



NATIONAL SCIENCE FOUNDATION  
2415 EISENHOWER AVENUE  
ALEXANDRIA, VIRGINIA 22314

**NSF 20-058**

## Dear Colleague Letter: Geoscience Opportunities for Leadership in Diversity - Expanding the Network (GOLD-EN)

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March 17, 2020

Dear Colleagues:

The geosciences continue to lag behind other STEM fields in creating a diverse community of researchers, scholars, and practitioners. Yet, diversity is a vital priority for the geosciences community because it promotes innovation, strengthens the community's ability to tackle complex geoscience research problems, and engenders widespread public Earth and environmental science literacy (<sup>1</sup>Russell, et al., 2007; <sup>2</sup>National Research Council, 2011; <sup>3</sup>National Research Council, 2012; <sup>4</sup>Thiry, et al., 2012; <sup>5</sup>Atchison, et al., 2015). Prior diversity and inclusion research investments focused on recruitment of underrepresented individuals, but not on the overall issues related to retention (<sup>6</sup>Starks and Mattheaus, 2018). <sup>7</sup>Bernard and Cooperdock (2018) looked at the number of graduating geoscience PhDs from racial and ethnic groups historically excluded and underrepresented in the geosciences, and consistent with the publication title, found that there has been "no progress on diversity" in four decades. Sense of belonging, cultural barriers and other elements require appropriate attention when socializing individuals into STEM culture.

Strategies employed to improve the number of women in the geosciences have not been successful in "moving the needle" for the recruitment and retention of geoscientists from historically excluded and underrepresented groups like people of color and those with disabilities. This suggests that there is no "one size fits all" set of strategies. Because there are several major factors that lead to underrepresentation in the geosciences, there must be multiple corrective approaches (<sup>8</sup>O'Connell and Holmes 2011; <sup>6</sup>Starks and Mattheaus 2018). Specific strategies need to be identified to attract and retain students, researchers, and faculty from these groups (<sup>9</sup>Hurtado et al., 2010; <sup>2</sup> National Research Council, 2011; <sup>10</sup>Chang et al., 2014; <sup>7</sup>Bernard and Cooperdock, 2018; <sup>6</sup>Starks and Mattheaus, 2018; <sup>11</sup>National Academies of Sciences, Engineering, and Medicine, 2019) so they can operate with a strong sense of belonging in their respective areas of learning, training and research.

In 2016, NSF launched the GOLD Program ([Geoscience Opportunities for Leadership in Diversity](#)) with the mission to achieve greater and more systemic diversity by creating a network of diversity and inclusion "champions" who can generate greater implementation of evidence-based best practices and resources. While geoscience community members generally agree upon the importance and ideals of broadening participation, most do not have the skills and competencies that allow them to be effective leaders in diversity. Through professional development opportunities, current GOLD projects research and develop the complex interplay of environmental context, personal traits, and motivating factors that must be considered in making such professional development efforts in diversity successful.

Each of the GOLD [pilot projects](#) has created unique mechanisms that promote environments which value a diverse group of leaders who foster a greater sense of inclusion and belonging. The specific characteristics of each of these innovative projects is the result of the [Ideas Lab model](#) which allowed each of the teams the flexibility to creatively access the resources necessary to develop their unique approaches. These projects are transforming attitudes and behaviors of researchers and workshop participants and influencing their programs. Furthermore, there is a high level of interest by the community as demonstrated by the large number of participant applications for GOLD workshops. Such workshops are typically identified as conferences in the NSF Proposal & Award Policies & Procedures Guide (PAPPG), and will hereafter be referred to as conferences. The capacity limit for GOLD conferences offered during 2017 and 2018 was quickly reached and many who were interested had to be turned away (<sup>12</sup>Posselt et al., 2019).

To expand the reach of current GOLD efforts, bring to scale related diversity activities in the geosciences, or develop unique approaches for greater inclusion in the geoscience education and research community, NSF welcomes submission of supplemental funding requests and the following types of proposals:

1. **Supplemental Funding Requests:** While each of the currently funded GOLD projects rely on the expertise of divergent thinkers from multiple cooperating organizations, these projects are primarily acting independent of each other. The existing network of GOLD projects could operate more collaboratively to sustain or enhance current efforts, develop new lines of inquiry and evaluation, or seek creative ways to implement methodologies that were generated from the initial conferences.

