Overview of BIO Directorate and its Human Resources Programs

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BIO/Division of Biological Infrastructure

Topics covered in this presentation

- **Short introduction to NSF and the BIO Directorate**
- **How to find funding opportunities: navigating the NSF website**
- **Programs: K-12 RET, REU, RAMP, PRFB**

❖ **Goal: encourage proposal submission to BIO to fund your research and/or education ideas**

Office of Equity and Civil Rights (OECR)

Office of the General Counsel (OGC)

Office of Integrative Activities (OIA)

Office of International Science and Engineering (OISE)

Office of Legislative and Public Affairs (OLPA)

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

NSB National Science Board

Chair, Vice Chair, NSB Executive Officer

Office of the Inspector General (OIG)

Directorate for Biological Sciences (BIO)

Directorate for Computer and Information Science and Engineering (CISE)

Directorate for STEM Education (EDU; formerly EHR)

Directorate for Engineering (ENG)

Directorate for Geosciences (GEO)

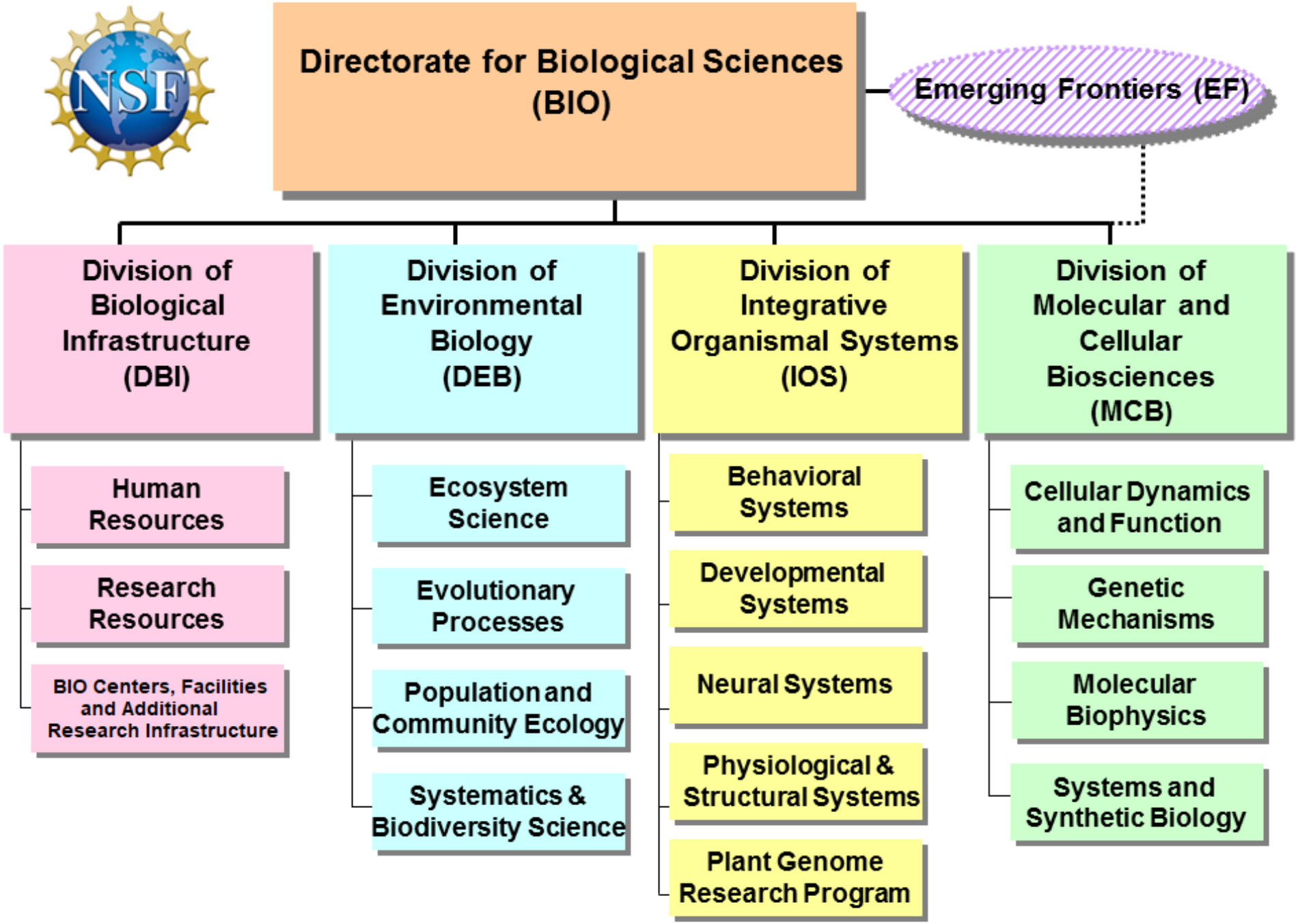
Directorate for Mathematical and Physical Sciences (MPS)

