

Division of Molecular and Cellular Biosciences (MCB) Virtual Office Hours

**Welcome to the MCB Virtual Office Hours, we will
begin at 2pm EST!**



Questions and Answers

Submit your questions via the Q&A box on your screen

- You may elect to submit your question anonymously.
- For specific questions about your project, please contact a Program Director.

Next MCB Virtual Office Hours

January 8, 2025: Mid-Career Advancement ([NSF 22-603](#))



MCB Virtual Office Hour

Today's Topic:

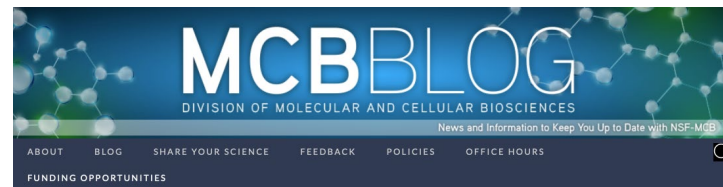
Building Synthetic Microbial Communities (NSF 25-501)

BioMADE (NSF 25-012)

Use-Inspired Creativity Extension (NSF 24-133)

Slides and recordings of past presentations at

<https://mcbblog.nsfbio.com/office-hours/2/>



Building Synthetic Microbial Communities for Biology, Mitigating Climate Change, Sustainability and Biotechnology (Synthetic Communities)

- **Solicitation:** NSF 25-501 (replaces NSF 22-607)
- **Participating BIO Divisions:** Molecular and Cellular Biosciences, Integrative Organismal Systems and Environmental Biology
- **Due Date:** February 3, 2025



General Information

- **Limit on Number of Proposals per Organization:** No restrictions or limits
- **Limit on Number of Proposals per PI or Co-PI:** No restrictions or limits
- **Letters of Intent:** Not required
- **Preliminary Proposals:** Not required
- **Full Proposals:** Yes (standard 15-page limit for the Project Description)
- **Budget:** Suitable for the proposed project



Goal of the Solicitation

The long-term goal of this solicitation is to build a comprehensive biological knowledge base that researchers can use to rationally design synthetic microbial communities for applications in economically relevant areas and for enhancing resiliency.



Supported Areas of Research to Achieve the Goal

- 1) Using synthetic microbial communities to define the biological principles that govern the formation, dynamics, stability, and interactions in natural communities
- 2) Designing synthetic microbial communities with novel capabilities, and studying the biological basis for these capabilities
- 3) Defining the functions of individual species within a synthetic community and their relationship to the properties of the community as a whole
- 4) Using synthetic microbial communities to characterize the ecological and evolutionary drivers that shape natural community patterns and dynamics



How are synthetic microbial communities defined?

For the purposes of this solicitation, a synthetic microbial community is defined as a host-associated or free-living consortium of taxonomically different microbial species that can be studied and co-cultured under well-defined and reproducible conditions.

If the synthetic community is used as a model for a natural system, it must contain a subset of the microbial species found in the natural community and provide information about fundamental processes in the natural community.

Organisms across multiple phyla and kingdoms, including bacteria, archaea, and eukaryotes such as fungi and micro-algae, may be used to generate the synthetic microbial community.



Specific Requirements

In addition to the standard NSF review criteria, reviewers will be asked to evaluate the following:

- 1) a description of the synthetic microbial community's composition and an adequate justification for using a synthetic community over a natural community
- 2) a description of how the chosen microbial community conforms to the solicitation-specific definition of a synthetic community
- 3) a description of reproducible methodologies for co-culturing the microbes in the synthetic community and the potential for scalable production, if scalable production is the ultimate goal
- 4) a careful consideration of the social, ethical, and bio-safety/security dimensions of the research