The total amount of supplemental funding requested must not exceed \$100,000.

NSF welcomes supplemental funding requests from GOLD projects that will:

- a. Create opportunities among and between currently funded GOLD projects to build collaborative infrastructures for system change.
- b. Provide opportunities to scale the identified leadership qualities in the pilot

projects.

- c. Broaden participation in GOLD projects by creating novel dissemination platforms/activities that will increase access and usability by others.
- d. Create common post-participation survey tools for all participants of GOLD projects that would help attend to activity goals.

NSF also welcomes supplement requests from current <sup>13</sup>INCLUDES projects that aim to use the supplement to collaborate with GOLD projects and expand on knowledge learned from GOLD.

2. **Conference Proposals:** Convenings that invite new project ideas for broadening participation in the geosciences with a strong emphasis on the role of the social and behavioral sciences are encouraged.

Conference proposals will be funded for up to 12 months and up to \$100,000 maximum.

NSF welcomes conference proposals from GOLD projects, GOLD conference and Ideas Lab participants and the broader scientific community that will:

- a. Support original GOLD professional development participants in implementing learned conference elements at their home institutions, departments or programs.
  - b. Disseminate information on lessons learned from current GOLD projects and the NSF INCLUDES National Network to the geoscience community, and encourage new opportunities for collaboration across other [NSF Broadening Participation Programs](#).
  - c. Create new or leverage existing GOLD collaborations to discuss the development of relevant collaborative infrastructure elements – all with an eye towards supporting the goals of collective impact.
  - d. Provide a forum for increased input of social science expertise to address issues related to diversity, equity and inclusion in the geosciences. Including engagement with social scientists either currently involved in GOLD or who bring additional unique expertise on the science of broadening participation.
3. **Early-Concept Grants for Exploratory Research (EAGER) Proposals:** The Program is interested in supporting novel and innovative approaches for greater inclusion in the geoscience education and research community. EAGER projects should be "high-risk/high-reward" projects, and thus should either be piloting high-risk efforts, involve radically new techniques and/or methods, apply new expertise, or engage novel disciplinary, interdisciplinary or convergent perspectives.

EAGER proposals will be funded for up to 24 months and up to \$300,000 maximum.

NSF welcomes EAGER proposals from GOLD projects, GOLD workshop and Ideas Lab participants and the broader scientific community that will propose new efforts with the

following questions in mind:

- a. How can potential leaders for diversity be identified, recruited and supported
  - b. How can the leadership qualities necessary to be a "champion for diversity" be developed, nurtured and empowered within a diverse community of potential leaders?
  - c. What curriculum is needed for a professional development program that can prepare a network of successful diversity leaders?
  - d. What are the requirements for taking model professional development programs to scale?
  - e. What barriers exist within academia and/or the geosciences that prevent the development of diversity champions?
  - f. What strategies could be employed to create and sustain cohorts of diversity leaders to maximize collective impact?
4. **Research Coordination Networks (RCNs):** RCNs should advance a field or create new directions in research or education by supporting groups of investigators to communicate and coordinate their research, training and educational activities across disciplinary, organizational, geographic and international boundaries. For the purposes of this DCL, NSF welcomes RCN proposals from GOLD projects, GOLD conference and Ideas Lab participants and the broader scientific community that will: foster new collaborations that would focus on practices related to the valuation of diversity leaders and their activities in institutional promotion systems.

RCN awards are not meant to support existing networks; nor are they meant to support the activities of established collaborations.

RCN proposals will be funded for up to 48 months and up to \$400,000 maximum.

RCN proposals should be prepared and submitted in accordance with the guidance in the [RCN solicitation](#), including the seven guidance items outlined in Section II. Program Description.

## PREPARATION AND SUBMISSION OF PROPOSALS/SUPPLEMENTAL FUNDING REQUESTS

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*Funding requests must be received by 5 p.m., submitter's local time on June 26, 2020.*

Eligible Principal Investigators are strongly encouraged to contact the cognizant NSF Program Directors listed below by June 12, 2020 to discuss their requests for support prior to submitting to NSF.