Directorate for Social, Behavioral and Economic Services (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)
Emerging Frontiers (EF)
Division of Biological Infrastructure (DBI)
Division of Environmental Biology (DEB)
Division of Integrative Organismal Systems (IOS)
Division of Molecular and Cellular Biosciences (MCB)
Human Resources
Research Resources
BIO Centers, Facilities and Additional Research Infrastructure
Ecosystem Science
Evolutionary Processes
Population and Community Ecology
Systematics & Biodiversity Science
Behavioral Systems
Developmental Systems
Neural Systems
Physiological & Structural Systems
Plant Genome Research Program
Cellular Dynamics and Function
Genetic Mechanisms
Molecular Biophysics
Systems and Synthetic Biology

How the BIO Divisions Support Research Across Scales

Molecular & Cellular Biosciences (MCB)

Integrative Organismal Systems (IOS)

Environmental Biology (DEB)

Biological Infrastructure (DBI)

Find a home for your idea

- **Visit: nsf.gov/bio. Click on Divisions to see all programs managed by the Divisions. Contact a Program Officer.**
- **Go to nsf.gov/awardsearch. Enter key words pertaining to your idea. Read the abstracts of recent awards and note the NSF unit that funded the idea.**

MCB Structure

Core Programs

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

Special Programs & Tracks

- Transitions to Excellence in Molecular and Cellular Biosciences Research **(Transitions)**
- Designing Synthetic Cells Beyond the Bounds of Evolution **(Designer Cells)**
- Reproducible Cells and Organoids via Directed-Differentiation Encoding **(RECODE)**

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)**

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 Research in Environmental Biology **(LTREB)**	Long-Term Ecological Research **(LTER)**	Macrosystems Biology and NEON-Enabled Science **(MSB-NES)**	Opportunities for Promoting Understanding through Synthesis **(OPUS)**

DBI Structure

Core Programs

Human Resources

Postdoctoral Research Fellowships in Biology
Research Coordination Networks in Undergraduate Biology Education
Research Experiences for Undergraduates
Building Research Capacity for New Faculty in Biology
Research and Mentoring for Postbaccalaureates in Biological Sciences
Research Experiences for Teachers Sites in Biological Sciences
Leading Culture Change through Professional Societies of Biology (BIO-LEAPS)

