Navigating NSF/BIO

Kari Segraves, Program Director
Division of Environmental Biology
Population and Community Ecology

Directorate for Biological Sciences (BIO)

Division of Environmental Biology (DEB)

- Ecosystem Sciences
- Evolutionary Processes
- Population and Community Ecology
- Systematics and Biodiversity Science

Division of Integrative Organismal Systems (IOS)

- Behavioral Systems
- Developmental Systems
- Neural Systems
- Physiological and Structural Systems
- Plant Genome Research Program

Division of Molecular and Cellular Biosciences (MCB)

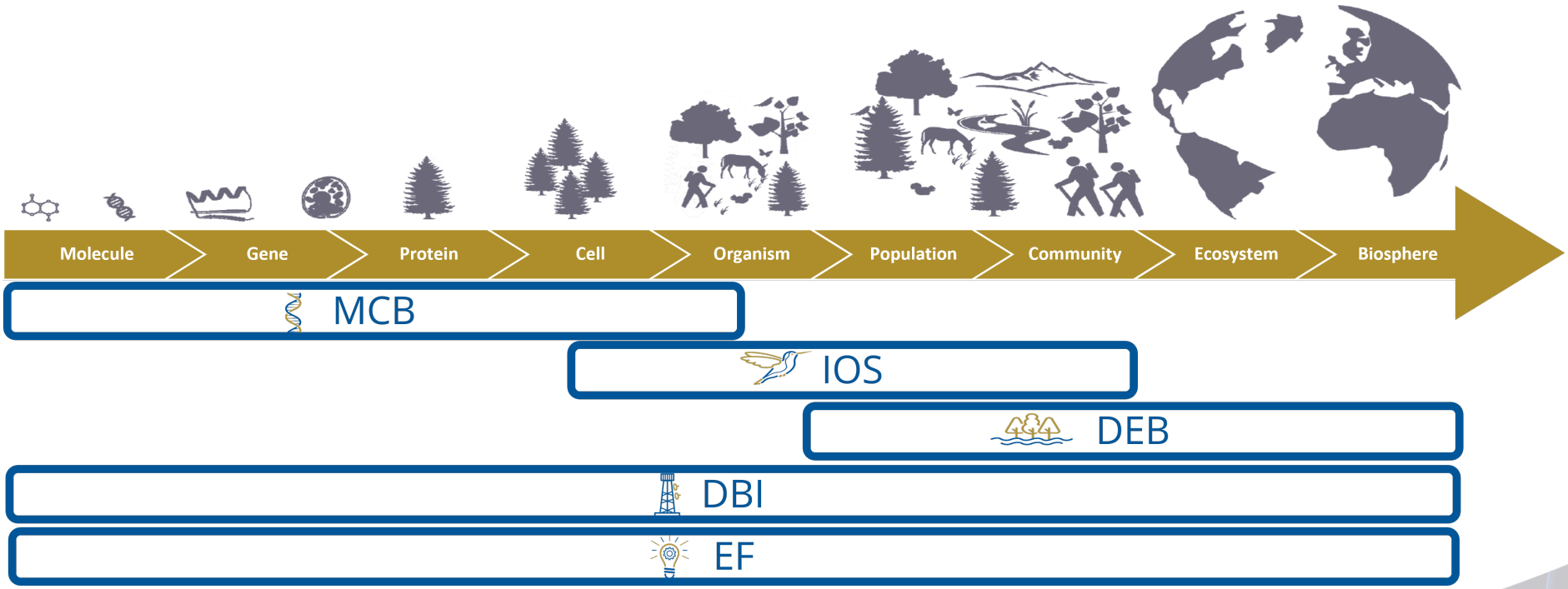
- Cellular Dynamics and Function
- Genetic Mechanisms
- Molecular Biophysics
- Systems and Synthetic Biology

Division of Biological Infrastructure (DBI)

- Research Resources
- Human Resources
- Centers, Facilities, and Additional Research Infrastructure

"To enable discoveries for understanding life, advance the frontiers of biological knowledge, and provide a theoretical basis for prediction within complex, dynamic living systems through an integration of scientific disciplines."

