Under-represented Minorities in the Scientific Workforce:

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Christopher H. Fox, DMD, DMSc
Executive Director

Seun Ajiboye, PhD
Science Policy Analyst

American Association for Dental Research
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Learning Objectives

• Understand national trends related to URMs in the scientific workforce.
• Identify resources to assist in increasing URMs in the scientific workforce.
Underrepresentation in Biomedical Research

Noninstitutionalized resident population of the United States ages 18-64 by race: 2014

White 62.1%
Asian 5.7%
Black 12.7%
Hispanic 17.0%
Other 2.5%

Biomedical research workforce (all degrees), 2015

White 69%
Asian 16%
Black 5%
Hispanic 8%
Other 2%

NIH considers Blacks or African Americans, Hispanics or Latinos, American Indians or Alaska Natives, Native Hawaiians and other Pacific Islanders underrepresented.

Other: American Indian/Alaskan Native, Native Hawaiian/Other Pacific Islander and Multiracial

Graduate enrollment among U.S. citizens and permanent residents, by race/ethnicity

Share of K Awards to African Americans Increased Over Time

RPG Awardees by Race, Ethnicity, and Field of Study
2006-2015

Disparities in NIH R01 Grant Funding

Disparities in NIH R01 Grant Funding

% OF SCIENTISTS WHO SUBMITTED AND WERE AWARDED AN NIH R01 GRANT BY RACE 2010-2015

17% WHITE
11% BLACK

BLACK SCIENTISTS ARE ONLY 1.5% TOTAL NIH R01 APPLICANT POOL

BLACK SCIENTISTS ARE LESS LIKELY TO APPLY OR RE-APPLY FOR AN NIH R01 GRANT
HAVE FEWER APPLICATIONS DISCUSSED BY STUDY SECTIONS
HAVE FEWER GRANTS FUNDED

NIH ADDRESSES THE DISPARITY
MENTORING AND COACHING TO INCREASE SUBMISSION & RE-SUBMISSION
INFORMATION OUTREACH ABOUT FUNDING BENEFIT OF TRYING AGAIN
PEER REVIEW ANONYMOUS BIAS STUDY

CUMULATIVE DISPARITY SPANS SUBMISSION TO FUNDING

Black scientists are a tiny fraction (1.5%) of the applicant pool and are less likely to apply or re-apply for NIH R01 grant.

Grant applications from Black scientists are given lower scores and are less likely to be discussed by reviewers, compared to whites.

Topics that many Black scientists prefer to study are less likely to be funded.

Addressing Bias in Peer Review

- Early Career Reviewer Program
  - Participation in NIH review committee correlates with success in grant application

- America COMPETES Challenges (what’s going on now?)
  - Methods to Detect Bias in Peer Review
  - Strategies to Strengthen Fairness and Impartiality in Peer Review

- Effect of Anonymization of Peer Review Process Study

- More information: https://acd.od.nih.gov/meetings.html
Decoupling of the minority PhD talent pool and assistant professor hiring in medical school basic science departments in the US

KENNETH D GIBBS JR*, JACOB BASSON, IMAML M XIERALI AND DAVID A BRONIATOWSKI

(i) Annual Population
(ii) Population Growth (Relative to 1980)
(iii) Percentage Representation

(B) Well-Represented (WR) Participation: 1980-2014
(i) Annual Population
(ii) Population Growth (Relative to 1980)
(iii) Percentage Representation

(A) URM Assistant Professor Hiring Dynamics
(i) Pool of Potential Candidates
(ii) Number of Assistant Professors Hired
(iii) Percent of Candidate Pool Hired

(B) WR Assistant Professor Hiring Dynamics
(i) Pool of Potential Candidates
(ii) Number of Assistant Professors Hired
(iii) Percent of Candidate Pool Hired

** p < 10^-4
Biomedical Science Ph.D. Career Interest Patterns by Race/Ethnicity and Gender

Kenneth D. Gibbs Jr.\(^1\), John McGready\(^3\), Jessica C. Bennett\(^4\), Kimberly Griffin\(^4\)

(C) Average Career Pathway Interest (Social Identity Group)

(i) Faculty, Research-intensive
(ii) Faculty, Teaching-intensive
(iii) Research, Non-Academic
(iv) Non-Research Career

(Strong Interest) 5
(Interest) 4
(Moderate Interest) 3
(Low Interest) 2
(No Interest) 1

