Directorate for Biological Sciences Virtual Office Hour

Welcome! We will begin the Virtual Office Hour soon.
Please submit questions in the Zoom Q&A box.

October 2026

Directorate for Biological Sciences (BIO)
Welcome!

Program Directors in attendance today:

- Pankaj Jaiswal
- Sridhar Raghavachari
- Shin-Han Shiu
- Diana Chu
- Amanda Simcox
- Anna Allen
- Gordon Burleigh
- Karen Cone

Administrative Support & Technical Assistance:

- Jennifer Visosky and Pauline Meng

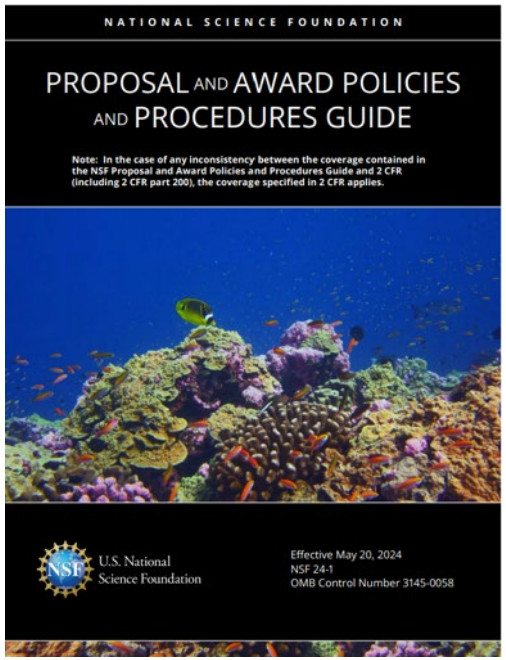
BIO Virtual Office Hour
Today's Topics

- Reminders and Background
- Topic of the Day: BIO x SI Intersection
- Q&A with Program Directors



Reminders: General

Proposal & Award Policies & Procedures Guide (PAPPG)



- Current version is NSF 24-1
- Latest version can always be found at: https://www.nsf.gov/policies/pappg
- Check for recent mini-updates (supplements NSF 26-200 and NSF 26-202)

Implementation of Executive Orders

- Updates on NSF Priorities can be found at https://www.nsf.gov/updates-on-priorities
- Updates on NSF's Implementation of Executive Orders can be found at https://www.nsf.gov/executive-orders

Executive Order 14434



"The terminology used by the Federal Government should reflect the transformative capabilities of these technologies and the limitless opportunities they create for the American people. Accordingly, the term “Super Intelligence” more appropriately captures the promise, potential, and rapidly advancing capabilities of these technologies. It is therefore the policy of my Administration that, to the maximum extent permitted by law,

the executive branch shall use the terms “Super Intelligence” and “SI” in place of “Artificial Intelligence” and “AI” and will not acknowledge the usage of “Artificial Intelligence” and “AI” in any applicable setting."

BIO has reorganized

Then

- Four divisions
- Core research supported via division-associated funding opportunities
- 20+ programs, each covering a focused research topic

Now

- Three thematic areas
- Core research support via **one** funding opportunity (NSF 26-517)
- Other support via specialized BIO and cross-agency funding opportunities



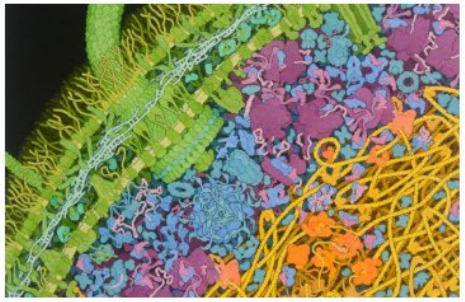
Home / Directorate for Biological Sciences (BIO)

Directorate for Biological Sciences (BIO)

- Programs and Funding Opportunities +
- What We Support −
  - Core Biological Sciences Research
  - Workforce Development
  - Initiatives and Infrastructure
- Centers, Institutes, and Facilities +
- About +
- Resources +
- News and Events +
- Career Opportunities +

The www.nsf.gov/bio website has been updated!

