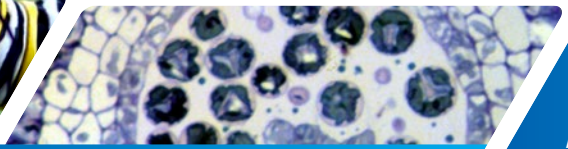


BROADENING PARTICIPATION

*How **YOU** can get involved to help train and engage a diverse (and growing) pool of individuals to move science forward*

BIOLOGICAL SCIENCES
DIRECTORATE

DIVISION OF BIOLOGICAL INFRASTRUCTURE ***(DBI)***
DIVISION OF ENVIRONMENTAL BIOLOGY ***(DEB)***
DIVISION OF INTEGRATIVE ORGANISMAL SYSTEMS ***(IOS)***
DIVISION OF MOLECULAR AND CELLULAR BIOSCIENCES ***(MCB)***

WHAT IS BROADENING PARTICIPATION?

Broadening participation is an element of **broader impacts**, which is part of the overall merit review process used at NSF. The goal is to discover and nurture talent wherever it may be found.

At NSF, this means reaching out to:

> **Individuals** from a wide range of underrepresented groups
>
> **Institutions** with diverse research and instructional goals and practices, including community colleges, minority serving institutions, women's colleges, institutions for people with disabilities
>
> **Geographic areas** with lower rates of participation in NSF programs.

Researchers seeking NSF funding may propose nonexclusive, nondiscriminatory strategies to broaden the participation of individuals who belong to underrepresented groups:

> Alaska Natives
> Native Americans
> Blacks or African Americans
> Hispanics
> Native Hawaiians
> Other Pacific Islanders
> Persons with Disabilities

Disabilities may be observable (e.g., physical) or unobservable (e.g., dyslexia).

Women remain underrepresented in some fields.

1 *Credit: Roger del Moral University of Washington*

WHY IS BROADENING PARTICIPATION IMPORTANT?

- **A** It promotes the future of the US STEM workforce in light of changing demographics
- **B** It encourages collaboration among diverse social groups that can foster innovation
- **C** It helps the US lead in science by giving all students and citizens the opportunity to participate regardless of their ethnicity, gender, or income

2 *Credit: Alexander Badyaev*
University of Arizona

3 *Credit: Tamara Frank*
Harbor Branch Oceanographic Institute

4 *Credit: Bruce Leventhal*
Forest Lake High School

5 *Credit: S. Blair Hedges*
Pennsylvania State University

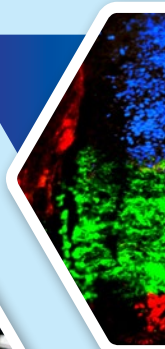
6 *Credit: Helene Muller-Landau*
University of Minnesota

IT'S A BIG CHALLENGE

Broadening participation has been a primary goal at NSF for many years and remains a difficult challenge (NSF 2008). In the Division of Environmental Biology, for example, a random sample of 280 awards revealed that broadening participation was by far the least often addressed type of broader impact (Watts et al. 2013).

NSF. 2008. Broadening Participation at the National Science Foundation: A Framework for Action.

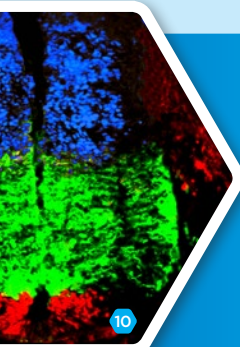
Watts, S.M., M.D. George, D.J. Levey. 2013. Broader impacts from an inside perspective. Frontiers in Ecology and the Environment 11:233-234.



7 *Credit: Clarisse Hart*

8 *Credit: Atlanta Center for Behavioral Neuroscience*

9 *Credit: Ronald L. Rutowski Arizona State University*



BROADENING PARTICIPATION PROGRAMS AT NSF

Opportunities to broaden participation exist in many aspects of your research, consider:

RAHSS
Research Assistantships for High School Students

RET
Research Experiences for Teachers

REU
Research Experiences for Undergraduates

- *There is an advantage in identifying an underrepresented student in REU requests.*
- *Some special REU supplements exist. Example:* www.nsf.gov/bio/deb/dimensions_supplements.pdf

Resources for biology undergraduate students and postdoctoral researchers include:

UNDERGRADUATE
Encourage undergraduate biology students to apply directly to REU Sites. See searchable list at: www.nsf.gov/crssprgm/reu

