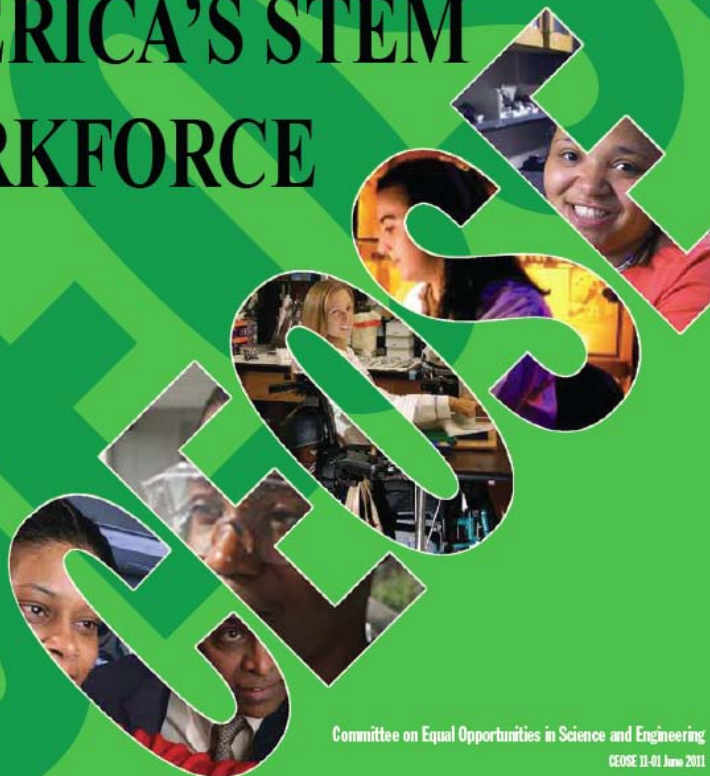


Committee on Equal Opportunity in Science and Engineering (CEOSE)

Keivan G. Stassun
Vanderbilt University

2009-2010 Biennial Report to Congress

BROADENING PARTICIPATION in AMERICA'S STEM WORKFORCE



Committee on Equal Opportunities in Science and Engineering
CEOSE 11-01 June 2011

MISSION

The Committee on Equal Opportunities in Science and Engineering (CEOSE) advises the National Science Foundation (NSF) on policies and programs to encourage full participation by women, underrepresented minorities, and persons with disabilities within all levels of America's science, technology, engineering, and mathematics (STEM) enterprise.

BACKGROUND

The Committee on Equal Opportunities in Science and Engineering was established by the United States Congress through the Science and Engineering Equal Opportunities Act of 1980 to address the problems of growth and diversity in America's STEM workforce. The legislation specifically provides that:

There is established within the National Science Foundation a Committee on Equal Opportunities in Science and Engineering (hereinafter referred to as the "Committee"). The Committee shall provide advice to the Foundation concerning (1) the implementation of the provisions of sections 1885 and 1885d of this title and (2) other policies and activities of the Foundation to encourage full participation of women, minorities, and persons with disabilities in scientific, engineering, and professional fields [42 U.S.C. §1885(c)].

Every two years, the Committee shall prepare and transmit to the Director (of the Foundation) a report on its activities during the previous two years and proposed activities for the next two years. The Director shall transmit to Congress the report, unaltered, together with such comments as the Director deems appropriate [42 U.S.C. §1885(e)].

CEOSE - Members List



Dr. Cecilia A. Conrad, CEOSE Chair

Vice President, MacArthur Fellows Program
MacArthur Foundation,
140 S. Dearborn Street
Chicago, IL 60603-5285

Term: 02/01/2010-01/31/2013; Chair Term: 06/01/2012 - Present

Vice Chair Term: 07/16/2011 - 05/31/2012

[Biography](#)



Dr. Alexander Ramirez, CEOSE Vice Chair

Former Executive Director of Information Technology Initiatives
HACU National Headquarters
San Antonio, TX 78229

Term: 02/01/2009-01/31/2012; 02/01/2012-01/31/2014

Vice Chair Term: 06/01/2012 - Present

[Biography](#)



Dr. Karl S. Booksh

Professor of Chemistry
Department of Chemistry
University of Delaware
210 South College Avenue
Newark, DE 19716

