

Session III

Overcoming Barriers to Progress: Setting the Stage

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Professor of Immunology
Deputy Provost
Cornell University**

**Workshop on Preparing the Future Workforce in Drug R&D
National Academies of Sciences, Engineering, & Medicine (NASEM)**

October 2023

Disclosures:

The 3M Company

Pfizer Inc.

Acellular CytoTherapeutics

Oncoseek Bio Pvt. Ltd. (India)

SESSION OBJECTIVES AND POTENTIAL DISCUSSION QUESTIONS

Objectives

- Discuss approaches to remove barriers and achieve a more person-centered, culturally aware drug R&D workforce.
- Share lessons learned based on current efforts and consider what practices/approaches can be more broadly applied.



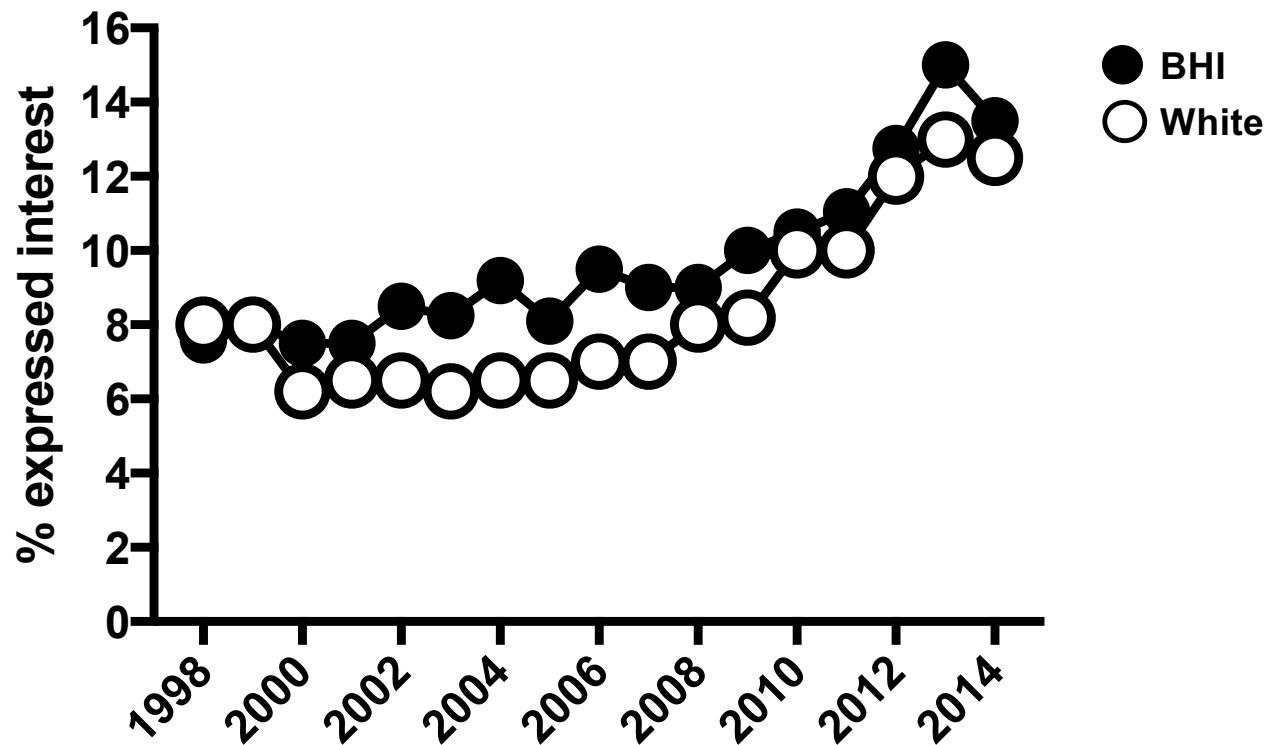
➤ Data on new drugs, diagnostics, and devices are not representative of all living with disease – introduces bias when utilizing AI/machine learning tools for decision-making

➤ To ensure data collected is representative of different patient profiles, the drug R&D workforce should be more person-centered and culturally aware

Myth:

