

Enabling Discovery through GENomics (EDGE)

PROGRAM SOLICITATION

NSF 21-546

REPLACES DOCUMENT(S):

NSF 20-532



National Science Foundation

Directorate for Biological Sciences
Division of Integrative Organismal Systems



National Institutes of Health

National Human Genome Research Institute

Full Proposal Deadline(s) (due by 5 p.m. submitter's local time):

March 16, 2021

February 17, 2022

Third Thursday in February, Annually Thereafter

IMPORTANT INFORMATION AND REVISION NOTES

Important Information

Innovating and migrating proposal preparation and submission capabilities from FastLane to Research.gov is part of the ongoing NSF information technology modernization efforts, as described in [Important Notice No. 147](#). In support of these efforts, the Directorate for Biological Sciences (BIO) is now requiring the use of Research.gov for the preparation and submission of proposals in response to its core programs that do not have deadline dates (see [Dear Colleague Letter NSF 20-129](#)). As such, full research proposals submitted in response to this program solicitation must be prepared and submitted via Research.gov. Proposals also may continue to be submitted via use of Grants.gov.

NSF is taking proactive steps to move the preparation and submission of all proposals from FastLane to Research.gov, however until capabilities are fully implemented, the other types of proposals outlined in Chapter II.E of the NSF Proposal & Award Policies & Procedures Guide (PAPPG), as well as accomplishment-based renewal proposals, must be prepared and submitted via FastLane or Grants.gov in accordance with the applicable guidance contained in the PAPPG or the NSF Grants.gov Application Guide

Revision Notes

With this solicitation, NSF Directorate of Biological Science is joined by the NIH National Human Genome Research Institute in support of tool development and research to solve the grand challenge of uncovering the rules that underlie the genomes-to-phenomes relationship.

The solicitation now has a deadline.

Language to clarify the Complex Multigenic Traits track has been added, and clarifications in the solicitation specific review criteria were added.

The Project Management Plan has been shortened to 2 pages.

Full research proposals submitted in response to this program solicitation can no longer be prepared and submitted via FastLane.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) ([NSF 20-1](#)), which is effective for proposals submitted, or due, on or after June 1, 2020.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Enabling Discovery through GENomics (EDGE)

Synopsis of Program:

Through the Enabling Discovery through GENomics (EDGE) program, the National Science Foundation (NSF) and the National Institutes for Health (NIH) support research to advance understanding of comparative and functional genomics. The EDGE program supports the development of innovative tools, technologies, resources, and infrastructure that advance biological research focused on the identification of the causal mechanisms connecting genes and phenotypes. The EDGE program also supports functional genomic research that addresses the mechanistic basis of complex traits in diverse organisms within the context (environmental, developmental, social, and/or genomic) in which they function. These goals are essential to uncovering the rules that underlie genomes-to-phenomes relationships and predict phenotype, an area relevant to [Understanding the Rules of Life: Predicting Phenotype](#), one of the [10 Big Ideas](#) for NSF investment. The goals also support the NHGRI priority to establish the roles and relationships of all genes and regulatory elements in pathways, networks, and phenotypes.

Cognizant Program Officer(s):

Please note that the following information is current at the time of publishing. See program website for any updates to the points of contact.

- Theodore J. Morgan, telephone: (703) 292 7868, email: tmorgan@nsf.gov
- Edda (Floh) Thiels, telephone: (703) 292-8167, email: ethiels@nsf.gov
- Douglas K. (Patrick) Abbot, telephone: (703) 292-7820, email: dabbot@nsf.gov
- Ford Ballantyne, telephone: (703) 292-8037, email: fballant@nsf.gov
- Steven E. Ellis, telephone: (703) 292-7876, email: stellis@nsf.gov
- Anthony G. Garza, telephone: (703) 292-8440, email: aggarza@nsf.gov
- Diane Jofuku Okamuro, telephone: (703) 292-4508, email: dokamuro@nsf.gov
- Jennifer Troyer, NIH/NHGRI Program Director, telephone: (301) 312-3276, email: jennifer.troyer@nih.gov

Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.074 --- Biological Sciences
- 93.172 --- National Human Genome Research Institute

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 10 to 15

Approximately 10-15 awards per year, pending availability of funds

Anticipated Funding Amount: \$10,000,000

Other budgetary limitations apply. Please see the full text of the Section III: Award Information.

\$10,000,000 in FY2021. The estimated budget, number of awards, and average award size/duration are subject to the availability of funds.

For NHGRI: There are no set aside funds. Applications compete with other applications submitted to NHGRI.

Limitation of Awards

EDGE proposal budgets may not exceed \$2 million in combined direct costs (summed over all components of the project if the proposal is a collaborative submission) to support up to a four-year project plan.

Award sizes have typically ranged from approximately \$125,000 to \$300,000 *per year* in combined *direct* costs (summed over all components of the project if the proposal is a collaborative submission), with durations of two to four years. This range is offered as a guide to help proposers understand what has historically been fundable. **Proposers requesting budgets toward the larger end of the range should make clear to reviewers why a larger or longer project is necessary.** The science should be commensurate with the level of effort and compare favorably to a more tightly focused, smaller project.

Upon conclusion of the review process, meritorious research proposals may be recommended for funding by one of the participating funding organizations at the option of the funders, not the proposer. Subsequent grant administration procedures will be in accordance with the individual policies of the participating funding organizations managing the awards.

Further information about agency processes and agency-specific award information is provided in Section VI.B. and Section VIII of this solicitation.