How the BIO Divisions Support Research Across Scales



DEB Structure

Core Programs

Ecology
Ecosystem Sciences
Population and Community Ecology

Evolution
Evolutionary Processes
Systematics and Biodiversity Science

Special Programs & Tracks

Biodiversity on a Changing Planet **(BoCP)**	Ecology and Evolution of Infectious Diseases **(EEID)**	Long-Term Ecological Research **(LTER)**	Long-Term Research in Environmental Biology **(LTREB)**	Opportunities for Promoting Understanding through Synthesis **(OPUS)**	Organismal Response to Climate Change **(ORCC)**	Partnership to Advance Conservation Science and Practice **(PACSP)**

IOS Structure

Core Programs

Behavioral Systems
Animal Behavior

Developmental Systems
Plant, Fungal, and Microbial Developmental Mechanisms
Animal Developmental Mechanisms
Evolution of Developmental Mechanisms

Neural Systems
Organization
Activation
Modulation

Physiological and Structural Systems
Symbiosis, Infection, and Immunity
Physiological Mechanisms and Biomechanics
Integrative Ecological Physiology
Plant Biotic Interactions (NSF-NIFA)

Plant Genome Research Program

Special Programs & Tracks

Enabling Discovery through GEnomics **(EDGE)**

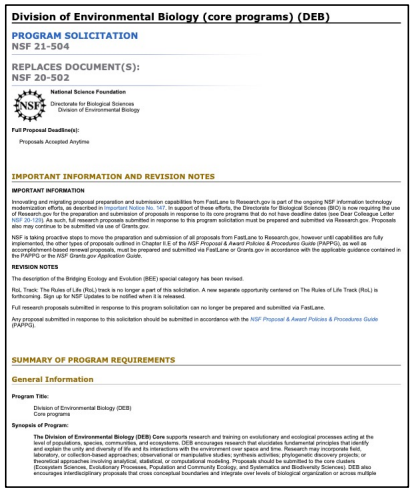
Organismal Response to Climate Change **(ORCC)**

Partnership to Advance Conservation Science and Practice **(PACSP)**

Essential Documents

PAPPG

Provides general guidance for proposal preparation and submission to NSF


Division of Environmental Biology (core programs) (DEB)

PROGRAM SOLICITATION
NSF 21-504

REPLACES DOCUMENT(S):
NSF 20-502

National Science Foundation
Directorate for Biological Sciences
Division of Environmental Biology

Full Proposal Deadline(s):
Proposals Accepted Anytime

IMPORTANT INFORMATION AND REVISION NOTES

IMPORTANT INFORMATION

REVISION NOTES

SUMMARY OF PROGRAM REQUIREMENTS

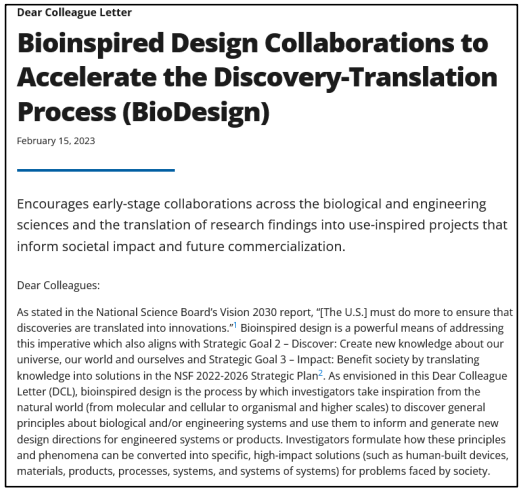
General Information

Program Title:
Division of Environmental Biology (DEB)
Core programs

Synopsis of Program:

Solicitation

Outlines specific funding call, including program objectives, eligibility requirements, deadline and budget information, and cognizant program staff to contact


Dear Colleague Letter

Bioinspired Design Collaborations to Accelerate the Discovery-Translation Process (BioDesign)

February 15, 2023

Encourages early-stage collaborations across the biological and engineering sciences and the translation of research findings into use-inspired projects that inform societal impact and future commercialization.