**Little interest in STEM careers among
students who are underrepresented in
STEM**

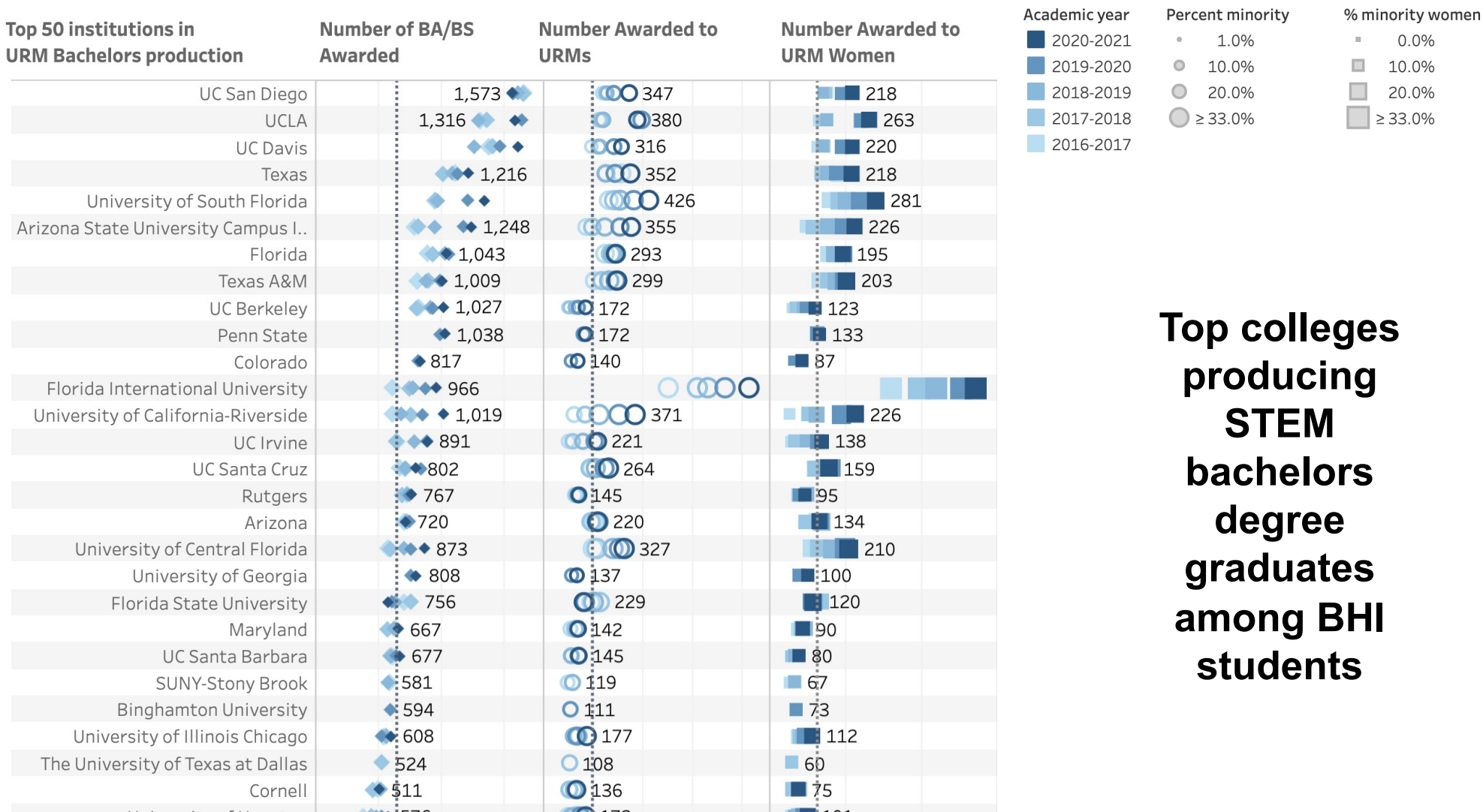
Similar interest among high school students in a degree in biology



Adapted from Meyers et al PLOS ONE 13: e0190606.