Well-represented, Male (WRM) (n=375)
Underrepresented Minority, Male (URMM) (n=87)
Well-represented, Female (WRF) (n=808)
Underrepresented Minority, Female (URMF) (n=189)
Decline-to-state/other (n=41)

(D) Average, Individual Change (Ph.D. Completion - Ph.D. Entry) in Career Pathway Interest

(i) Faculty, Research-intensive
(ii) Faculty, Teaching-intensive
(iii) Research, Non-Academic
(iv) Non-Research Career

Bonferroni corrected comparisons for panels C & D

* p <0.05, cf. WRM
^ p <0.05, cf. URMM
# p <0.05, cf. WRF
** p <0.001, cf. WRM
^^ p <0.001, cf. URMM
### p <0.001, cf. WRF
Dentist-scientist workforce

Distribution of NIH-funded clinician-scientist workforce between 2008 and 2012 by professional category.

Dentist-scientists include those with DDS or DMD degrees alone, DDS and PhD or DDS/PhD with other degrees.

B) NIH-funded research project grant (RPG) applications
C) RPG awardees
D) NIH RPG awards in 5-year increments, 1995-2012
Race/Ethnicity of AADR, May 2017

**All Members***

- 53.0%
- 28.8%
- 9.1%
- 4.4%
- 2.8%
- 1.6%
- 0.3%
- 0.1%

**Students**

- 45%
- 32%
- 10%
- 8%
- 3%
- 2%
- 0.1%
- 0.1%

*57% response rate

**82% response rate
Race/Ethnicity of AADR by Age, May 2017
PROGRAMS AND OPPORTUNITIES
**Poor Returns on the Usual Diversity Programs**

The three most popular interventions make firms less diverse, not more, because managers resist strong-arming. For instance, testing job applicants hurts women and minorities—but not because they perform poorly. Hiring managers don’t always test everyone (white men often get a pass) and don’t interpret results consistently.

**% CHANGE OVER FIVE YEARS IN REPRESENTATION AMONG MANAGERS**

<table>
<thead>
<tr>
<th>Type of program</th>
<th>White Men</th>
<th>White Women</th>
<th>Black Men</th>
<th>Black Women</th>
<th>Hispanic Men</th>
<th>Hispanic Women</th>
<th>Asian Men</th>
<th>Asian Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory diversity training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job tests</td>
<td>-3.8</td>
<td>-10.2</td>
<td>-9.1</td>
<td>-8.8</td>
<td>-6.7</td>
<td>-8.8</td>
<td>-9.3</td>
<td></td>
</tr>
<tr>
<td>Grievance systems</td>
<td>-2.7</td>
<td>-7.3</td>
<td>-4.8</td>
<td>-4.7</td>
<td>-4.7</td>
<td>-11.3</td>
<td>-4.1</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE** GRAY INDICATES NO STATISTICAL CERTAINTY OF A PROGRAM’S EFFECT.

**SOURCE** AUTHORS’ STUDY OF 829 MIDSIZE AND LARGE U.S. FIRMS. THE ANALYSIS ISOLATED THE EFFECTS OF DIVERSITY PROGRAMS FROM EVERYTHING ELSE GOING ON IN THE COMPANIES AND IN THE ECONOMY.

**FROM** “WHY DIVERSITY PROGRAMS FAIL,” BY FRANK DOBBIN AND ALEXANDRA KALEV, JULY-AUGUST 2016

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Diversity Programs That Get Results

Companies do a better job of increasing diversity when they forgo the control tactics and frame their efforts more positively. The most effective programs spark engagement, increase contact among different groups, or draw on people’s strong desire to look good to others.

