineering, he is now an assistant professor at the University of Texas MD Anderson Cancer Center. Read more about Satcher’s NASA experience in his story.

Other honors received by alumni include:

- Public Health Service Meritorious Service Medal
- Young Investigator Awards from the American Heart Association
- Established Investigator Awards from the American Heart Association
- Career Development Awards from the National Institutes of Health
- Martin Luther King Jr. Award for leadership in advancing social and economic justice
- American Cancer Society Clinical Oncology Career Development Award
- NIH Director’s Transformative Research Award
- NIH Director’s Pioneer Award

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13 After leaving the university presidency, Owen became CEO of Sidra Medical and Research Center in Qatar.
Alumni have reached positions of influence in academia that enable them to help correct the underrepresentation of minorities in the health professions and address health disparities. Former scholars are:

- Full professors, deans, and assistant deans
- Members of admission, intern, and faculty selection committees
- On review boards through which clinical protocols are set up and human research studies are considered
- Officers of professional societies
- Members of editorial boards of academic journals
- Invited lecturers at national and international symposiums
- Policy experts at government agencies

Among many other examples of their work:

- **Esteban González Burchard, MD, MPH** (2004), professor in the departments of bioengineering and therapeutic sciences and medicine at the University of California, San Francisco, focuses on identifying genetic risk factors for asthma in ethnically diverse populations. Director of the university’s Center for Genes, Environments and Health, Burchard has worked with colleagues to mount what he says is the largest pediatric genetic study of asthma in minority children in the United States.

  “The overwhelming amount of biomedical research has gone into non-minority populations in the United States—on European populations,” he says. “We’re one of the first to focus solely on minority populations. In doing so, we’re doing a service by making sure that all populations benefit from scientific advantages.” Read more about Burchard’s research in his [story](#).

- **Giselle Corbie-Smith, MD, MSc**, the University of North Carolina medical professor mentioned earlier, directs the Program on Health Disparities at the university’s Cecil G. Sheps Center for Health Services Research.

  Her scholarly work focuses on ethical and other issues surrounding the mandated inclusion of minorities in research, and she has served on national and regional committees examining the involvement of underserved groups in research-related activities. (Read more about Corbie-Smith in her [story](#).)

- **Agustín Escalante, MD** (1994), professor of immunology at the University of Texas Health Science Center, San Antonio, is a specialist in rheumatic diseases. His research has examined ethnic disparities among patients. A published author, he has served on advisory and grant review committees for NIH and other
organizations, and is associate editor of the peer-reviewed journal *Arthritis Care and Research*. (Read more about Escalante in his story.)

— **Paula A. Johnson, MD, MPH** (1992), associate professor at Harvard Medical School and chief of the division of women’s health at Brigham and Women's Hospital, is a specialist in cardiovascular disease in women and an authority on disparities in health care.

She directs the hospital’s Connors Center for Women’s Health and Gender Biology, which was established in 2002 to develop collaborative research and educational programs to improve women’s health. (Read more about Johnson in her story.)

In remarks for the program’s 25th anniversary celebration in 2008, RWJF’s Lavizzo-Mourey said:

*The imperative to diversify the fields of health and health care is as urgent now as it was when this program was launched in 1983. The nation is moving inexorably toward “majority minority” demographics, and the number of underrepresented and disadvantaged groups in health professions remains too small.*

*Results of the Harold Amos Medical Faculty Development Program give us hope because of the incredible number who go on to be associate professors, professors, members of the IOM, internationally recognized researchers, deans, university presidents, and NIH Institute directors.*

**Measuring Scholars’ Success: A Chicken-or-Egg Question**

Minorities today remain underrepresented in academic medicine, and the modest gains that have been made in recent decades certainly cannot be attributed entirely to this one program. As Levi Watkins Jr., MD, an inaugural and continuing member of the advisory committee, has noted, the program is too small to move the macro dial appreciably.

The program’s impact is, instead, to be found in the careers of its participants, program leaders say. As Krol puts it, “The measure of the success of the program is the success of the individuals.”

By that yardstick, the Amos program is undoubtedly successful. Alumni CVs are brimming with the kind of academic achievement and professional contributions that the program was designed to foster.