Myth:

**Colleges are not producing STEM
degrees among those who are
underrepresented in STEM**



Top colleges
producing
STEM
bachelors
degree
graduates
among BHI
students

**Overall 32.5% increase
STEM doctorate degree
recipients
(2008-2018)**

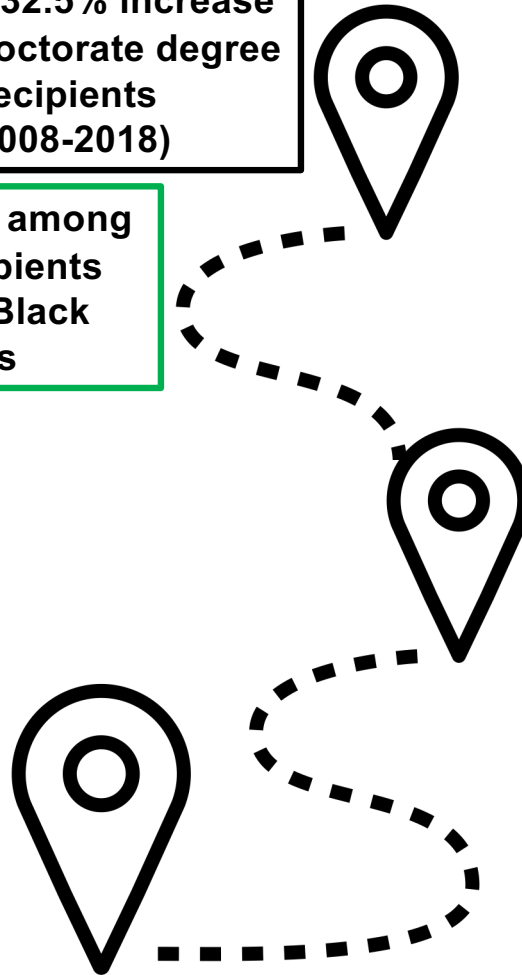
**37.2% increase among
Hispanic recipients
25% among Black
recipients**

**Overall 59.6% increase
STEM MS degree
recipients
(2008-2018)**

**54% increase among
Hispanic recipients
25.7% among Black
recipients**

**Overall 69.1% increase
STEM BS degree
recipients
(2008-2018)**

**65.4% increase among
Hispanics
(2008-2018)**



**But significant difference in BHI representation
in STEM trainees**



- **Establishing a drug R&D workforce that can support future needs will not be achieved using the current workforce training model**
- **Significant changes in biomedical science training will better prepare the drug R&D workforce to support future needs**

Myth:

The drug and discovery process is neutral and so a diverse workforce is not required for equitable outcomes