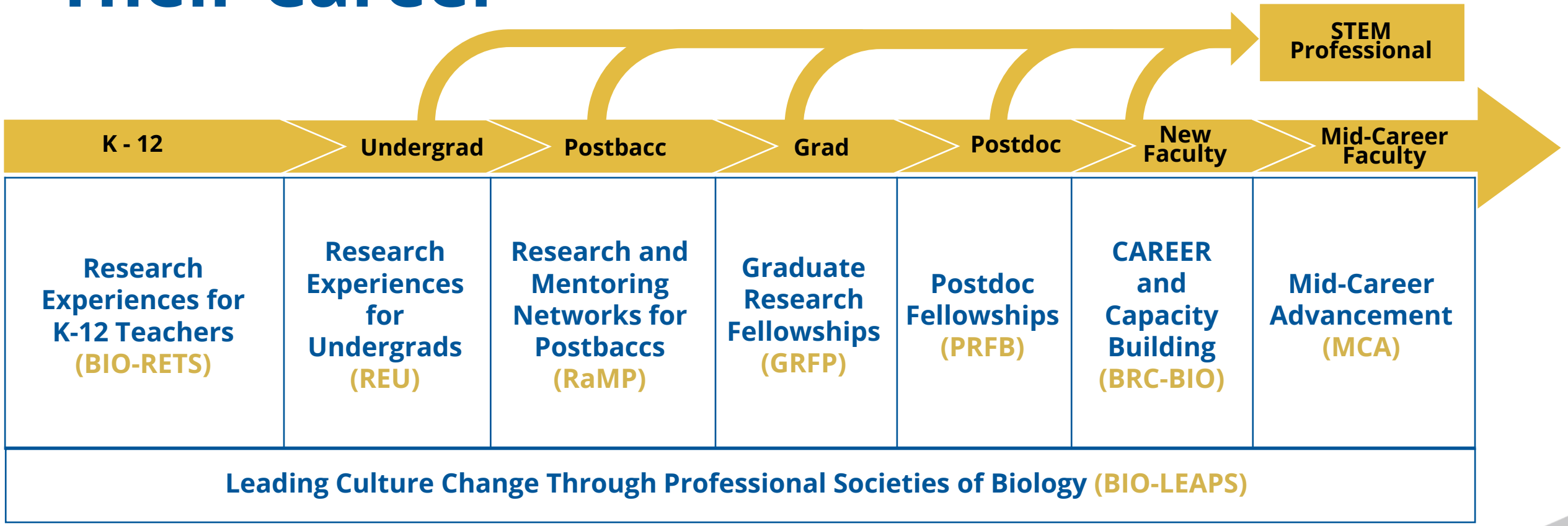
Research Resources

Infrastructure Innovation for Biological Research (Innovation)
Infrastructure Capacity for Biological Research (Capacity)
Sustaining Infrastructure for Biological Research (Sustaining)
Major Research Instrumentation Program

Centers, Facilities, and Additional Research Infrastructure

Biology Integration Institutes (BII)
Center for Advancement of Synthesis of Open Environmental Data and Sciences
Management of Operations and Maintenance of the National Ecological Observatory Network (NEON)
Mid-scale Research Infrastructure-1
Mid-scale Research Infrastructure-2

Supporting Researchers Throughout Their Career



BIORETS Research Experience for Teachers Sites in the Biological Sciences

- Research training of levels **7-14 Teachers (**middle school; high school; community college faculty)
- Translation/integration of research experience into classroom curriculum or activity
- Typically 6-8 weeks in summer plus additional weeks in AY
- Awards: 3 years for up to $600k
- Deadline – July 31, 2024 (webinars)

REU Research Experiences for Undergraduates

- **Synopsis**
  - Two mechanisms:
    1. REU Sites: Organized training of a group of undergrads in a theme-focused bioscience research. Typically, 10 students/summer for 10 weeks.
    2. REU Supplements: Supplements to new or existing awards to engage one or more students in the research activity
- **Where do I find more information?**
  - **NSF 23-601, next deadline August 2024**
  - To view recent awards, go to https://nsf.gov/awardsearch/
  - Program Officer: reu.bio@nsf.gov

RaMP Research and Mentoring for Postbaccalaureates in Biological Sciences

- Networks to support full-time research, mentoring, and training for recent college graduates who have had few or no research or training opportunities during college in research fields typically supported by BIO (response to pandemic; REPS supplement).
  - strong and inclusive mentoring programs to create a competitive and highly representative skilled workforce in STEM (science, technology, engineering, and mathematics)
  - Transitions into the STEM workforce could include pathways into research-focused M.S. or Ph.D. programs, industry, federal or state agencies, education and research centers, and other STEM careers.
- **NSF 23-514: deadline has passed (Jan 18, 2024)**

GRFP Graduate Research Fellowship Program (individual award; managed in EDU)

- Advanced undergraduate, recent graduate or beginning graduate student pursuing Master's or PhD studies (must be a U.S. citizen, national, or permanent resident)
- Fellowship: 5-year year tenure with 3 years of financial support
- Pursue advanced degree at any U.S. Institution of Higher Education or non-profit organization
- **Applications due:** Oct./Nov. each year
- Send questions to: info@nsfgrfp.org
- **Seeking reviewers**: register at **NSFGRFPReviewers.org**

