CAREERS

ACADEMIA Survey discloses US institutions' pay and services for postdocs **p.500**

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DIVERSITY

Equal access

Universities seek to recreate the success of one institution's mentorship programme for minorities in science.

BY VIRGINIA GEWIN

Astrophysicist Neil deGrasse Tyson, director of the Hayden Planetarium in New York and host of the US television show *Cosmos*, is arguably one of the best-known scientists in the United States — a success all the more notable given that he is an African American in a field dominated by white men. Tyson has suggested that the low numbers of minorities and women in the US science workforce are due in large part to a lack of equal access to opportunities for entering that workforce.

To solve that problem, universities are now looking to the example of the Meyerhoff Scholars Program at the University of Maryland, Baltimore County (UMBC). It has crafted a formula for mentoring students from minority groups underrepresented in the sciences and helping to guide them into science, technology, engineering and maths (STEM) careers. And that formula seems to work — African American Meyerhoff scholars are five times more likely than their counterparts at other US universities to pursue STEM PhDs (K. I. Maton *et al. Mt Sinai J. Med.* **79,** 610–623; 2012).

Now, with US$7.75 million in funding from the Howard Hughes Medical Institute (HHMI), Pennsylvania State University (Penn State) in University Park and the University of North Carolina at Chapel Hill (UNC) are trying to replicate the programme, which for two and a half decades has led the nation in the number of its minority graduates who go on to earn STEM PhDs.

Minorities account for almost 30% of the US population but make up just 9% of the nation's scientific workforce, according to the US National Institutes of Health (NIH). Only 1% of applications to the NIH for basic-research funding in 2000–08 were from African American researchers, and white applicants are nearly twice as likely as black applicants to win those awards (see *Nature* http://doi.org/b58f62; 2011).

Created in 1988, the Meyerhoff programme now has more than 900 alumni, of whom 184 have earned STEM PhDs and now work as university faculty members, government scientists or clinical physicians.

The Meyerhoff Adaptation Project at Penn State and UNC aims not only to implement the programme, but also to study how best to shape it for different campus cultures. "Other universities have tried to replicate individual components of the Meyerhoff programme, but none have been as successful (without that holistic approach)," says David Asai, senior director in science education at the HHMI.

The programme comprises several 'interventions' throughout a student's undergraduate career. It starts with a four-year financial-aid package and an intensive, six-week summer 'bridge' programme to prepare students for university study, and continues with study groups, tutoring, counselling and research internships throughout their undergraduate study.

The bridge programme is designed to help students to bond with each other and to prepare for the rigours of university courses. "For me, the summer bridge was pivotal," says Lekelia Jenkins, who was part of the fifth class of Meyerhoff students at UMBC and is now a marine-conservation scientist at the University of Washington in Seattle. She says that the friendships she formed in the programme helped to sustain her through the ups and ▶

downs of university and graduate studies.

Meyerhoff scholars live together in residential housing during their first year at university, and are strongly encouraged to maintain study groups. The programme's staff advisers offer insights into coursework and research experiences; peers and graduates give moral support; and a network of Meyerhoff mentors provides career advice.

The programme also places students in summer research internships so that they can gain laboratory experience.

In a bid to improve the lacklustre numbers of minority undergraduates at Penn State and UNC who continue on for PhDs — fewer than ten a year at each — university administrators sought advice from UMBC biochemist Michael Summers, who helped to design the original Meyerhoff programme. Those discussions led to a joint proposal to the HHMI to study how the programme is implemented at both campuses, and the HHMI made the five-year funding commitment in May.

For many students, the adjustment to university is a challenge, which makes it all the more important to build an institutional culture to support minority scholars, says Mary Williams, associate dean for undergraduate education at Penn State. She says that the university is aiming to embrace the idea that excellence is accomplished through diversity, and that this project may help to eliminate stereotypes.