**How
Electroencephalograms
(EEGs) are collected...**



How Electroencephalograms are collected...equitably

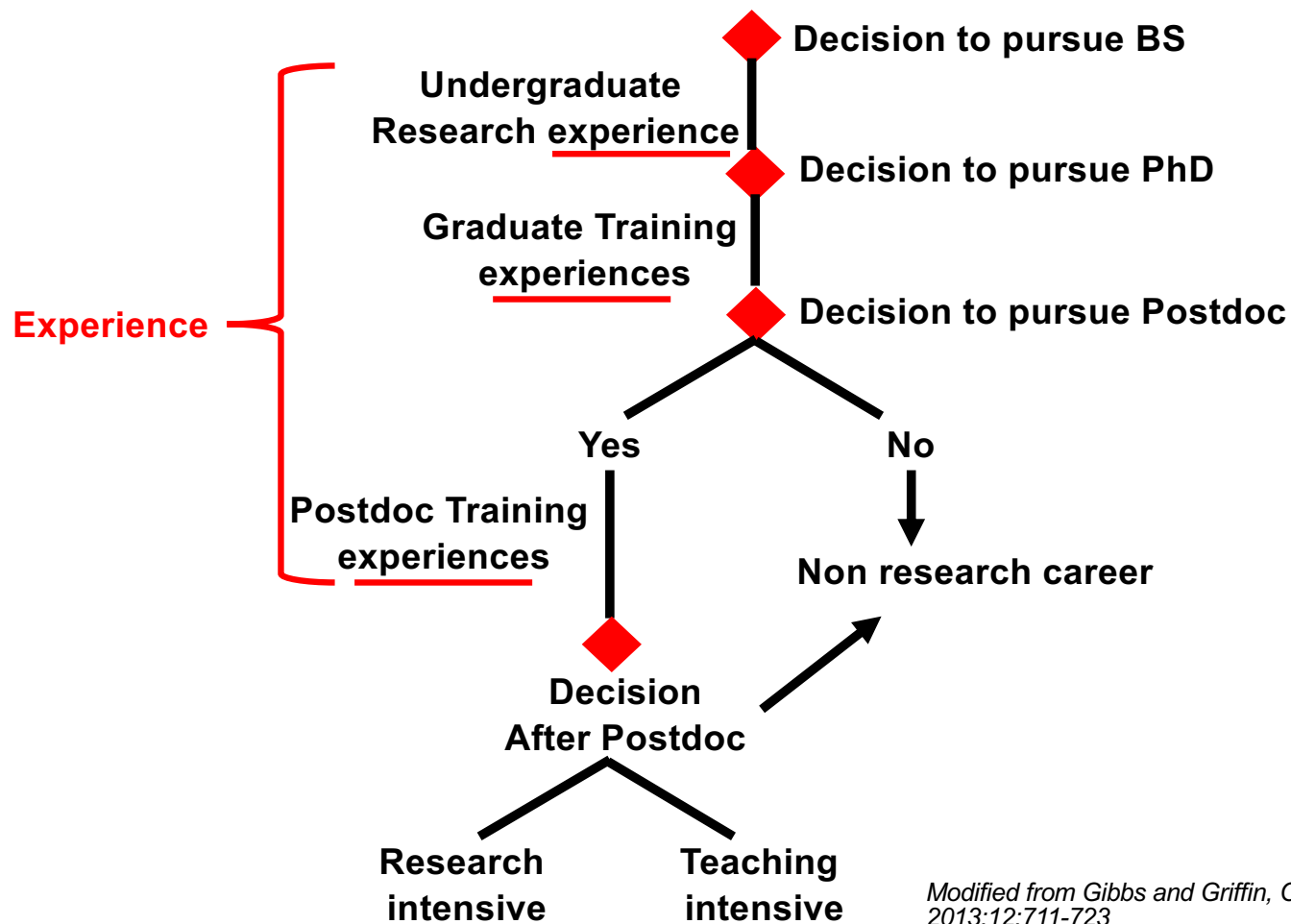
Standard EEG methods can falter when detecting signals from people with coarse, curly hair



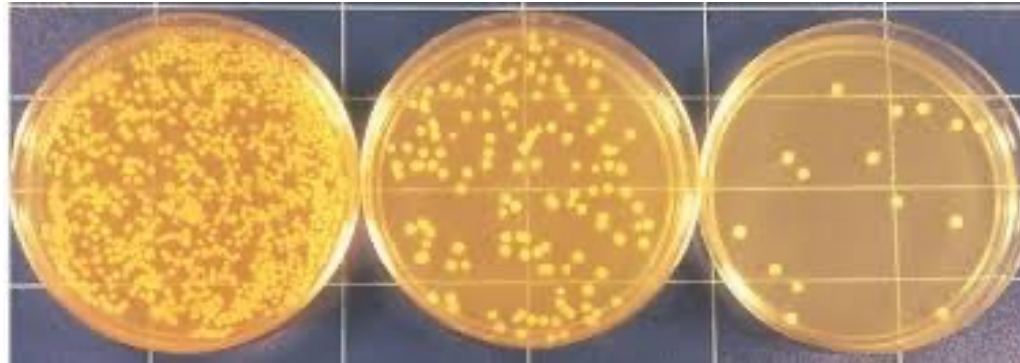
I ended up finding the problem that I was working on because I wondered how someone with my hair type would experience getting an EEG recording done.

