



Navigating NSF Funding Opportunities

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How to find, request, and hopefully receive NSF support

- Signing up to get the news
- Interpreting program websites
- Approaching Program Directors effectively
- Crafting an effective white paper
- What is a Dear Colleague Letter?
- What is a solicitation?
- The PAPPG is your friend
- Supplements?



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Limited submissions ▾	Award type ▾	Advancing diversity ▾
Directorate ▾	Division ▾	Education level ▾

☐ Show only NSF-wide/cross-directorate opportunities (43)

Sort: New opportunities ▾

Award Type	Opportunity Details	Next Required Due Date
Standard Grant	<p>Dear Colleague Letter Catalyzing Human-Centered Solutions through Research and Innovation in Science, the Environment and Society</p> <p>NSF invites proposals for interdisciplinary research to create evidence-based solutions that strengthen human resilience, security and quality of life by addressing seemingly intractable challenges that confront our society.</p> <p>NSF 23-102 Posted May 9, 2023</p>	See letter for details

Finding Programs



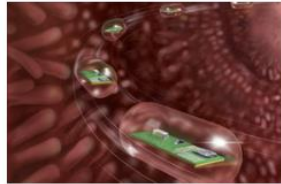
Innovation Opportunity

NSF is an independent agency of the U.S. Department of Education that funds research and education in all fields of science and engineering.

What we do



What we support



Chemical engineering

We support the development of new approaches and materials that improve the efficiency, resource use and yield of chemical processes.

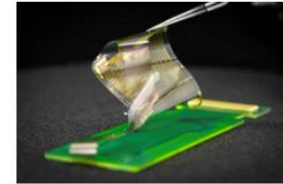
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Mechanical engineering

We support research on the mechanics of materials and structures, biomechanics, dynamical systems, robotics and more.

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Electrical engineering

We support research on electronics, computing, communications, power and quantum technologies for future devices, systems and networks.

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Civil engineering

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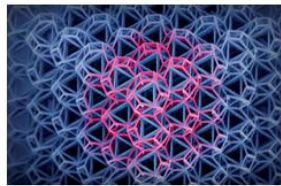
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We support research on design, operations, optimization and control to advance the engineered and socio-technical systems that are critical to society.

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Core Programs

Engineering (ENG)

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Programs: Division of Chemical, Bioengineering, Environmental and Transport Systems (CBET)

This is a list of all the programs within the Division of Chemical, Bioengineering, Environmental and Transport Systems (CBET).

Key: C Crosscutting | N NSF-wide

Chemical Process Systems Cluster

- Catalysis
- Process Systems, Reaction Engineering, and Molecular Thermodynamics

Electrochemical Systems

Interfacial Engineering

Engineering Biology and Health Cluster

- Cellular and Biochemical Engineering
- Disability and Rehabilitation Engineering (DARE)
- Engineering of Biomedical Systems

Biosensing

Biophotonics

Environmental Engineering and Sustainability Cluster

- Environmental Engineering

Environmental Sustainability

Nanoscale Interactions

Transport Phenomena Cluster

- Fluid Dynamics

Thermal Transport Processes (TTP)

Particulate and Multiphase Processes

Combustion and Fire Systems (CFS)



Reading the Program Description

- Look for key phrases:
 - “fundamental engineering research that advances understanding of cellular and biomolecular processes”
 - “understanding of how biomolecules, subcellular systems, cells, and cell populations interact”
 - “quantitative treatment of problems related to biological processes is considered vital”
 - “engineering research leading to novel bioprocessing and biomanufacturing approaches”
 - “Major areas of interest include...”
- Use this information to evaluate your proposed project
 - Identify matches and mismatches
 - Consider how changes in project objectives might impact relevance
 - Identify clear questions for the program director



[← Search for more funding opportunities](#)

i Important Information for Proposers

Any proposal submitted in response to this funding opportunity should be submitted in accordance with the NSF Proposal & Award Policies & Procedures Guide (PAPPG) that is in effect for the relevant fiscal year.

Supports fundamental engineering research leading to the development of technology that advances biomanufacturing in the therapeutic cell, biochemical, biopharmaceutical and biotechnology industries.

Synopsis

The **Cellular and Biochemical Engineering (CBE)** program is part of the **Engineering Biology and Health** cluster, which also includes: 1) the **Biophotonics** program; 2) the **Biosensing** program; 3) the **Disability and Rehabilitation Engineering** program; and 4) the **Engineering of Biomedical Systems** program.

The **Cellular and Biochemical Engineering** program supports fundamental engineering research that advances understanding of cellular and biomolecular processes. CBE-funded research may lead to the development of enabling technology for advanced biomanufacturing in support of the therapeutic cell, biochemical, biopharmaceutical, and biotechnology industries.

Fundamental to many research projects in this area is the understanding of how biomolecules, subcellular systems, cells, and cell populations interact, and how those interactions lead to changes in structure, function, and behavior. A quantitative treatment of problems related to biological processes is considered vital to successful research projects in the CBE program.

The program encourages highly innovative and potentially transformative engineering research leading to novel bioprocessing and biomanufacturing approaches. The CBE program also encourages proposals that effectively integrate knowledge and practices from different disciplines while incorporating ongoing research into educational activities.

