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# A Practical Guide to Navigating IOS, BIO, and NSF Resources

## Integrative Organismal Systems (IOS)

## Directorate for Biological Sciences (BIO)

## National Science Foundation

*Joanna Shisler and Liz Wenker*

# Outline

- **Intro to NSF, the BIO Directorate, and the IOS Division**
- How to find funding opportunities + a few programs of interest
- What to do before you even start writing a grant
- NSF's merit review: how are proposals evaluated
- How to stay informed about NSF BIO and IOS



# Office of the Director (OD) Director

Deputy Director

Chief Operating Officer

Chief of Research Facilities

Chief Information Officer

Chief of Research Security, Strategy and Policy

Chief of Staff

Directorate for Biological Sciences (BIO)

Directorate for Computer and Information Science and Engineering (CISE)

Directorate for STEM Education (EDU)

Directorate for Engineering (ENG)

Directorate for Geosciences (GEO)

Directorate for Mathematical and Physical Sciences (MPS)

Directorate for Social, Behavioral and Economic Sciences (SBE)

Directorate for Technology, Innovation and Partnerships (TIP)

Office of Budget, Finance and Award Management (BFA)

Office of Information and Resource Management (OIRM)



# Directorate for Biological Sciences (BIO)

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.



[nsf.gov/bio](https://www.nsf.gov/bio)