Arnelle Etienne, Undergraduate Student, College of Engineering

Career pathway decisions



“Cultur(ing) success”



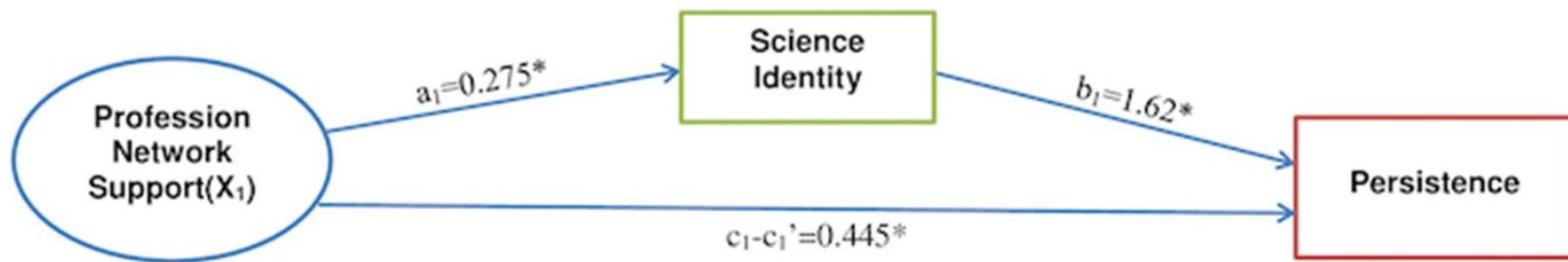
Burnout and Mental Health Problems in Biomedical Doctoral Students

**Gabriela A. Nagy,[†] Caitlin M. Fang,[†] Alexander J. Hish,[‡] Lisalynn Kelly,[†]
Christopher V. Nicchitta,[§] Kafui Dzirasa,^{†||¶#} and M. Zachary Rosenthal^{†@*}**

[†]Department of Psychiatry and Behavioral Sciences, [§]Department of Cell Biology, Office of Biomedical Graduate Education, ^{||}Center for Neuroengineering, and [‡]Duke Institute for Brain Sciences, Duke University Medical Center, Durham, NC 27710; [†]Duke University School of Medicine, Durham, NC 27705; [#]Departments of Biomedical Engineering and Neurobiology and [@]Department of Psychology and Neuroscience, Duke University, Durham, NC 27705

