



NATIONAL SCIENCE FOUNDATION
2415 EISENHOWER AVENUE
ALEXANDRIA, VIRGINIA 22314

NSF 20-116

Dear Colleague Letter: Planning for Midscale Infrastructure for the Biological Sciences

August 13, 2020

Dear Colleagues:

The Mid-scale Research Infrastructure (MSRI) initiative is a National Science Foundation (NSF)-wide *Big Idea* designed to address the research community's growing needs for visionary and unique research infrastructure for the advancement of contemporary science and engineering research. NSF's MSRI program is designed to support the implementation of research capabilities and infrastructure with total project costs between \$6M and \$70M. In FY 2019, the NSF released two associated solicitations: [Mid-scale RI-1 \(NSF 19-537\)](#) for design and implementation projects requesting up to \$20 million and [Mid-scale RI-2 \(NSF 19-542\)](#) for implementation projects between \$20 million and \$70 million. MSRI projects directly enable advances in fundamental science, technology, engineering, and mathematics (STEM) in one or more of the research and education domains supported by the NSF. The MSRI Program emphasizes strong scientific merit and response to identified needs of the research community, technical and managerial readiness for implementation, and a well-developed plan for student training and involvement of a diverse workforce in mid-scale facility development, and/or associated data management.

NSF's Biological Sciences Directorate (NSF/BIO) recognizes that infrastructure needs of the biology community span a wide spectrum ranging from discrete instrumentation, cyberinfrastructure, collections resources, or broadly used data sets to major facilities and associated expertise to enable generation or processing of data through monitoring, experimental, or computational means. Accordingly, the state of readiness and preparation of the community likely varies widely, wherein some mid-scale infrastructure projects for biological research are in the earliest stages of conceptualization or planning while others are ready for implementation having already matured through previous developmental investments. This Dear Colleague Letter (DCL) is intended to address the current need for pre-implementation activities in the biology research community including early-stage design or development that lead projects through conceptual, preliminary and final design stages

and places them on a path to implementation of mid-scale research infrastructure projects. Moreover, even projects that are in an advanced stage of readiness may lack the full complement of skills needed for effective management and technical activities that are required to prepare, initiate, execute and conclude implementation of projects at these larger scales in an accountable and flexible manner.

With this DCL, NSF/BIO announces its intent to support workshops and planning awards. Such workshops are typically identified as conferences in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) and will hereafter be referred to as conferences. These activities will help increase capacity across the biological sciences research community to develop ideas, facilitate team formation and develop effective, milestone-based project management practices that will enable teams to be better equipped to implement mid-scale infrastructure projects.

Conference proposals: NSF/BIO expects to support up to 10 conferences to bring the community together to conceptualize potential projects that address national research infrastructure gaps. Each proposal should identify clearly the potential for addressing one or more identified high-priority science goals within the relevant research community, its potential for advancing scientific discovery, and the project's potential benefit to the broader U.S. research community. The conferences should support a diverse set of 20 to 50 attendees, which may, in addition to academic researchers, include relevant scientists, engineers, data/computer scientists or educators at federal agencies, industry, and international organizations. Conferences are encouraged to include individuals with experience in the management of research infrastructure at this scale for the purpose of training and mentoring investigators in the development of Project Management and Project Execution Plans. Proposals should include the deliverable of a report to the community with recommendations that address the identified gap in research infrastructure that also outlines the strategy for access and utilization of the infrastructure by the target research communities, and planned metrics and evaluation of the success and impact. The report should position the relevant community to respond to future opportunities for research infrastructure projects at the appropriate scale (mid-scale or above), by defining either design or implementation projects. For information about preparing and submitting conference proposals, please see Chapter II.E.7 of the *Proposal and Award Policies and Procedures Guide* (PAPPG).

Planning proposals: NSF/BIO expects to support up to 10 planning proposals that help teams to carry out limited preliminary activities that prepare identified infrastructure projects that have strong scientific merit. For such projects in early stages of conceptualization, these planning proposals should be aimed at the identification of the primary scientific, technical and system performance requirements, and associated designs and specifications. For those in advanced stages of readiness, these proposals should seek to develop a mature plan to execute and manage the project including a project schedule with identified risks and plans to

mitigate them, a governance plan and effective project management methods for tracking progress, costs and performance (including Earned Value Management) that are appropriate to the scope of the project. As part of the planning process, investigators should generate sound baseline cost estimates as well as of the anticipated operations and maintenance costs. All proposals should also develop plans for effective student training and the involvement of a diverse workforce in instrumentation, facility development, or data management/analysis.

As an important reminder, proposed infrastructure ideas in conference and planning grants should not:

- solely focus on center or small-scale laboratory development or acquisition of collections of instruments to solely meet the mid-scale cost threshold,
- have a user-base that is largely restricted to the campus or the local community.

Finally, conference or planning proposals do not constitute any commitment on behalf of the submitters or their institutions to submit a proposal or carry out a research infrastructure project, nor do they imply an intent on the part of NSF to support the proposed project.

Prior to submitting a conference or planning proposal, the PI must send an email to the address listed below to ensure that the proposal fits the goals of this DCL. PIs will then be directed to appropriate Program Officer(s) with subject matter expertise most appropriate for the project for further consideration and also to ascertain whether a conference or planning proposal would be best matched for the desired goals and outcomes. Proposing organizations should refer to Section 5.0 of the [Major Facilities Guide](#).

Conference proposals should be submitted through the normal submission processes outlined in Chapter II.E.7 of the NSF [PAPPG](#). Planning proposals should be submitted to the [Infrastructure Capacity for Biological Research](#) solicitation. Proposals or requests where PIs have not contacted the Program Officer to which they have been directed will be returned without consideration.

POINTS OF CONTACT

Inquiries or questions about this DCL and submission of proposals in response to it should be directed to Program Officers representing each of BIO's divisions by emailing BIOWinfrastructure@nsf.gov.

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