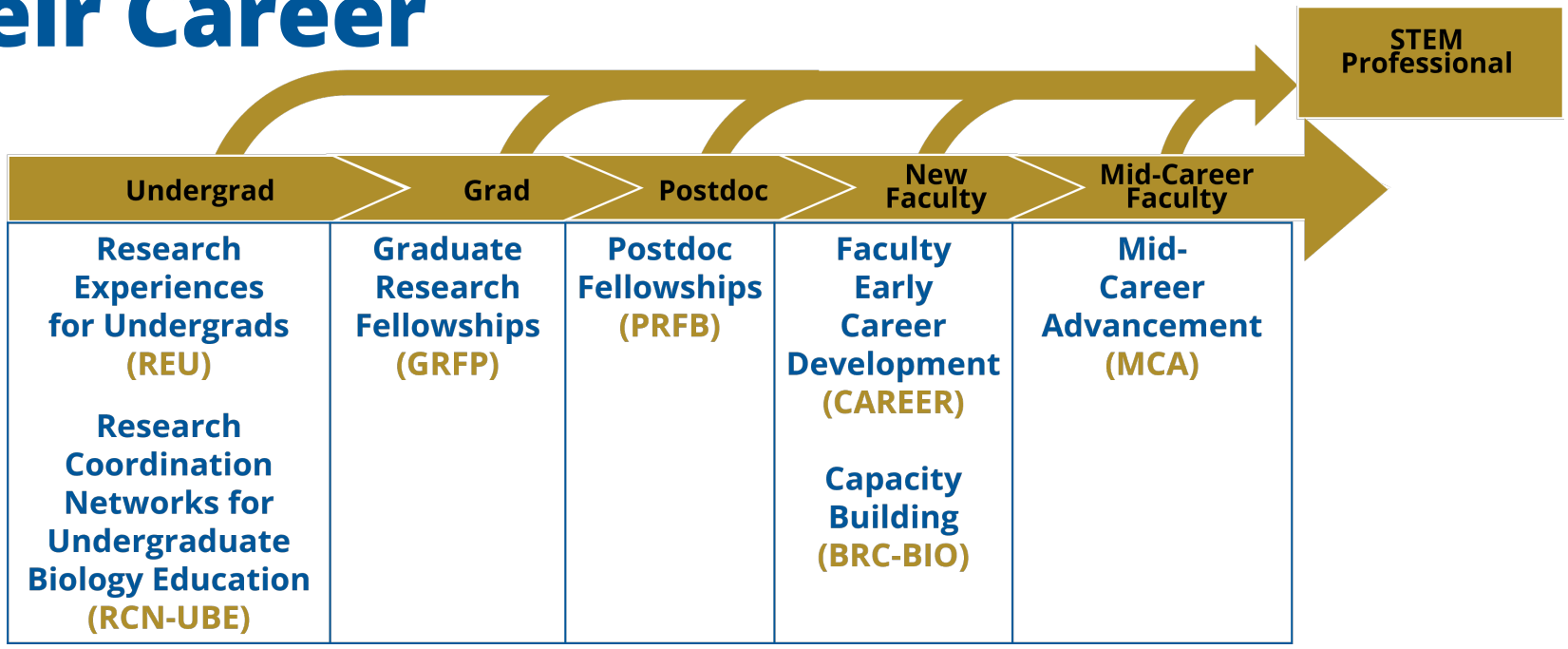
Dear Colleagues:

As stated in the National Science Board's Vision 2030 report, "[The U.S.] must do more to ensure that discoveries are translated into innovations."[1] Bioinspired design is a powerful means of addressing this imperative which also aligns with Strategic Goal 2 – Discover: Create new knowledge about our universe, our world and ourselves and Strategic Goal 3 – Impact: Benefit society by translating knowledge into solutions in the NSF 2022-2026 Strategic Plan[2]. As envisioned in this Dear Colleague Letter (DCL), bioinspired design is the process by which investigators take inspiration from the natural world (from molecular and cellular to organismal and higher scales) to discover general principles about biological and/or engineering systems and use them to inform and generate new design directions for engineered systems or products. Investigators formulate how these principles and phenomena can be converted into specific, high-impact solutions (such as human-built devices, materials, products, processes, systems, and systems of systems) for problems faced by society.

Dear Colleague Letter

Highlights interest in proposals in specified topical areas, planned program changes, or supplement opportunities

BIO Supports Researchers Throughout Their Career



BRC-BIO Building Research Capacity of New Faculty in Biology

- **Who:** PIs must:
  - hold at least a 50% tenure-track (or tenure-track equivalent) position as an assistant professor (or equivalent rank)
  - be untenured and within first three years of their appointment
  - have both research and teaching components to their appointment
- **What:** Proposed projects should enable the establishment of research programs for new faculty to position them to apply for future grants to sustain their research and should also enrich undergraduate research experiences and thereby grow the STEM workforce.
- **Where:** MSIs, PUIs, and other universities and colleges that are not among the nation's most research-intensive and resourced institutions.
- **When:** Proposal window late spring-early summer.