PRFB Postdoctoral Research Fellowship in Biology (individual award)

- Recent recipients of doctoral degrees (Past 15 months); US citizen, national or permanent resident
- Tenure: 3-year postdoctoral fellowship
- Current themes/tracks: Rules of Life, Plant Genomics, Broadening Participation
- Pursue at any Institution of Higher Education or non-profit organization
- **NSF 23-620:** Application deadline is in the Fall (Nov 7, 2024)

Contact: bio-dbi-prfb@nsf.gov or **dbipgr@nsf.gov** (Plant Genomics)

Questions?

BIO-LEAPS Leading Cultural Change through Professional Societies of Biology

- Leverage the work of professional societies towards facilitating necessary culture change in the biological sciences to advance diversity, equity, and inclusion at scale.
  - Evaluation Track: Assessment and research of the values, norms, priorities, and practices associated with the culture of the discipline or sub-discipline.
  - Design Track: Develop an evidence-based plan to address broad-scale culture change within a discipline or sub-discipline.
  - Implementation Track: Implement evidence-based cultural change strategies that leverage the influence of biological professional societies.
- Institution of higher education or other non-profit organization in the U.S.
- **NSF 22-542:** July 1, 2024

RCN-UBE

Research Coordination Networks in Undergraduate Biology Education

Program Overview

Supports networks of scientists focused on integrating biological research discoveries with innovations in education to improve learning experiences for undergraduates

Projects are responsive to (and contribute to) 'Vision and Change in Undergraduate Biology Education'

RCN-UBE: What, when, and how

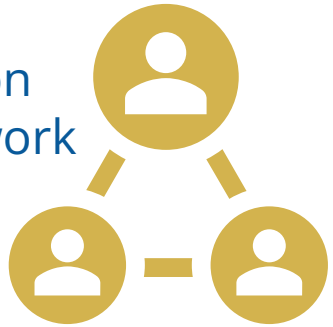
- **Funding Mechanisms**
  - Incubator awards (up to $75K, one year duration) to fund the formation of new teams
  - Full awards (up to $500K, up to 5 years duration) to fund more mature projects
- **When**
  - January 23, 2024 (Fourth Thursday in January annually)
- **How**

Develop a plan…

- Use expertise and current and new connections to generate a network that improves biology education
- There are many different kinds of networks
  - Browse current RCN-UBE awards through the link from the program page

