“What Can Academic Institutions Do To Address Diversity and Inclusion?”

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Immunology 2019
AAI
Fostering Diversity and Preventing Harassment in the Biomedical Research Workforce
May 11, 2019
Disclosure:

The 3M Company
Native peoples of San Diego:

Luiseno, Cahuilla, Cupeno, Kumeyaay, and Northern Diegueño
In the beginning…..
Native removal
84% of Native removal
154 years ago (1865), Congress passed the 13th amendment to the constitution which abolished slavery in the United States.
99 years ago (1920), Congress passed the 19th amendment to the constitution which gave women the right to vote.
Marie Curie
Nobel Prize in Physics in 1903
Nobel Prize in Chemistry in 1911
Irène Joliot-Curie
Nobel Prize in Chemistry in 1935
Irène Joliot-Curie
Nobel Prize in Chemistry in 1935

1970’s the Ivy League became co-educational....
1947 federal court case ruled that segregation of Mexican and Mexican American students in Orange County, CA into separate "Mexican schools" was unconstitutional.
U.S. Supreme Court


Brown v. Board of Education of Topeka

Argued December 9, 1952

Reargued December 8, 1953

Decided May 17, 1954*

APPEAL FROM THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF KANSAS
Effects of government sanctioned redlining

Redlined neighborhoods have the highest share of black residents

Data from 149 cities mapped by the Home Owners’ Loan Corporation in the 1930s.
Effects of property value and school funding

Percent of Public School Funding from Local Revenue Sources, published by the Mass Budget and Policy Center, reporting on 2008 Data

Massachusetts: 52.8%; Average for all States: 43.7%
Changing demographics of the U.S.

Data from the U.S. Census
Basic Science faculty makeup at Medical Schools

URM Status

Data from the AAMC 2017
Similar interest among high school students in a degree in biology

Adapted from Meyers et al PLOS ONE 13: e0190606.
Higher rate of STEM BS degrees for URM....

Slope of change in BS STEM (2002-2012)

Calculated from data tabulated by National Science Foundation, National Center for Science and Engineering Statistics; data from Department of Education, National Center for Education Statistics: Integrated Postsecondary Education Data System Completions Survey.
Higher rate of biological sciences PhD degrees for URM....

Slope of change in PhD degree Bio Sci (2002-2012)

Calculated from data tabulated by National Science Foundation, National Center for Science and Engineering Statistics; data from Department of Education, National Center for Education Statistics: Integrated Postsecondary Education Data System Completions Survey.
Welcome to NIGMS

The National Institute of General Medical Sciences (NIGMS) supports basic research that increases understanding of biological processes and lays the foundation for advances in disease diagnosis, treatment, and prevention.

Undergraduate and Predoctoral Programs
Postdoctoral Programs
Research Programs
Educational Resources
Increasing graduate trainee diversity....
Increasing graduate trainee diversity....
Typical physics Ph.D. admissions criteria limit access to underrepresented groups but fail to predict doctoral completion

Casey W. Miller¹*, Benjamin M. Zwickl², Julie R. Posselt³, Rachel T. Silvestrini⁴, Theodore Hodapp⁵

This study aims to understand the effectiveness of typical admissions criteria in identifying students who will complete the Physics Ph.D. Multivariate statistical analysis of roughly one in eight physics Ph.D. students from 2000 to 2010 indicates that the traditional admissions metrics of undergraduate grade point average (GPA) and the Graduate Record Examination (GRE) Quantitative, Verbal, and Physics Subject Tests do not predict completion as effectively admissions committees presume. Significant associations with completion were found for undergraduate GPA in all models and for GRE Quantitative in two of four studied models; GRE Physics and GRE Verbal were not significant in any model. It is notable that completion changed by less than 10% for U.S. physics major test takers scoring in the 10th versus 90th percentile on the Quantitative test. Aside from these limitations in predicting Ph.D. completion overall, overreliance on GRE scores in admissions processes also selects against underrepresented groups.
Larger rate of increase in URM faculty pipeline pool…

Gibbs et al; PLOS ONE 9: e114736.
...accompanied by a drop in hiring URM faculty

Gibbs et al; PLOS ONE 9: e114736.
Paradox

More is less..
Choices....
Career pathway decisions

Decision to pursue BS

Undergraduate Research experience

Decision to pursue PhD

Graduate Training experiences

Decision to pursue Postdoc

Yes

Postdoc Training experiences

No

Non research career

Decision After Postdoc

Research intensive

Teaching intensive

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

- Decision to pursue BS
- Decision to pursue PhD
- Decision to pursue Postdoc
  - Postdoc Training experiences
    - Yes
      - Undergraduate Research experience
        - Decision to pursue BS
    - No
      - Non research career
        - Decision After Postdoc
          - Research intensive
          - Teaching intensive