CAREER Faculty Early-Career Development Program

- **Who:** Tenure track faculty members at assistant professor level, or equivalent
- **What:** Designed to help junior faculty members develop activities that can **effectively integrate research and education** within the context of his/her organization.
- **Where:** At any U.S. Institution of Higher Education or non-profit organization
- **When:** Application deadline is in the summer

Core Programs Tracks

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STAR Special Targeted Awards for Research: DEB Core Programs*

- **Who:** There are no restrictions
- **What:** Important research activities that entail a narrower scope and/or reduced costs (e.g., analysis of existing data (including NEON data), theoretical research, synthesis projects, fieldwork projects, etc.), including ideas initiated by postdoctoral researchers
- **Where:** At any U.S. Institution of Higher Education or non-profit organization
- **When:** No deadlines

Ecosystem Science, Evolutionary Processes, Population and Community Biology, Systematics and Biodiversity Science

IntBIO Integrative Research in Biology: BIO Core Programs

- **Who:** There are no restrictions
- **What:** Track within BIO core programs that supports integrative biological research spans subdisciplines and incorporates cutting-edge methods, tools, and concepts from each to produce groundbreaking biological discovery. Research should be synergistic and produce novel, holistic understanding of how biological systems function and interact across different scales of organization.
- **Where:** At any U.S. Institution of Higher Education or non-profit organization
- **When:** Proposals accepted anytime

Other Solicitations & Special Programs

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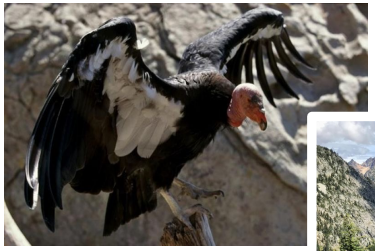
PACSP Partnership to Advance Conservation Science and Practice

Managed in Partnership with the Paul G. Allen Family Foundation

- **Who:** Interdisciplinary academic-conservation organization partnerships
- **What:** Conservation research projects that investigate organismal biology, ecology, and/or evolution and are designed to contribute to the development and implementation of evidence-based activities and/or technology solutions (TOOLS track) to advance biodiversity conservation.
- **Where:** Limited to US-based projects only
- **When:** Deadline to be posted
- **Questions:** Kari Segraves (ksegrave@nsf.gov)
  Colette St. Mary (cstmary@nsf.gov)



BoCP Biodiversity on a Changing Planet

- **Who:** There are no restrictions
- **What:** Interdisciplinary proposals addressing grand challenges in biodiversity science within the context of unprecedented environmental change. Proposal may include researchers that will be supported by the federal science agencies of China, Brazil, and/or South Africa.
- **Where:** At any U.S. Institution of Higher Education or non-profit organization
- **When:** September 4, 2025

ORCC Organismal Response to Climate Change

- **Who:** There are no restrictions
- **What:** Integrative proposals that focus connect organismal mechanisms of the response to climate change with eco-evolutionary approaches to predict, manage, and mitigate the effects of changing climate in any species or system (including marine systems).
- **Where:** At any U.S. Institution of Higher Education or non-profit organization
- **When:** 3rd Tuesday in November, annually

EEID Ecology and Evolution of Infectious Diseases

- **Partners:** GEO, MPS, SBE, National Institutes of Health, U.S. Department of Agriculture-National Institute for Food and Agriculture
- **Who:** There are no restrictions
- **What:** Aims to support research on the ecological, evolutionary, and social drivers that influence the transmission dynamics of infectious diseases.
- **Where:** At any U.S. Institution of Higher Education or non-profit organization
- **When:** 3rd Wednesday in November, annually

LTREB Long-Term Research in Environmental Biology

- **Who:** There are no restrictions
- **What:** supports the generation of extended time series of data to address important questions in evolutionary biology, ecology, and ecosystem science.
- **Where:** At any U.S. Institution of Higher Education or non-profit organization
- **When:** No deadline

Dear Colleague Letters (DCLs)

Innovative Use of Scientific Collections DCL

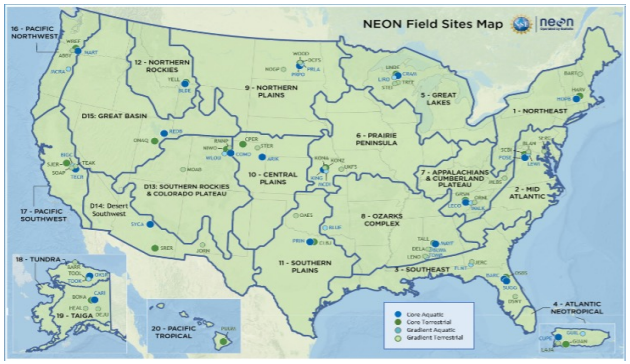
- **What:** encourages the submission of proposals that foster Innovative Use of Scientific Collections and/or associated digital data for novel research, education, and training applications within and across STEM disciplines
- **Where:** DBI (Capacity: Biological Collections), DEB (EP, ES, PCE, SBS), CISE (IIS), GEO (EAR, OCE, OPP), and SBE (BCS, SES)
- **When:** Deadline/no deadline according to participating programs' solicitations
- **How:** Submit to relevant participating program with the prefix "IUSC:"

ULTRA-Data Using Long-Term Research Associated Data DCL

- **What:** Encourages submission of proposals for projects that use/reuse long-term environmental data to advance understanding of ecological and evolutionary questions.
- **Where:** DEB, IOS, OCE and OPP
- **When:** Deadline/no deadline according to participating programs' solicitations
- **How:** Submit to relevant participating program with the prefix "ULTRA-Data:" and, at the end of the Overview section of the Project Summary, include a sentence indicating that the proposal is being submitted in response to this DCL.