# BIO by the Numbers



**\$831.73M**  
FY2022 Current Plan



**4,237**  
Proposals  
evaluated



**1,113**  
Awards made

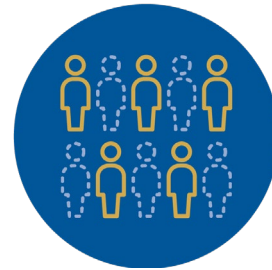
**27%**  
Funding  
rate



**416**  
institutions  
supported



**143**  
postdoctoral  
fellowships



**14,000+**  
Individuals from  
Sr. Researchers  
to Undergrads



**10**  
New Biology  
Integration  
Institutes

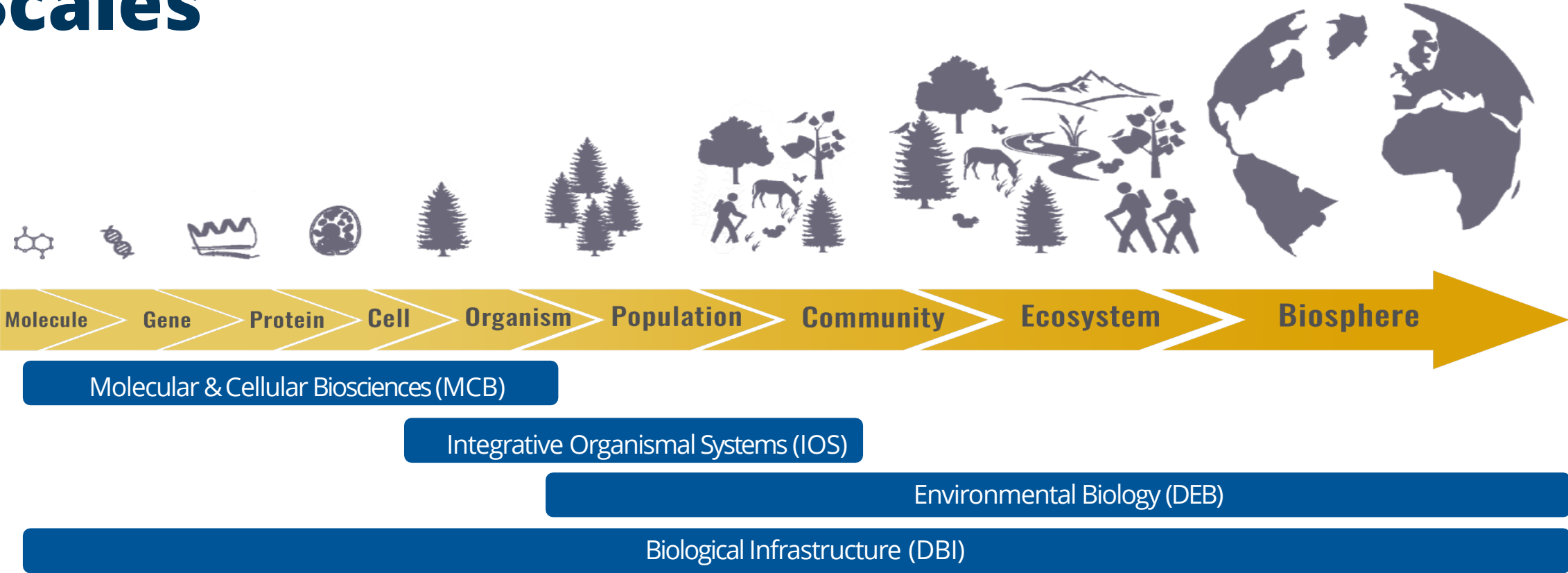


# BIO and Biomedical Research: What Isn't Funded

- Biological research on mechanisms of disease **in humans**, including on the etiology, diagnosis, or treatment of disease or disorder, **is normally not supported**.
- Biological research to develop animal models of human conditions, or the development or testing of procedures for their treatment, also are **not normally eligible for support**.
- However, research with etiology, diagnosis - or treatment-related goals that advances knowledge in **engineering, mathematical, physical, computer, or information sciences** is eligible for support.



# Support for Biological Research Across Scales



## Division of Integrative Organismal Systems (IOS)

Supports research aimed at improving our understanding of organisms as integrated units of biological organization.



# IOS Structure

## Core Programs

Details of Core Programs and IntBIO will be presented **today** at 12:45pm ET

<b>Behavioral Systems</b> Animal Behavior	<b>Developmental Systems</b> Plant, Fungal, and Microbial Developmental Mechanisms Animal Developmental Mechanisms Evolution of Developmental Mechanisms
<b>Neural Systems</b> Organization Activation Modulation	<b>Physiological and Structural Systems</b> Symbiosis, Infection, and Immunity Physiological Mechanisms and Biomechanics Integrative Ecological Physiology Plant Biotic Interactions (NSF-NIFA)
<b>Plant Genome Research Program</b>	