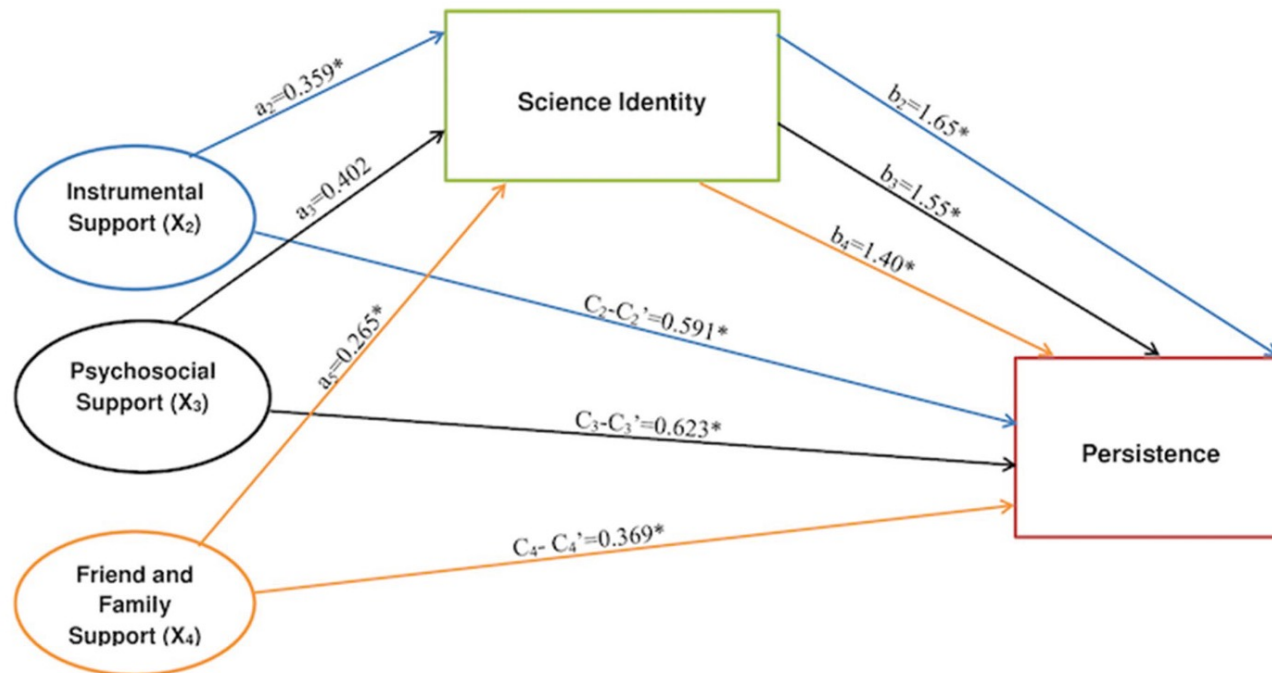


Professional network support enhance persistence of majority students



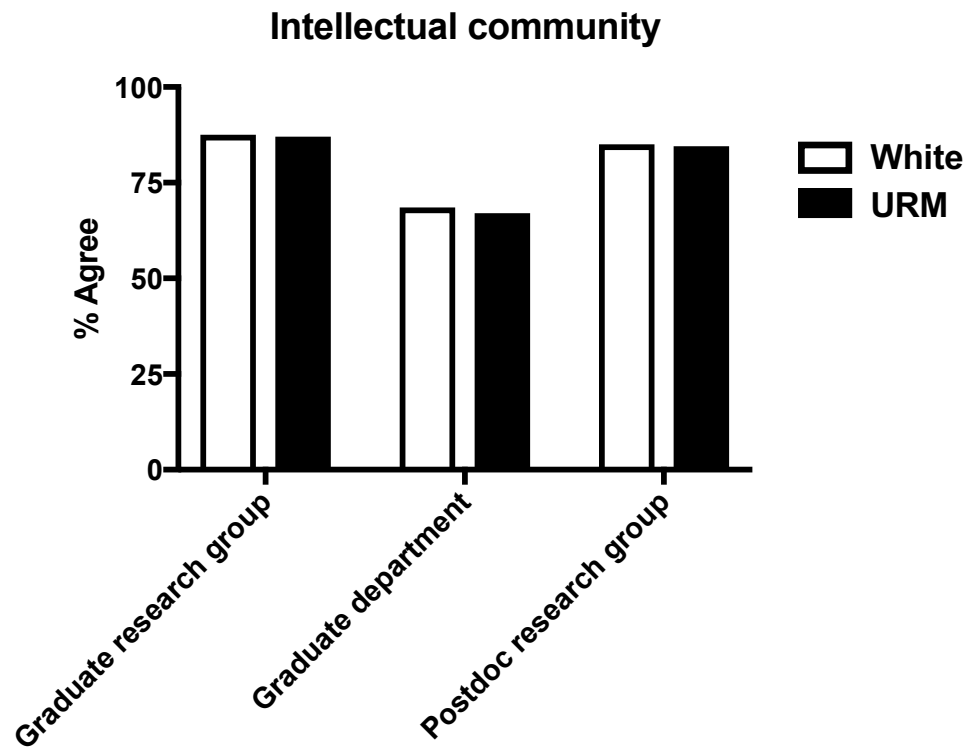
Modified from Estrada et al, CBE Life Sci Educ 2019;18:1-11

