

The background features a detailed illustration of a cell. At the top, a chain of molecular models is shown, consisting of spheres connected by rods. Below this, a yellow DNA double helix is depicted. The cell's internal structure is shown with various organelles, including a large blue nucleus on the left and a pink, ribbon-like structure on the right. The overall color palette is light blue and white, with various colors used for the molecular and cellular components.

Division of Molecular and Cellular Biosciences (MCB)

Virtual Office Hours

Welcome!

We will begin at 2pm ET



MCB Virtual Office Hour

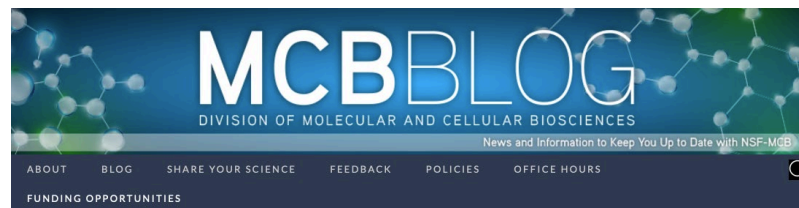
Today's Topic:

Catalyzing Across Sectors to Advance the Bioeconomy (CASA-Bio)

Slides and recordings of past presentations at

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

(Example: April 12, 2023 – How to Write a Great NSF Proposal)





CASA-Bio

Brent Miller, Karen Cone, and Martin Liu
Directorate for Biological Sciences
US National Science Foundation

Definitions



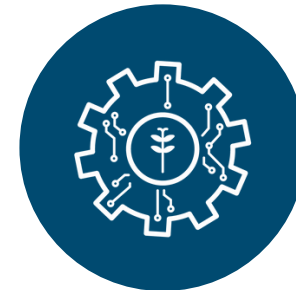
Bioeconomy

economic activity derived from biotechnology and biomanufacturing



Biotechnology

technology that applies to and/or is enabled by life science innovation or product development



Biomanufacturing

use of biological systems to produce goods and services at commercial scale



CASA-Bio Background

- Inspired by the [Executive Order \(EO\)](#) on Advancing Biotechnology and Biomanufacturing Innovation for a Sustainable, Safe, and Secure American Bioeconomy
- EO laid out a grand vision to advance US biotechnology and biomanufacturing through foundational and use-inspired R&D in five areas ([themes](#))



Climate Change
Solutions



Food and Agriculture
Innovation



Supply Chain
Resilience



Human Health



Cross-Cutting
Advances

CASA-Bio: What is it?



- **A collaborative, facilitated activity** with these stakeholders:
 - Government agencies
 - Industries
 - Non-profits
 - Public-sector research community
- **Overall goal:** Give life to the vision of the Bioeconomy EO
- **Challenges:**
 - The vision is HUGE!
 - Agencies, industries, non-profits, and academic researchers have their own goals
- **Solution:** Seek synergy through collaboration in areas of mutual interest

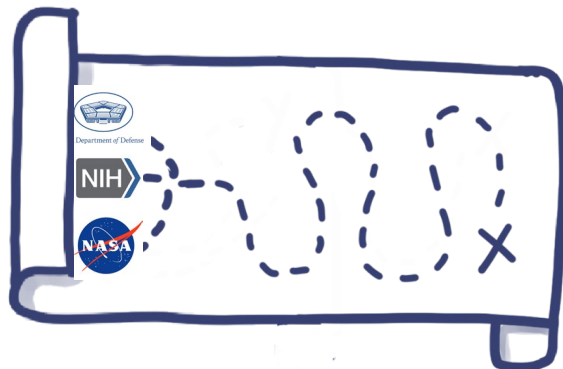
CASA-Bio: Action Plan



STARTING POINT:

Multiple organizations with independent goals

- 1 Alignment** Identify R&D Areas (Subtheme Challenges) of shared interest and potential for synergy among agencies, industry and non-profits; use to frame a Call to Action
- 2 Engagement** Ask the **research community** to respond to the Call to Action by identifying exciting and tractable Cutting-Edge Research Ideas addressing the Subthemes
- 3 Synthesis** Use the community's feedback to identify and select Priority Research Ideas with highest potential for cross-organizational collaboration
- 4 Advancement** Host community workshops to catalyze creation of roadmaps for research relevant to the Priority Research Ideas



ENDPOINT:
***Multiple roadmaps for
priority research to
advance the bioeconomy***



