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## Interdisciplinary Approaches to Climate Change Research and Training: Possible Funding Opportunities

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# Interdisciplinary Approaches to Climate Change Research and Training Possible Funding Opportunities

## **NSF Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics (TUES)**

The Transforming Undergraduate Education in Science, Technology, Engineering, and Mathematics (TUES) program seeks to improve the quality of science, technology, engineering, and mathematics (STEM) education for all undergraduate students. This solicitation especially encourages projects that have the potential to transform undergraduate STEM education, for example, by bringing about widespread adoption of classroom practices that embody understanding of how students learn most effectively. Thus transferability and dissemination are critical aspects for projects developing instructional materials and methods and should be considered throughout the project's lifetime. More advanced projects should involve efforts to facilitate adaptation at other sites.

The program supports efforts to create, adapt, and disseminate new learning materials and teaching strategies to reflect advances both in STEM disciplines and in what is known about teaching and learning. It funds projects that develop faculty expertise, implement educational innovations, assess learning and evaluate innovations, prepare K-12 teachers, or conduct research on STEM teaching and learning. It also supports projects that further the work of the program itself, for example, synthesis and dissemination of findings across the program. The program supports projects representing different stages of development, ranging from small, exploratory investigations to large, comprehensive projects.

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=5741](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5741)

## **Dept. of Education Graduate Assistance in Areas of National Need (GAANN)**

### PROGRAM DESCRIPTION

This program provides fellowships, through academic departments and programs of IHEs, to assist graduate students with excellent records who demonstrate financial need and plan to pursue the highest degree available in their course study at the institution in a field designated as an area of national need.

### TYPES OF PROJECTS

Grants are awarded to programs and institutions to sustain and enhance the capacity for teaching and research in areas of national need.

<http://www2.ed.gov/programs/gaann/index.html>

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## **NSF Discovery Research K-12 (DRK-12)**

The Discovery Research K-12 program (DRK-12) seeks to significantly enhance the learning and teaching of Science, Technology, Engineering and Mathematics (STEM) by preK-12 students, teachers, administrators and parents. All DRK-12 projects should be framed around a research question or hypothesis that addresses an important need or topic in preK-12 STEM education. The emphasis in DRK-12 is on research projects that study the development, testing, deployment, effectiveness, and/or scale-up of innovative resources, models and tools. DRK-12 invites proposals that address immediate challenges that are facing preK-12 STEM education as well as those that anticipate a radically different structure and function of pre-K 12 teaching and learning. DRK-12 especially encourages proposals that challenge existing assumptions about learning and teaching within or across STEM fields, envision the future needs of learners, and consider new and innovative ways to support student and teacher learning. DRK-12 is particularly interested in projects that hold promise for identifying and developing the next generation of STEM innovators (NSB, 2010). There are four strands described in detail in the solicitation: 1) Assessment; 2) Learning; 3) Teaching; 4) Scale-up.

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=500047](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=500047)

## **Packard Foundation – Conservation and Science**

The Conservation and Science Program invests in action and ideas that conserve and restore ecosystems while enhancing human well-being. We support public policy reforms, changes in private sector practices, and scientific activities to develop essential knowledge and tools for addressing current and future priorities. Our grantmaking supports actions and ideas that: Harness market forces to drive changes in the management of the world's fisheries. Pioneer new approaches to the conservation of coastal ecosystems in California, the Gulf of California, and the Western Pacific Ocean. Reverse the decline of marine bird populations. Enable the creative pursuit of scientific research. Reduce the greenhouse gas emissions that cause climate change. Improve the environmental performance of agriculture and biofuels production. Protect and restore biologically important and iconic regions of western North America.

<http://www.packard.org/>

## **Gates Foundation – College-Ready Education, Early Learning, Post-secondary Education, Empowering Communities**

<http://www.gatesfoundation.org/Pages/home.aspx>

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## **Dow Foundation**

1. Education - The Foundation is always interested in improving the quality of education at Michigan's academic institutions, particularly in those specific areas where a given institution already is establishing preeminence.
2. Science - Since the community of Midland and the base of the Foundation's assets have been products of scientific achievement, the trustees seek to encourage projects that include advanced research and new applications of science and/or technology. The Foundation is currently involved with the Saginaw Bay Watershed Initiative which is aimed at environmental improvement that is consistent with community growth.
3. Arts and Culture - The Dow Gardens, the Midland Center for the Arts, and the Alden B. Dow Museum of Science and Art are programs and projects that the Foundation champions and supports. Art-related activities that explore or promote the interrelation of science and art are encouraged. The trustees particularly enjoy supporting tasteful, creative, and innovative programs that expand the general public's art and cultural horizons.
4. Community Life – Midland and Michigan - To improve the quality of life for Midland and Michigan residents continues to be a major goal of the Foundation. The Trustees support programs and projects that add an important dimension to community life, such as the Grace A. Dow Memorial Library, the Greater Midland Community Centers, Inc., the West Midland Family Center, and the 99 Midland County churches. The Foundation affirms the importance of local initiatives, particularly private initiatives, which encourage economic development and promote job creation.