Investigations Outside the Scope of the Solicitation

- 1) Projects that aim to bio-engineer synthetic microbial communities with novel capabilities but do not investigate the biological processes that are responsible for these capabilities
- 2) Projects that focus on the biological properties of a single microbial species or variants of a single species rather than a microbial community as defined in the solicitation
- 3) Projects that aim to study natural microbial communities and are better suited for review by core programs in MCB, DEB or IOS
- 4) Projects that would fall under US government policy on potential enhanced pandemic pathogens



Agency Contacts

- 1) MCB- Anthony Garza (aggarza@nsf.gov)
- 2) IOS- Aardra Kachroo (akachroo@nsf.gov)
- 3) DEB- Sara Branco (sbranco@nsf.gov)



Dear Colleague Letter: Announcing the Opportunity for NSF Researchers to Participate in BioMADE Project Calls as Part of an Integrated Project Team (NSF 25-012)

- Steve Peretti, Program Director, CBET Cellular and Biochemical Engineering
- David Rockcliffe and David Klinke, Program Directors, MCB Systems and Synthetic Biology

<https://new.nsf.gov/funding/opportunities/dcl-announcing-opportunity-nsf-researchers-participate-biomade>

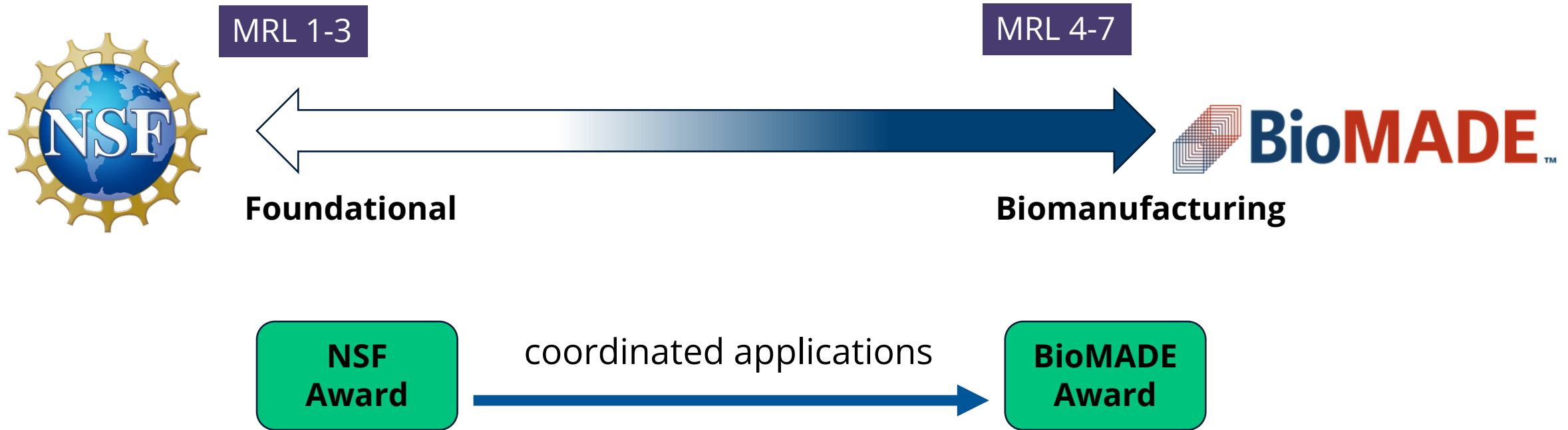


An NSF-BioMADE Collaboration

- NSF and BioMADE encourage researchers to create integrated projects that span from MRL1-3 levels typically supported by NSF all the way to MRL 4-7 levels supported by BioMADE
- Via a joint review mechanism, such projects that respond to one of BioMADE's Project Calls will be jointly supported by NSF and BioMADE, with NSF supporting basic research and BioMADE funding higher MRL research and translation efforts.



Embodies a collaborative approach between NSF and BioMADE



Foundational knowledge addressing biomanufacturing needs



Award Size and Information

- NSF will provide a standard level of support offered to unsolicited projects by the managing program. NSF anticipates making 6-8 awards total pending availability of funds.
- BioMADE will provide \$ in direct cost per award over 2 years (traditionally in the \$1.5 - \$2M range).