But that raises a variant of the old question: Which came first: the chicken or the egg? In this instance, the question is: Is the Amos program producing winners, or is it simply
good at picking them? After all, the program’s participants are sharp, promising individuals to begin with; otherwise they would not have been selected. So would these alumni have been equally successful without the program?

The new evaluation may eventually provide hard evidence, but at RWJF there is confidence that the program is indeed making a difference. “One factor in the equation of success is high potential,” says Krol, but, he adds, “there are many other factors.”

Having a mentor, getting guidance from a committee of distinguished scientists, and being part of a supportive network of scholars—Krol ticks off these features and adds, “I think the reason these individuals become so successful is because of all these other things that go along with being a scholar in the Harold Amos program.”

“That, I think, is what sort of gets at that question ‘Would they have been successful anyway?’ I think we increase the chances of that by providing all of this other stuff through this program.”

Former scholar Gary Gibbons backed up that view in 2012 when he was named director of the National Heart, Lung, and Blood Institute. “I am deeply indebted to RWJF, the visionary leadership of the [Amos program] and my [program] peers for providing the inspiration, empowering self-belief, and nurturing social network platform that helped make this moment possible,” he wrote to RWJF.

In connection with the program’s 25th anniversary in 2008, Lavizzo-Mourey said:

> We definitely know that there are things you can put into place to increase the probability that people are going to succeed—and not just succeed a little but have very successful, impactful academic careers. And I think that there’s no question that the Harold Amos program has done that .... I view it as an out-of-the-park success.

**CHALLENGES FOR THE FUTURE**

As the program moves ahead it faces a number of challenges.

- The future of the Amos program is integrally linked to the evolution of academic health centers. The program depends on academic health centers to identify and train promising physicians from historically disadvantaged backgrounds. A decline in the number of centers committed to academic and intellectual pursuits could limit the pool of program candidates.

  Academic health centers are dealing with significant changes in how care is paid for. The federal spending squeeze and its potential impact on research funding present another uncertainty. Just how these and other developments may affect academic...
health centers’ dedication to education and research is hard to predict, says RWJF’s Krol. “I can’t imagine it’s going to change, but I don’t think anyone right now would say that academic health centers have stopped evolving.”

- Expanding the program’s applicant pool while maintaining high standards for scholars and mentors is an ongoing challenge. The expansion of eligibility to physicians from all historically disadvantaged backgrounds helped meet that challenge, but the pool of applicants interested in medical and dental research remains limited.

While there are a number of programs to steer minority and disadvantaged youngsters into the so-called STEM fields (science, technology, engineering and mathematics), the effects of these programs have yet to be felt, says Krol.

And even if a new STEM-focused generation emerges, there is no guarantee that many of its members will be aiming at an academic health-related career—building a start-up company may be more attractive, he says.
APPENDIX 1

Other RWJF Initiatives to Increase the Number of Minorities in Health Care

Since its inception as a national philanthropy in 1972, RWJF has sought to redress the underrepresentation of minorities in the health professions and to assist other disadvantaged groups, such as low-income students and women. Among its efforts, RWJF has:

- Given core support to historically Black medical schools. One example is a set of early grants to support strategic planning and renovation at Meharry School of Medicine; see Program Results Report on ID#s 21667, 22754 and 20436.

- Provided need-based scholarships for minority medical students through the National Medical Fellowships, a nonprofit organization that seeks to increase the number of minority physicians; see Program Results Report on ID# 18335.

- Supported a program that encourages minority nursing assistants to move up the career ladder and become registered nurses; see Program Results Report on Ladders in Nursing Careers.

- Provided summer enrichment experiences for pre-medical and pre-dental students from historically disadvantaged groups through the RWJF Summer Medical and Dental Education Program (formerly, the Minority Medical Education Program); see Program Results Report.

- Supported Pipeline, Profession and Practice: Community-Based Dental Education, a program to expand the recruitment of minority and low-income students into dental schools. See Program Results Report.

- Funded studies of the status of disadvantaged groups in medicine and the effectiveness of various types of intervention programs. These studies include:
  
  — Analysis of Results from a National Survey of Young Physicians; see Program Results Report on ID#s 10974, 11234, 13430, PC225, PC226, 19166, 28326.