Term: 09/09/2011-09/08/2014

[Biography](#)



Dr. Gregory Cajete

Director of Native American Studies
University of New Mexico
Mesa Vista Hall Room 3080
MSC06 3740

1 University of New Mexico
Albuquerque, NM 87131

Term: 06/01/2012-05/31/2015

[Biography](#)



Dr. Evelyn Hammonds

Dean of Harvard College and
Barbara Gutmann Rosenkrantz Professor
of the History of Science and of African and African American Studies
Harvard University
University Hall 119, Harvard Yard
Cambridge, MA 02138

Term: 02/01/2009-01/31/2012; 02/01/2012 - 01/31/2015

[Biography](#)



Dr. Ira Harkavy

Associate Vice President
University of Pennsylvania
3451 Walnut Street,
Philadelphia, PA 19104

Term: 06/01/2012-05/31/2015

[Biography](#)



Dr. Charles Isbell

Professor and Associate Dean
Georgia Institute of Technology
North Avenue,
Atlanta, GA 30332

Term: 06/01/2012-05/31/2015

[Biography](#)



Dr. Robert J. Jones

President
University at Albany
University Hall 302
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Albany, NY 12222

Term: 06/01/2012-05/31/2015

[Biography](#)



Dr. George Middendorf

Graduate Professor
Department of Biology
Howard University
415 College Street
206 E. E. Just Hall
Washington, DC 20059

Term: 02/01/2010-01/31/2013

[Biography](#)



Dr. Maria (Mia) Ong

Principal Investigator
Education Research Collaborative
TERC
2067 Massachusetts Avenue
Cambridge, MA 02140

Term: 02/01/2008-01/31/2011; 02/01/2011-01/31/2014

[Biography](#)



Dr. Wendy Raymond

Professor, Biology
Associate Dean for Institutional Diversity
Williams College
226 Bronfman Science Center
Williamstown, MA 01267

Term: 02/01/2010-01/31/2013

[Biography](#)



Dr. Keivan Guadalupe Stassun

Professor of Physics and Astronomy
Vanderbilt University
Department of Physics & Astronomy
VU Station B 1807
Nashville, TN 37235

Term: 09/09/2011-09/08/2014

[Biography](#)



Dr. Joseph A. Whittaker

Dean and Professor
School of Computer, Mathematical & Natural Sciences
Morgan State University
1700 East Cold Spring Lane,
Baltimore, MD 21251

Term: 09/09/2011-09/08/2014

[Biography](#)

CEOSE recent activities

- Revised merit review language, especially regarding broadening participation, and incorporation into *Grant Proposal Guide* language.

d. Project Description (including Results from Prior NSF Support)

(i) Content

The Project Description should provide a clear statement of the work to be undertaken and must include: objectives for the period of the proposed work and expected significance; relation to longer-term goals of the PI's project; and relation to the present state of knowledge in the field, to work in progress by the PI under other support and to work in progress elsewhere.

The Project Description should outline the general plan of work, including the broad design of activities to be undertaken, and, where appropriate, provide a clear description of experimental methods and procedures. Proposers should address what they want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified. These issues apply to both the technical aspects of the proposal and the way in which the project may make broader contributions.

The Project Description must contain, as a separate section within the narrative, a discussion of the broader impacts of the proposed activities. Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to the project. NSF values the advancement of scientific knowledge and activities that contribute to the achievement of societally relevant outcomes. Such outcomes include, but are not limited to: full participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.

CEOSE recent activities

- Seeking examples of excellence in broadening participation activities, including demographics of leadership and participants, in major NSF centers and facilities.
 - MRSEC
 - MRI
 - ERC
 - STC
 - SLC
 - Upcoming: Major facilities, e.g. astronomical observatories, physics frontier centers, etc.