## Special Programs & Tracks

ORCC and EDGE BIO will be presented **today** at 3pm ET

Enabling Discovery through GENomics <b>(EDGE)</b>	Organismal Response to Climate Change <b>(ORCC)</b>	Organismal Systems and Infection Biology <b>(OSIB)</b>	Bio Inspired Design <b>(BIODesign)</b>	Integrative Research in Biology <b>(IntBIO)</b>
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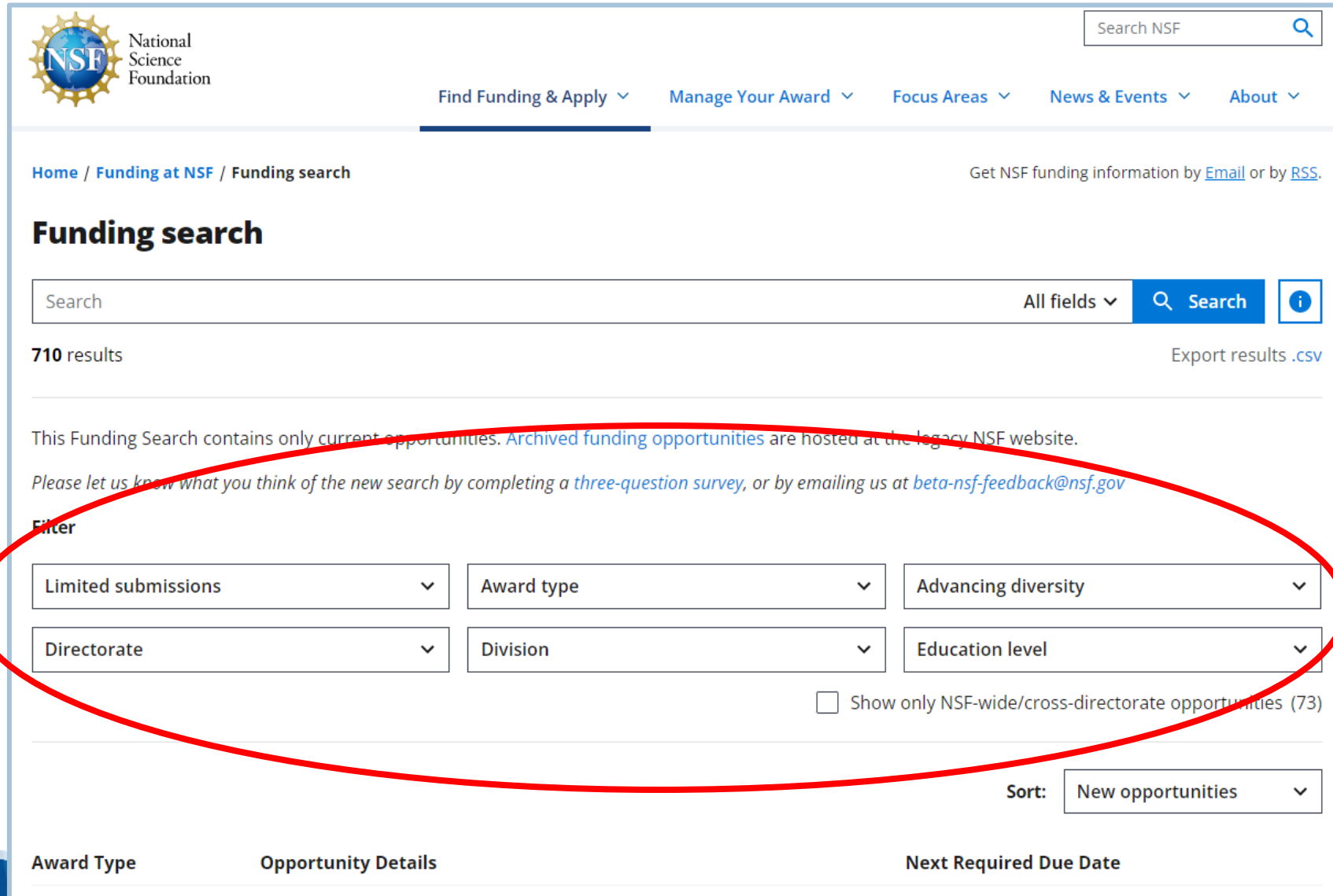
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# Find Funding Opportunities

www.nsf.gov/funding/opportunities



The screenshot shows the NSF Funding Search interface. At the top left is the NSF logo and the text "National Science Foundation". To the right is a search bar labeled "Search NSF". Below the logo is a navigation menu with items: "Find Funding & Apply", "Manage Your Award", "Focus Areas", "News & Events", and "About". The breadcrumb trail reads "Home / Funding at NSF / Funding search". On the right, there is a link to "Get NSF funding information by Email or by RSS." The main heading is "Funding search". Below it is a search input field with the placeholder "Search", a dropdown menu set to "All fields", a "Search" button, and an information icon. Below the search bar, it says "710 results" and "Export results .csv". A red circle highlights the filter section, which includes the following text: "This Funding Search contains only current opportunities. Archived funding opportunities are hosted at the legacy NSF website. Please let us know what you think of the new search by completing a three-question survey, or by emailing us at beta-nsf-feedback@nsf.gov". The filter section contains six dropdown menus: "Limited submissions", "Award type", "Advancing diversity", "Directorate", "Division", and "Education level". Below these is a checkbox labeled "Show only NSF-wide/cross-directorate opportunities (73)". At the bottom right of the filter section is a "Sort:" dropdown menu set to "New opportunities". The bottom of the page shows the start of a table with columns: "Award Type", "Opportunity Details", and "Next Required Due Date".