Eligibility Information

Who May Submit Proposals:

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), Chapter I.E. Unaffiliated individuals are not eligible to submit proposals in response to this solicitation.

Who May Serve as PI:

There are no restrictions or limits.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

Limit on Number of Proposals per PI or Co-PI:

There are no restrictions or limits.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not required
- **Preliminary Proposal Submission:** Not required
- **Full Proposals:**
 - Full Proposals submitted via Research.gov: *NSF Proposal and Award Policies and Procedures Guide (PAPPG)* guidelines apply. The complete text of the PAPPG is available electronically on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg.
 - Full Proposals submitted via Grants.gov: *NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov* guidelines apply (Note: The *NSF Grants.gov Application Guide* is available on the Grants.gov website and on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide).

B. Budgetary Information

- **Cost Sharing Requirements:**

Inclusion of voluntary committed cost sharing is prohibited.
- **Indirect Cost (F&A) Limitations:**

For awards made by NSF, Proposal and Award Policies and Procedures Guide (PAPPG) guidelines apply.
NIH pays full F&A on research grants per [NIH Grants Policy Statement, section 7.4](#).
- **Other Budgetary Limitations:**

Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

- **Full Proposal Deadline(s)** (due by 5 p.m. submitter's local time):
 - March 16, 2021
 - February 17, 2022
 - Third Thursday in February, Annually Thereafter

Proposal Review Information Criteria

Merit Review Criteria:

National Science Board approved criteria. Additional merit review criteria apply. Please see the full text of this solicitation for further information.

Award Administration Information

Award Conditions:

Additional award conditions apply. Please see the full text of this solicitation for further information.

Reporting Requirements:

Additional reporting requirements apply. Please see the full text of this solicitation for further information.

TABLE OF CONTENTS

Summary of Program Requirements

- I. Introduction
- II. Program Description
- III. Award Information
- IV. Eligibility Information
- V. Proposal Preparation and Submission Instructions
 - A. Proposal Preparation Instructions
 - B. Budgetary Information
 - C. Due Dates
 - D. Research.gov/Grants.gov Requirements
- VI. NSF Proposal Processing and Review Procedures
 - A. Merit Review Principles and Criteria
 - B. Review and Selection Process
- VII. Award Administration Information
 - A. Notification of the Award
 - B. Award Conditions
 - C. Reporting Requirements
- VIII. Agency Contacts
- IX. Other Information

I. INTRODUCTION

A comprehensive understanding of genotype-to-phenotype relationships requires that functional genomics move beyond descriptive genomics to a functional understanding of genomic mechanisms underlying complex multigenic traits. Achieving such understanding will require pursuing systems-level analyses of gene-regulatory networks and the functional properties that emerge from these networks, while elucidating the causal connections across levels of biological organization. To achieve these goals, the EDGE program provides support for genomic research and associated theory, approaches, tools, and infrastructure development to address the mechanistic basis of complex traits in diverse organisms within the context (environmental, developmental, social, and/or genomic) in which they function.

With this solicitation, the National Science Foundation, Directorate for Biological Sciences is joined by the National Institutes of Health, National Human Genome Research Institute (NHGRI), in support of tool development and research to solve the grand challenge of uncovering the rules that underlie the genomes-to-phenomes relationship. Solving this grand challenge is critical to achieving the goals of [Understanding the Rules of Life: Predicting Phenotype](#), one of the [10 Big Ideas](#) for NSF investment, and aligns with the NHGRI goal to establish the roles and relationships of all genes and regulatory elements in pathways, networks, and phenotypes.

The participating funding organizations have released parallel documents with further agency-specific information, referenced in Section VIII of this solicitation.

II. PROGRAM DESCRIPTION

A comprehensive understanding of the functional mechanisms that connect genotype-to-phenotypes is a grand challenge in biology. Support for research on diverse organisms is critical for discovering generalizable rules that govern the connection between genomes and phenomes across all of life. The EDGE program will accept proposals to two submission tracks:

FUNCTIONAL GENOMIC TOOLS (FGT) TRACK: Proposals submitted to this track should aim to develop and provide proof-of-concept tests of functional genomic tools and infrastructure to enable direct tests of hypotheses about gene function in diverse species for which such tools and infrastructure are presently unavailable. Investigators may use taxonomic, question-based, and/or technology-based strategies to develop tools and approaches that will be employed by larger communities of researchers. Projects may include instrumentation development followed by proof-of-concept testing in the context of developing functional genomic tools to enable direct tests of gene function.

Tools, approaches, and infrastructure that will have significant catalytic effects to enable large numbers of investigators to overcome bottlenecks in testing gene function directly will receive priority. FUNCTIONAL GENOMIC TOOLS TRACK proposals **must** include carefully developed plans for rapid and active dissemination of any new resources and training of other researchers in their use, as well as a rationale for support that is based on an assessment of current impediments and the potential impact of proposed projects on the relevant research communities. Investigators are encouraged to bring together novel combinations of expertise to achieve the greatest impact of the proposed tools and infrastructure across research communities.

Proposals submitted to the FUNCTIONAL GENOMICS TOOLS TRACK benefit from an existing community of researchers using the target organism. Although proposals can be submitted and implemented by single investigators, participation in formulation of the proposal by members of the user community is recommended. This community should be described clearly in the "Research Community Impact" section of the project description. The EDGE program does not support research on the promise that a research community will form around an organism once functional genomic tools become available as a result of investment by this program.