POSTDOCTORAL
Encourage postdoctoral scholars to apply for the Broadening Participation area in the Postdoctoral Research Fellowships in Biology. Information at: www.nsf.gov/funding/pgm_summ.jsp?pims_id=503622

NSF BROADENING PARTICIPATION PORTFOLIO

www.nsf.gov/od/broadeningparticipation/bp_portfolio_dynamic.jsp

The NSF Broadening Participation portfolio also includes capacity building, centers, partnerships, and alliances, as well as research. Some examples include:

Tribal Colleges and Universities Program

Alliances for Graduate Education and the Professoriate

Louis Stokes Alliances for Minority Participation

Centers of Research Excellence in Science and Technology

ADVANCE

Science of Broadening Participation

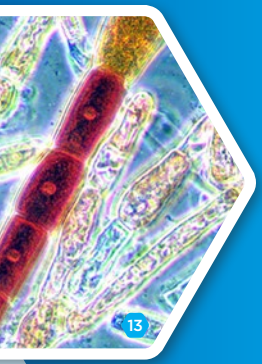
10 *Credit: Qiubo Lei and Michael P. Matisse UMDNJ/RWJMS*

TIPS TO HELP YOU GET STARTED

- **A** Seek existing expertise and infrastructure to plan, carry out, and assess your activities
- **B** Mentoring is a key source of academic and social support. Enhance your skills mentoring diverse groups from programs like "Entering Mentoring" www.researchmentortraining.org
- **C** Set goals and network with colleagues
- **D** Engage through public schools (teachers, science fairs, summer programs)
- **E** Work with your university's offices for outreach, disabilities, or assessment
- **F** Partner with regional institutions, community colleges, museums, or field stations
- **G** Partner with minority serving institutions, community colleges, women's colleges, or institutions for people with disabilities
- **H** Connect with professional societies that have programs to promote and support diversity
- **I** Use resources available through many national organizations, only a few are listed here

11 *Credit: Kate Lajtha Oregon State University*

12 *Credit: David Wessner*



SOME RESOURCES TO GO FURTHER

NSF-funded Centers have broadening participation in their mission; resources may be found at their respective websites:
go.usa.gov/XE4B
www.nsf.gov/od/iia/programs/stc

Society for Advancing Chicano and Native American Scientists (SACNAS)
www.sacnas.org

AISES, American Indian Science and Engineering Society
www.aises.org

Institute for Broadening Participation, partner-ships to increase diversity in STEM workforce
www.pathwaystoscience.org

Understanding Interventions that Broaden Participation in Research Careers
understanding-interventions.org

Minority Scientist Network, a virtual community for minority students
www.miscinet.org

BIONIC, Broader Impacts and Outreach Network for Institutional Collaboration, a new Research Coordination Network
broaderimpacts.net

CAISE, online community and collection of learning, evaluation, and research resources
www.informalscience.org

Beyond Rigor, Improving Evaluations with Diverse Populations
www.beyondrigor.org

Classroom Undergraduate Research Experiences assessment tool
www.aacu.org/resources/assessment/STEMAssessments.cfm

Views expressed on web sites listed here are not necessarily those of NSF

13 *Credit: Mike Peglar Provided courtesy of micro*scope*

14 *Credit: Dennis Ward Project Budburst National Ecological Observatory Network*

15 *Credit: David Karnosky Michigan Technological University*

CHECK THE DEB AND IOS BLOGS FOR NEWS

nsfdeb.wordpress.com
nsfiosinfocus.wordpress.com

NSF 14-85

Keep up-to-date on programs and funding opportunities that help train and engage a diverse pool of individuals to move science forward

For details and deadlines, see:

NSF BROADENING PARTICIPATION PROGRAMS
www.nsf.gov/od/broadeningparticipation/bp.jsp

DIRECTORATE FOR BIOLOGICAL SCIENCES
www.nsf.gov/dir/index.jsp?org=BIO

NATIONAL SCIENCE FOUNDATION
4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230
NSF.ORG

FRONT COVER CREDIT

1. *Kailen Mooney*
   University of California, Irvine
2. *Center for Limnology*
   University of Wisconsin, Madison
3. *Karen Renzaglia*
   Southern Illinois University, Carbondale
4. *Karen M. Warkentin*
   Boston University
5. *Katsuhiko Kondo*
   Bruce McClure
   University of Missouri, Columbia
6. *Todd Paris*
   University of Alaska Fairbanks
7. *D. Levey*
8. *Steve Raciti*