CEOSE recent activities

- Review of emerging *science of broadening participation*, including advancing science and innovation through inclusion.
 - Title IX enforcement in context of STEM education (e.g., *Do Babies Matter in Science?*, Mary Ann Mason)
 - Examples of national models for broadening participation at all levels, especially PhD (e.g., Bridge Programs with Minority Serving Institutions).
 - Impact of standardized test scores on diversity in PhD programs (e.g., NSF GRF program, admissions through NSF supported graduate programs)

CEOSE recent activities

Title IX enforcement in context of STEM education (e.g., *Do Babies Matter in Science?*, Mary Ann Mason)

I would invite Title IX investigators to talk directly to graduate students and postdocs in the sciences, mathematics, and engineering to find out what discrimination looks like.

You will find women like Jennifer Mitchell, a Ph.D. in neuroscience and a postdoc at the University of California at Berkeley. When Eve Mason Ekman (my daughter) and I interviewed Mitchell for our 2007 book, *Mothers on the Fast Track*, Mitchell told us, "I don't think I'll ever do a tenure-track job, and people were very upfront about that when I had my child."

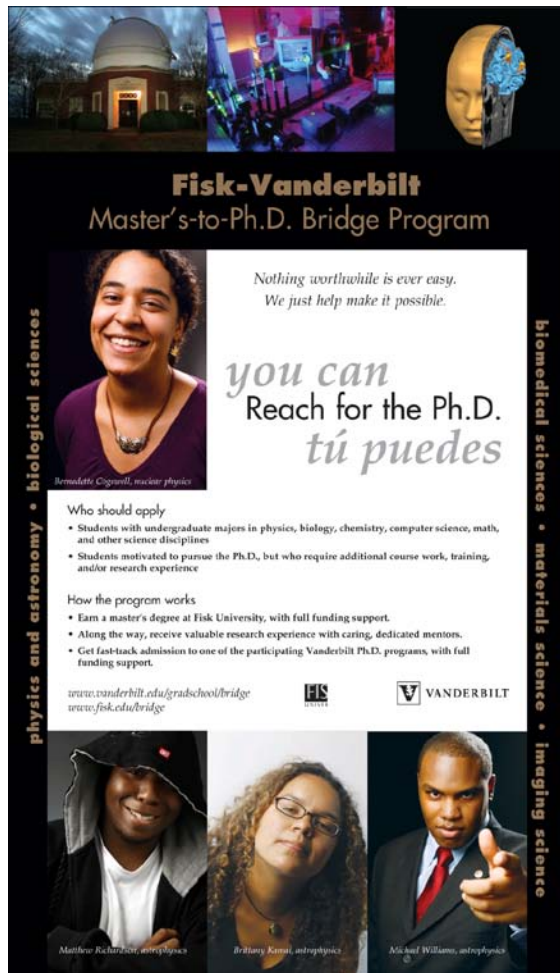
You'll also find women like Sherry M.J. Towers, a particle physicist and a postdoctoral fellow, who had a baby and was effectively blacklisted by her adviser (*The Chronicle*, November 11, 2005). When she was pregnant, she said, her adviser refused to write a letter of recommendation for her unless she returned to work almost immediately. She did return, and he still refused. She received no interviews for any of the positions to which she applied.

Discrimination against job candidates who are pregnant or have children is a very real part of gender discrimination. Some scientists may believe that women who have families cannot be serious scientists ~~because academic science demands exclusive attention to research~~. But they do not hold the same beliefs about male scientists with kids. In fact, research shows that male scientists are far more likely to have children than female scientists; two years after their Ph.D.'s, nearly 50 percent of men, but only 30 percent of women, had children.

Mason (2008, *Chronicle of Higher Education*)

CEOSE recent activities

Examples of national models for broadening participation at all levels, especially PhD (e.g., Bridge Programs with Minority Serving Institutions).



The poster features a collage of images at the top: a building, a laboratory, and a human head with a brain scan. The central text reads: "Fisk-Vanderbilt Master's-to-Ph.D. Bridge Program". Below this is a quote: "Nothing worthwhile is ever easy. We just help make it possible." and the phrase "you can Reach for the Ph.D. tú puedes". The poster lists "Who should apply" (students with undergraduate majors in physics, biology, chemistry, computer science, math, and other science disciplines; students motivated to pursue the Ph.D. but who require additional course work, training, and/or research experience) and "How the program works" (earn a master's degree at Fisk University with full funding support; receive valuable research experience with caring, dedicated mentors; get fast-track admission to one of the participating Vanderbilt Ph.D. programs with full funding support). It includes the website www.vanderbilt.edu/gradschool/bridge and www.fisk.edu/bridge, and logos for Fisk University and Vanderbilt University. At the bottom, three student portraits are shown: Remedette Cignoni (nuclear physics), Matthew Ralston (astrophysics), Brianny Kinnel (astrophysics), and Michael Williams (astrophysics). Vertical text on the sides reads "physics and astronomy • biological sciences" and "biomedical sciences • materials science • imaging science".

