

# Outcomes of Global Public Health Training Program for US Minority Students: A Case Report

Noa Krawczyk<sup>a</sup>, Luz Claudio, PhD  
*New York, NY*

## Abstract

The numbers and success of minority students in science and the health fields remain relatively low. This study presents the outcomes of a research training program as an illustrative case study. The Short-Term Training Program for Minority Students (STPMS) recruits underrepresented minority undergraduate and graduate students for immersion in research training. A total of 69 students participated in the STPMS between 1995 and 2012, and 59 of these completed our survey to determine the perceived impact of the program on the students' motivations and professional development. Results indicated that motivations to participate in the STPMS were commonly related to long-term professional development, such as obtaining mentoring and guidance in career decision making, rather than gaining specific research skills or for economic reasons. Students reported that participation in short-term research training had the most significant effect on improving their attitudes toward biomedical research and promoted positive attitudes toward future careers in health research. A total of 85% of the program's alumni have since completed or are currently working toward a degree in higher education, and 79% are currently working in science research and health care fields. Overall, the short-term training program improved students' attitudes toward research and health science careers. Mentoring and career guidance were important in promoting academic development in students.

**KEY WORDS** graduate, health fields, internship, medicine, science, undergraduate, underrepresented.

## INTRODUCTION

Lack of diversity in the sciences and health professions has been identified as an important perpetuator of health disparities and as a pressing challenge to the conduct of medicine.<sup>1-4</sup> At a time when the gap in health between the races has widened, the number of minority students in biomedical research and medicine continues to be small. Underrepresented minorities (URM) constitute 32% of the general population in the United States,<sup>5</sup> yet in 2012 they made up only 11% of those who graduated from American medical schools.<sup>6</sup> The Council on Gradu-

ate Medical Education determined that the United States would need to increase medical school enrollment by 15% to keep up with the public's need for physicians.<sup>6</sup> With the country's changing demographics, this goal would be nearly impossible to achieve without the recruitment of minority students.<sup>3,7</sup> Minority scientists are also urgently needed to conduct research and develop models to address health conditions.<sup>8-10</sup> Yet in 2012, URM represented only 7.3% of those graduating with doctoral degrees in the natural sciences, and in 2013, 6.2% of full-time professors with science, engineering, or health doctorates in all American institutions.<sup>5</sup>

Funding Source: The Short-Term Training Program for Minority Students was initially supported by a grant from the National Institute of Environmental Health Sciences (1995-2010, Grant T35 ES007298) and is currently supported by a grant from the National Heart, Lung, and Blood Institute (2011-2016, grant number R25 HL 108857) and a related grant from the National Institute on Minority Health and Health Disparities (2005-2018, Grant T37 MD001452).

Conflict of Interest: The authors declare that they have no conflicts of interest.

The authors declare that this article has not been published elsewhere and that it has not been simultaneously submitted for publication elsewhere.

All authors participated in the preparation of the manuscript.

<sup>a</sup>Currently at Department of Mental Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD.

From the Department of Environmental Medicine and Public Health, Division of International Health, Icahn School of Medicine at Mount Sinai, New York, NY (NK). Address correspondence to L.C. ([luz.claudio@mssm.edu](mailto:luz.claudio@mssm.edu)).

Reasons for the lack of URM in science and health professions are complex. Among them are economic hardship, poor access to quality early education, lack of role models, feelings of isolation and discrimination, and inadequate support systems.<sup>8,11-15</sup> Many URM come from disadvantaged high schools where they are not academically prepared.<sup>16</sup> These disadvantages perpetuate over time, through medical and graduate education.<sup>14,15,17</sup> Minority physicians are less likely to enter careers in academic medicine,<sup>18</sup> where they would have the ability to contribute to the future of medical education, and minority scientists compete less successfully for NIH funding than their nonminority peers.<sup>19</sup>

It is essential to recognize the substantial benefits of increased diversity. Minority physicians tend to practice medicine in underserved communities<sup>20</sup> and do research on diseases that disproportionately affect underserved populations<sup>8,10,21</sup> and are effective in recruiting minorities into research studies.<sup>10,22</sup> Creating a diverse and culturally competent workforce may allow for development of effective interventions to treat all populations.<sup>2,3,23-25</sup>

Well-designed programs can be effective in recruiting minority students and improving their rates of success in health-related fields. Exposure to research experiences, mentorship, peer integration, and financial assistance have all been proposed to enhance educational and professional attainment for minorities.<sup>26-30</sup> In this paper we present an evaluation of the Short-Term Research Training Program for Minority Students (STPMS) at the Icahn School of Medicine at Mount Sinai, a program that provided 3 months of research training to 69 undergraduate and graduate URM students between the years 1995-2012.

## SHORT-TERM TRAINING PROGRAM FOR MINORITY STUDENTS

**Recruitment.** Criteria for selection into the training program were (1) US citizens or permanent resident, (2) self-identified as URM, and (3) an undergraduate grade point average of 3.0 or above. The National Institutes of Health definition of URM includes American Indians or Alaska Natives, Blacks or African Americans, Hispanics or Latinos, and Native Hawaiians or Other Pacific Islanders. Students were selected on a competitive basis from a national pool of applicants.

**Program Structure.** Students were paired based on academic interests with a faculty mentor. Before the research period, students underwent an orientation during which they learned about institutional policies and completed

courses in the ethical conduct of research, including Health Insurance Portability and Accountability Act compliance, conflict of interest, and ethical use of human and animal subjects in research. During the research period, students participated in seminar series, weekly group meetings, monthly works-in-progress seminars, and a bimonthly journal club. Students were granted a stipend and benefits for the duration of their research training.

**Training and Mentoring Strategies.** Research training focused on environmental health and includes disciplines such as community-based participatory research, health disparities research, biostatistics, molecular biology, or other research methods. Students were required to complete a research paper. Each student had weekly sessions with their mentor and monthly career counseling sessions with the program director, who is a URM woman. After completion of their research training period, students became part of an alumni network linked through e-mail and social media groups. Alumni are regularly sent information regarding relevant scholarships and training positions and are encouraged to stay in touch with each other as well as with mentors and the program director regarding their future plans.

**Program Evaluation.** After testing with students who were not participants in this program, a questionnaire was developed using Survey Monkey. Individual e-mails were sent to alumni with an invitation to voluntarily complete survey. Questions included demographic information; educational attainment and degree; motivation for participation in the program; frequency of contact with mentor, director, and peers from the program; employment field and satisfaction with current work; impact of training program on professional and academic development; and overall impressions and recommendations for the program. All questions were voluntary and both multiple choice and open-answer questions were used.

**Data Analysis.** Data were compiled in 2013 and multiple choice and short-answer questions and answers were assembled into tables and graphs using Microsoft Excel. Percentage and other appropriate calculations were performed using the number of respondents in each question. Open-response answers were reviewed and categorized by content and used as a qualitative reference for discussion.

## FINDINGS FROM PROGRAM EVALUATION

**Participant Profile.** A total of 69 alumni participated in the STPMS between the years 1995-2012. Seven students were lost to follow-up; 62

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