CASA-Bio Action Plan: Schematic

Alignment

Orientation Meeting

Virtual
Dec 1

Who:
Funding Agencies
NGOs
Industry

Goal: Explore broad areas with shared interest and opportunities for possible collaboration

Output: R&D areas with potential for synergy

Call to Action Meeting

In-person
Dec 4-5

Who:
Funding Agencies
NGOs
Industry

Goal: Flesh out R&D areas of shared interest as Bioeconomy relevant Subtheme challenges for Call to Action

Output: Call to Action for Town Halls Based on Bioeconomy Subthemes

Town Hall Meetings x 4

Virtual
February

Who:
Broad R&D
Communities

Goal: Present Subtheme challenges and ask community to identify Cutting-Edge Research ideas

Output: Community-sourced research ideas relevant to the Bioeconomy Subthemes

Synthesis

Synthesis Meetings x 4

Virtual
March

Who:
Funding Agencies
NGOs
Industry

Goal: Evaluate Cutting-Edge Research ideas and prioritize based on high potential for cross-agency synergy

Output: Priority Research Ideas ready for Roadmapping

Community Engagement

CASA-Bio Action Plan: Schematic

Advancement

Advancement Workshops x 5-10

*In-person and virtual,
Spring 2024 – Summer 2024*

Who:

R&D Communities

Goal: Engage research communities in producing roadmaps describing Priority Research opportunities for the bioeconomy

Output: Engaged, focused research communities; roadmaps for Priority Research to advance the US Bioeconomy



Where are we?

Themes Defined by the Bioeconomy EO



Subtheme Challenges Defined in Alignment Meetings



Representative Subtheme Challenges



Climate Change
Solutions

Creating Value from
Waste Carbon for a
Circular Bioeconomy

Reducing
Greenhouse
Gases

Accelerating
Plant and Animal
Breeding

Climate-Smart
Food and
Agriculture

Protecting Plants
and Animals to
Sustain the Planet



Food and Agriculture
Innovation

Resilient and
Sustainable Ag

Biomanufacturing
Alternative / Novel
Foods



Representative Subtheme Challenges



Supply Chain
Resilience

Creating Domestic Supply
Chains for Essential Bio-Products

Advancing Sustainable
Economic Models for Supply
Chain Management



Cross-Cutting
Advances

Designing Biologics for
Supply Chain Resilience
and Broad Uses

Scaling up Biomanufacturing
from Lab to Market



Human Health

Advanced Computing for
Human Health

Enhancing Human
Nutrition through
Biotechnology

Leveraging Advanced
Computing for
Biological Data Integration

Developing the
Bioeconomy Workforce

Building Data
Infrastructure
for the Bioeconomy

Now it's **your** turn!

So...

*Check out the
subthemes and
tell us what's
missing.*

You are a stakeholder
in this activity – help
us identify the gaps in
our discussions!

Your turn!

*What keeps you
up at night?*

Tell us how **you**
would solve such
big bioeconomy
challenges!

Call to Action

Share your **creative ideas** with funding agencies, industry partners, and non-profits at one of four **Virtual Town Halls!**

These Town Halls will be **highly interactive** with lots of time for breakout discussions among community members. Each Town Hall will have the same agenda but will be offered at different days and times to accommodate diverse schedules.

Three simple steps:

1. Visit www.casa-bio.net.
2. Register for the Town Hall session that works best for you.
3. Share your insights on bioeconomy **subthemes** and **research!**

Tentative Dates

February 12
7 - 8:30 PM ET

February 15
9 - 10:30 AM ET

February 21
Noon - 1:30 PM ET

February 22
5 - 6:30 PM ET



CASA-Bio is facilitated by KnowInnovation under contract No. 49100423P0058 from the National Science Foundation.



Next MCB Virtual Office Hours

- **Wednesday February 14th, 2024, 2-3 pm ET**
Working with an NSF Program Director
- **Wednesday March 13th, 2024, 2-3 pm ET**
Special Funding Opportunities Relevant to MCB PIs

All BIO Divisions host monthly VOH

Biological Infrastructure: 3rd Tuesday (3-4 pm)

Environmental Biology: 2nd Monday (1-2 pm)

Integrative Organismal Systems: 3rd Thursday (1-2 pm)

Molecular and Cellular Biosciences: 2nd Wednesday (2-3 pm)

