

Diversifying the Professoriate: Approaches to Recruitment, Retention and Inclusion

Hannah A. Valantine, MD

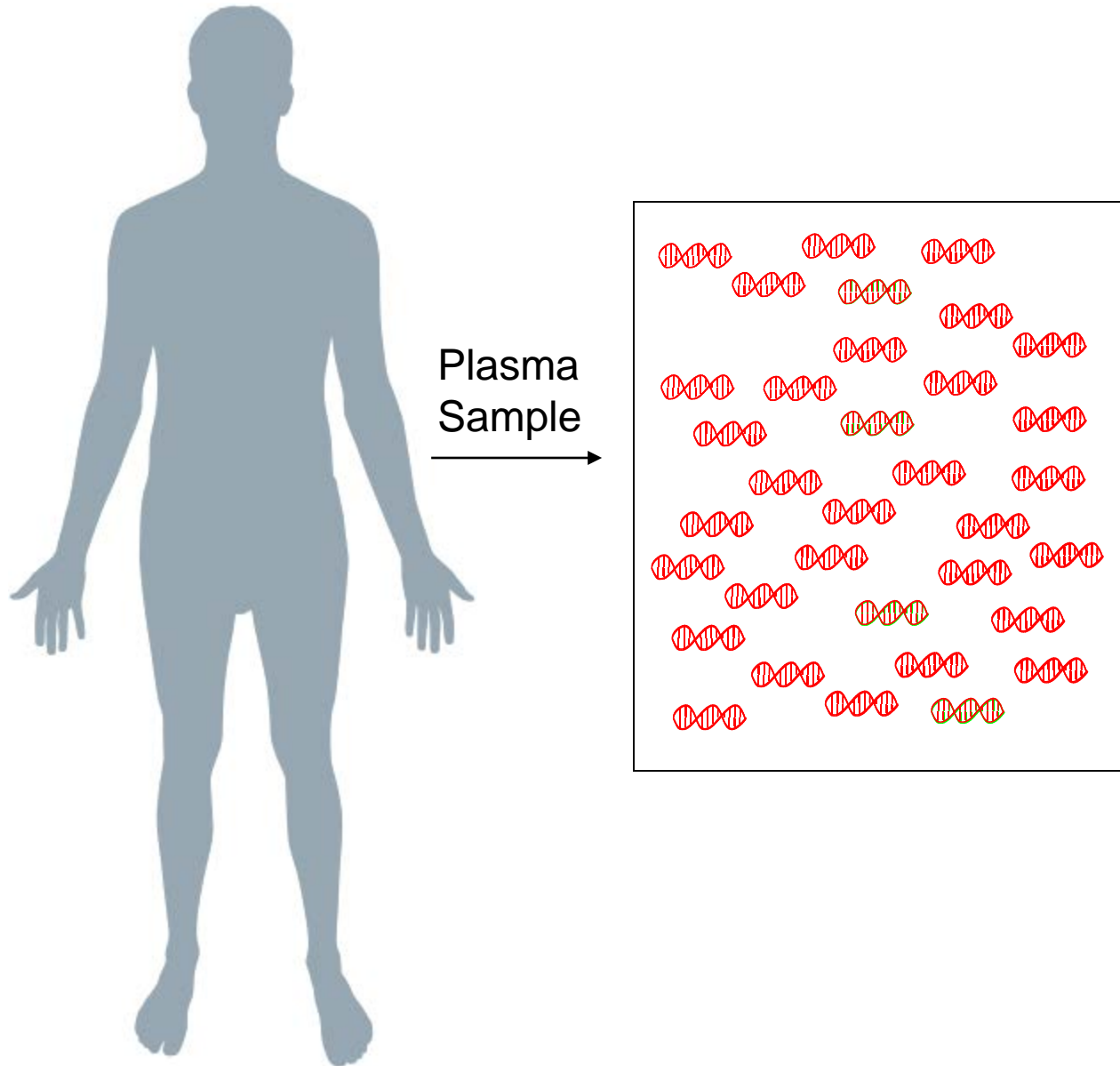
NIH Chief Officer for Scientific Workforce Diversity