White Paper Submission Due Date: January 22, 2025

- Submitted to BioMADE – will be made available to NSF
- Pre-proposal (maximum 5 pages, 5.5 pages if seeking NSF funding)
- Include high-level technical narrative, project plan and budget
- Opportunity for feedback
- Full proposal invitations will be extended in early March



Full Proposal Submission Due Date: April 18, 2025

- Specific instructions regarding parallel submission to BioMADE's Project Call 5 and NSF will be provided with the full proposal invitation.
- The NSF proposal will follow the NSF PAPPG guidelines.



Contacts for assistance in identifying the most appropriate NSF program for proposal submission are:

Molecular and Cellular Biosciences:

- David Rockcliffe, drockcli@nsf.gov, Systems and Synthetic Biology
- David Klinke, dklinke@nsf.gov, Systems and Synthetic Biology

Chemical, Bioengineering, Environmental, and Transport Systems

- Steven Peretti, speretti@nsf.gov, Cellular and Biochemical Engineering
- Amanda Esquivel, aesquive@nsf.gov, Disability and Rehabilitation Engineering
- Bruce Hamilton, bhamilto@nsf.gov, Environmental Sustainability
- Rohit Ramachandran, rramacha@nsf.gov, Process Systems, Reaction Engineering and Molecular Thermodynamics
- Nora Savage, nosavage@nsf.gov, Nanoscale Interactions
- Alex Simonian, asimonia@nsf.gov, BioSensing



Use-Inspired Creativity Extension for the Bioeconomy (UICREX-Bioeconomy)

Technology, Innovation and Partnerships

A directorate at the U.S. National Science Foundation

- Creativity Extensions “offer the most creative investigators an extended opportunity to attack adventurous, “high-risk” opportunities in the same general research area, but not necessarily covered by the original/current award.”
- With a “use-inspired” creativity extension (UICREX) we wish to support research and translation activities that are likely to yield **an application relevant to advancing the bioeconomy.**
- **Funding through this mechanism is expected to accelerate translation of basic research to application.**
- NSF program directors will consider those research projects that are adventurous, high-risk, and **have the potential for commercial translation or widespread adoption.**



Use-Inspired Creativity Extension for the Bioeconomy (UICREX-Bioeconomy): What should a PI consider?

- What are the accomplishments of the current award that align it with the special creativity extension?
- What is the translational direction or “product” the continued work will provide? What additional work will be accomplished with the UICREX supplement and how will that relate to creating pathways to minimal viable product or prototypes?
- How will this outcome of the UICREX advance the bioeconomy?
- Briefly describe the activities that would be supported by the UICREX supplement and what partners would be involved (if any).
- Please provide an estimated amount funding required to complete these activities.
- Please contact your program officer for guidance.



New Solicitations and DCLs

- Molecular Foundations for Biotechnology – RNA Tools/Biotechnology; ([NSF 24-607](#)) Due: 12/16/2024
- Future Manufacturing; ([NSF 24-525](#)) Due 1/13/2025
- Accelerating Computing-Enabled Scientific Discovery (ACED); ([NSF 24-541](#)) Due: 1/14/2025
- BioMADE; ([NSF 25-012](#)) Due: 1/22/2025 (white paper); 4/18/2025 (full proposal)
- Building Synthetic Microbial Communities; ([NSF 25-501](#)) Due: 2/3/2025
- Advancing Research at the Intersection of Biology and AI/ML; ([NSF 24-131](#))
- Use-Inspired Creativity Extension; ([NSF 24-133](#))



Upcoming...

Office hours:

- Wednesday January 8th, 2025, 2-3 pm ET
Mid-Career Advancement ([NSF 22-603](#))

Funding opportunities:

See [Funding Opportunities](#) page on for relevant funding calls and deadlines.



Questions

