



CABBI

CENTER FOR ADVANCED BIOENERGY
AND BIOPRODUCTS INNOVATION

10-YEAR TARGETS

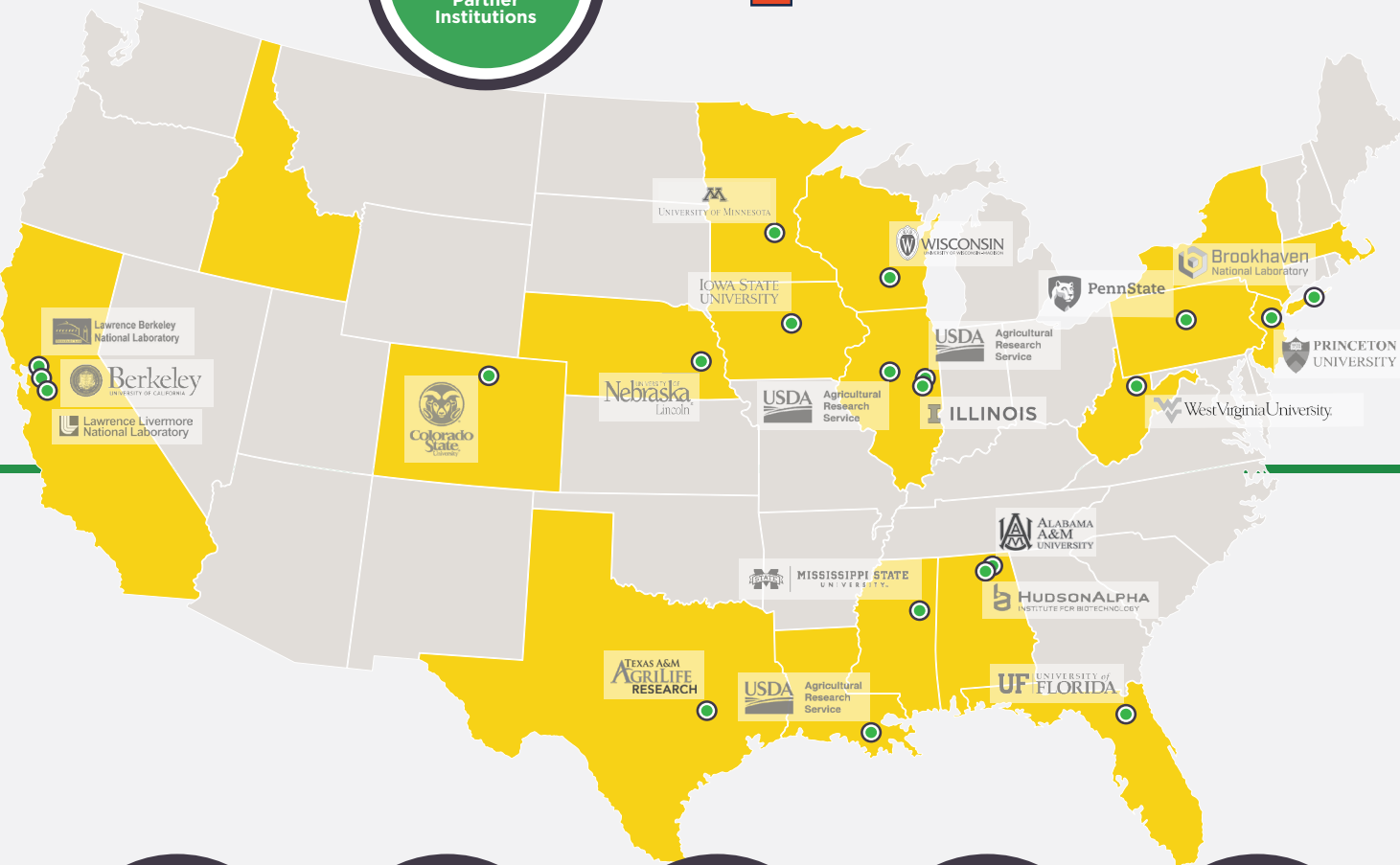
- A regionally adaptive, national-scale platform for grass-based biorefining using feedstocks with improved yield and resource-use efficiency.
- A broad set of platform microorganisms, as well as automated tools that engineer them, to develop value-added products from plant-produced feedstocks or substrates.
- An integrated economic and environmental framework for determining feedstock supply and sustainability — and the policies and impacts of large-scale bioenergy production.