Examples of relevant objectives for plants, animals, microbes, viruses, or fungi for which such tools and infrastructure are presently unavailable include, but are not limited to:

- Development of mutant libraries and/or high-quality reference genomes;
- Expansion of the use of gene editing, knock-out, and overexpression approaches for manipulating individual genes or interrogating multiple genes simultaneously in diverse organisms;
- Development of approaches to test gene function in a variety of targeted, single cells in organisms;
- Generalizable high-throughput phenotyping methods;

- Innovative approaches for establishing function of single or networks of genes; and
- Development and testing of transformation approaches.

COMPLEX MULTIGENIC TRAITS (CMT) TRACK: Proposals submitted to this track should include hypothesis-driven research that advances understanding of the relationship between genomes and complex multi-genic traits, toward the goal of predicting phenotypes across diverse contexts, including environmental, developmental, social, and/or genomic contexts. Successful proposals may include the development of theory and/or analytical approaches to achieve the scientific goal. The EDGE program recognizes that many of the traits of interest to biologists are quantitative in nature and are controlled by many genes of small effect and that understanding complex traits requires systems-level analysis of the underlying gene regulatory networks that goes beyond linking individual genes with said traits. Submissions to the COMPLEX MULTIGENIC TRAITS TRACK should emphasize the contribution of genome-wide factors that impact expression of a phenotype.

For the COMPLEX MULTIGENIC TRAITS TRACK, the use of traditional model organisms is permitted, but proposals **must** demonstrate the **generalizability** of the results beyond the focal species across contexts (environmental, developmental, social, and/or genomic).

Submissions to this track may include but are not limited to:

- Systems-level analysis of the gene regulatory networks underlying complex traits;
- Elucidation of the causal connections across levels of biological organization that underlie complex multigenic traits;
- New or innovative analytical approaches to linking genes and complex traits; and
- Multi-genome/epigenome interactions with the environment towards the goal of predicting complex organismal phenotypes across contexts.

INFORMATION FOR BOTH TRACKS:

Appropriate scientific areas of investigation may be related to the missions and strategic objectives of any of the participating funding organizations. Highly competitive EDGE proposals submitted to either the FGT or the CMT track will present a compelling case for the potential of the project to enable or achieve direct tests of hypotheses about gene function in diverse organism(s) to accelerate basic and translational advances in cellular, organismal, and evolutionary biology. Projects that cross disciplines within biology, combining organismal biology with cellular, evolutionary, or ecological research will be given higher priority. Innovative research training and enrichment opportunities are highly encouraged to develop research capacity in functional genomics, broaden participation, and enhance the impact of functional genomics research. Submissions at all levels of career development are welcome under this solicitation.

NHGRI will consider applications that can demonstrate utility or relevance to human or disease-relevant model organisms; that will advance the science of genomic medicine; and that will incorporate genomics to improve the effectiveness of healthcare. NHGRI will focus on applications that demonstrate approaches that are generalizable beyond single-gene, single-trait, or single-diseases relevant phenotypes. NHGRI strongly encourages potential applicants to contact program staff (see Section VIII) in the early stages of developing your application.

Proposals focused on genome scale research or tool development for agriculturally relevant plant species are encouraged to contact the [Plant Genome Research Program](#) to discuss appropriate programmatic fit. Additionally, proposals focused exclusively on bioinformatic tool development are encouraged to contact the [Infrastructure Innovation for Biological Research](#) program to discuss programmatic fit.

SPECIAL PROPOSAL TYPES:

Research in Undergraduate Institution (RUI) Proposals: RUI Proposals may be submitted to the EDGE program and must follow the proposal preparation guidance in the current RUI/ROA solicitation (https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5518), especially as it relates to submissions through Research.gov. In addition to the requirements of the RUI program, proposals should follow the guidance in this solicitation.

NSF-BSF Proposals: The EDGE program will accept proposals for the joint NSF/US-Israel Binational Science Foundation (BSF) collaborative research opportunity. More information can be found in the Dear Colleague Letter at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf20094 and subsequent replacements.

III. AWARD INFORMATION

Anticipated Type of Award: Continuing Grant or Standard Grant

Estimated Number of Awards: Approximately 10-15 awards per year, pending availability of funds

Anticipated Funding Amount: \$10,000,000 in FY2021. The estimated budget, number of awards, and average award size/duration are subject to the availability of funds.

For NHGRI: There are no set aside funds. Applications compete with other applications submitted to NHGRI.

Limitation of Awards:

EDGE proposal budgets may not exceed \$2 million in combined direct costs (summed over all components of the project if the proposal is a collaborative submission) to support up to a four-year project plan.

Award sizes have typically ranged from approximately \$125,000 to \$300,000 *per year* in combined *direct* costs (summed over all components of the project if the proposal is a collaborative submission), with durations of two to four years. This range is offered as a guide to help proposers understand what has historically been fundable. **Proposers requesting budgets toward the larger end of the range should make clear to reviewers why a larger or longer project is necessary.** The science should be commensurate with the level of effort and compare favorably to a more tightly focused, smaller project.

Upon conclusion of the review process, meritorious research proposals may be recommended for funding by one of the participating funding organizations at the option of the funders, not the proposer. Subsequent grant administration procedures will be in accordance with the individual policies of the participating funding organizations managing the awards.

Further information about agency processes and agency-specific award information is provided in Section VI.B. and Section VIII of this solicitation.

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), Chapter I.E. Unaffiliated individuals are not eligible to submit proposals in response to this solicitation.

Who May Serve as PI:

There are no restrictions or limits.