<table>
<thead>
<tr>
<th>Type of program</th>
<th>White (Men)</th>
<th>White (Women)</th>
<th>Black (Men)</th>
<th>Black (Women)</th>
<th>Hispanic (Men)</th>
<th>Hispanic (Women)</th>
<th>Asian (Men)</th>
<th>Asian (Women)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voluntary training</td>
<td></td>
<td></td>
<td>+13.3</td>
<td></td>
<td>+9.1</td>
<td></td>
<td>+9.3</td>
<td>+12.6</td>
</tr>
<tr>
<td>Self-managed teams</td>
<td>-2.8</td>
<td>+5.6</td>
<td>+3.4</td>
<td>+3.9</td>
<td></td>
<td></td>
<td></td>
<td>+3.6</td>
</tr>
<tr>
<td>Cross-training</td>
<td>-1.4</td>
<td>+3.0</td>
<td>+2.7</td>
<td>+3.0</td>
<td>-3.9</td>
<td></td>
<td>+6.5</td>
<td>+4.1</td>
</tr>
<tr>
<td>College recruitment: women*</td>
<td>-2.0</td>
<td>+10.2</td>
<td>+7.9</td>
<td>+8.7</td>
<td>+10.0</td>
<td></td>
<td>+18.3</td>
<td>+8.6</td>
</tr>
<tr>
<td>College recruitment: minorities**</td>
<td></td>
<td>+7.7</td>
<td>+8.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mentoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+18.0</td>
<td>+9.1</td>
<td>+23.7</td>
<td>+18.0</td>
</tr>
<tr>
<td>Diversity task forces</td>
<td>-3.3</td>
<td>+11.6</td>
<td>+8.7</td>
<td>+22.7</td>
<td>+12.0</td>
<td>+16.2</td>
<td>+30.2</td>
<td>+24.2</td>
</tr>
<tr>
<td>Diversity managers</td>
<td>+7.5</td>
<td>+17.0</td>
<td>+11.1</td>
<td></td>
<td>+18.2</td>
<td>+10.9</td>
<td></td>
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</tr>
</tbody>
</table>

*College recruitment targeting women turns recruiting managers into diversity champions, so it also helps boost the numbers for black and Asian-American men.

**College recruitment targeting minorities often focuses on historically black schools, which lifts the numbers of African-American men and women.

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Grant Opportunities

• Ruth L. Kirschstein National Research Service Award (NRSA) or Individual Predoctoral Fellowships to Promote Diversity in Health-Related Research (Parent F31 - Diversity)

• NIDCR Mentored Career Development Award to Promote Diversity in the Dental, Oral and Craniofacial Research Workforce (K01)

• Maximizing Access to Research Careers Undergraduate - Student Training in Academic Research (MARC U-STAR) (T34)
Diversity Supplements

Diversity supplements are administrative supplements that provide extra support for investigators with trainees that will improve to the diversity of the research workforce.

• Research Supplements to Promote Diversity in Health Related Research

• Research Supplements to Promote Re-entry into Biomedical and Behavioral Research Careers
  – Support re-entry of researchers into the workforce after a disruption due to family or other qualifying circumstances.
NIH Loan Repayment Programs

- 20 hrs/week of research for 2 years in exchange for repayment of $35,000 annually of educational debt
- Clinical Researchers
- Pediatric Research
- Health Disparities
- Loan Repayment Program for Individuals from Disadvantaged Backgrounds

https://www.lrp.nih.gov/
Other Opportunities

NIH Academy - postbacs

“Being a part of [The NIH Academy] was life-changing. It [has] inspired me to continue working with under-served communities in my career. That is priceless.”

NRMN
National Research Mentoring Network
-postdocs and early career scientists

Harold Amos
MEDICAL FACULTY DEVELOPMENT PROGRAM

Working to increase the number of medical, dental, and nursing faculty from historically disadvantaged backgrounds

About The Program

The Minority Medical Faculty Development Program (MMFDP) was renamed in January 2004 in honor of Harold Amos, Ph.D., who was the first African-American to chair a department, now the Department of Microbiology and Medical Genetics, of the Harvard Medical School.

He was a founding member of the National Advisory Committee of the MMFDP in 1983, and served as the Program’s National Program Director between 1989 and 1993.

-postdocs

AADR
American Association for Dental Research
NIH Office of Scientific Workforce Diversity

https://diversity.nih.gov/
AADR Committee on Diversity and Inclusion

• Diversity Task Force formed in 2014 to address diversity of AADR membership
• Evolved into CDI, established March 2017
• Task Force and CDI accomplishments to date
  – Voted to accept the NIH’s definition of “underrepresented populations”
  – Audit of diversity within AADR’s membership
  – Surveyed diversity programs of similar scientific associations
  – Reached out to NDA, HDA, and ADEA and exhibited at meetings

George Taylor, DMD, MPH, DrPH (UCSF)
Chair, AADR CDI

Photo credit: UCSF, http://profiles.ucsf.edu/george.taylor
AADR Committee on Diversity and Inclusion

Priorities

• Data-driven strategies
• Recruitment and retention
• Visibility
• Mentorship
• Welcoming and Inclusive Environments
Questions?

Contact Information:

www.iadr.org/aadr.org

Christopher H. Fox, DMD, DMSc cfox@aadr.org

Seun Ajiboye, PhD sajiboye@iadr.org