Funding requests should be prepared and submitted in accordance with the guidance in the [NSF PAPPG](#) or the relevant program solicitation. See below for specific guidance:

- Supplemental Support: PAPPG Chapter VI.E.4
- Conference Proposals: PAPPG Chapter II.E.7
  - EAGER Proposals: PAPPG Chapter II.E.2
  - RCN Proposals: [NSF 17-594](#)

## REVIEW INFORMATION

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Requests for supplemental funding and conference and EAGER proposals will be subject to internal NSF review. RCN proposals will be subject to NSF's merit review process, as described in the RCN solicitation. All funding requests are subject to the availability of funds and the quality of the requests received as determined by review.

Competitive proposals/supplemental funding requests will explicitly describe and demonstrate their alignment and/or connections to the mission and goals of NSF's GOLD Program. Failure to sufficiently demonstrate relevancy to NSF's GOLD Program will result in the proposal/supplemental funding request being declined.

## COGNIZANT NSF PROGRAM DIRECTORS

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Sincerely,

William E. Easterling  
Assistant Director for Geosciences

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## REFERENCES

<sup>1</sup>Russell, S.H., M.P. Hancock, and J. McCullough (2007) Benefits of undergraduate research experiences, *Science*, 316, 548-549.

<sup>2</sup>National Research Council (2011) *Expanding Underrepresented Minority Participation: America's Science and Technology Talent at the Crossroads*. Washington, DC: National Academies Press, [https://www.nap.edu/catalog.php?record\\_id=12984](https://www.nap.edu/catalog.php?record_id=12984).

<sup>3</sup>National Research Council (2012) Discipline-based Education Research: Understanding and Improving Learning in Undergraduate Science and Engineering. Washington, DC: National Academies Press, [https://www.nap.edu/catalog.php?record\\_id=13362](https://www.nap.edu/catalog.php?record_id=13362).

<sup>4</sup>Thiry, H., T.J. Weston, S.L. Laursen, and A.B. Hunter (2012) The benefits of multi-year research experiences: Differences in novice and experienced students' reported gains from undergraduate research, CBE Life Sciences Education, 11 (Fall), 260-272.

<sup>5</sup>Atchison, C.L. and B.H. Gilley (2015) Geology for everyone: making the field accessible, Earth Magazine, <https://www.earthmagazine.org/article/geology-everyone-making-field-accessible>.

<sup>6</sup>Starks, B.C. and Matthaeus, W.H (2018) STEM Recruitment and Beyond: The Messenger is the Medium, Journal of STEM Education, volume 19 (4), 27-33.

<sup>7</sup>Bernard, Rachel E.; Cooperdock, Emily H. G. (2018) No progress on diversity in 40 years. Nature Geoscience, V.11, No. 5, p.292-295. <https://doi.org/10.1038/s41561-018-0116-6>.

<sup>8</sup>O'Connell, Suzanne; Holmes, Anne (2011) Obstacles to the recruitment of minorities into the geosciences: A call to action. GSA Today, V. 21, No. 6, p. 52-54

<sup>9</sup>Hurtado, S., C.B. Newman, M.C. Tran, and M.J. Chang (2010) Improving the rate of success for underrepresented racial minorities in STEM fields: Insights from a national project, New Directions for Institutional Research, Volume 148, 5-15.

<sup>10</sup>Chang, M.J., J. Sharkness, S. Hurtado, and C.B. Newman (2014), What matters in college for retaining aspiring scientists and engineers from underrepresented racial groups, Journal of Research in Science Teaching, volume 51 (5), 555-580.

<sup>11</sup>National Academies of Sciences, Engineering, and Medicine (2019) Minority Serving Institutions: America's Underutilized Resource for Strengthening the STEM Workforce. Washington, DC: National Academy Press, <https://doi.org/10.17226/25257>.

<sup>12</sup>Posselt, J.R., Chen, J., Dixon, G., Jackson, J.F.L, Kirsch, R., Nunez, A., Teppen, B.J., (2019) Advancing inclusion in the geosciences: An overview of the NSF-GOLD program, Journal of Geoscience Education, DOI: [10.1080/10899995.2019.1647007](https://doi.org/10.1080/10899995.2019.1647007).

<sup>13</sup>NSF's Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES) program. [https://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=505289](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505289).