Limit on Number of Proposals per Organization:

There are no restrictions or limits.

Limit on Number of Proposals per PI or Co-PI:

There are no restrictions or limits.

Additional Eligibility Info:

Clinical trials are not allowed. The NIH will only consider applications that do not propose clinical trials. Individuals who are considering submitting a proposal in response to this solicitation should review <https://grants.nih.gov/ct-decision/> in determining whether the project meets the NIH definition of a Clinical Trial.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Preparation Instructions: Proposers may opt to submit proposals in response to this Program Solicitation via Research.gov or Grants.gov.

- Full Proposals submitted via Research.gov: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the general guidelines contained in the *NSF Proposal and Award Policies and Procedures Guide* (PAPPG). The complete text of the PAPPG is available electronically on the NSF website at: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg. Paper copies of the PAPPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov. The Prepare New Proposal setup will prompt you for the program solicitation number.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the *NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov*. The complete text of the *NSF Grants.gov Application Guide* is available on the Grants.gov website and on the NSF website at: (https://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov.

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via Research.gov. PAPPG Chapter II.D.3 provides additional information on collaborative proposals.

See PAPPG Chapter II.C.2 for guidance on the required sections of a full research proposal submitted to NSF. Please note that the proposal preparation instructions provided in this program solicitation may deviate from the PAPPG instructions.

Also note proposals selected for funding consideration by NHGRI will need to be re-submitted to that agency.

EDGE SPECIFIC PROPOSAL PREPARATION INSTRUCTIONS

The following solicitation-specific exceptions and additions to the PAPPG and NSF Grants.gov Application Guide guidelines apply to proposals submitted to this solicitation:

Title of Proposed Project. The project title must start with "EDGE FGT: ..." for the FUNCTIONAL GENOMIC TOOLS track OR "EDGE CMT:..." for the COMPLEX MULTIGENIC TRAITS track.

Project Description. The project description must not exceed 15 pages. Project plans must span **four** years or less. Investigators should note the additional review criteria for EDGE proposals contained in this solicitation (see Additional Solicitation Specific Review Criteria) as they develop their proposals.

In addition to the requirements specified in the PAPPG, submissions to **the Functional Genomics Tools track should also include a subsection entitled:**

Research Community Impact This section should include but is not limited to: a discussion of the scientific and community-based justification of the selection of organism(s) that will be enabled; clear statements identifying bottlenecks to functional genomics questions linking cause and effect in these

organisms, and a description of how the bottlenecks will be addressed; a description of how one or more research communities within organismal biology and, if applicable, beyond will benefit from the proposed project; a description of how scientific progress will be accelerated in one or more research areas if the proposed project is successful; and a description of any impediments the communities may face in employing the proposed tools, approaches, or outcomes.

EDGE proposals submitted to the Functional Genomics Tools track that do not include the required named Research Community Impact subsection in the Project Description will be returned without review.

Proposal Budget. Provide a summary budget and a yearly budget for the duration of the proposed project, including subawards, if appropriate. A Budget Justification should be provided for each budget submitted, including any subaward budgets. It is recommended that the Budget Justifications be structured with the same headings and subheadings shown in the Budget sheets. Funds for facility support, construction, or renovation may not be requested.

The budget **must** include funds to cover the cost of attendance of the principal investigator and one other member of the project senior personnel, or one trainee (graduate student or postdoctoral researcher) at a two-day annual awardee meeting for **all** funded years.

SUPPLEMENTARY DOCUMENTS

PAPPG Required Supplementary Documents: EDGE proposals are required to have a Data Management Plan, a Postdoctoral Mentoring Plan if funds are requested for postdoctoral support, and additional supplementary documents as described in the PAPPG. Additional guidance from the Biological Sciences Directorate on Data Management Plans can be found here: https://www.nsf.gov/bio/pubs/BIODMP_Guidance.pdf.

Project Management Plan: For collaborative research projects (see PAPPG, Chapter II.D.3.), a Project Management Plan, not to exceed 2 pages, **must** be included as part of "Special Information and Supplementary Documentation." The plan should include a description of communication and coordination mechanisms across organizations that will ensure the project goals are met in a timely manner. This document is separate from the Data Management Plan required in all NSF proposals (see the PAPPG). **Collaborative proposals that involve one or more organizations that do not include the required Project Management Plan will be returned without review.**

Letters of Collaboration: Supplementary Documents may include letters of collaboration from individuals or organizations that are **integral parts of the proposed project but are not supported by subawards**. Such individuals or organizations may be involved in specific, well-defined aspects of the project, cooperation on outreach efforts, or documentation of permission to access materials or data. Letters of collaboration should be limited to stating the intent to collaborate and should not contain endorsements or evaluation of the proposed project. The required format for letters of collaboration can be found in Chapter II.C.2.j of the PAPPG. Letters from the broader community of potential resource-users are not required and should not be included unless they are also performing specific tasks described in the Project Description.

The Project Description should include a description of the nature of and need for the collaboration, the role of each collaborator, and the expected outcomes/deliverables from the collaboration. Letters of collaboration are not required from any individual designated as Co-PI or senior personnel, nor are letters of collaboration required from any organization that will be a subawardee in the proposal budget.

Requests to collaborators for letters of collaboration should be made by the PI well in advance of the proposal submission deadline because they **must** be included at the time of proposal submission.

Generic letters of general support are not allowed. Proposals that include unallowable letters of support will be returned without review.