Multiple types of supports enhance persistence of underrepresented students



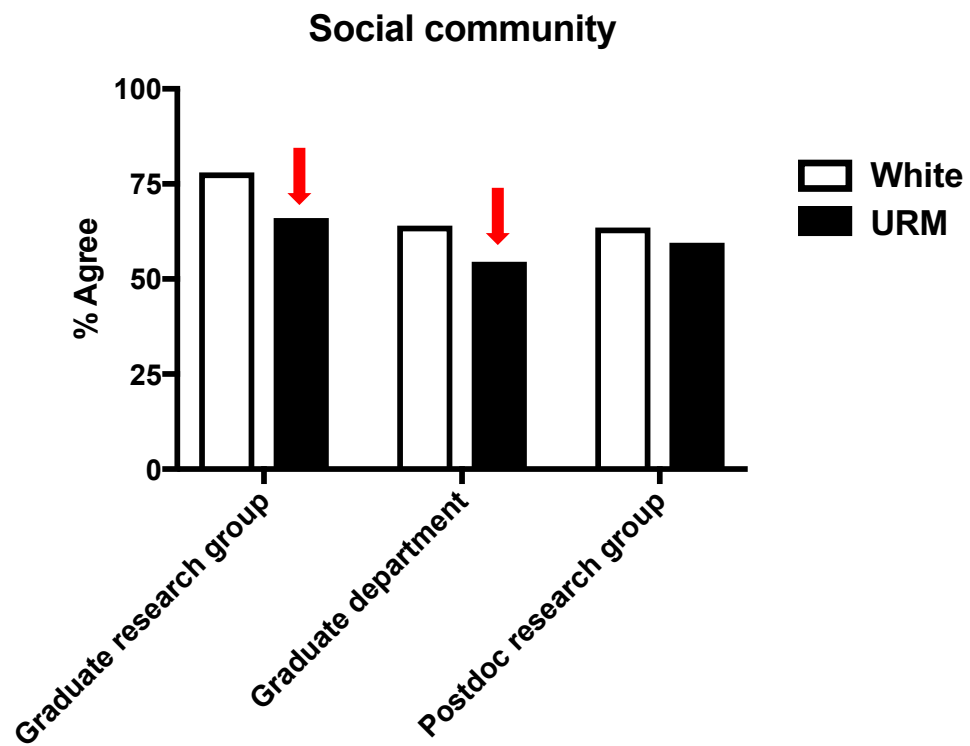
Modified from Estrada et al, CBE Life Sci Educ 2019;18:1-11

No difference in sense of belonging to an intellectual community



Modified from Gibbs and Griffin, *CBE Life Sci Educ*
2013;12:711-723

Less sense of belonging to a social community in graduate school



Modified from Gibbs and Griffin, *CBE Life Sci Educ*
2013;12:711-723

Supporting the development of diverse community of scientific leaders...



ABRCMS 2023

November 15–18 | Phoenix, AZ



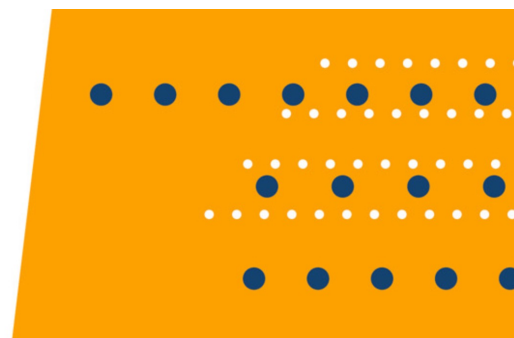
ABRCMS

ePoster Spring Symposium
for Emerging Scientists

April 25, 2024 | Virtual



**ABRCMS
365**



ABRCMS365 On Demand

ABRCMS engages a highly diverse audience of biomedical and behavioral scientists

- Since 2001, **Annual Biomedical Research Conference for Minoritized Scientists** (ABRCMS) has hosted participants from all 50 states, including Puerto Rico and Guam
- The annual event aims to build community and help scientists from minoritized groups unlock their full potential
- ABRCMS offers opportunities to present research findings and sessions on professional development, which include best practices for navigating the workplace and skills to be successful in different sectors (including those supporting drug development)
- Online component recently added to engage audiences year-round



Exhibitor program provides opportunity to meet with biopharmaceutical representatives



- ABRCMS features an exhibitor showcase with representatives from academia, government, non-profit, and biopharmaceutical organizations
- Representatives offer insight on different drug development roles
- As a majority of ABRCMS participants will be undergraduate students, and more recently graduate students, introducing drug development roles at this early career stage broaden their career options
- While the focus is on attaining the highest levels of education, participants interested in clinical research can explore the range of scientific roles (e.g., study coordinator)



Leadership Academy will foster a more culturally aware drug R&D workforce

- ABRCMS recognizes the growing needs of the drug R&D workforce and is establishing a Leadership Academy to address this
- The Academy will leverage the connectivity across different sectors and access to emerging scientists from diverse backgrounds
- Learning environments are created to foster a more culturally aware and inclusive ecosystem through training programs, customized mentorship, and access to experts



Donate to ABRCMS Innovation Programs