NIH Council of Councils | January 27, 2017

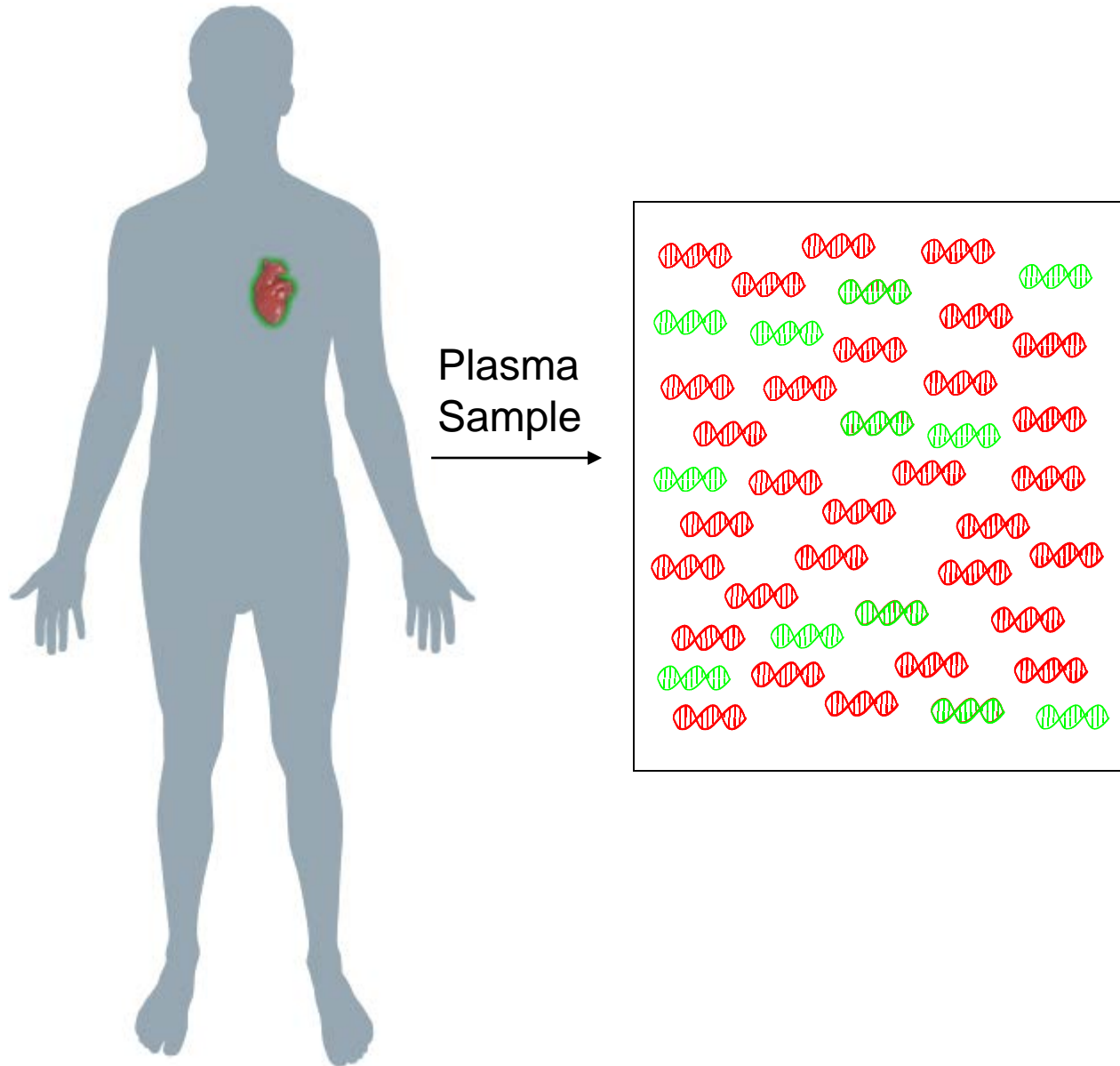


National Institutes of Health
Office of the Director
Scientific Workforce Diversity