Key research themes



Foundations of life

Understanding natural or synthetic molecules, cells, and physiology that build living things.

Read more about the Foundations of Life program.



Living systems

Understanding how species evolve, interact and shape Earth's biodiverse ecosystems.

Read more about the Living Systems program.



Bioinnovation and infrastructure

Investigating the functional genomic complexity of life and developing the tools, data and technologies to drive biological discovery.

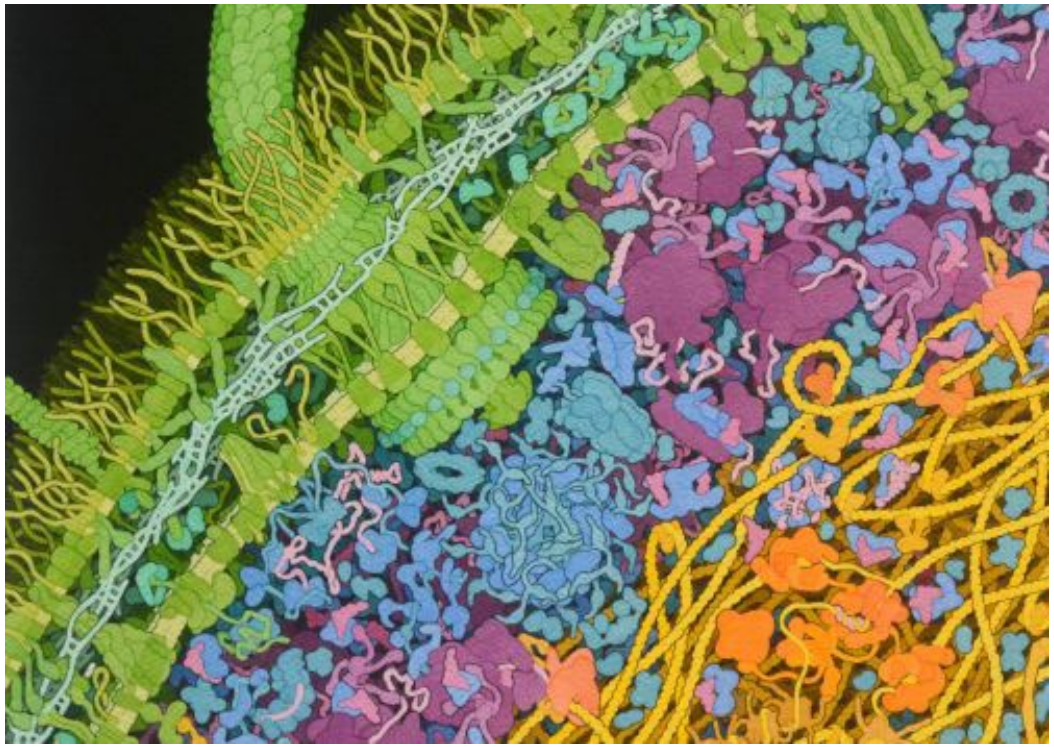
Read more about the Bioinnovation and Infrastructure program.

Read the BIO Core funding opportunity

Foundations of Life

Sections: Molecular Biosciences; Cell, Development & Physiology

Supports fundamental research to understand the natural and synthetic molecules, cells, and physiology that build living things



Topics may include:

- Principles governing biomolecular interactions, including quantum phenomena
- Biomolecular and supramolecular structure, assembly and dynamics
- Cell structure and dynamics
- Biomechanical principles of organismal function
- Integrated physiological processes
- Neuroscience scaling from cellular to behavioral levels
- Developmental mechanisms
- Epigenetics and mechanisms of gene expression

Contact info: bio-FL@nsf.gov

Living Systems

Sections: Evolutionary Patterns & Processes; Organismal Interactions & Ecology

Supports investigation of how species evolve, interact and shape Earth's biodiverse ecosystems