As needed, an incubator could help establish this

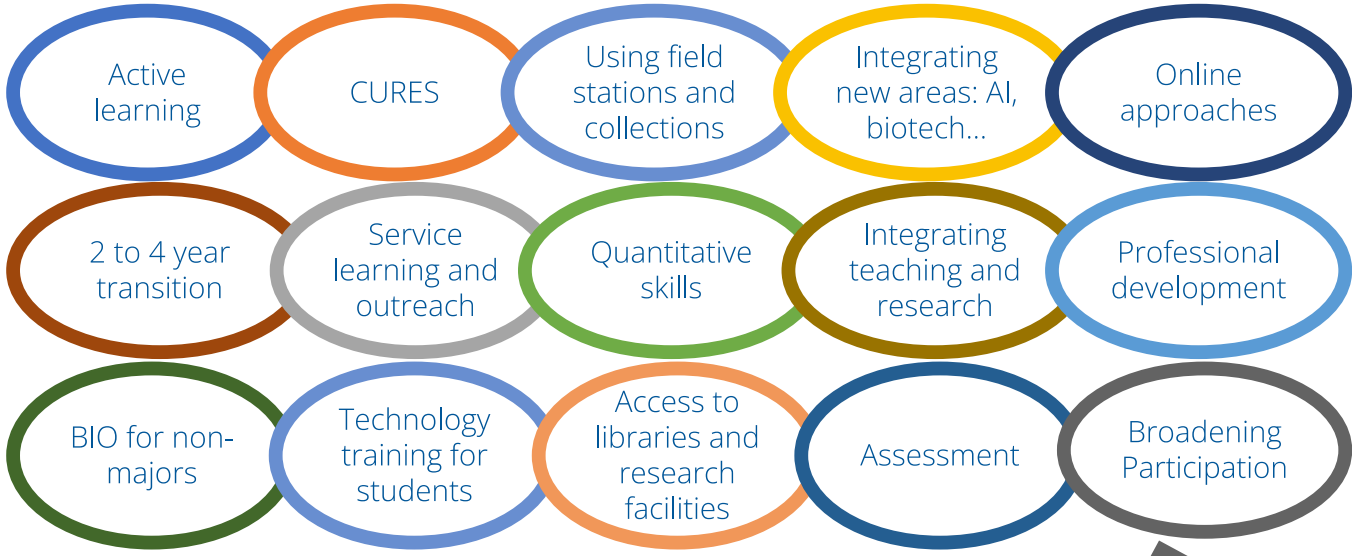
Foundation for a network

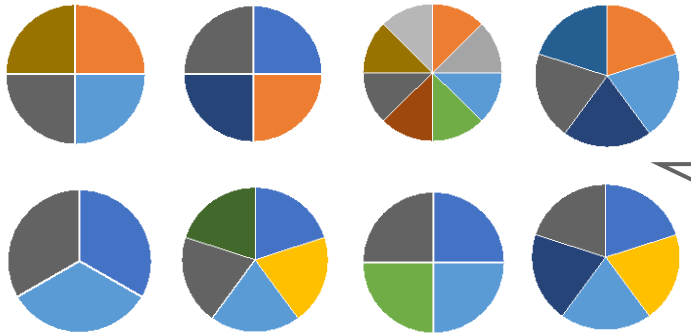


Full proposal for growth into a larger network

Does **not** support established networks

Successful RCN-UBE proposals include some of the following topics or activities:





Individual networks have different combinations of the topics:
all have broadening participation

RCN-UBE: How Does it Differ From a "Regular" Award?

- Supports projects to build communities of biology faculty ("We" instead of "I") to solve problems and accomplish more than any one person or institution could achieve.

- RCNs foster networking activities (such as conferences, workshops, student and faculty exchanges) and will not **directly** support laboratory and field research.

Building Research Capacity of New Faculty in Biology (BRC-BIO)

NSF 22-500

Contact us at: BRC-BIO@nsf.gov

Goals of BRC-BIO

- Enhance research capacity by supporting new faculty of biology at institutions that are not among the nation's most research-intensive institutions (non-R1)
- Expand opportunities to groups underrepresented in biology

Eligibility

- Institutions not among the nation's most research intensive:
  - Predominantly Undergraduate Institutions (PUIs)
  - Other institutions (including MSIs) classified as R2, D/PU, or M1-3
- PIs must be Assistant Professors (or equivalent), for no more than 3 years
- The PI's appointment must have both research *and* educational responsibilities
- Members of groups typically underrepresented in the biological sciences are especially encouraged to apply

What do awards support?

- Initiate and build independent research programs by enhancing PI research capacity
- Projects can include biology-focused research collaborations
  - Faculty at the same institution, other institutions (including research intensive), industry etc.
- Projects should lead to
  - establishment of sustainable research programs
  - undergraduate research experiences to grow the STEM workforce

Proposals

- Project Descriptions limited to 6 pages
- Intellectual Merit section
  - Overarching research goal, specific research questions, brief but feasible research plan
- All fields supported by the BIO directorate are eligible
- Research should provide a solid foundation upon which to build a long-term, sustainable research program
- Broader Impacts section should include how the proposed activities will increase participation of underrepresented students in research

Proposals: Other Documents

- Supplementary Document: Impact Statement (reviewed)
  - 2 pages describing the likely impact of the project to launch the PI's research program
  - Impact on the career development and the research capacity of the faculty participant(s)
  - Impact on undergraduate research experiences
- Single Copy Document: Institutional Letter of Support (for NSF only)
  - 1 page from the PI's department head (or other senior organizational official)
  - Statement that the PI is eligible for this program
  - Statement of support for the proposed plan of research and teaching