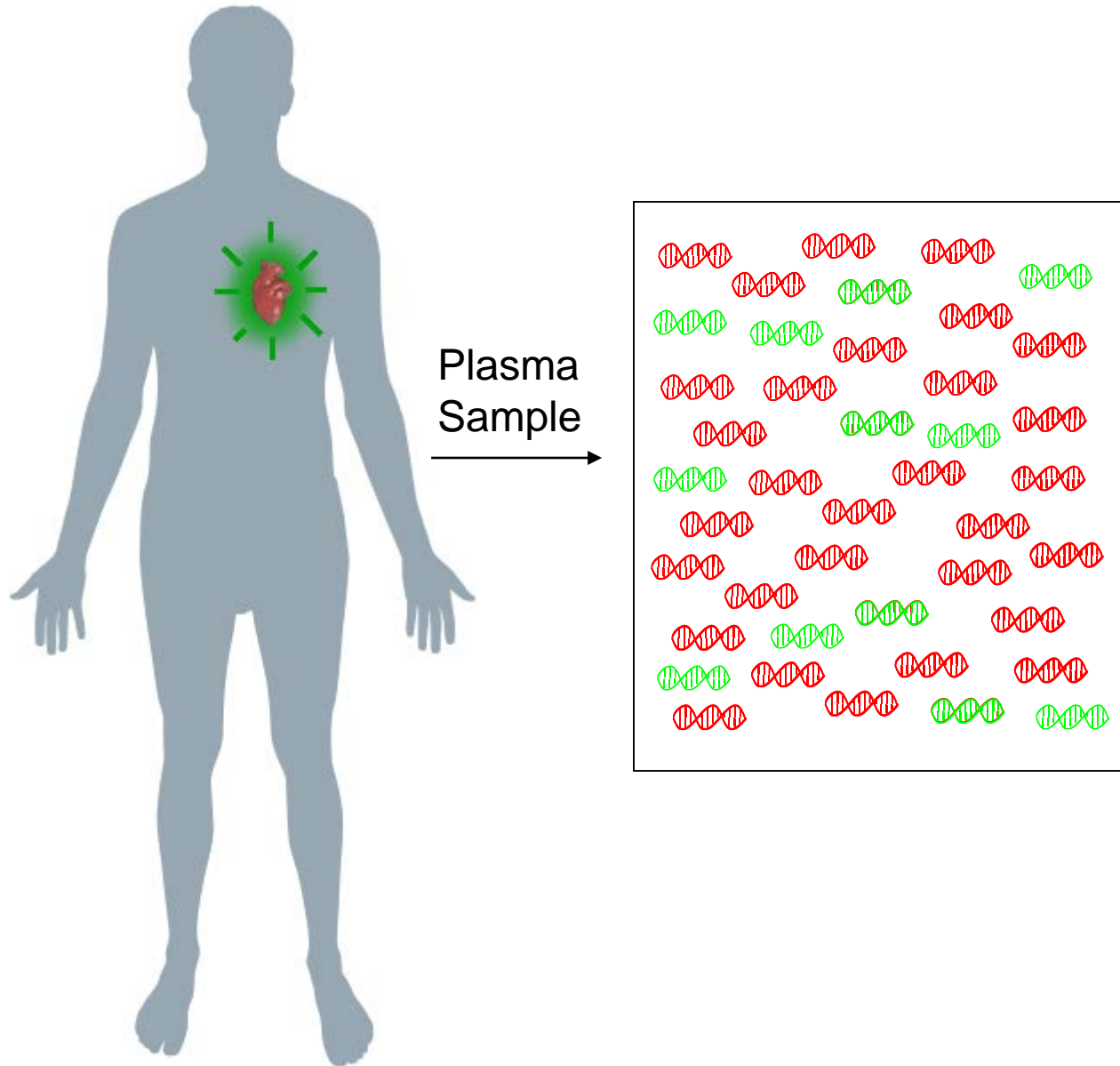
Organ Transplant as Genome Transplant



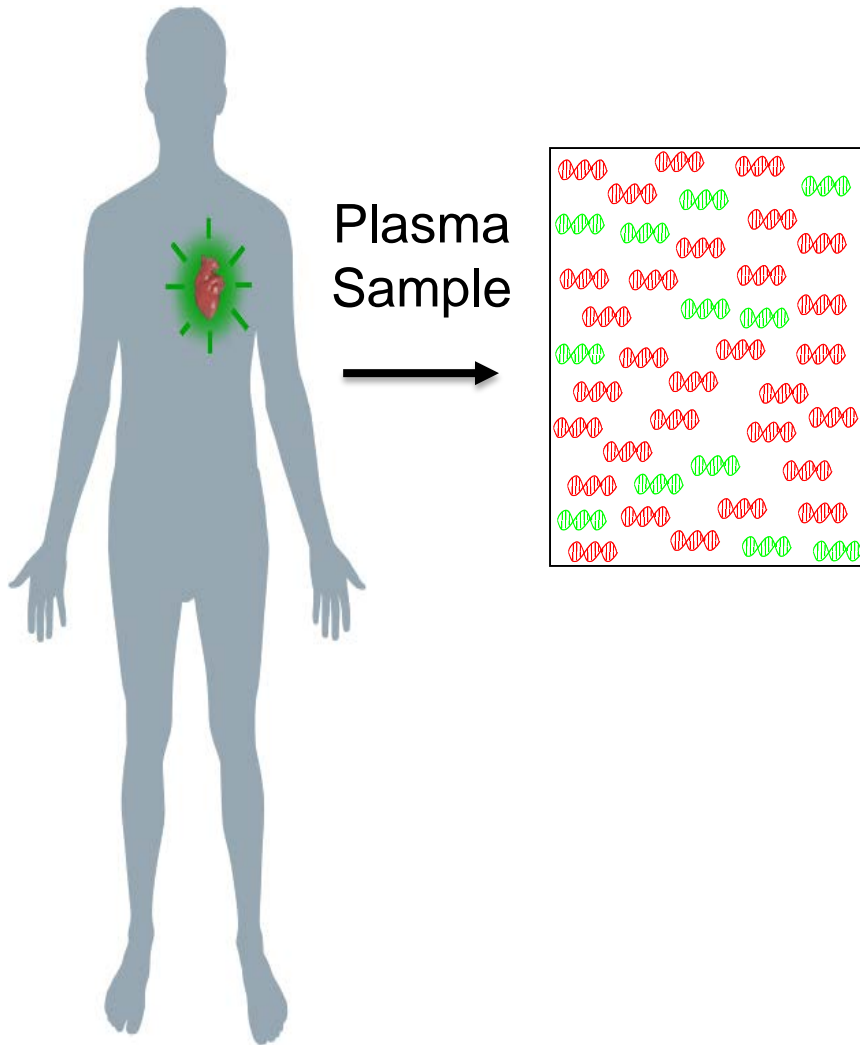
Organ Transplant as Genome Transplant



Organ Transplant as Genome Transplant



Genomic Research Alliance for Transplantation (**GRAfT**) - Progress to Date



- ✓ Enrollment started in June 2015
- ✓ Cf-ddDNA technology
- ✓ Enrollment on-going at 5 centers
 - ✓ 173 patients enrolled
 - ✓ 114 transplanted (68 heart; 46 lung)
- ✓ Biorepository: Over 6,000 biospecimens banked
- ✓ Clinical Data: > 900 time points

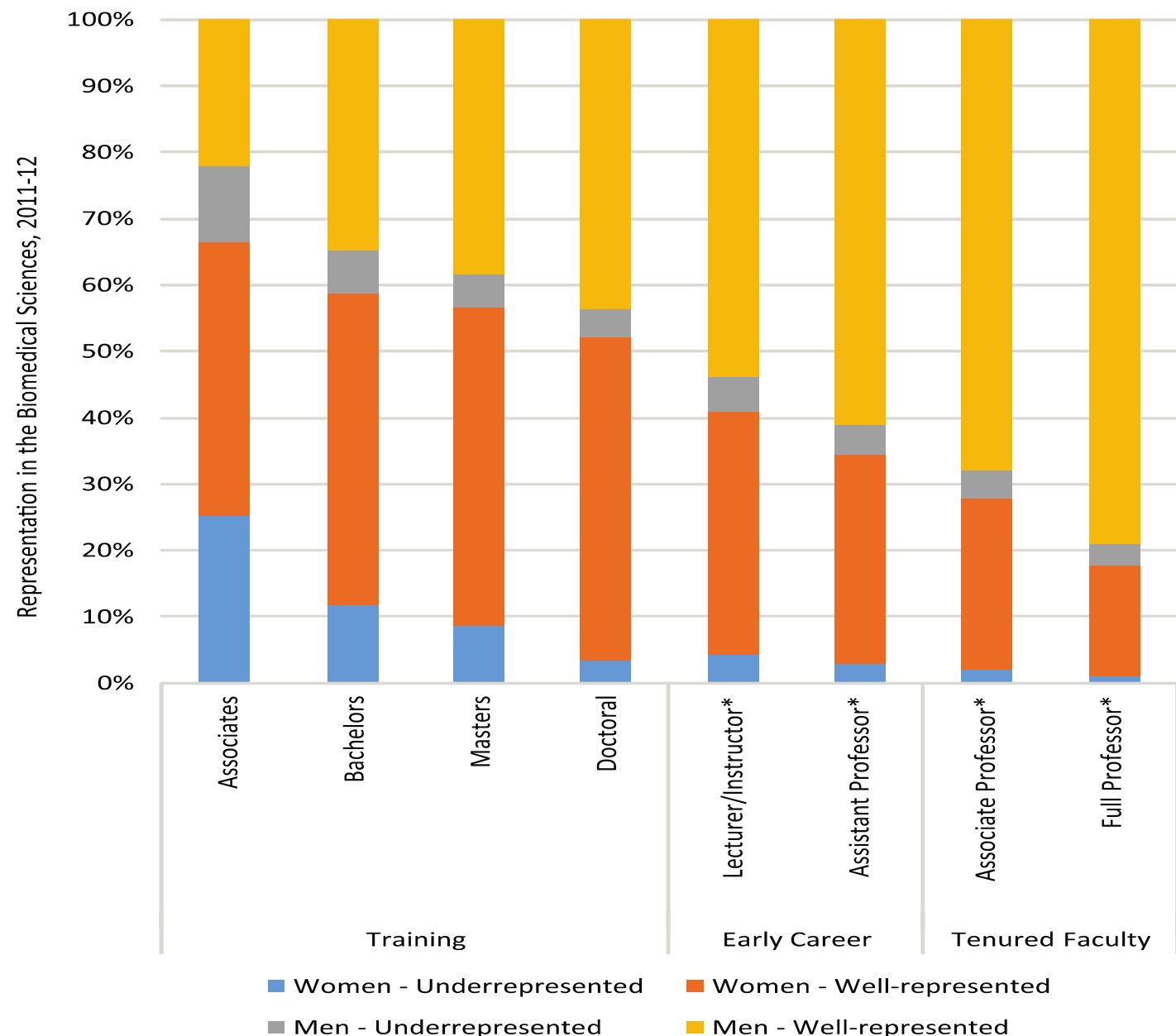
Addressing the Science of Diversity:

Time for Scientific Rigor and Integrated Approach

Presentation Outline

- Defining the issue of lack of diversity
- Why diversity?
 - Driving force for excellence and innovation
- Addressing four cross-cutting diversity challenges with scientific rigor
 - Unconscious bias (Pervasiveness, overcoming bias)
- Building evidence, sustaining diversity (data-driven)
 - Diversity Program Consortium
 - Lessons learned from NIH intramural research program
 - Hubs of Innovation

Career Representation in Biomedical Sciences



Why Diversity Matters

Capitalizing on the Opportunity

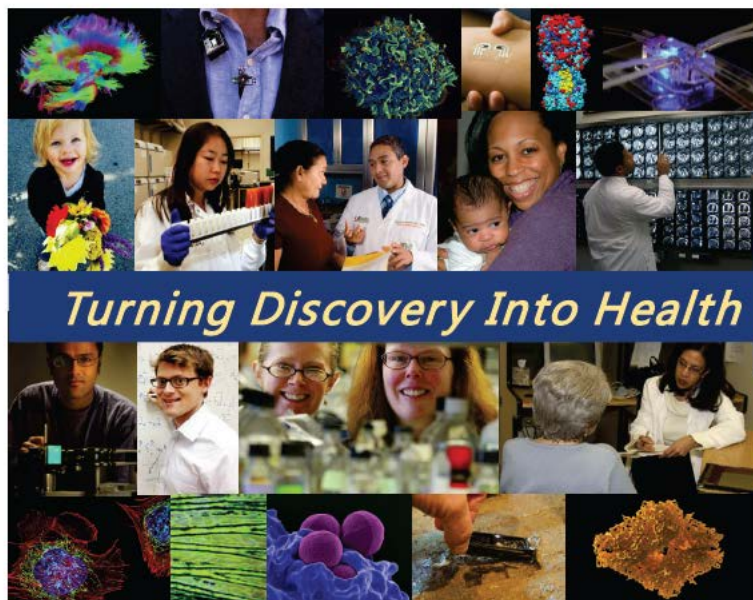
- Excellence, creativity, innovation
- Broadening scope of inquiry - solutions to complex problems of health and disease
- Impact of workforce diversity on health disparities
- Ensuring fairness
 - Changing demographics
 - Leveraging the entire U.S. intellectual capital



Why Diversity Matters for NIH

NIH-Wide Strategic Plan

Fiscal Years 2016-2020



Enhance Stewardship

- Recruit/retain outstanding research workforce
- Enhance workforce diversity
- Encourage innovation
- Optimize approaches to inform funding decisions
- Enhance impact through partnerships
- Ensure rigor and reproducibility
- Reduce administrative burden

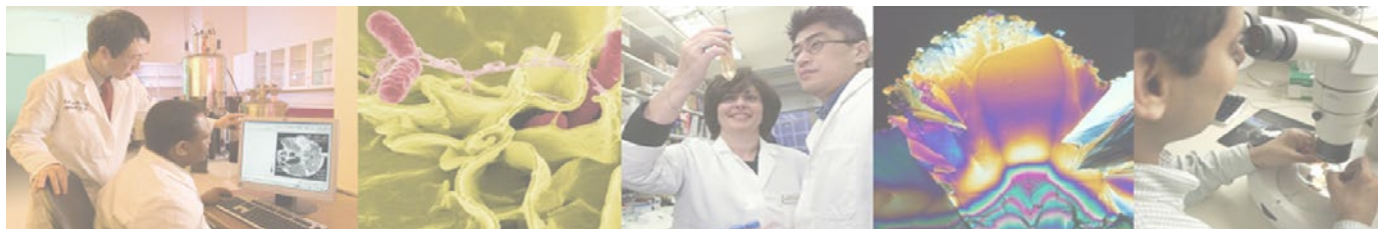


ACD WG Recommendation (2012)

Chief Officer for Scientific Workforce Diversity

Accountability, Evaluation, Coordination

- Recruit an active biomedical researcher with commitment to diversity and strong credibility in the academic community
- Charge: Coordinate diversity programs across NIH
- Intramural research program can be a critical space for learning about diversity recruiting/retention
- All programs must be subject to rigorous evaluation



Valantine and Collins.

PNAS 2015: Oct
6;112:12240-2

Diversity Science

Sociocultural Factors



Recruitment,
Retention:
What Works
and Why?
Context matters

Sustaining
Diversity

Better Problem-solving Results From A Larger Informational, Or Cognitive Space

Scott E. Page

THE DIFFERENCE

HOW THE POWER OF DIVERSITY
CREATES BETTER GROUPS, FIRMS,
SCHOOLS, AND SOCIETIES

- Argument: diversity outperforms ability
- Test: hypothetical scenarios designed to reflect individual's problem solving abilities toward making a hiring decision - 1,000 applicants
- Result: 20 people randomly selected from the qualified applicant pool were better at solving the problem than the highest-scoring individual or 20 individuals with the next highest 20 scores

Groups of diverse problem solvers can outperform groups of high-ability problem solvers. *PNAS* 2004 Nov 16;101(46):16385-9.

Diversity and Quality of Science

- 2.57 million scientific papers between 1985-2008 (authors with U.S. addresses); 11 scientific fields
- Surnames of co-authors – ethnic diversity
- Controlled for # authors; population density etc.
- Lots of homophily: association with similar others

Papers written by a diverse groups:

- Receive more citations
- Published in journals with higher impact factors

- Similar finding for gender diversity*



Freeman, R. B., & Huang, W. (2014). *National Bureau of Economic Research*, No. w19905.

* Campbell LG, et al. (2013) Gender-heterogeneous working groups produce higher quality science. *PLoS One*.