  — Research on Factors Influencing Women's Participation in Academic Medicine (objective expanded to include minorities); see Program Results Report on ID# 19600.

  — Policy Studies on Health Workforce Issues; see Program Results Report on ID# 24109.

  — Research on U.S. Culture, Ethnicity and Health Care; see Program Results Report on ID# 22031.
— Study of Physician Workforce Training, Deployment and Performance in California; see Program Results Report on ID# 29873.

— Changes in Physician Supply; see Program Results Report on ID# 30968.

APPENDIX 2

Lessons Learned

1. The best recruiters for a fellowship program are the alumni of the program. Many Amos program applicants become interested through contact with a scholar or alumnus. The national program office formalized this recruitment approach by funding alumni visits to schools and conferences. (Director Gavin, Deputy Director Ardery)

2. Even when candidates are not selected as scholars, the application process itself can promote interest in academic medicine among physicians from diverse backgrounds, furthering the program’s goals. The application process forces minority physicians to forge professional bonds with potential mentors and scientific institutions as they prepare their applications. (1995 Evaluators)

3. Engendering a sense of community within the program has been a critical factor in scholars’ individual career progress and the overall impact of the program. That sense of community has extended from the interviewing process to the annual meetings to the commitment shown by mentors and advisory committee members. (Director Gavin, Deputy Director Ardery)

4. A committed and effective mentor is a predictor of a minority scholar’s success. Involved, committed, well-prepared mentors have fostered some of the program’s best experiences in terms of scholars’ career progress. (Director Gavin, Deputy Director Ardery)

5. To reach potential participants in a program for historically disadvantaged groups, advertise the program in publications aimed at those groups. In-person presentations to professional associations and fraternities composed of such groups is also effective.

The Amos program used both publications and presentations to gain increased recognition within its target communities and to increase the diversity of the applicant pool. (Deputy Director Ardery)

6. A well designed website maintained by the national program office streamlines the administration of a competitive fellowship program. The Amos program website saves staff time by providing information to prospective candidates and directing ineligible individuals to more appropriate educational and training opportunities. (Deputy Director Ardery)
7. **Quantitative proof of impact from a program to redress long-standing historical underrepresentation necessarily requires a long timeline.** While minorities remain underrepresented in academic medicine, past and present leaders of the Amos program agree that the program is on course to achieve its objectives over the long term.

The “best advice I can give to those organizations working to reduce disparities is to stay the course,” Gavin said in 2011. The Amos program is “now seeing the third generation of change. Our grantees from 25 years ago have generated mentees who are now sending their own mentees to the program. As a result, we are seeing one of the highest, persistent, rates of grantees engaged in academia for any program of our type. Expanding these activities, along with community and political support for eliminating disparities, will someday lead us to more broad-based success.”

**SCHOLAR PROFILES**

Brief profiles of the following former Amos program scholars are available online. The academic positions listed below were current as of 2013 and in most cases differ from those held by the individual when the profile was written.

**Michelle Asha Albert, MD, MPH** (Profile posted September 2008)
Harold Amos Medical Faculty Development Program Scholar, 2001–2005
Professor of Medicine, Chief of the Division of Cardiovascular Medicine, and Director of Cardiovascular Disease Research at Howard University College of Medicine and Howard University Hospital in Washington

**Kenneth D. Aldape, MD** (Profile posted September 2013)
Harold Amos Medical Faculty Development Program Scholar, 1998–2005
Professor of Pathology, University of Texas MD Anderson Cancer Center, Houston

**Jesus A. Araujo, MD, MSc, PhD** (Profile posted September 2008)
Harold Amos Medical Faculty Development Program Scholar, 2004–2008
Assistant Professor, University of California, Los Angeles Medical Center

**Keith L. Black, MD** (Profile updated June 2014)
Harold Amos Medical Faculty Development Program Scholar, 1987–1991
Chairman and Professor of the Department of Neurosurgery and Director of the Maxine Dunitz Neurosurgical Institute at Cedars-Sinai Medical Center, Los Angeles

