

PGLYRP-1 could serve as a clinically useful ASCVD risk marker and therapeutic target.

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Junior Faculty Career Development Through an NHLBI Program to Increase Diversity in Cardiovascular Health-Related Research



Evidence shows that underrepresented scientists and clinicians are needed to attend to the needs of growing populations affected by diseases of the cardiovascular

system (1,2). The rates of cardiovascular disease (CVD) and its risk factors are increasing in low-income groups worldwide and capable, highly motivated, and well-trained underrepresented individuals are needed because underrepresented research professionals are more likely to work in areas related to underserved minorities and low-income populations (1,2). Moreover, medical researchers of underrepresented backgrounds tend to have a cultural understanding of minority communities, facilitating their potential to implement effective interventions (3). In cardiovascular medicine, the need for well-trained underrepresented scientists is especially urgent. To address this issue, in 2006 the National Heart, Lung, and Blood Institute established the Summer Institute Program to Increase Diversity in Health-Related Research (SIPID) (4), later renamed Program to Increase Diversity Among Individuals Engaged in Health-Related Research (PRIDE). The goal is to train multidisciplinary scientists and clinicians from racial/ethnic groups and/or groups with disabilities that are underrepresented in biomedical and behavioral sciences. Although multiple SIPID and PRIDE programs were funded and provided mentored training in research related to heart, lung, blood, and sleep research, they had a similar training format of intensive face-to-face mentored training during 2 consecutive summers and a shorter mid-year meeting with program faculty and their mentors. In addition, all programs provided mentees access to 1 or more experienced mentors to help develop research projects and grant proposals, culminating in the submission of a grant application within 2 years of completing training.

State University of New York Downstate Medical Center at Brooklyn under the Brooklyn Health Disparities Center has been the recipient of both SIPID and PRIDE awards to increase diversity in cardiovascular health-related research (SIPID/PRIDE-CVD). The SIPID/PRIDE-CVD program is described here, and the first 9 years (2006 to 2015) of the program are evaluated. The program consists of a fully supported 3-week summer research education and mentoring experience in 2 consecutive summers. The training program included fundamental training by interdisciplinary faculty in the areas of health disparities, mentoring partnership between mentors and mentees based on mutual research interests, capacity building by training and coaching mentees in grant writing, and career development strategies to develop skills needed for independent research.

A total of 53 mentees were matriculated to the SIPID/PRIDE-CVD program and 52 completed both summers; 1 mentee was unable to complete the second summer. Most of the 52 mentees were female

(79%) and African American (85%), with 7 Hispanic (13%) and 1 Native American. Most (71%) participants had a PhD or EdD, 27% had MD degrees, and 1 person had a combined MD/PhD. The mentees were recruited from 42 universities in 24 states nationwide.

Table 1 shows the numbers of grant proposals submitted and obtained by mentees before, during, and after training. It is notable that 63% of mentees (33 of the 52) submitted a total of 72 grants; 58% obtained 40 peer-reviewed grants from the National Institutes of Health (NIH) and non-NIH funding agencies. Grants funded by NIH included 6 K-series awards, 2 RO1s, 5 RO3s, and 1 R34. At the time of this writing, an additional 24 NIH grants from 15 mentees are pending (either under review or under revision) and include 7 K-series awards, 4 RO1s, 7 R21s, 4 RO3s, and 2 diversity supplements, as well as 8 pending non-NIH grants from 7 mentees (6 AHA and 2 RWF). This is a considerable accomplishment because PRIDE-CVD cohorts 1, 2, and 3 are, respectively, only 3-, 2-, and 1-year out of training. Before joining SIPID/PRIDE-CVD, the 52 mentees had a total of 8 grants (4 NIH and 4 non-NIH) from 7 mentees. Finally, research productivity measured by number of publications more than tripled (3.7-fold increase) after mentees completed the training (from 125 to 467 publications). Twenty-one (40%) of the 52 mentees received promotion to the rank of associate professor after training.

As a result, mentees have gained career development tools, an understanding of research methods, and confidence in their ability to pursue grant opportunities at NIH and elsewhere, and have become knowledgeable about health disparities-focused research, especially in CVDs. Most have also completed research grant applications of which more than one-half were funded, formed a network with underrepresented colleagues and faculty, and have been inspired to pursue research careers.

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TABLE 1 SIPID/PRIDE-CVD Outcomes

	Before Training	During Training	After Summer B	Total During and After Training
Received NIH career awards Ks	2 (2)	3 (3)	3 (3)	6 (6)
Pending Ks	0	1 (1)	6 (5)	7 (6)
Received NIH research awards RO3s	1 (1)	3 (3)	3* (3)	6 (6)
Pending RO3s	0	1 (1)	3 (3)	4 (4)
Received NIH research awards R21s	0	0	0	0
Pending R21s	0	3 (2)	4 (4)	7 (6)
Received NIH research awards RO1s	0	0	2 (2)	2 (2)
Pending RO1s	0	0	4 (3)	4 (3)
Received other NIH grants	1 (1)	4 (3)	4 (3)	8 (6)
Other pending NIH grants	0	1 (1)	1 (1)	2 (2)
Received non-NIH awards	4 (3)	8 (8)	10 (7)	18 (12)
Pending non-NIH awards	0	1 (1)	7 (6)	8 (7)
Total grants	8 (7)	25 (18)	47 (25)	72 (33)
Total publications	125	179	270	467
Rank at least associate professor	1	0	21	21

N = 52 mentees. Numbers in parentheses indicate the number of mentees who achieved that outcome metric (e.g., a single mentee could have received more than 1 grant). Other NIH grants include diversity supplement, Minority Fellowship Program Clinical Training Grant in Nursing (T06), Collaborative Research Opportunities (U01), Clinical Research Scholar Supplement (M01), and P20 and P60 as PI for a portion of the grant. Non-NIH peer-reviewed awards include American Heart Association, Robert Wood Johnson Foundation, Department of Veterans Affairs, Health Resources and Services Administration of the Department of Health and Human Services, Centers for Disease Control and Prevention, and Department of Agriculture. *Indicates 1 R34.

CVD = cardiovascular disease; NIH = National Institutes of Health; PRIDE = Program to Increase Diversity Among Individuals Engaged in Health-Related Research; SIPID = Summer Institute Program to Increase Diversity in Health-Related Research.

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Dilation of the Aorta Ascendens Forms Part of the Clinical Spectrum of HCN4 Mutations



The HCN4-channel conducts the hyperpolarization-activated pacemaker current (“funny” current, I_f) in the sinoatrial node and mutations in the HCN4 gene