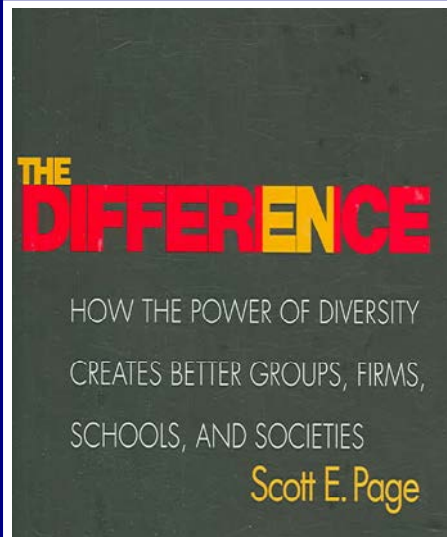
PNAS

NIH Addresses the Science of Diversity

Valantine and Collins.
PNAS 2015: Oct
6;112:12240-2

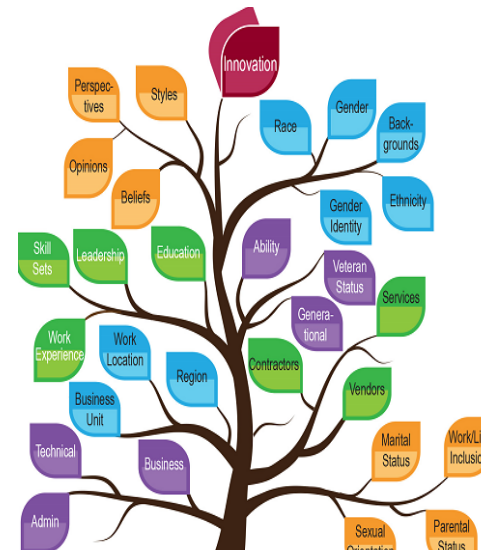
Diversity
Science

Sociocultural
Factors



DIVERSITY
PROGRAM
CONSORTIUM

*Supported by the National
Institutes of Health*



Recruitment,
Retention:
What Works
and Why?
Context matters

Sustaining
Diversity

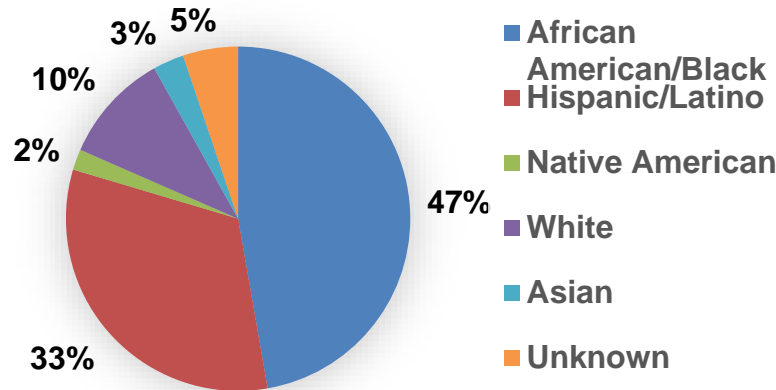
Targeted Recruiting and Retention: Enhancing NIH Intramural Diversity

- Scientific opportunities in the IRP
- Underrepresentation: Pipeline, attrition
 - Women
 - Race/ethnicity
- Enhancing diversity in the IRP – SWD partnership
 - Recruitment and retention of tenure-track scientists
 - SWD tools
 - Unconscious bias education

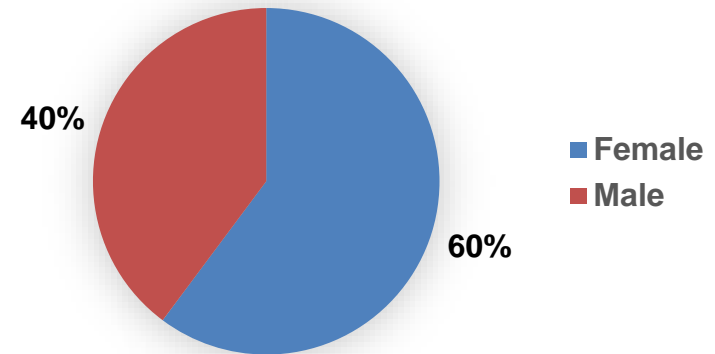
Recruiting Tool for Junior Career Stage

Postdoctoral and Assistant Professors

Race/Ethnicity



Gender



- ~ 525 total, top 1/3rd culled
- 4-10 years post-doctorate (most 4-7)
- Authorship in top journals
- 10+ publications: 188
- 100+ citations: 198
- 200+ citations: 136



Endocrinology

JNeurosci
THE JOURNAL OF NEUROSCIENCE

JAMA[®]
The Journal of the American Medical Association

 **PLOS** | ONE



The NEW ENGLAND
JOURNAL of MEDICINE



BMC
Pediatrics

Neuron

nature
immunology



2016 | NIH FUTURE RESEARCH LEADERS CONFERENCE

SEPTEMBER 13-15 | NIH Main Campus



FRLC@NIH.GOV

Trans-NIH effort to engage talented early-stage biomedical and behavioral scientists from diverse backgrounds to promote knowledge and awareness about scientific career opportunities in the NIH intramural research program



Understanding What Works: NIH Diversity Program Consortium

Pipeline, Mentoring, Evaluation

Awards made October 2014

BUILD: 10
sites/experiments

NRMN
CEC

Total: \$250 million (5 years)

BUILD (500 scholars to date)

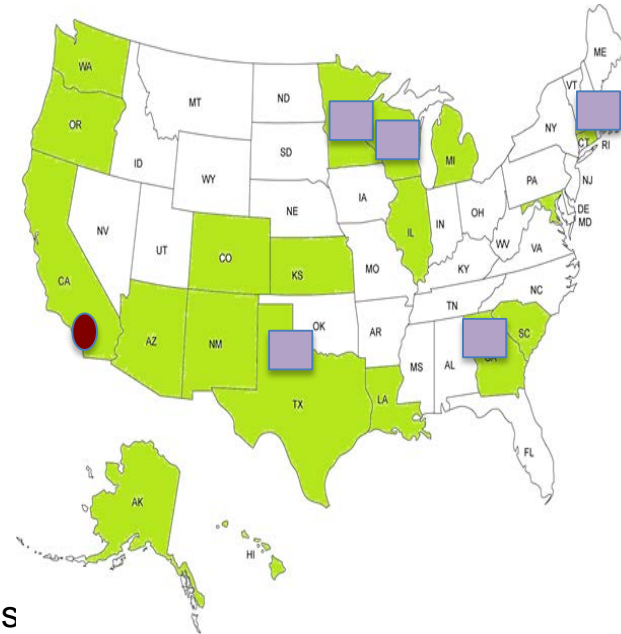
- California State University Long Beach
- California State University Northridge
- Morgan State University
- Portland State University
- San Francisco State University
- University of Alaska Fairbanks
- University of Detroit Mercy
- University of Maryland Baltimore County
- University of Texas El Paso
- Xavier University of Louisiana