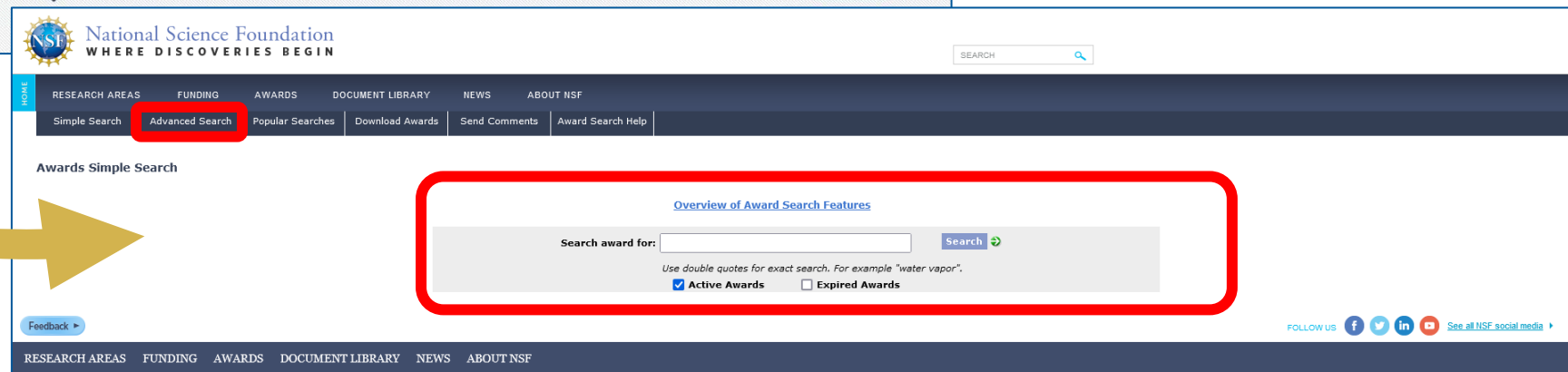


# Where Does My Research Fit?



The screenshot shows the NSF website home page. The top navigation bar includes 'Research Areas', 'Funding', 'Awards', 'Document Library', 'News', and 'About NSF'. The 'Awards' menu is open, showing options like 'About Awards', 'Award Statistics', 'Award Conditions', 'Managing Awards', 'Policies and Procedures', 'Presidential and Honorary Awards', and 'Search Awards'. The 'Search Awards' option is highlighted with a red box. A yellow arrow points from this box to the search interface in the next screenshot.

Look for both research topics and researchers most similar to your research



The screenshot shows the 'Awards Simple Search' page. The 'Advanced Search' option is highlighted with a red box. The search interface includes a search box, a 'Search' button, and checkboxes for 'Active Awards' and 'Expired Awards'. A red box highlights the search input area and the 'Search' button. A yellow arrow points from the 'Search Awards' option in the previous screenshot to this search interface.





# An Example Funding Opportunity



Search NSF

[Find Funding & Apply](#) [Manage Your Award](#) [Focus Areas](#) [News & Events](#) [About](#)

## Division of Integrative Organismal Systems Core Programs (IOS)

[View guidelines](#)  
**23-547**

[View image credit](#)

Document #

Acronym

[← Search for more funding opportunities](#)

[Print](#)

### **i** Important information for proposers

All proposals must be submitted in accordance with the requirements specified in this funding opportunity and in the NSF [Proposal & Award Policies & Procedures Guide \(PAPPG\)](#) that is in effect...

Supports research and training on the structure and function of organisms. Core areas supported include development, behavior, neuroscience, physiology, biomechanics and morphology, microbiology, immunology, virology, and plant and animal genomics.