Fisk-Vanderbilt
Master's-to-Ph.D. Bridge Program

*Nothing worthwhile is ever easy.
We just help make it possible.*

you can
Reach for the Ph.D.
tú puedes

Remedette Cignoni, nuclear physics

Who should apply

- Students with undergraduate majors in physics, biology, chemistry, computer science, math, and other science disciplines
- Students motivated to pursue the Ph.D., but who require additional course work, training, and/or research experience

How the program works

- Earn a master's degree at Fisk University, with full funding support.
- Along the way, receive valuable research experience with caring, dedicated mentors.
- Get fast-track admission to one of the participating Vanderbilt Ph.D. programs, with full funding support.

www.vanderbilt.edu/gradschool/bridge
www.fisk.edu/bridge

FISK **VANDERBILT**

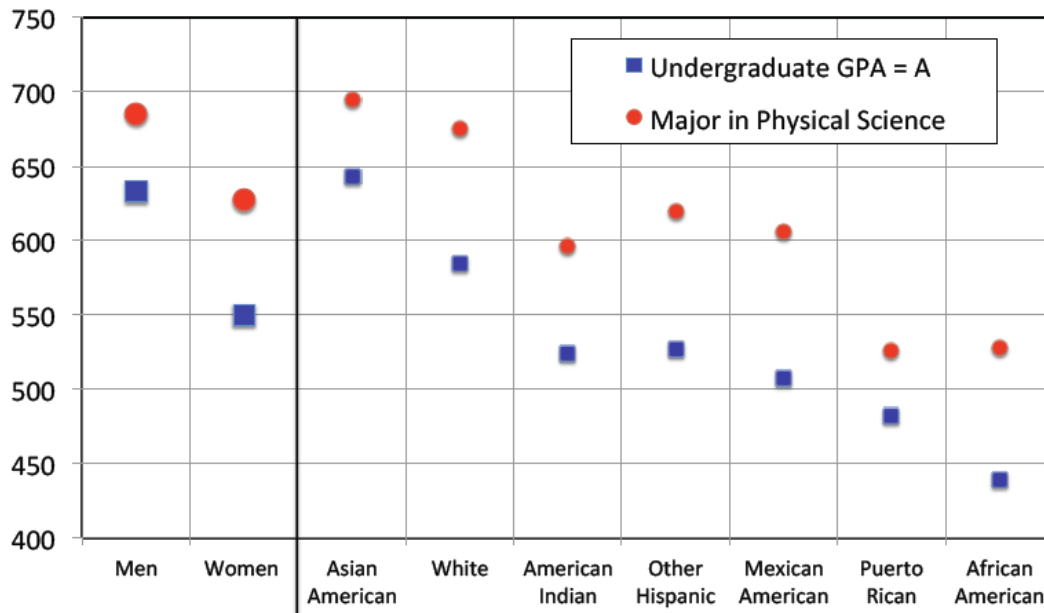
Matthew Ralston, astrophysics *Brianny Kinnel, astrophysics* *Michael Williams, astrophysics*

physics and astronomy • biological sciences
biomedical sciences • materials science • imaging science

- Minorities ~50% more likely to earn terminal Master's degree en route to PhD (Lange 2006; Stassun et al. 2011).
- Recognition of Master's degree transition now included in NSF solicitations for IGERT and other programs.
- Now being emulated by American Physics Society.

CEOSE recent activities

Impact of standardized test scores on diversity in PhD programs (e.g., NSF GRF program, admissions through NSF supported graduate programs)



GRE Quantitative scores for US Citizens

Source: ETS, "Factors that can influence performance on the GRE General Test 2006-2007"

- Use of cutoff scores in grad admissions significantly impacts diversity.

Miller (2013, APS News)