ANTHONY HARRIS/PHOTOGRAPHIC,INC. SEATTLE

"For me, the summer bridge was pivotal."
Lekelia Jenkins

Meyerhoff graduate Lola Eniola-Adefeso, now a chemical engineer at the University of Michigan in Ann Arbor, says that UMBC's supportive culture may be difficult to replicate at other institutions. "UMBC started with the premise that minority students could achieve at an equal level to majority students, and all the faculty and staff fostered that sense of community," she says. She adds that the nurturing environment percolated down from the university's president through the rest of the campus. She scored top marks at UMBC, she says, "because I had that push to do well all around me".

Former Meyerhoff students often become research mentors themselves. Kafui Dzirasa, a neuroengineer at Duke University Medical Center in Durham, North Carolina, and a graduate of the programme, often brings Meyerhoff students into his lab as interns. Dzirasa stresses the importance of research experiences in helping students to decide on a career path. After a successful internship at the University of Lancaster, UK, Dzirasa took a position at a petrol company. He realized that an industry post was not for him. "It was valuable for figuring out what I didn't want to do," he says. Now he enjoys helping current Meyerhoff scholars along on their academic journey.

HADAR GOREN

"The goal of the project is to learn from it so others are encouraged to try it."
David Asai

There will be challenges in translating the programme to other institutions. Penn State and UNC will have to determine how to identify students who will succeed in the programme, says UMBC president Freeman Hrabowski. Applicants to UMBC's programme are nominated by secondary-school administrators, guidance counsellors or teachers. Finalists are selected on the basis of their intent to pursue an advanced STEM degree as well as their academic records, test scores, recommendation letters and community-service activities.

UMBC will work with UNC and Penn State to determine how to adapt the programme to fit each school's culture, demographics and research portfolio, and how to document how each aspect of the programme contributes to its overall success. Universities will have to assess, for example, the amount of academic preparation necessary for students to be successful. "If we're serious about getting other research universities to try programmes of their own, we have to look at each of the programme components to find out how and where they can work — and what adaptations need to be made," says Asai.

Once the UNC and Penn State programmes are fully implemented, each will endeavour to expand slowly to 35–40 students. Hrabowski and Asai hope that what they learn from the project will encourage other universities, foundations and agencies to adapt the programme.

"We in science education should be looking for dissemination of effective programmes — not every programme needs to be new," says Asai. "The goal is to learn from this so others are encouraged to try it."

Hrabowski agrees. "The vision is not simply creating a programme that encourages diversity in science but one that works to produce the best scientists in the world," he says. "That's what's revolutionary." ■

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ACADEMIA

Postdoc policies probed

Less than two-thirds of US institutions say that their postdoctoral researchers earn at least the US National Institutes of Health-recommended minimum of US$39,264, a survey has found. Health-care benefits are available to postdocs working as employees under a principal investigator's grant at some 95% of responding institutions, but less than two-thirds offer such benefits to those classified as trainees or on fellowships.

The US National Postdoctoral Association (NPA) in Washington DC, which represents about 70,000 postdocs across 190 US and Canadian institutions, this month released preliminary data from its Institutional Policy Survey. Building on a 2011 survey, the association polled 167 private, public and government institutions on postdoc policies concerning pay and benefits, career-development services and career-tracking practices, among others. It received full responses from 74 institutions.

No other agency or organization has produced similar information on postdocs. The NPA estimates that there are up to 91,000 postdocs in the United States, including those who are not NPA members.

The survey results showed that career-development services for postdocs vary widely. Most institutions (96%) offer training in writing grant applications, for example, but only just over three-quarters run programmes on presentation skills, and smaller proportions provide interview training, networking events or career-counselling appointments. Institutions with fewer than 750 postdocs offer especially scanty services. Some 57% of institutions say they have no postdoc handbook, and about one-fifth set no limit on how long a researcher can be classified as a postdoc. Just six institutions reported that they have a system to track postdocs' career arcs after they have left the institution.

Belinda Huang, executive director of the NPA, says that the association is preparing a report on the findings, for distribution to policy-makers, funders and university and institution administrations. It will call for extra training for careers outside academia, as well as more tracking of postdocs after they leave. "Now we have hard data," she says.

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