Topics may include:

- Evolution of genes, genomes, and genetic architecture
- Evolution of processes that govern development, morphology, behavior, physiology, speciation, etc.
- Biodiversity discovery and systematics
- Population and quantitative mechanisms
- Morphological, behavioral, or physiological patterns and processes within or between species
- Ecological consequences of biotic interactions, including roles of microorganisms and their interactions with other organisms
- Processes governing population-level features and feedbacks with environmental conditions
- Community characteristics, such as assembly, structure, resilience, and turnover
- Ecosystem dynamics and trajectories
- Trait-based or mechanistic pathways organisms use to mediate interactions, ecology, disease, or environmental responses

Contact info: bio-LS@nsf.gov

Bioinnovation and Infrastructure

Sections: Informatics & Functional Genomics; Infrastructure, Institutes & Centers

Supports investigations into the functional genomic complexity of life and the development of tools, data, and technologies to drive biological discovery

Topics may include:

- Hypothesis-driven and discovery-based omics-scale studies that examine:
  - Relationships among biological structure, function and environment
  - How genome-wide features influence traits across biological levels and environmental conditions
  - Connections of molecular- and cellular-level characteristics to patterns observed in organisms
- Technology development to improve or create innovative shared resources for broad scientific communities
  - Computational algorithms and pipelines
  - Instrumentation
  - Research methods or analytical strategies



Contact info: bio-BI@nsf.gov

BIO has a new core solicitation!

- Core Research in Biological Sciences (BIO Core; NSF 26-517)
- Supports foundational, curiosity-driven, use-inspired, or interdisciplinary research from single investigators or collaboratives
- **Replaces** core solicitations formerly in the Divisions of:
  - Environmental Biology (DEB; NSF 24-543)
  - Integrative Organismal Systems (IOS; NSF 24-546)
  - Molecular and Cellular Biosciences (MCB; NSF 24-539)
- Welcomes proposals in **all areas** of biological sciences
  - Relevant to one or more of BIO's three Thematic Areas, **or**
  - Aligned with national* / NSF priorities, such as super intelligence, biotechnology, quantum information sciences

* OSTP/OMB Memo on FY 2028 Administration R&D Budget Priorities

Now to today's topic: Intersection of BIO and SI

NSF BIO Support for Super Intelligence



SI-usable datasets for biological research



New SI to power biological discovery



SI - BIO workforce development

Datasets for Biological Research
Production and Analysis

Data Generation

Protein Data Bank

NSF National Ecological Observatory Network

AgBioData Database Consortium

Data Synthesis

NSF Environmental Data Science Innovation & Impact Lab

NSF National Synthesis Center for Emergence In the Molecular and Cellular Sciences

NSF National Synthesis Center for Organismal Resilience

Unlocking Dataset Value for AI-Enabled Scientific Discovery, NSF 26-512

Unlocking Dataset Value for AI-Enabled Scientific Discovery (NSF 26-512)

- Goals
  - To apply super intelligence to extract features, generate metadata, and integrate scientific datasets.
  - To build robust data pipelines that support automated analysis and SI-enabled research.
  - To augment and harmonize existing datasets to increase their value for new scientific discoveries.
- Deadline: November 4, 2026
- For info: AIDatasets@nsf.gov
- Webinar recording available



Investigated Topics May Include

- The use of novel feature extraction, metadata generation, and data integration techniques that make previously generated datasets more usable by SI for testing new hypotheses.
- Next-generation data pipelines that create more powerful, comprehensive, or interdisciplinary datasets ready for automated analysis and SI training.
- Strategic augmentation and/or harmonization of existing datasets that significantly expand their scientific utility and usability by SI tools.
- Automated platforms that discern the readiness of legacy datasets at scale.
- Expanding broad availability of enhanced scientific community datasets through NSF data platforms, accelerating SI-driven inquiry and interdisciplinary discovery.