Modified from Gibbs and Griffin, CBE Life Sci Educ 2013;12:711-723
Basic Science faculty makeup at Medical Schools

Data from the AAMC 2017
Athena Swan Initiative

Athena Scientific Women Achievement Network (SWAN) Charter

Launched in 2005 to address the unequal representation of women and to encourage and recognize commitment to advancing the careers of women in STEM employment in both higher education and research..
160 Charter Members to date; provides guidance, templates, best practices

- recognise a solid foundation for eliminating gender bias and developing an inclusive culture that values all staff. Includes assessment, 4-year plan, organization structure...
  - 36 members

- significant record of activity and achievement in promoting gender equality and in addressing challenges in different disciplines, including improvements from Bronze...
  - 288 members

- completely embedded, strong leadership in promoting and championing the charter principles of gender equality, data demonstrating the impact and intersectional approach of Athena SWAN activities.
  - 316 members
Funding in the U.K. dependent on Athena SWAN Silver status

significant record of activity and achievement in promoting gender equality and in addressing challenges in different disciplines, including improvements from Bronze.
Launched in 2001 to develop systemic approaches to increase the participation and advancement of women in academic STEM careers.

- Drive institutional transformation based on gender-disaggregated data collection methods, mentoring schemes, implementation of work–life balance policies, and guidance for institutional leaders to ensure understanding of changes to policies and practices aimed at enhancing faculty careers for women in STEM.

- Research on gender equity and inclusive practices.

- Examples include how to train search committees, department chairs, and tenure and promotion committees to reduce the impact of cultural stereotypes on judgement and decision making.
ADVANCE: Organizational Change for Gender Equity in STEM Academic Professions (ADVANCE)

STEM Female Faculty
- ADVANCE
- Non-ADVANCE

STEM Roles Female
- ADVANCE
- Non-ADVANCE

% increase
Lessons from Athena Swan and NSF ADVANCE

Good Practice Initiatives

ADVANCE: Organizational Change for Gender Equity in STEM Academic Professions (ADVANCE)
Lessons from Athena Swan and NSF ADVANCE

High Quality Institutional Data

> Baseline data for benchmarking

> Disaggregated

> Quantitative and Qualitative
Lessons from Athena Swan and NSF ADVANCE

Appropriate Leadership

> President and Provost must be invested and accountable

> Female/URM leaders may experience positive and negative effects on career

> Men in STEM should become more engaged
Lessons from Athena Swan and NSF ADVANCE

Implement and Sustain Policy changes

> Depends on senior management

> Recruitment, hiring, research support, tenure and promotion criteria, work life balance

> Negative policies might be difficult to eliminate

> Representation of women/URM
The utility of student teaching evaluations...

Use of "Genius" on RateMyProfessors.com
Use of the words “brilliant” and “genius” on RateMyProfessors.com predicts the proportion of 2011 U.S. PhDs who are African American
Availability of cookies during an academic course session affects evaluation of teaching

Michael Hessler, Daniel M Pöpping, Hanna Hollstein, Hendrik Ohlenburg, Philip H Arnemann, Christina Massoth, Laura M Seidel, Alexander Zarbock & Manuel Wenk

Teaching evaluations
From Deficits to Possibilities
Mentoring Lessons from Plants on Cultivating Individual Growth through Environmental Assessment and Optimization

Beronda L. Montgomery
Recognizing, progressing and committing to equality and diversity in higher education.

Recognizing commitment to the advancement of gender equality in academia, addressing unequal gender representation across academic disciplines, professional and support functions and removing the obstacles faced by women.

Improving the representation, progression and success of black and minority ethnic staff and students within higher education.
Intersectionality
Male: Female ratio of basic science faculty at U.S. medical schools

Data from the AAMC 2017
Male: Female ratio of basic science faculty at U.S. medical schools

Data from the AAMC 2017
Changing demographics of the U.S.

Data from the U.S. Census
The promise of personalized medicine

Costs of Sequencing a single Human Genome 2003-2015
Who decides?
Charles Drew, MD, CM, MDSc.
- born June 3, 1904, in Washington, D.C.
As you know, there is no scientific basis for the separation of the bloods of different races except on the basis of the individual blood types or groups.

- Charles Drew
"BANKED BLOOD"

A Study in Blood Preservation

by

Charles Richard Drew, M.D., C.M.

From the Surgical Pathology Laboratory of the College of Physicians and Surgeons, Columbia University, and the Department of Surgery, Presbyterian Hospital.

1940.
This plan consists of two units. One contains the...
From Deficits to Possibilities
Mentoring Lessons from Plants on Cultivating Individual Growth through Environmental Assessment and Optimization

Beronda L. Montgomery
What do we do here?