Program Notes - Both in Midland and in Michigan, the trustees look for opportunities where a grant of seed money or a matching grant will stimulate broad public participation in an artistic, recreational, educational or cultural project so that the project can become self-sustaining. Projects that benefit youngsters or senior citizens are of special interest. If a program needs launching or requires changes, the Foundation may help. Requests for general support money for ongoing programs are more properly directed to other organizations of broad public benefit.

<http://www.hhdowfdn.org/>

## **NIH Science Education Partnership Award (SEPA)**

The Science Education Partnership Award (SEPA) Program funds innovative K-12 STEM and Informal Science Education (ISE) educational projects. SEPA projects create partnerships among biomedical and clinical researchers and K-12 teachers and schools, museums and science centers, media experts, and other educational organizations. SEPA K-12 resources target state and national K-12 standards for STEM teaching and learning and are rigorously evaluated for effectiveness. SEPA is sponsored by the National Institutes of Health (NIH).

<http://www.nihsepa.org/>

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## **NIH-National Institute of Allergy and Infectious Diseases (NIAID) Science Education Award (R25)**

This funding opportunity announcement (FOA) solicits applications from applicant organizations that propose creative and innovative research education programs that will 1) increase the public's understanding of biomedical research, or 2) encourage K-12 students to enter areas in biomedical science in the mission area(s) of the National Institute of Allergy and Infectious Diseases (NIAID). The NIH Research Education (R25) grant mechanism is a flexible and specialized mechanism designed to foster the development of biomedical, behavioral, and clinical researchers through creative and innovative research education programs.

The overall goal(s) of the NIAID's research education programs are (1) to ensure that highly trained scientists will be available in adequate numbers and in appropriate scientific areas to address the Nation's biomedical, behavioral, and clinical research needs in the NIAID mission areas and (2) to provide

public education and outreach on NIH-funded research to a variety of audiences. NIAID accepts R25 applications that provide training and curriculum development for K-12 teachers and students using innovative approaches and broad outreach at a national level. The applicant organization should determine the nature of the program, state the specific goals for the program, and define specific measurable objectives. The NIH encourages all proposed programs to foster the participation of individuals from racial and ethnic groups underrepresented in biomedical and behavioral research, individuals from disadvantaged backgrounds, individuals with disabilities, and women.

<http://grants.nih.gov/grants/guide/pa-files/PAR-08-003.html>

## **NSF Partnerships for International Research and Education (PIRE)**

Partnerships for International Research and Education (PIRE) is an NSF-wide program that supports international activities across all NSF supported disciplines. The primary goal of PIRE is to support high quality projects in which advances in research and education could not occur without international collaboration. PIRE seeks to catalyze a higher level of international engagement in the U.S. science and engineering community.

International partnerships are essential to addressing critical science and engineering problems. In the global context, U.S. researchers and educators must be able to operate effectively in teams with partners from different nations and cultural backgrounds. PIRE promotes excellence in science and engineering through international collaboration and facilitates development of a diverse, globally-engaged, U.S. science and engineering workforce.

This PIRE competition will focus exclusively on the NSF-wide investment area of Science, Engineering, and Education for Sustainability (SEES). The SEES effort focuses on interdisciplinary topics that will advance sustainability science, engineering and education as an integrative approach to the challenges of adapting to environmental, social and cultural changes associated with growth and development of human populations, and attaining a sustainable energy future. Additional details are provided in the Summary of Program Requirements below.

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=12819](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=12819)

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## **NSF International Research Experiences for Students (IRES)**

The International Research Experiences for Students (IRES) program supports development of globally-engaged U.S. science and engineering students capable of performing in an international research environment at the forefront of science and engineering. The IRES program supports active research participation by students enrolled as undergraduates or graduate students in any of the areas of research funded by the National Science Foundation. IRES projects involve students in meaningful ways in ongoing research programs or in research projects specifically designed for the IRES program.

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=12831](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=12831)

## **NSF Catalyzing New International Collaborations**

The Catalyzing New International Collaborations program supports the participation of U.S. researchers and students in activities intended to catalyze new international collaborations. This program provides educational opportunities for Undergraduate Students, Graduate Students, Postdoctoral Fellows. This program provides indirect funding for students. To inquire about possible funding opportunities from grantees, please look at the active awards for this program.