Major areas of interest for the program include:

- Metabolic engineering and synthetic biology for biomanufacturing, including the design of synthetic metabolic components and synthetic cells,
- Quantitative systems biotechnology,
- Microbiome structure, function, synthesis, and maintenance,
- Protein and enzyme engineering, and
- Single cell and population dynamics and modeling in the context of biomanufacturing.

All proposals should include a description on the potential impact of proposed research on an associated biomanufacturing process.

Proposals whose core innovation involves tissue engineering, organ culture, development of models of healthy or diseased physiology, or design and application of technologies focused on the diagnosis or treatment of disease should be submitted to the **Engineering of Biomedical Systems** program (CBET 5345).

What should a white paper accomplish and how?

Provide a clear indication of the technical relevance of the proposed project for the intended program

- How this can be achieved in one page
 - Describe the fundamental scientific and/or engineering questions the project is intended to address
 - Clearly explain a testable working hypothesis to be applied
 - Explain the approach you propose to take to attack this problem (experimental and/or computational) and why it is likely to be effective
 - Describe the data you expect to generate and how they will be analyzed
 - Explain how the results generated will be used to address the original fundamental questions
- Do not use the one-page NSF project summary format; the panel will determine the intellectual merit and broader impacts of the project once the full proposal is submitted.



Contacting a Program Director

- Objectives
 - Determine what aspects of your project idea are relevant to the program
 - Determine why particular elements are relevant or not
 - Determine what the reviewer community is looking for in a project of your type (experimental; theoretical, computational, etc.)
- Strategy
 - Write a one-page white paper
 - Email it to directors of all programs where you can clearly identify some relevance – copy all of them in the same email!
 - Request a time to meet/Zoom to discuss the objectives stated above and other questions you might have regarding the program.



Talking with the Program Director: Points to remember

- You are asking about relevance, not selling them on the project. They cannot and should not tell you whether it is a “good idea”
- You are discussing the project, not everything you are doing in your lab
- You may need to divide your project into different pieces that are relevant to different programs – No single program can support your research career!
- Ask about average budgets – different programs have different constraints
- Offer to be a reviewer for proposals in relevant research areas in which you have expertise
- RELAX – this is not an interview! You are asking for guidance, not auditioning.
- Be mindful of the time – usually not more than 30 minutes



What is a Dear Colleague Letter (DCL)?

Dear Colleague Letter

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

- Answer: An expression of interest on the part of one or more core programs in a specific topical area
- “this DCL will support productive *transdisciplinary teams* that work together to (1) test hypotheses about the functioning of living things that are of interest to biologists and engineers; (2) create an iterative process that generates ongoing feedback between the workflows of foundational and use-inspired research in order to design a device, machine, algorithm, and/or a workflow that solves a practical problem; and (3) develop prototypes based on these activities as part of a process of exploring pathways to larger societal and economic benefits”.
- Lists programs that share the interest (in this case, ENG/CMMI and CBET have multiple programs, BIO lists two divisions (IOS and MCB), and TIP lists one program)
- A DCL may list specific funding mechanisms they will consider (supplements, unsolicited proposals) and may indicate a submission deadline.



What is a solicitation?

BioFoundries to Enable Access to Infrastructure and Resources for Advancing Modern Biology and Biotechnology (BioFoundries)

[View guidelines](#)
23-585

- These are special initiatives, separate from any individual core program
 - Specified budget guidelines and total solicitation funding available; budgets are usually larger than a standard unsolicited proposal
 - Directed at specific types of problems/questions
 - Most always multidisciplinary and team-oriented
 - Usually have requirements beyond those outlined in the PAPPG (Proposal and Award Policies & Procedures Guide)
 - Definitely have submission deadlines
 - May have additional submission requirements and timeline (Letter of Intent, Preproposal)
 - Often have limitations on the number of proposals a PI can be affiliated with or that an institution may submit



The PAPPG is your friend: <https://new.nsf.gov/policies/pappg>

- **THE** source for information about NSF's proposal and award process
- Explains what is required in every section of a proposal, including the project description, budgets, facilities, approvals required, biosketches, etc.
- Briefly explains the different types of proposals and their requirements
 - RAPID, RAISE, EAGER, GOALI, conference and equipment proposals, supplements
- It describes the review process, including
 - Evaluation criteria: Intellectual Merit and Broader Impacts
 - Selecting reviewers, handling conflicts of interest between reviewers and proposals
 - What review information will be provided once a decision is made
 - General process timeline
- NOTE: Proposals have been returned without review due to missing or incorrectly constructed proposal sections!



Supplements

- Once you have an award, a world of supplements is available to you
- There are several established opportunities
 - Research Experiences for Undergraduates (REU), Teachers (RET)
 - Veterans Research Supplement (VRS)
 - Career-Life Balance
 - Travel
 - INTERN (non-academic graduate student internship support)
 - Student Design projects directly related to NSF research
- New opportunities
 - Research Collaboration Opportunity in Europe
- All are described in DCLs
- Discuss any supplement request with the PD managing your award PRIOR to submission



Thank you for your attention!

Are there any questions?

