

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)





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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.



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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



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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.

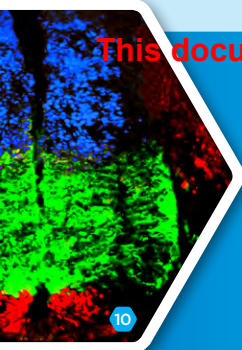
Watts, S.M., M.D. George, D.J. Levey. 2013. Broader impacts from an inside perspective. Frontiers in Ecology and the Environment 11:233-234.



7 Credit: Clarisse Hart

8 Credit: Atlanta Center for Behavioral Neuroscience
9 Credit: Ronald L. Rutowski Arizona State University

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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



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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

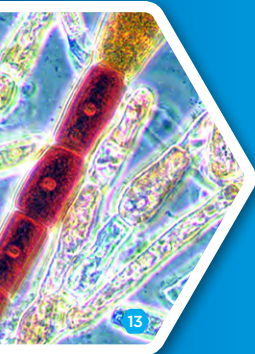


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¹¹ Credit: Kate Lajtha
Oregon State University

¹² Credit: David Wessner

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SOME RESOURCES TO GO FURTHER

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

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

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BLOGS

For updates, visit the Directorate for Biological Sciences blogs:

IOS INFOCUS

nsfiosinfocus.wordpress.com

DEBRIEF

nsfdeb.wordpress.com

MCB BLOG

nsfmcb.wordpress.com

BIO BUZZ

Blog of the Office of the Assistant Director

nsfbiobuzz.wordpress.com

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/bio

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