Submissions to the **Functional Genomic Tools Track** must *also* include:

Dissemination and Education Plan: A Dissemination and Education Plan, not to exceed 3 pages, must be included as part of the "Special Information and Supplementary Documentation." The Dissemination and Education Plan should include, but is not limited to, a description of how the enabling tools will be rapidly disseminated and how training will be provided (if necessary) to maximize impact on the research community. An explicit expectation is that tools and methods will be disseminated before publication; PIs should include plans to accommodate this expectation. How will outreach to the community be achieved? How many researchers will be trained? How will reagents and other resources be maintained and disseminated? An implementation timetable and strategy for evaluation and management of the Dissemination and Education Plan over the award period should be included. The timetable should include: a proposed timeline for producing deliverables (resource and data products) associated with research and broader impacts goals and a timeline for generation and release of each resource/data product, where the resources/data will be deposited, and how the impact of these products will be assessed.

Functional Genomics Tools Track proposals that do not include the required Dissemination and Education Plan will be returned without review.

Because of the Interagency nature of this activity, some additional documents that are not standard for NSF are required. Where relevant, these documents should be uploaded as part of the "Special Information and Supplementary Documentation":

Human Subjects Protection: Proposals involving human subjects should include a supplementary document, no more than two pages in length, summarizing potential risks to human subjects; plans for recruitment and informed consent; inclusion of women, minorities, and children across the lifespan; and planned procedures to protect against or minimize potential risks. Only one Human Subjects Protection document, covering all collaborative components of the project within the two-page limit, may be submitted per project.

Vertebrate Animals: Proposals involving vertebrate animals should include a supplementary document, no more than two pages in length, that addresses the following points:

- o Detailed description of the proposed use of the animals, including species, strains, ages, sex, and number to be used;
- o Justification for the use of animals, choice of species, and numbers to be used;
- o Description of procedures for minimizing discomfort, distress, pain, and injury; and
- o Method of euthanasia and the reasons for its selection.

Only one Vertebrate Animals document, covering all collaborative components of the project within the two-page limit, may be submitted per project.

Proposals containing special information or supplementary documentation that has not been explicitly allowed in the PAPPG or this solicitation, such as article reprints or preprints, or appendices, **will be returned without review.**

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Indirect Cost (F&A) Limitations:

For awards made by NSF, Proposal and Award Policies and Procedures Guide (PAPPG) guidelines apply.

NIH pays full F&A on research grants per [NIH Grants Policy Statement, section 7.4](#).

Other Budgetary Limitations:

The budget **must** include funds to cover the cost of attendance of the principal investigator and one other member of the project senior personnel or one trainee (graduate student or postdoctoral researcher) at a two-day annual awardee meeting for **all** funded years.

C. Due Dates

- **Full Proposal Deadline(s)** (due by 5 p.m. submitter's local time):

March 16, 2021

February 17, 2022

Third Thursday in February, Annually Thereafter

D. Research.gov/Grants.gov Requirements

For Proposals Submitted Via Research.gov:

To prepare and submit a proposal via Research.gov, see detailed technical instructions available at: https://www.research.gov/research-portal/appmanager/base/desktop?_nfpb=true&_pageLabel=research_node_display&_nodePath=/researchGov/Service/Desktop/ProposalPreparationandSubmission.html. For Research.gov user support, call the Research.gov Help Desk at 1-800-673-6188 or e-mail rgov@nsf.gov. The Research.gov Help Desk answers general technical questions related to the use of the Research.gov system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

For Proposals Submitted Via Grants.gov:

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: <https://www.grants.gov/web/grants/applicants.html>. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

Submitting the Proposal: Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to the NSF FastLane system for further processing.

Proposers that submitted via Research.gov may use Research.gov to verify the status of their submission to NSF. For proposers that submitted via Grants.gov, until an application has been received and validated by NSF, the Authorized Organizational Representative may check the status of an application on Grants.gov. After proposers have received an e-mail notification from NSF, Research.gov should be used to check the status of an application.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program for acknowledgement and, if they meet NSF requirements, for review. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF either as *ad hoc* reviewers, panelists, or both, who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal. In addition, Program Officers may obtain comments from site visits before recommending final action on proposals. Senior NSF staff further review recommendations for awards. A flowchart that depicts the entire NSF proposal and award process (and associated timeline) is included in PAPPG Exhibit III-1.

A comprehensive description of the Foundation's merit review process is available on the NSF website at: https://www.nsf.gov/bfa/dias/policy/merit_review/.

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in *Building the Future: Investing in Discovery and Innovation - NSF Strategic Plan for Fiscal Years (FY) 2018 – 2022*. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

One of the strategic objectives in support of NSF's mission is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions must recruit, train, and prepare a diverse STEM workforce to advance the frontiers of science and participate in the U.S. technology-based economy. NSF's contribution to the national innovation ecosystem is to provide cutting-edge research under the guidance of the Nation's most creative scientists and engineers. NSF also supports development of a strong science, technology, engineering, and mathematics (STEM) workforce by investing in building the knowledge that informs improvements in STEM teaching and learning.

NSF's mission calls for the broadening of opportunities and expanding participation of groups, institutions, and geographic regions that are underrepresented in STEM disciplines, which is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

A. Merit Review Principles and Criteria

The National Science Foundation strives to invest in a robust and diverse portfolio of projects that creates new knowledge and enables breakthroughs in understanding across all areas of science and engineering research and education. To identify which projects to support, NSF relies on a merit review process that incorporates consideration of both the technical aspects of a proposed project and its potential to contribute more broadly to advancing NSF's mission "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes." NSF makes every effort to conduct a fair, competitive, transparent merit review process for the selection of projects.