NRMN

- Boston College
 - Morehouse SM; U. Min.; U. North Texas; U. Wisconsin

CEC

- University of California Los Angeles



Understanding What Works: NIH Diversity Program Consortium

Pipeline, Mentoring, Evaluation

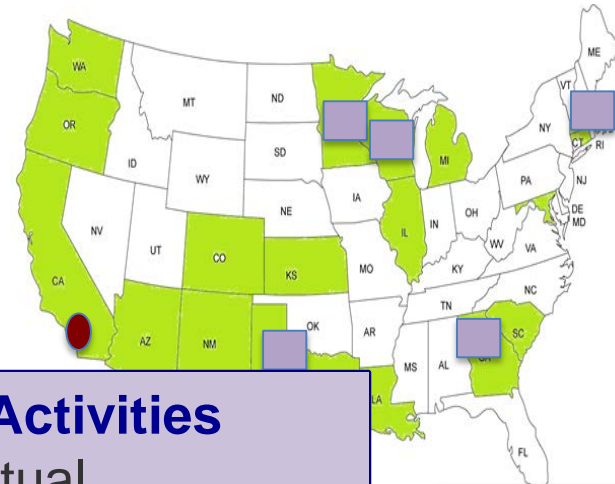
Awards made October 2014

BUILD: 10
sites/experiments

NRMN

CEC

Total: \$250 million (5 years)



Hypotheses Being Tested by BUILD

- Stereotype threat
- Critical race theory
- Student entrepreneurship
- Living and learning communities

NRMN Activities

- Guided virtual mentorships
- MyNRMN tool
- Mentors trained: 250
- Mentee/mentors touched 3,100
- Grantwriting/coaching - mentees: 225

Hispanic-Serving Institutions

Historically Black Colleges and Universities

Total of 10 Sites/Experiments

State Colleges

Universities

PNAS NIH Addresses the Science of Diversity

Valantine and Collins.
PNAS 2015: Oct
6;112:12240-2

Diversity
Science

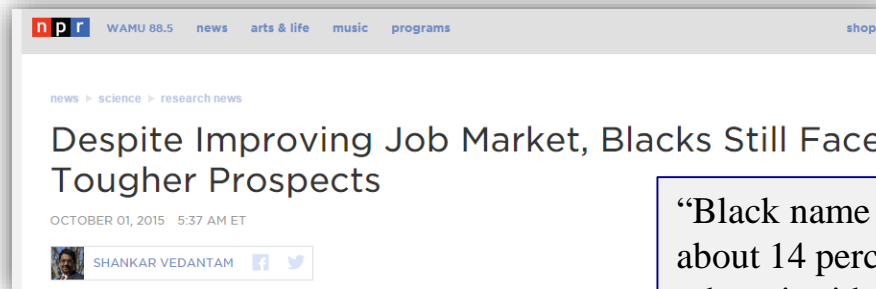
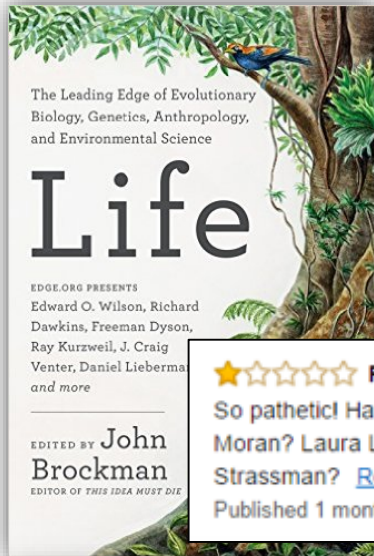
Sociocultural
Factors



Recruitment,
Retention:
What Works
and Why?
Context matters

Sustaining
Diversity

Bias is Pervasive in Science and Beyond



“Black name applicants in our study received about 14 percent lower call-back rates than otherwise identical white applicants.”

★☆☆☆☆ Pathetic!

So pathetic! Have these people not heard of Hopi Hoekstra? Nicole King? Nancy Moran? Laura Landweber? Rosemary Grant? Mercedes Pascual? Joan Strassman? [Read more](#)

Published 1 month ago by Danny Wells

Recommendation letters for men:

Longer;
More references to CV, publications, patients, colleagues



Welcome to the world of sport. It's a world where men are "strong, big, real, great or fastest"

Recommendation letters for women :

Shorter;
More “doubt raisers” (hedges, faint praise, and irrelevancies);
More references to personal life

“It’s amazing how much she’s accomplished.”

“ ... she became the third new mum to retain Olympic gold” ... “asked how she cares for her skin and how training affects her hair.”

Study: “Who is a Scientist?”

- Pictures of actual faculty members in STEM at elite universities
- Rated for masculinity and femininity
- Separate group of students rated pictures for likelihood of being a scientist

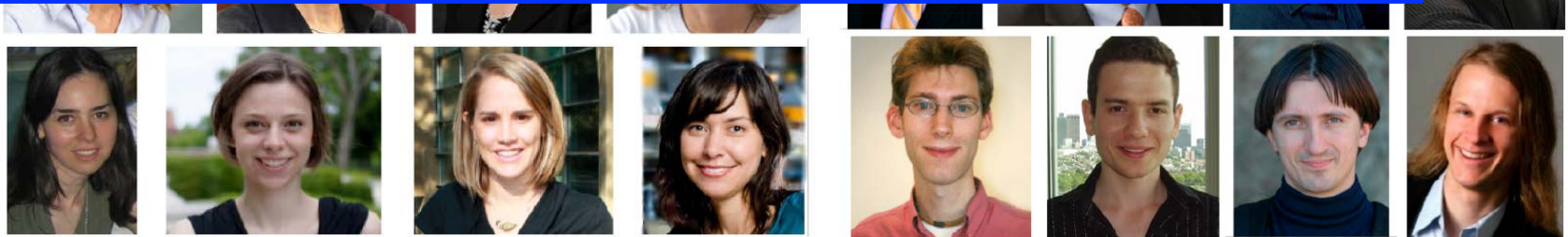


Banchefsky, S., Westfall, J., Park, B., & Judd, C. M. (2016). But You Don't Look Like A Scientist!: Women Scientists with Feminine Appearance are Deemed Less Likely to be Scientists. *Sex Roles*, 1-15.