Award Information

Anticipated funding amount: $60 M to $100 M

Impact

- Up to 3 years
- Maximum $2,000,000 per award
- Approximately 10 to 20 awards

Planning

- Up to 2 years
- Maximum $200,000 per award
- Approximately 10 to 20 awards
- Address early-stage issues that may lead to stronger full proposals
- **Must** contact aidatasets@nsf.gov for guidance and approval

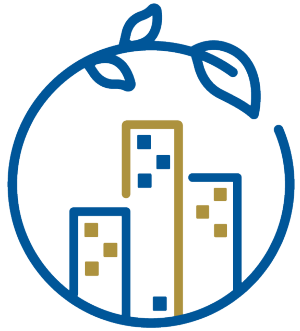
Flagship

- Up to 3 years
- Maximum $5,000,000 per award
- Approximately 5 to 10 awards
- Address more complex challenges that are not achievable without more substantial resources
- Encouraged to contact aidatasets@nsf.gov to discuss project scope and concept early

New SI to Power Biological Discovery

BIO Infrastructure Innovation for Biological Research

NSF 23-578



- Supporting innovation in design or improvement of research tools in bioinformatics, methods, and instrumentation
- Send questions to: BIO-BI@nsf.gov

Dear Colleague Letter: Advancing Research at the Intersection of Biology and Artificial Intelligence / Machine Learning

NSF 24-131



- Promoting biological discovery through use of existing SI/ML or developing new SI/ML methods using biological data
- Send questions to: BIO-AI@nsf.gov

Funding SI to Power Biological Discovery

Dear Colleague Letter: Unleashing a new age of SI-enabled scientific discovery through the **Genesis Mission** (NSF 26-023)

Purpose

Invites researchers to submit proposals through existing NSF funding opportunities that support the Genesis Mission – a coordinated federal effort to accelerate SI-enabled scientific discovery and address national science and technology priorities.

NSF Focus Areas

Leveraging and Building SI for Science

Research that uses SI for science or seeks to build the foundations of SI-accelerated scientific discovery.

Building Foundations for S&T Challenges

Research that supports one or more of the Genesis Mission National Science and Technology Challenges.

Growing Workforce and Capacity in SI for Science

Proposals that advance workforce and capacity-building in SI for science.

Send questions to one of the BIO aliases:
Bio-FL@nsf.gov; Bio-LS@nsf.gov; Bio-BI@nsf.gov

Genesis Mission Science and Technology Challenges Most Relevant to Foundational Research in Biology

Predicting Living Systems

Achieving SI-Driven Autonomous Laboratories

Scaling Biology for American Industrial Strength

Securing America's Critical Minerals Supply

Finding the Root Causes of Chronic Diseases

Early Detection and Attribution of Biological Threats

Genesis S&T Challenges

Apply to Bio CORE, NSF 26-517

SI - BIO Workforce Development



- NSF Research Experiences for Undergraduates (NSF REU)



- NSF Graduate Research Fellowship Program (NSF GRFP)



- NSF Postdoctoral Research Fellowships in Biology (NSF PRFB)

Research and Training Focus:
Intersection of SI and Biological Sciences to Strengthen and Safeguard Biotechnology Innovations

NSF 26-504



- NSF Faculty Early Career Development (NSF CAREER)
- NSF Mid-Career Advancement (NSF MCA)

NSF Frontier Initiatives
Funding Opportunities Coming Soon

Foundations of Biological Design

To advance the broad measurement and intervention tools to read, write, and reliably control living systems in the physical world. Tools such as gene editing, low-cost synthesis and sequencing, and advanced microscopy, have driven much of modern biology, and the next generation of tools will also draw deliberately on engineering, mathematics, chemistry, and materials science.

Future of Intelligence

To advance our fundamental understanding of intelligence, aimed at breakthroughs in the architectures, hardware, and theories of learning that will define the next paradigm of SI. Just as neuroscience laid the groundwork for neural networks, the next paradigm will likely come from outside computer science and draw deliberately on physics, mathematics, biology, neuroscience, and engineering.