### Upcoming due dates

Full proposal accepted anytime

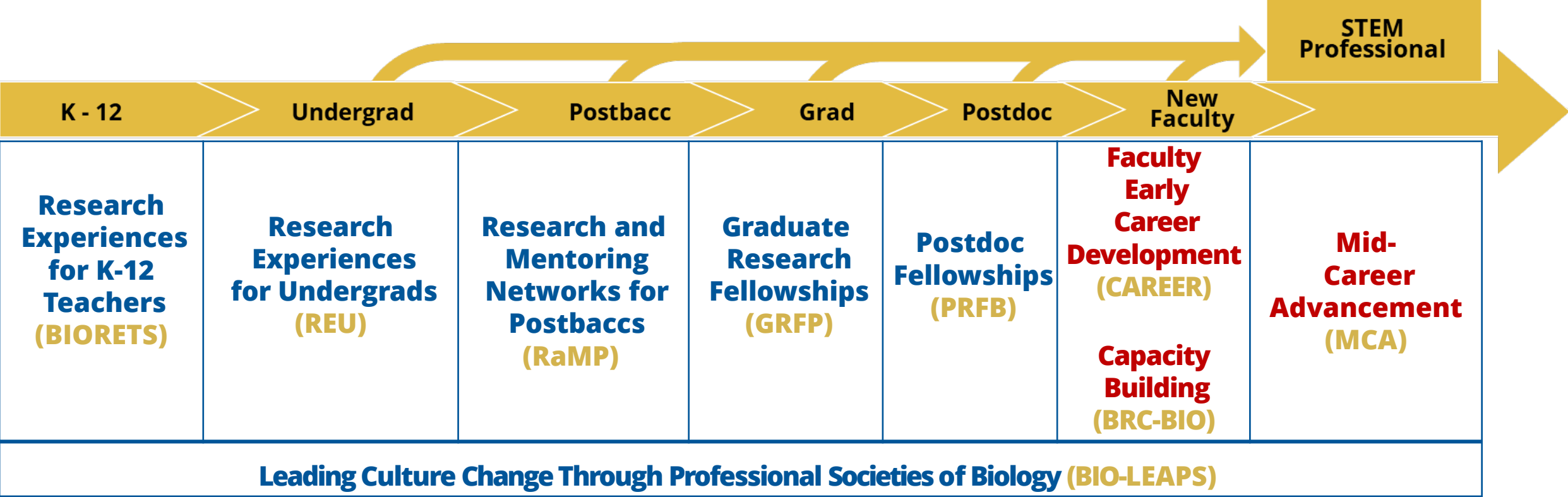
### Program guidelines

Feedback





# Supporting Researchers Throughout Your Career



CAREER and BRC-BIO will be presented **tomorrow** at 1:15pm ET

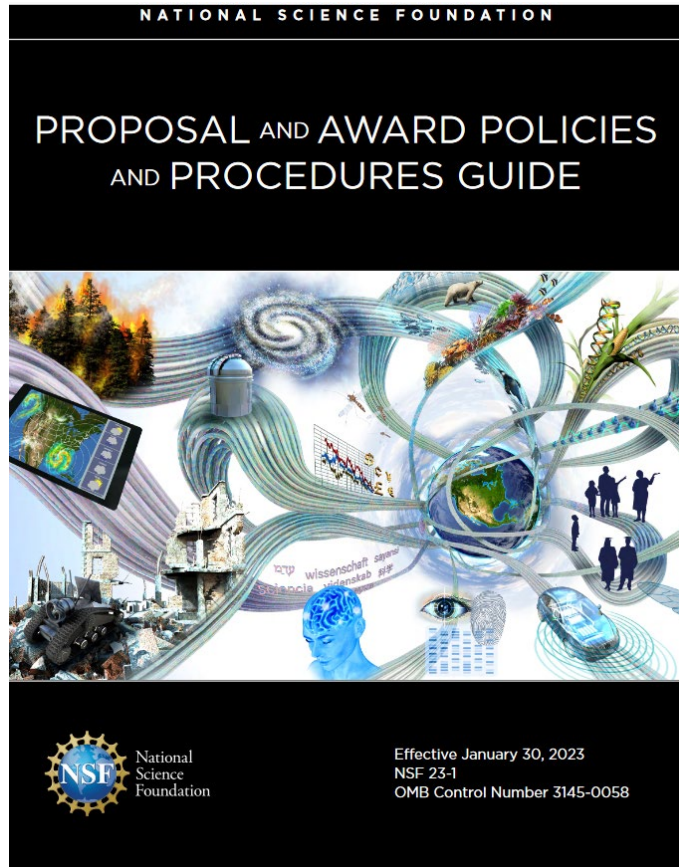


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# Essential Documents



**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**

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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**  
The description of the Bridging Ecology and Evolution (BEE) special category has been revised.  
RoL Track: The Rules of Life (RoL) track is no longer a part of this solicitation. A new separate opportunity centered on The Rules of Life Track (RoL) is forthcoming. Sign up for NSF Updates to be notified when it is released.  
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**SUMMARY OF PROGRAM REQUIREMENTS**