Study: “Who is a Scientist?”

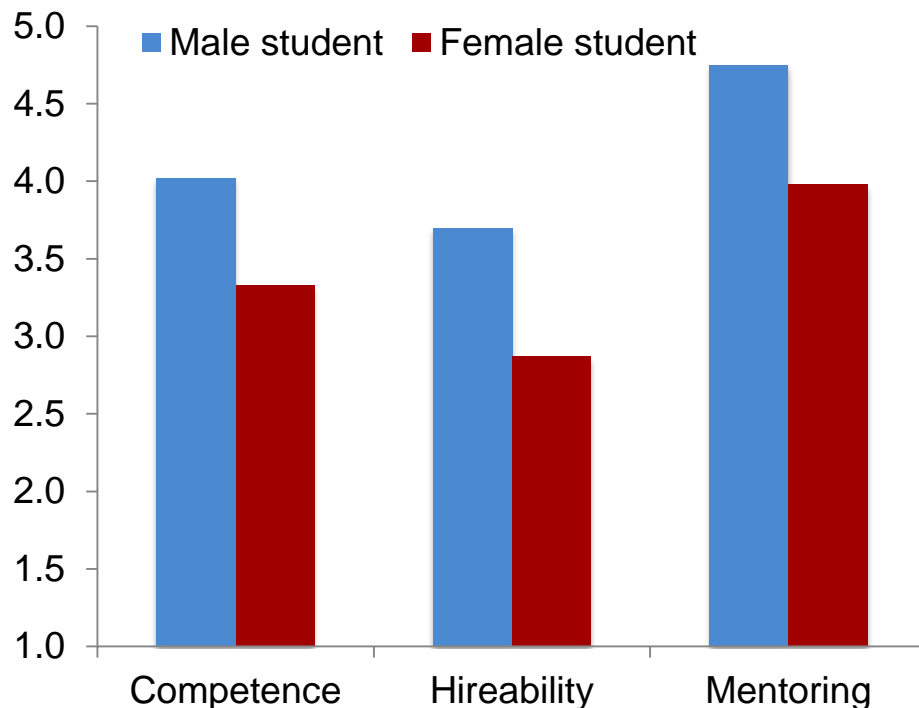
- Pictures of actual faculty members in STEM at elite universities
- Rated for masculinity and femininity
- Students rated the likelihood of being a scientist

Result: For females, the more feminine the person is rated, the more likely she is rated to be an early childhood educator and less likely to be a scientist.



Unconscious Bias in Academic Science

A nationwide sample of biology, chemistry, and physics professors (n=127) evaluated application materials of an undergraduate science student (female or male) for a lab manager position.



1. **Both** male and female faculty participants rated the female student as:

- Less competent
- Less hireable
- Offered lower salary (\$3.7K)
- Less mentoring

2. Even though the female was rated more likeable

Unconscious Bias: Habits Can Be Broken

- 92 departments, matched by school/college
- Randomized controlled intervention
- Intervention group reported:
 - Greater personal bias awareness
 - More motivation to promote gender equity
 - More confidence in being able to enact gender equity
 - Feel that it would be personally beneficial to promote gender equity in one's department
- Persisted 3 months

Carnes, M., et al. (2015). The effect of an intervention to break the gender bias habit for faculty at one institution: a cluster randomized, controlled trial. *Academic Medicine*, 90(2), 221-230.

2015 Stadtman Unconscious Bias Education Goals and Objectives

- Raise awareness of unconscious bias and reduce its impact in the search process
- Test feasibility
- Scientifically test the efficacy of the educational module

- Does unconscious bias education affect the Stadtman search process and outcomes?
- Pre- and post-measurements of implicit/explicit bias

Valantine and Collins.
PNAS 2015: Oct
 6;112:12240-2

Diversity
 Science

Sociocultural
 Factors



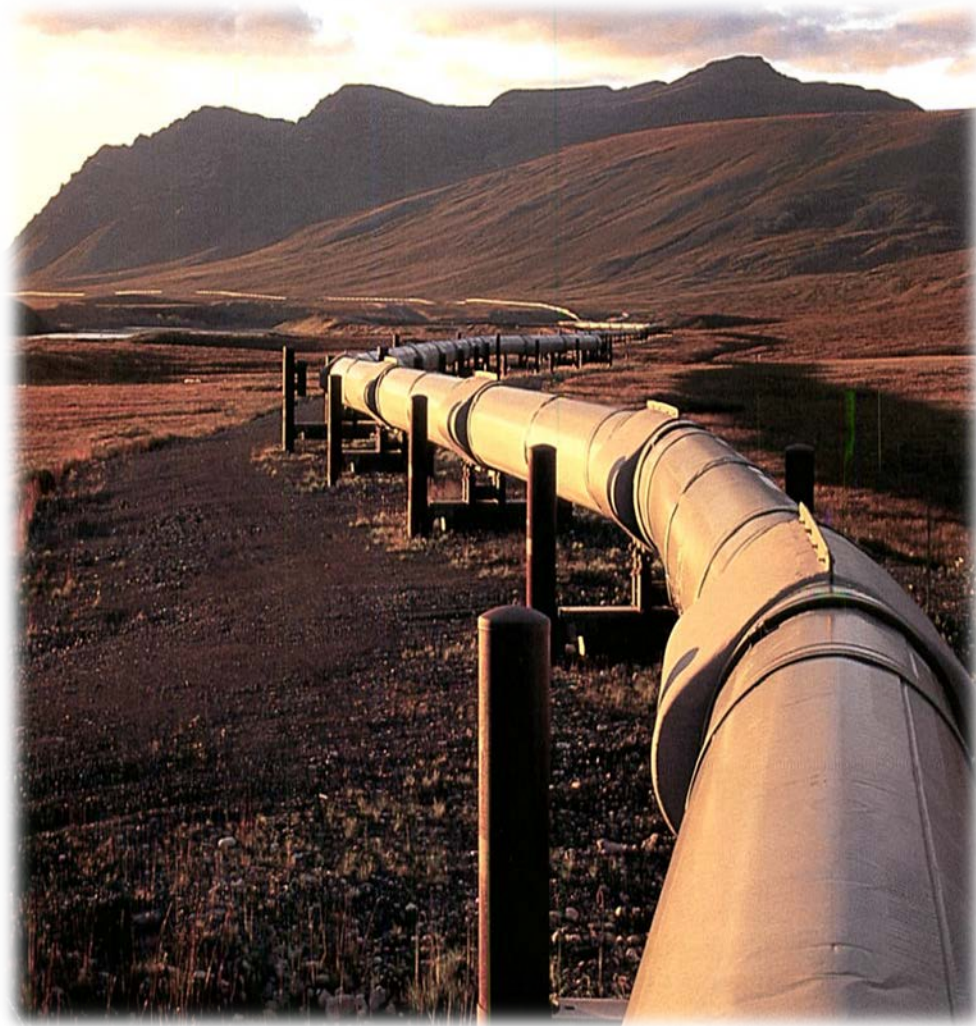
Recruitment,
 Retention:
 What Works
 and Why?
 Context matters