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=12815](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=12815)

## **NSF Partnerships for Enhanced Engagement in Research (PEER) Science**

The Partnerships for Enhanced Engagement in Research (PEER) Science program was established under a Memorandum of Understanding (MOU) between NSF and the United States Agency for International Development (USAID). PEER Science is a USAID-funded competitive grants program that provides an opportunity to support scientists in developing countries who work with NSF-funded scientists at U.S. institutions. PEER Science is intended to build scientific capacity and empower researchers in developing countries to use science and technology to address local and global development challenges. PEER Science funding may be used to train students and faculty, equip laboratories and field stations, and fund research, building scientific networks to address global challenges.

PEER Science proposals will be accepted from researchers in eligible developing countries. Developing country PIs who apply should either be actively engaged in or plan to be engaged in a collaborative research project with an NSF-funded U.S. researcher. Proposals are not accepted from U.S. researchers.

Areas in which both NSF and USAID have strong mutual interests include, but are not limited to, the following: Food security topics such as agricultural development, fisheries, and plant genomics. Global health issues such as ecology of infectious disease, biomedical engineering, and natural/human system interactions

Climate change impacts such as water sustainability, hydrology, ocean acidification, climate process and modeling, and environmental engineering. Other development topics including disaster mitigation, biodiversity, water, and renewable energy

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=504726](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504726)

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## **NSF Directorate for Social, Behavioral and Economic Sciences**

Interdisciplinary Research Across the SBE Sciences, Including a New Interdisciplinary Behavioral and Social Sciences (IBSS) Competition. Based on feedback gathered during the SBE 2020 visioning process and presented in Rebuilding the Mosaic, the Directorate for Social, Behavioral & Economic Sciences (SBE) encourages investigators to submit proposals that go beyond the boundaries of traditional disciplines, span across the existing core SBE programs, or extend outside the SBE sciences. A new Dear Colleague Letter outlines a range of options for pursuing support for interdisciplinary research that bridges the social, behavioral, and economic (SBE) sciences. Among these options is a new competition for Interdisciplinary Behavioral and Social Sciences Research (IBSS). Consult the IBSS website and the IBSS solicitation for more information.

<http://www.nsf.gov/div/index.jsp?div=SES>

## **NSF Integrative Graduate Education and Research Traineeship Program (IGERT)**

The Integrative Graduate Education and Research Traineeship (IGERT) program has been developed to meet the challenges of educating U.S. Ph.D. scientists and engineers with interdisciplinary backgrounds, deep knowledge in chosen disciplines, and technical, professional, and personal skills. The program is intended to establish new models for graduate education and training in a fertile environment for collaborative research that transcends traditional disciplinary boundaries. It is also intended to facilitate diversity in student participation and preparation, and to contribute to a world-class, broadly inclusive, and globally engaged science and engineering workforce.

Building upon the IGERT platform, the purpose of this IGERT solicitation is to support new models in graduate education in which students are engaged in an environment that supports innovation to learn through hands-on experience how their own research may contribute in new ways to benefit society and to learn the processes for the successful implementation of such contributions.

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=12759](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=12759)

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## **NSF Advancing Informal STEM Learning (AISL)**

The Advancing Informal STEM Learning program invests in research and development of innovative and field-advancing out-of-school STEM learning and emerging STEM learning environments.

The name of the program has changed from Informal Science Education (ISE) to Advancing Informal STEM Learning (AISL). AISL better emphasizes the priorities of the solicitation and the changes at NSF:

- a. Advancing - This emphasizes that AISL seeks innovative projects that advance the field and that requests need to go beyond just proposing a new exhibit, program or film.
- b. Informal - This continues to emphasize that the program is interested in out-of-school learning that makes learning Lifelong, Life Wide (occurring across multiple venues) and Life Deep (occurring at different levels of complexity).
- c. STEM - This recognizes that the program is not just focused on science, but all of STEM.
- d. Learning - This term is more appropriate than "education" based on what we know on how people learn. Also, "learning" is more connected with what people do for themselves, compared to "education" which is perceived as something that is done to them.

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=504793](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504793)

## **EPA Environmental Education (EE) Grants**

The purpose of the Environmental Education Grants Program is to provide money to support environmental education projects that increase the public's awareness about environmental issues and provide them with the skills to take responsible actions to protect the environment.

This grant program funds environmental education (EE) projects. Environmental information and outreach may be important elements of EE projects, but these activities by themselves are not environmental education. By itself, environmental information only addresses awareness and knowledge, usually about a particular environmental issue. Outreach involves information dissemination and requests or suggestions for action on a particular issue (often without the critical thinking, problem solving and decision making steps in between). EE covers the range of steps and activities from awareness to action with an ultimate goal of environmental stewardship.

<http://www.epa.gov/education/grants/index.html>