1. Merit Review Principles

These principles are to be given due diligence by PIs and organizations when preparing proposals and managing projects, by reviewers when reading and evaluating proposals, and by NSF program staff when determining whether or not to recommend proposals for funding and while overseeing awards. Given that NSF is the primary federal agency charged with nurturing and supporting excellence in basic research and education, the following three principles apply:

- All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.
- NSF projects, in the aggregate, should contribute more broadly to achieving societal goals. These "Broader Impacts" may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.
- Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects. If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project.

With respect to the third principle, even if assessment of Broader Impacts outcomes for particular projects is done at an aggregated level, PIs are expected to be accountable for carrying out the activities described in the funded project. Thus, individual projects should include clearly stated goals, specific descriptions of the activities that the PI intends to do, and a plan in place to document the outputs of those activities.

These three merit review principles provide the basis for the merit review criteria, as well as a context within which the users of the criteria can better understand their intent.

2. Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board approved merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two merit review criteria are listed below. **Both** criteria are to be given **full consideration** during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria. (PAPPG Chapter II.C.2.d(i). contains additional information for use by proposers in development of the Project Description section of the proposal). Reviewers are strongly encouraged to review the criteria, including PAPPG Chapter II.C.2.d(i), prior to the review of a proposal.

When evaluating NSF proposals, reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers will be asked to evaluate all proposals against two criteria:

- **Intellectual Merit:** The Intellectual Merit criterion encompasses the potential to advance knowledge; and
- **Broader Impacts:** The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to
 - a. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
 - b. Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. NSF values the advancement of scientific knowledge and activities that contribute to achievement of societally relevant outcomes. Such outcomes include, but are not limited to: full participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.

Proposers are reminded that reviewers will also be asked to review the Data Management Plan and the Postdoctoral Researcher Mentoring Plan, as appropriate.

Additional Solicitation Specific Review Criteria

For proposals submitted to either track that involve multiple organizations, the quality of the Project Management Plan and likelihood of successful project coordination will be carefully evaluated by reviewers.

For EDGE FGT proposals, it is suggested that reviewers focus on the following critical aspects of the proposed work:

- The potential catalytic impact on advancing research and research communities using organisms named in the proposal;
- The potential catalytic impact on advancing research and research communities of the enabling tools, approaches, and infrastructure that are proposed;
- The quality and potential for high impact of the Dissemination and Education Plan.

For EDGE CMT Proposals, it is suggested that reviewers focus on the following critical aspects of the proposed work:

- The extent to which the proposed hypotheses test or demonstrate causal links between genomes and phenomes;
- The potential of the proposed studies to advance theory and understanding of complex multigenic trait expression;
- The degree to which proposals demonstrate that conclusions may be generalizable across diverse research organisms; and
- The potential of the proposed studies to inform predictive understanding of complex phenotypes based on genomic information.

NIH Review Criteria

The mission of the NIH is to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability. In their evaluations of Intellectual Merit, reviewers will be asked to consider the following criteria that are used by NIH:

Overall Impact. Reviewers will provide an overall impact/priority score to reflect their assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s) involved, in consideration of the following five core review criteria, and additional review criteria (as applicable for the project proposed).

Significance. Does the project address an important problem or a critical barrier to progress in the field? Is there a strong scientific premise for the project? If the aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice be improved? How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?

Investigator(s). Are the PD/PIs, collaborators, and other researchers well suited to the project? If Early Stage Investigators or New Investigators, do they have appropriate experience and training? If established, have they demonstrated an ongoing record of accomplishments that have advanced their field(s)? If the project is collaborative or multi-PD/PI, do the investigators have complementary and integrated expertise; are their leadership approach, governance, and organizational structure appropriate for the project?

Innovation. Does the application challenge and seek to shift current research or clinical practice paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or interventions? Are the concepts, approaches or methodologies, instrumentation, or interventions novel to one field of research or novel in a broad sense? Is a refinement, improvement, or new application of theoretical concepts, approaches or methodologies, instrumentation, or interventions proposed?

Approach. Are the overall strategy, methodology, and analyses well-reasoned and appropriate to accomplish the specific aims of the project? Have the investigators presented strategies to ensure a robust and unbiased approach, as appropriate for the work proposed? Are potential problems, alternative strategies, and benchmarks for success presented? If the project is in the early stages of development, will the strategy establish feasibility and will particularly risky aspects be managed? Have the investigators presented adequate plans to address relevant biological variables, such as sex, for studies in vertebrate animals or human subjects?

If the project involves clinical research, are the plans for 1) protection of human subjects from research risks, and 2) inclusion of minorities and members of both sexes/genders, as well as the inclusion of children, justified in terms of the scientific goals and research strategy proposed?

Environment. Will the scientific environment in which the work will be done contribute to the probability of success? Are the institutional support, equipment and other physical resources available to the investigators adequate for the project proposed? Will the project benefit from unique features of the scientific environment, subject populations, or collaborative arrangements?

Where applicable, the following items will also be considered:

Protections for Human Subjects. For research that involves human subjects but does not involve one of the six categories of research that are exempt under 45 CFR Part 46, the committee will evaluate the justification for involvement of human subjects and the proposed protections from research risk relating to their participation according to the following five review criteria: 1) risk to subjects, 2) adequacy of protection against risks, 3) potential benefits to the subjects and others, 4) importance of the knowledge to be gained, and 5) data and safety monitoring for clinical trials.