NEON National Ecological Observatory Network

81 field sites across 20 eco-climatic regions, including Alaska, Hawaii, and Puerto Rico



Data Products, Education & Training Opportunities

- Data for teaching and training modules
- Data science workshops
- Code Hub software code
- Online tutorials
- Teaching modules and data sets
- Faculty Mentoring Networks

Research Support & Assignable Assets

Supports community research and activities by providing research support services and access to infrastructure

https://www.neonscience.org/

LTER Long-Term Ecological Research Network

Research programs at 28 sites support ecological discovery on the influence of long-term and large-scale phenomenon

- Data from almost 40 years of sustained observations is publicly available
- Trains a diverse group of graduate students, undergraduates and others in ecological science
- Provides educational outreach through the LTER Schoolyard Series and other efforts

Where Does My Research Fit?

- Write a 'one-pager'
  - Your overarching biological question
  - The big picture of your research area and the knowledge gaps you are addressing
  - The hypotheses you will use to address the question
  - The specific aims and a brief overview of the planned activities

- Send your one-pager to the PO of the program(s) that fits your expertise
  - Get feedback on the fit of your project
  - Schedule a meeting to discuss your options
  - Follow up on their suggestions

BIO Virtual Office Hours (VOH)

- Informational webinar focused on:
  - New and ongoing funding opportunities
  - Topics of general interest
  - Open questions from audience to be answered live

- Days & Times by Division (occasionally rescheduled due to holidays)
  - Division of Biological Infrastructure – 3rd Tuesday from 3-4 p.m.
  - Division of Environmental Biology – 2nd Monday from 1-2 p.m.
  - Division of Integrative Organismal Systems – 3rd Thursday from 1-2 p.m.
  - Division of Molecular and Cellular Biosciences – 2nd Wednesday from 2-3 p.m.

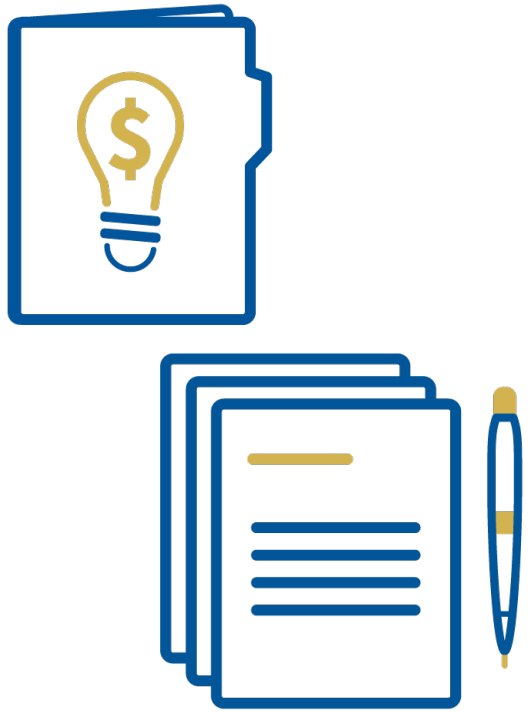
BIO Blogs

News, features, highlights, and more from OAD and the BIO Divisions

- BIO Buzz (OAD): https://oadblog.nsfbio.com/
- DBInfo (DBI): https://dbiblog.nsfbio.com/
- DEBrief (DEB): https://debblog.nsfbio.com/
- IOS in Focus (IOS): https://iosblog.nsfbio.com/
- MCB Blog (MCB): https://mcbblog.nsfbio.com/

Become an NSF Reviewer

- Peer review process depends on qualified reviewers from the academic, industrial, and government sectors.
  - Provide helpful advice on the merits of proposals and constructive comments to proposers that strengthen their projects.
  - Learn about:
    - Peer review process
    - Common problems with proposals
    - Strategies to write strong proposals
  - Meet colleagues and NSF program officers
- Send an e-mail to the PO of the program(s) that fits your expertise
  - Introduce yourself and identify your areas of expertise
  - It is most helpful if you also attach a 2-page CV



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