Frontier of Quantum Phenomena

To advance foundational research in quantum information science and technology, building the physical understanding, materials, and theory needed to compute, sense, and communicate in ways that exceed the capabilities of classical systems. This initiative will also support the engineering and instrumentation breakthroughs required to realize the application of quantum to other frontiers.

Advanced Materials and Matter

To advance the design, discovery, and manipulation of the materials that underpin nearly every other frontier, including quantum and computing, semiconductors, robotics, fusion, and biomanufacturing. This initiative will also advance early-stage research on advanced manufacturing methods that accelerate and close the loop between discovery, synthesis, and characterization.

As announced by Brian Stone, Chief of Staff, Performing the Duties of the NSF Director

NSF provides free resources and services!

National Computing, Data, and SI Resources

ACCESS Advancing Innovation
ALLOCATIONS SUPPORT OPERATIONS METRICS

PATh PARTNERSHIP to ADVANCE THROUGHPUT COMPUTING
Throughput Computing, Data, and Support

National Secure Data Service
Secure Compute Environment

SGX3
Science Gateways

NRP NATIONAL RESEARCH PLATFORM

NAIRR Pilot

Training, Workshops, and More

- https://support.access-ci.org/events
- https://portal.osg-htc.org/documentation/support_and_training/training/materials/
- https://nairrpilot.org/pilotevents
- https://www.nrp.ai/training/

Community and Workforce Development

ms-cc.org in partnership with INTERNET2
Minority Serving CI Consortium
www.ms-cc.org

CaRCC Campus Research Computing Consortium
Campus Research Computing Consortium
www.carcc.org

TRUSTED CI
THE NSF CYBERSECURITY CENTER OF EXCELLENCE

Portals

- **ACCESS: https://access-ci.org**
- NRP: www.nrp.ai
- PATh: https://path-cc.io
- NAIRR Pilot: https://nairrpilot.org
- CaRCC: https://carcc.org
- SGX3: https://sciencegateways.org/
- LCCF: https://lccf.tacc.utexas.edu/
- MSCC: https://www.ms-cc.org/
- Trusted CI: https://www.trustedci.org/

BIO is recruiting rotating program directors!

- Shape the future of science
- Gain new perspectives
- Take valuable expertise back to your home institution



Krisztina Pankaj April Diana Shin-Han

All areas of biological expertise are welcome, including:

Biotechnology Plant biology Computational biology Neuroscience Systems biology

Biological infrastructure Program management Molecular Biophysics Synthetic biology

https://www.nsf.gov/careers/openings/bio/bio-2026-120839
https://www.nsf.gov/careers/rotator-programs

BIO Virtual Office Hour Reminders

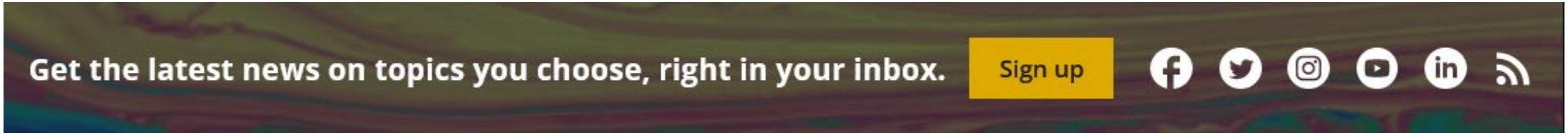


- Submit questions in the Zoom Q&A box
- Project-specific questions are best addressed individually by contacting a Program Director or Program Alias
- Next BIO Virtual Office Hours:
  - November 12, 2026 (1-2 pm ET): Topic to be determined
  - December 17, 2026 (1-2 pm ET): Topic to be determined

For more info:

Sign-up for emails on new funding opportunities, events, due date reminders, and BIO's newsletter!

Visit www.nsf.gov and scroll down until you see the Sign up and social media banner, click on the yellow box, and follow the prompts.



Now let's open it up to answering questions directly from you.

Submit questions in the Zoom Q&A box


NSF