For research that involves human subjects and meets the criteria for one or more of the six categories of research that are exempt under 45 CFR Part 46, the committee will evaluate: 1) the justification for the exemption, 2) human subjects involvement and characteristics, and 3) sources of materials.

Inclusion of Women, Minorities, and Children. When the proposed project involves human subjects and/or NIH-defined clinical research, the committee will evaluate the proposed plans for inclusion (or exclusion) of individuals on the basis of sex/gender, race, and ethnicity, as well as the inclusion (or exclusion) of children to determine if it is justified in terms of the scientific goals and research strategy proposed.

Vertebrate Animals. The committee will evaluate the involvement of live vertebrate animals as part of the scientific assessment according to the following criteria: (1) description of procedures involving animals including species, strains, ages, sex, and total number to be used; (2) justifications for the use of animals and for the appropriateness of the species proposed; (3) interventions to minimize discomfort, distress, pain and injury; and (4) justification for euthanasia method if NOT consistent with the American Veterinary Medical Association (AVMA) Guidelines for the Euthanasia of Animals. Reviewers will assess the use of chimpanzees as they would any other application proposing the use of vertebrate animals. For additional information, see <https://grants.nih.gov/grants/olaw/VASchecklist.pdf>.

Biohazards. Reviewers will assess whether materials or procedures proposed are potentially hazardous to research personnel and/or the environment, and if needed, determine whether adequate protection is proposed.

Budget and Period of Support. Reviewers will consider whether the budget and the requested period of support are fully justified and reasonable in relation to the proposed research.

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Ad hoc Review and/or Panel Review, or Agency Specific Processes.

NSF will manage the review of proposals in consultation with NHGRI. Relevant information about proposals and unattributed reviews of proposals will be shared between the participating organizations as appropriate. Further information on the processes and requirements of participating funding organizations is detailed in this Section and in Section VIII of this solicitation.

Reviewers will be asked to evaluate proposals using two National Science Board approved merit review criteria and, if applicable, additional program specific criteria. A summary rating and accompanying narrative will generally be completed and submitted by each reviewer and/or panel. Upon conclusion of the review process, meritorious proposals may be recommended for funding by either NSF or NIH, at the option of the agencies, not the proposing organizations. Proposals selected for funding by NIH will need to be reformatted and resubmitted to that agency. Subsequent submission and grant administration procedures will be in accordance with the individual policies of the awarding agency. Further information will be provided to these applicants after selection.

NSF Process: Those proposals selected for funding by NSF will be handled in accordance with standard NSF procedures. After scientific, technical, and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF strives to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. Large or particularly complex proposals or proposals from new awardees may require additional review and processing time. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director acts upon the Program Officer's recommendation.

After programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications. After an administrative review has occurred, Grants and Agreements Officers perform the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

Once an award or declination decision has been made, Principal Investigators are provided feedback about their proposals. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers or any reviewer-identifying information, are sent to the Principal Investigator/Project Director by the Program Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

NIH Process: Proposals selected for funding consideration by NIH will be invited to submit reformatted applications to the Division of Receipt and Referral (DRR) in NIH's Center for Scientific Review (CSR: <http://www.csr.nih.gov/>). PIs invited to resubmit to NIH will receive further information on resubmission procedures from NIH and a new receipt date will be determined for the NIH formatted applications. An applicant will not be allowed to increase the proposed budget or change the scientific content of the application in the resubmission to the NIH. NIH budgets must be less than \$500,000 in direct costs per year, and the total direct costs requested for the all years may not exceed the total requested on the NSF application. Indirect costs on any foreign subawards/subcontracts will be limited to eight (8) percent. Applicants will be expected to utilize the Multiple Principal Investigator option at the NIH (https://grants.nih.gov/grants/multi_PI/) as appropriate. These NIH applications will be entered into the NIH IMPAC II system.

Following the initial peer review, recommended applications that have been resubmitted to the NIH are required to go to second level review by the Advisory Council or Advisory Board of the awarding Institute or Center. The following will be considered in making funding decisions:

- Scientific and technical merit of the proposed project as determined by scientific peer review.
- Availability of funds.
- Relevance of the proposed project to program priorities.

Subsequent grant administration procedures for NIH awardees, including those related to New and Early Stage Investigators (https://grants.nih.gov/grants/new_investigators/), will be in accordance with the policies of NIH. Applications selected for NIH funding will use the NIH R01 funding mechanism. At the end of the project period, renewal applications for projects funded by the NIH are expected to be submitted directly to the NIH as Renewal Applications.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award notice, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or

disapprovals of proposed expenditures); (3) the proposal referenced in the award notice; (4) the applicable award conditions, such as Grant General Conditions (GC-1)*; or Research Terms and Conditions* and (5) any announcement or other NSF issuance that may be incorporated by reference in the award notice. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

*These documents may be accessed electronically on NSF's Website at https://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-8134 or by e-mail from nsfpubs@nsf.gov.

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the NSF *Proposal & Award Policies & Procedures Guide* (PAPPG) Chapter VII, available electronically on the NSF Website at https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg.

Special Award Conditions:

Attribution of support in publications must acknowledge the EDGE program, as well as the agency and award number, by including a phrase such as, "as part of the NSF/NIH Enabling Discovery through GENomics Program."

Awardees agree to participate in annual investigator meetings composed of other EDGE awardees and NSF staff, to share resources and data with other EDGE awardees.