**Arleen F. Brown, MD, PhD** (Profile posted September 2008)
Harold Amos Medical Faculty Development Program Scholar, 1999–2004
Associate Professor, University of California, Los Angeles School of Medicine
Esteban González Burchard, MD, MPH (Profile posted August 2013)
Harold Amos Medical Faculty Development Program Scholar, 2005–2009
Professor, University of California, San Francisco, School of Medicine

Kenneth R. Cooke, MD (Profile posted October 2013)
Harold Amos Medical Faculty Development Program Scholar, 2000–2004
Professor of Pediatric Oncology, Johns Hopkins University School of Medicine, Baltimore

Lisa A. Cooper, MD, MPH (Profile posted November 2007)
Harold Amos Medical Faculty Development Program Scholar, 1995–1999
Professor of Medicine, Johns Hopkins University School of Medicine, Baltimore

Giselle Corbie-Smith, MD, MSc (Profile posted September 2008)
Harold Amos Medical Faculty Development Program Scholar, 2002–2006
Professor of Social Medicine and Professor of Medicine at the University of North Carolina, Chapel Hill

Errol D. Crook, MD (Profile updated August 2014)
Harold Amos Medical Faculty Development Program Scholar, 1994–1998
Professor and Abraham A. Mitchell Chair, Department of Internal Medicine, University of South Alabama College of Medicine, Mobile

Wonder Puryear Drake, MD (Profile updated April 2014)
Harold Amos Medical Faculty Development Program Scholar, 2000–2005
Associate Professor of Medicine, Department of Infectious Diseases, Vanderbilt University School of Medicine, Nashville

Agustín Escalante, MD (Profile posted May 2014)
Harold Amos Medical Faculty Development Program Scholar, 1994–1998
Professor of Immunology at the University of Texas Health Science Center, San Antonio

Levi Garraway, MD, PhD (Profile posted July 2011)
Harold Amos Medical Faculty Development Program Scholar, 2006–2010
Assistant Professor of Medicine, Dana-Farber Cancer Institute, Boston
Sherita Hill Golden, MD, MHS (Profile posted September 2013)
Harold Amos Medical Faculty Development Program Scholar, 2000–2004
Associate Professor of Medicine and Epidemiology, Johns Hopkins University School of Medicine, Baltimore

Ralph Gonzales, MD, MSPH (Profile updated April 2014)
Harold Amos Medical Faculty Development Program Scholar, 1996–2000
Professor, University of California, San Francisco, School of Medicine

Carmen E. Guerra, MD, MSCE (Profile posted April 2014)
Harold Amos Medical Faculty Development Program Scholar, 2005
Assistant Professor, University of Pennsylvania Perelman School of Medicine

Kevin B. Johnson, MD, MS (Profile updated October 2013)
Harold Amos Medical Faculty Development Program Scholar, 1997–2001
Professor and Chair of Biomedical Informatics and Professor of Pediatrics, Vanderbilt University School of Medicine, Nashville

Paula A. Johnson, MD, MPH (Profile updated August 2014)
Harold Amos Medical Faculty Development Program Scholar, 1992–1996
Associate Professor, Harvard Medical School and Chief of the Division of Women's Health at Brigham and Women's Hospital

Juanita Merchant, MD, PhD (Profile posted October 2013)
Harold Amos Medical Faculty Development Program Scholar, 1987–1991
Professor of Internal Medicine, Professor of Molecular and Integrative Physiology, University of Michigan Medical Center

Lee W. Riley, MD (Profile updated October 2013)
Harold Amos Medical Faculty Development Scholar, 1985–1991
Professor of Epidemiology & Infectious Diseases and Chair, Division of Infectious Diseases & Vaccinology, School of Public Health, University of California, Berkeley

Lewis Rowland Roberts, MB, ChB, PhD (Profile posted September 2008)
Harold Amos Medical Faculty Development Scholar, 1999–2003
Professor of Medicine, Mayo Clinic College of Medicine, Rochester
Griffin Rodgers, MD (Profile updated April 2014)
Harold Amos Medical Faculty Development Scholar, 1983–1987
Director, National Institute of Diabetes and Digestive and Kidney Diseases, Washington

Robert Lee Satcher Jr., MD, PhD (Profile posted December 2009)
Harold Amos Medical Faculty Development Scholar, 2003–2007
Assistant Professor, University of Texas MD Anderson Center, Houston.