**General Information**

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

**Synopsis of Program:**  
The Division of Environmental Biology (DEB) Core supports research and training on evolutionary and ecological processes acting at the level of populations, species, communities, and ecosystems. DEB encourages research that elucidates fundamental principles that identify and explain the unity and diversity of life and its interactions with the environment over space and time. Research may incorporate field, laboratory, or collection-based approaches; observational or manipulative studies; synthesis activities; phylogenetic discovery projects; or theoretical approaches involving analytical, statistical, or computational modeling. Proposals should be submitted to the core clusters (Ecosystem Sciences, Evolutionary Processes, Population and Community Ecology, and Systematics and Biodiversity Sciences). DEB also encourages interdisciplinary proposals that cross conceptual boundaries and integrate over levels of biological organization or across multiple

PAPPG



Solicitation




# Essential Documents - Solicitation

**Division of Environmental Biology (core programs) (DEB)**

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**PROGRAM SOLICITATION**  
NSF 21-504

**REPLACES DOCUMENT(S):**  
NSF 20-502

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Division of Environmental Biology

**Full Proposal Deadline(s):**  
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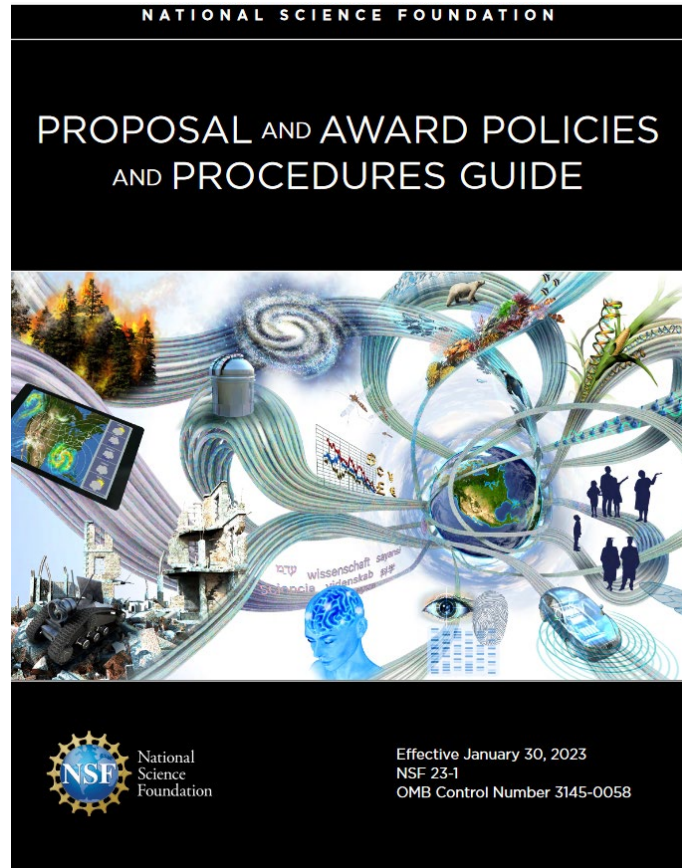
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- Deadline / Target Date
- Synopsis
- Program Directors (contact for questions)
- Eligibility (do you and your institution qualify?)
- Budget limitations
- Do you need a Pre-Proposal or Letter of Intent?
- How much money is available, how many awards are expected?





# Essential Documents - PAPPG



- **Provides guidance for proposal preparation and submission to NSF**
  - Who can submit proposals?
  - What is allowed in the budget?
  - Format + required documents
- **Describes the merit review process by which proposals will be reviewed**
- **Share this with your grants office**

Tips for Developing NSF Research Proposals will be presented **tomorrow** at 3:15pm ET

**NSF 23-1**



# Safe and Inclusive Working Environment Plan

**Off-campus or off-site research** is defined as data/information/samples being collected off-campus or off-site, such as fieldwork and research activities on vessels and aircraft.