For Awards supported by NIH: Notification of award as well as award terms and conditions will be determined by the NIH.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer no later than 90 days prior to the end of the current budget period. (Some programs or awards require submission of more frequent project reports). No later than 120 days following expiration of a grant, the PI also is required to submit a final project report, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report, will delay NSF review and processing of any future funding increments as well as any pending proposals for all identified PIs and co-PIs on a given award. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project-reporting system, available through Research.gov, for preparation and submission of annual and final project reports. Such reports provide information on accomplishments, project participants (individual and organizational), publications, and other specific products and impacts of the project. Submission of the report via Research.gov constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report also must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

More comprehensive information on NSF Reporting Requirements and other important information on the administration of NSF awards is contained in the NSF *Proposal & Award Policies & Procedures Guide* (PAPPG) Chapter VII, available electronically on the NSF Website at https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg.

For Awards supported by NIH: Project Reporting requirements will be determined by the relevant agency and included in the relevant award Terms & Conditions.

VIII. AGENCY CONTACTS

Please note that the program contact information is current at the time of publishing. See program website for any updates to the points of contact.

General inquiries regarding this program should be made to:

- Theodore J. Morgan, telephone: (703) 292 7868, email: tmorgan@nsf.gov
- Edda (Floh) Thiels, telephone: (703) 292-8167, email: ethiels@nsf.gov
- Douglas K. (Patrick) Abbot, telephone: (703) 292-7820, email: dabbot@nsf.gov
- Ford Ballantyne, telephone: (703) 292-8037, email: fballant@nsf.gov
- Steven E. Ellis, telephone: (703) 292-7876, email: stellis@nsf.gov
- Anthony G. Garza, telephone: (703) 292-8440, email: aggarza@nsf.gov
- Diane Jofuku Okamuro, telephone: (703) 292-4508, email: dokamuro@nsf.gov
- Jennifer Troyer, NIH/NHGRI Program Director, telephone: (301) 312-3276, email: jennifer.troyer@nih.gov

For questions related to the use of FastLane or Research.gov, contact:

- FastLane and Research.gov Help Desk: 1-800-673-6188
- FastLane Help Desk e-mail: fastlane@nsf.gov.
- Research.gov Help Desk e-mail: rgov@nsf.gov

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: support@grants.gov.

General inquiries regarding this program should be made to:

BIOEDGE@NSF.GOV

For questions about NHGRI interests, contact:

- Jennifer Troyer, telephone (301) 312-3276, email: jennifer.troyer@nih.gov

National Human Genome Research Institute (NHGRI)

NHGRI will support the development of resources, approaches, and technologies that will accelerate genomic research on the structure of genomes, the biology of genomes, and the biology of disease; that will use genomics to advance the science of medicine; and that will incorporate genomics to improve the effectiveness of healthcare. NHGRI will also support genomic research in several cross-cutting areas, including the ethical, legal and societal implications of genomics and genetics research, bioinformatics, technology development, and research training and career development.

In general, NHGRI supports studies that provide generalizable methods and knowledge. Applications for studies relevant only to a particular disease or organ system should be directed to the appropriate Institute or Center. NHGRI strongly encourages potential applicants to contact program staff in the early stages of developing your application. The contact information for the three scientific programs are:

Division of Genome Science: <https://www.genome.gov/27550609/division-of-genome-sciences-staff/>

Division of Genomic Medicine: <https://www.genome.gov/27550610/division-of-genomic-medicine-staff/>

Division of Genomics and Society: <https://www.genome.gov/27550080/division-of-genomics-and-society/>

IX. OTHER INFORMATION

The NSF website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this website by potential proposers is strongly encouraged. In addition, "NSF Update" is an information-delivery system designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF [Grants Conferences](#). Subscribers are informed through e-mail or the user's Web browser each time new publications are issued that match their identified interests. "NSF Update" also is available on [NSF's website](#).

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this mechanism. Further information on Grants.gov may be obtained at <https://www.grants.gov>.

ABOUT THE NATIONAL INSTITUTES OF HEALTH

The National Institutes of Health (NIH) mission is to uncover new knowledge that will lead to better health for everyone. NIH works toward that mission by conducting research in its own laboratories; supporting the research of non-Federal scientists in universities, medical schools, hospitals, and research institutions throughout the country and abroad; helping in the training of research investigators; and fostering communication of medical information.

For the latest information about NIH programs, visit the NIH website at <http://www.nih.gov/>.

The mission of the National Human Genome Research Institute (NHGRI) is to accelerate scientific and medical breakthroughs that improve human health. We do this by driving cutting-edge research, developing new technologies, and studying the impact of genomics on society. More information can be found at our website at <https://www.genome.gov>.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 55,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Arctic and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

Facilitation Awards for Scientists and Engineers with Disabilities (FASSED) provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See the *NSF Proposal & Award Policies & Procedures Guide* Chapter II.E.6 for instructions regarding preparation of these

types of proposals.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at <https://www.nsf.gov>

- **Location:** 2415 Eisenhower Avenue, Alexandria, VA 22314
- **For General Information** (NSF Information Center): (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090
- **To Order Publications or Forms:**
 - Send an e-mail to: nsfpubs@nsf.gov
 - or telephone: (703) 292-8134
- **To Locate NSF Employees:** (703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See [System of Record Notices](#), NSF-50, "Principal Investigator/Proposal File and Associated Records," and NSF-51, "Reviewer/Proposal File and Associated Records." Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding the burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to:

Suzanne H. Plimpton
Reports Clearance Officer
Office of the General Counsel
National Science Foundation
Alexandria, VA 22314

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