Sustaining
 Diversity

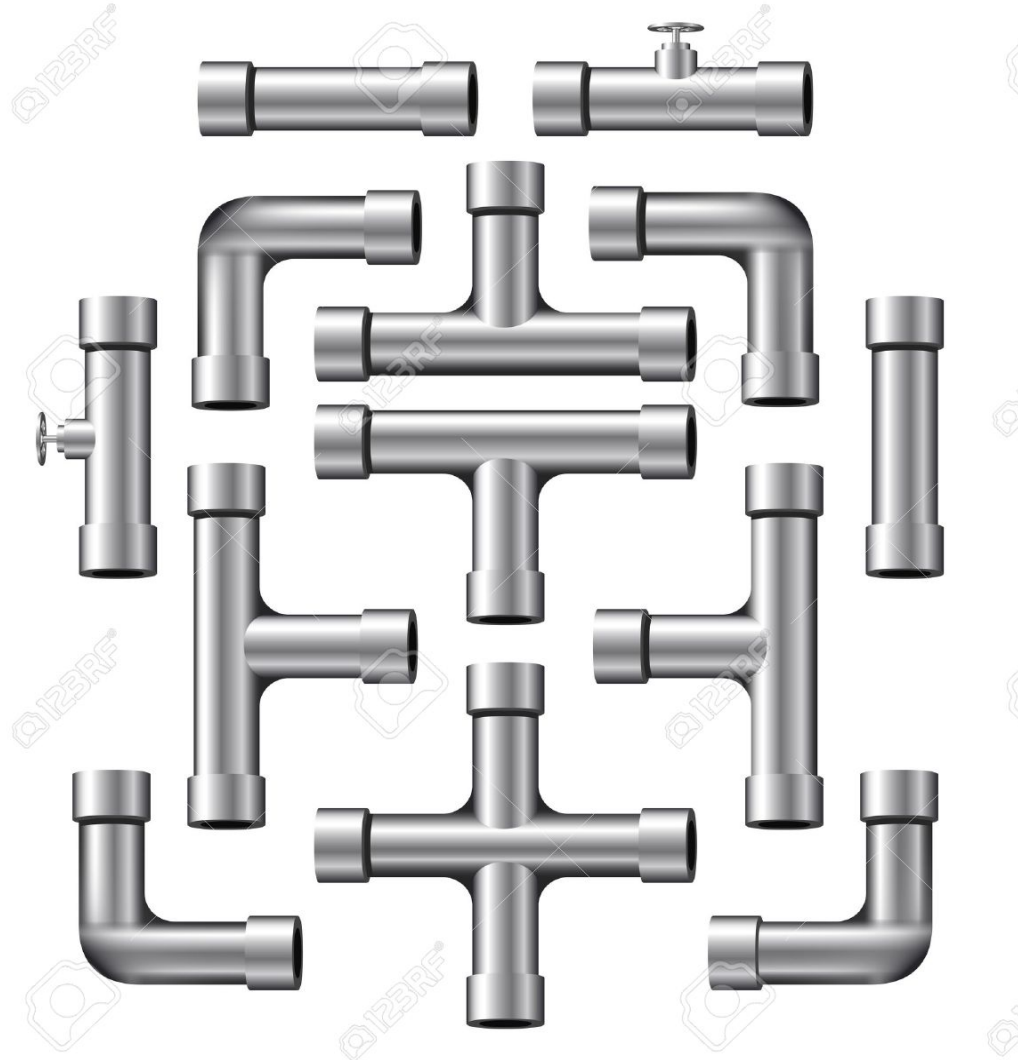
Addressing Racial Funding Disparities: New Data

- Ginther et al. (2011): AA/B applicants (FY2001-2006) less likely to be awarded R01 grant compared to WH applicants
 - Controlling for demographics; education and training; employer characteristics; NIH experience; research productivity
- AA/B Funding Disparity Working Group follow-up analysis with more recent data (FY2008-2014)
 - Multifactorial
 - Disparity at each stage in the process
 - Initial applications, re-submissions, review outcome (score), number of applications discussed, funded
 - Cumulative disparity
 - Applications from AA/B scientists funded at a significantly lower rate than applications from white (WH) scientists (11% vs. 18%)
 - AA/B scientists funded at half the rate as WH scientists, taking into account lower AA/B submission rates

Sustaining Diversity: Retiring the Pipeline Metaphor.....



Sustaining Diversity: Retiring the Pipeline Metaphor.....



Sustaining Diversity: Retiring the Pipeline Metaphor.....



... and thinking about a system

Underrepresentation is Not Just a Pipeline Issue



Gibbs KD et al. *Elife*. 2016 Nov 17;5.

- URG talent has grown 7-fold over past 20 years
- Academia is not tapping into the pool of URG scientists
- Filling the “pipeline” is necessary but not sufficient
- The math
 - AAMC institutions (about 150) hire ~1,000 assistant professors per year
 - 10% URG representation = 100 URG faculty

If 2/3 of AAMC institutions hired and retained **one** URG faculty member per year for 6 years, there would be parity in hiring assistant professor pool in one tenure cycle (5-6 years)

Great minds think
differently ...

@NIH_COSWD 



National Institutes of Health

Office of the Director

Scientific Workforce Diversity