**The PI's institution(s) makes the determination** if the work is off-campus or off-site, so check with your Sponsored Research Office (SRO)



# Proposal Cover Page – last box should be checked – for ALL

THIS PROPOSAL INCLUDES ANY OF THE ITEMS LISTED BELOW	
<input type="checkbox"/> TYPE OF PROPOSAL _____	<input type="checkbox"/> HUMAN SUBJECTS _____ Human Subjects Assurance Number _____ Exemption Subsection _____ or IRB App. Date _____
<input type="checkbox"/> COLLABORATIVE STATUS _____	<input type="checkbox"/> FUNDING OF INT'L BRANCH CAMPUS OF U.S. IHE
<input type="checkbox"/> BEGINNING INVESTIGATOR	<input type="checkbox"/> FUNDING OF FOREIGN ORGANIZATION OR FOREIGN INDIVIDUAL
<input type="checkbox"/> DISCLOSURE OF LOBBYING ACTIVITIES	<input type="checkbox"/> INTERNATIONAL ACTIVITIES: COUNTRY/COUNTRIES INVOLVED _____
<input type="checkbox"/> PROPRIETARY & PRIVILEGED INFORMATION	<input type="checkbox"/> POTENTIAL LIFE SCIENCES DUAL USE RESEARCH OF CONCERN
<input type="checkbox"/> HISTORIC PLACES	<input checked="" type="checkbox"/> OFF-CAMPUS OR OFF-SITE RESEARCH
<input type="checkbox"/> LIVE VERTEBRATE ANIMALS IACUC App. Date _____ PHS Animal Welfare Assurance Number _____	

# Proposal Certification Page – AOR signature

## Certification Regarding Safe and Inclusive Working Environments for Off-Campus or Off-Site Research

(This certification applies only to proposals in which data/information/samples are being collected off-campus or off-site, such as fieldwork and research activities on vessels and aircraft.)

By electronically signing the Certification Pages, the Authorized Organizational Representative is certifying that, in accordance with the NSF Proposal & Award Policies and Procedures Guide, Chapter II.E.9, the organization has a plan in place **for this proposal** regarding safe and inclusive working environments.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE

SIGNATURE

DATE



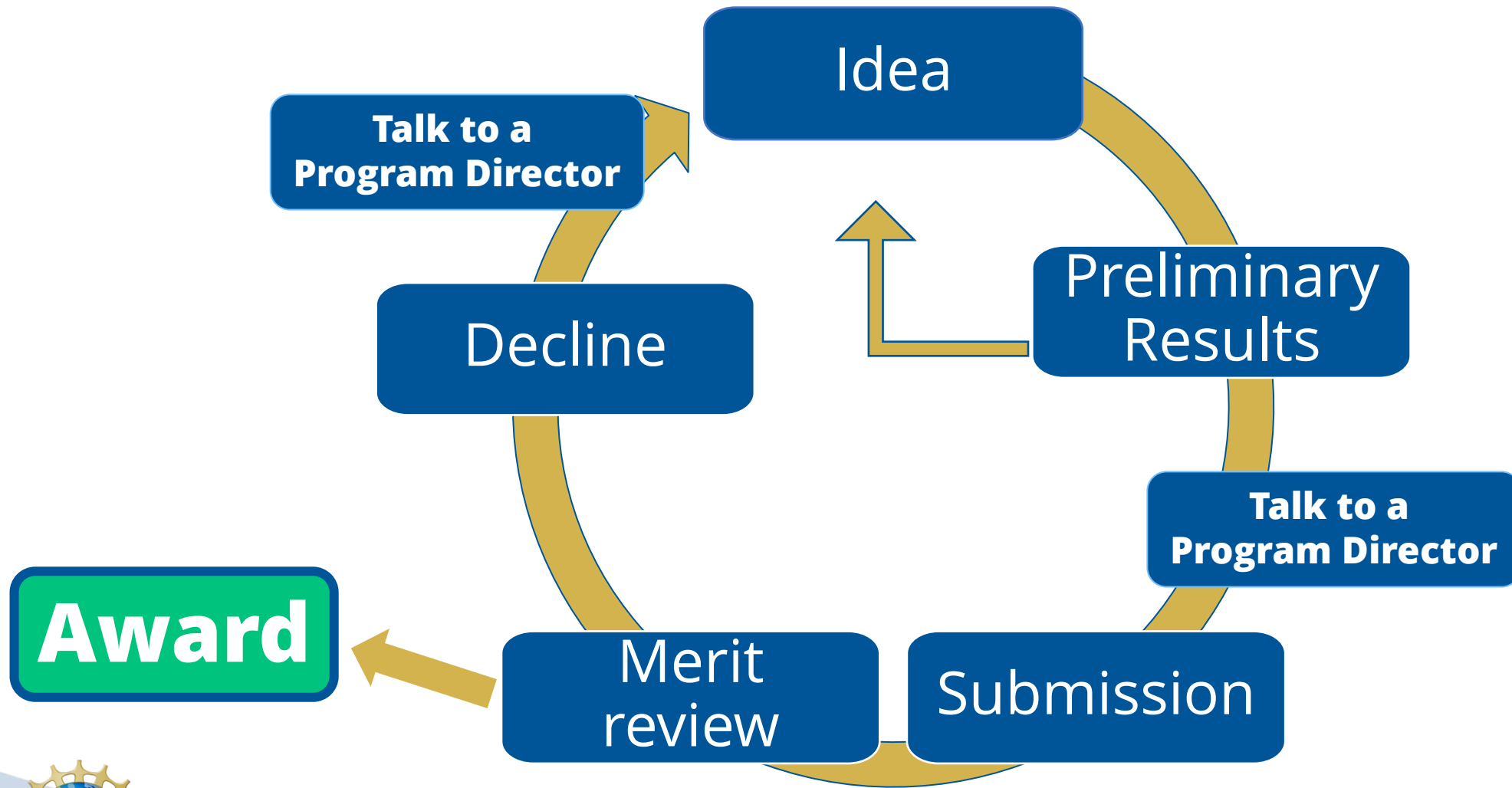
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# Proposal Submission Process: PI Perspective



Tips for writing a one-page concept outline to send to a Program Director will be presented **today** at 4:15pm ET



# Merit Review Criteria

Details of the Merit Review Process will be presented **tomorrow** at 2pm ET

- **Intellectual Merit (IM):**  
the potential to advance knowledge
- **Broader Impacts (BI):**  
the potential to benefit society and contribute to the achievement of specific, desired societal outcomes
- **Additional: solicitation-specific criteria**



# Become an NSF Reviewer

- **Why?**
- Learn about:
  - The peer review process
  - Common problems with proposals
  - Strategies to write strong proposals
- Meet colleagues and NSF program officers
  
- **How?**
- Send a CV to a Program Director of the program(s) that fits your expertise or fill out the IOS reviewer interest list



IOS Reviewer Interest List  
<https://www.surveymonkey.com/r/XPZH6GH>



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## **Upcoming IOS Virtual Office Hours**

**Register here:**



### **September 21, 2023**

BIO's Postdoctoral Research Fellowships in  
Biology (PRFB)

### **October 19, 2023**

Primarily Undergraduate Institution (PUI)  
Opportunities

### **November 16, 2023**

IOS Synthesis Center Webinar

### **December 21, 2023**

Meet the IOS Program Directors!



# 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 – 3<sup>rd</sup> Tuesday from 3-4 pm

Division of Environmental Biology – 2<sup>nd</sup> Monday from 1-2 pm

**Division of Integrative Organismal Systems – 3<sup>rd</sup> Thursday from 1-2 pm**

Division of Molecular and Cellular Biosciences – 2<sup>nd</sup> Wednesday from 2-3 pm



# BIO Blogs

News, features, solicitation announcements, tips, 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/>



# BIO News and Updates

Sign-up for emails on new solicitations; events; due date reminders; and BIO's quarterly newsletter, including information on new priorities and solicitations, highlights from the community, and more!

Visit [www.nsf.gov](http://www.nsf.gov) and scroll down until you see the orange sign-up box, click, and follow the prompts.