Budgets

- Up to $450,000 in research costs and up to $50,000 in justified equipment costs over 3 years
- Costs may include 50% teaching release time/year + 2 months of summer salary
- Personnel such as undergraduates, post-baccalaureate associates, laboratory technicians and postdoctoral support are allowed
- Other acceptable costs:
  - Research and conference related travel
  - Contractual administrative services as needed
  - Strongly justified subawards to collaborating institutions

Submission window

2024	May 1-July 1

Proposal Review

- Dedicated panels with reviewers from similar institution types well represented
- Proposals should be understandable by someone who is not necessarily a specialist in the same specific field

Reviewers will evaluate ***all*** merit review criteria

- Intellectual Merit
- Broader Impacts
- Solicitation Specific Criteria

Solicitation-Specific Criteria

- The potential of the project to increase the quantity, quality, and capacity of research of the PI
- The potential to increase the diversity and number of students engaged in authentic research experiences
- If applicable, the nature and impact of the proposed collaborations or partnerships

For More Information

Contact: Amanda Simcox

asimcox@.nsf.gov

BRC-BIO@nsf.gov

MCA Mid-Career Advancement (22-603)

BIO, EDU, GEO, SBE, & TIP

see solicitation for participating programs

WHO: Scientists and engineers at the **Associate Professor rank (or equivalent)** with at least 3 years at that rank

- Pilot Track in **BIO and GEO** extends eligibility to **Full Professors (or equivalent) at Primarily Undergraduate Institutions (PUIs**) only

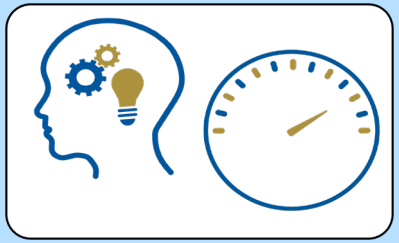
WHY: To ensure that PIs remain **active in cutting-edge research at a critical career stage replete with constraints on time** that can impinge on research productivity, retention, and career advancement.

WHAT: An opportunity to **substantively enhance and advance the PI's research program and career trajectory** through synergistic and **mutually beneficial mentored partnerships.**

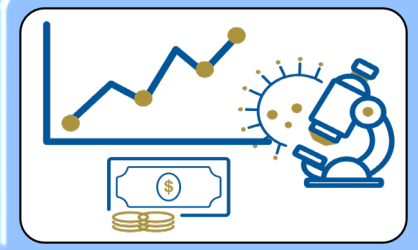
Contact: mca.info@nsf.gov

MCA Mid-Career Advancement (22-603)

How:



Protected Time (salary): Up to a total of 6.5 months of salary plus fringe over the course of the 3-yr grant, *not yearly*.



Resources (direct costs): $100,000.00 in support of the research advancement and training plan.

Partner: Up to 1 month of summer salary (total, not yearly), *or* other reasonable costs, for each partner.

Contact: mca.info@nsf.gov

MCA Mid-Career Advancement (22-603)

WHEN: Submission window between **February 1 and March 1,** annually.

Submit using **solicitation 22-603 and choose a participating program** (e.g., Division of Molecular and Cellular Biosciences)

1) In addition to PAPPG requirements, **12 page project description includes the following**:

- Section 1: Candidate's Past Research
- Section 2: Candidate's Proposed Research Advancement and Training Plan
- Section 3: Candidate's Long-Term Career Plans

2) Additional Supplementary Documentation

- Impact Statement (2 pages) - discuss constraints on time and resources available for research, and the impact an MCA award would have on PI's productivity and advancement
- Letter(s) of Collaboration (written by the Partner)
- Departmental Letter

Contact: mca.info@nsf.gov

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

RUI Research in Undergraduate Institutions

- **Who:** Faculty at Primarily Undergraduate Institutions
- **What:** An opportunity to support PUI faculty engagement in their professional field, build capacity for research at the institution, and support integration of research and undergraduate education.
- **Where:** At any U.S. PUI (awarded ≤20 PhDs in last 2 years)
- **When:** Any time (in BIO)
- **See also:** BRC-BIO and ROA (Research Opportunity Award) supplements to existing awards to support PUI faculty research at collaborator's institution

Questions?

Visit our ASM CUE NSF Booth