CABBI ACROSS THE NATION

21
Partner
Institutions

LED BY:

I ILLINOIS



350+
Peer-Reviewed
Publications
as of 2024

55+
Intellectual
Property Filings
as of 2024

58
Faculty-Level
Researchers
Nationwide

180+
Postdoctoral
Researchers
& Technicians

140+
Graduate
& Undergrad
Students

**DOE BIOENERGY RESEARCH CENTERS (BRCs):
DEVELOPING A VIABLE AND SUSTAINABLE DOMESTIC
BIOFUEL AND BIOPRODUCTS INDUSTRY FROM
DEDICATED BIOENERGY CROPS.**



Center for Bioenergy Innovation (CBI), Est. 2017 (previously BioEnergy Science Center, 2007-17)

Great Lakes Bioenergy Research Center (GLBRC), Est. 2007

Joint BioEnergy Institute (JBEI), Est. 2007

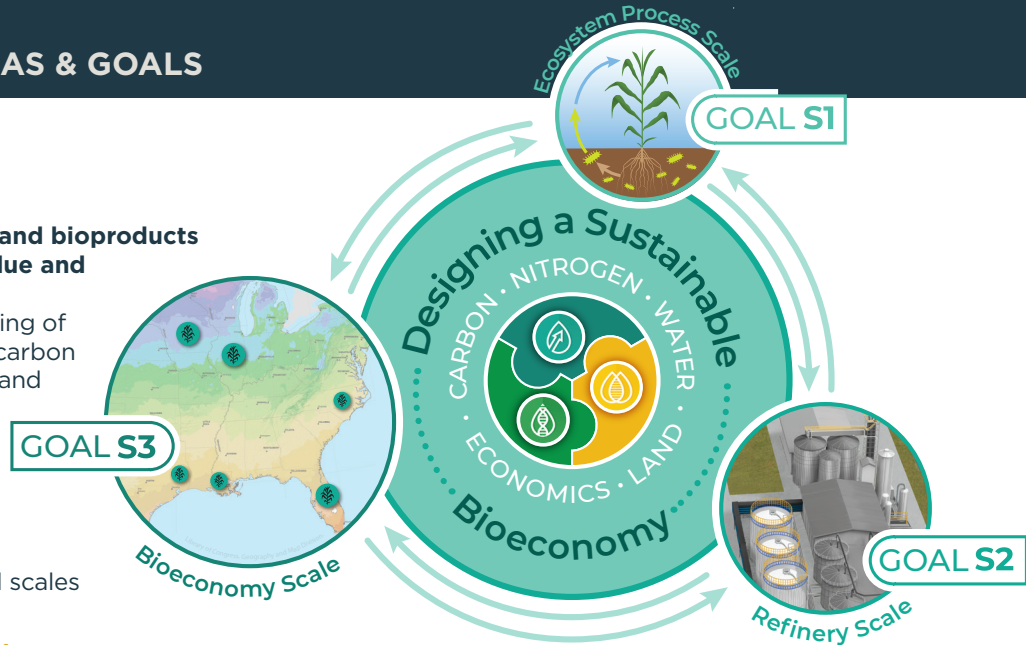
CABBI, Est. 2017

RESEARCH FOCUS AREAS & GOALS

SUSTAINABILITY

Guiding the design of a bioenergy and bioproducts industry with optimal economic value and environmental benefits to:

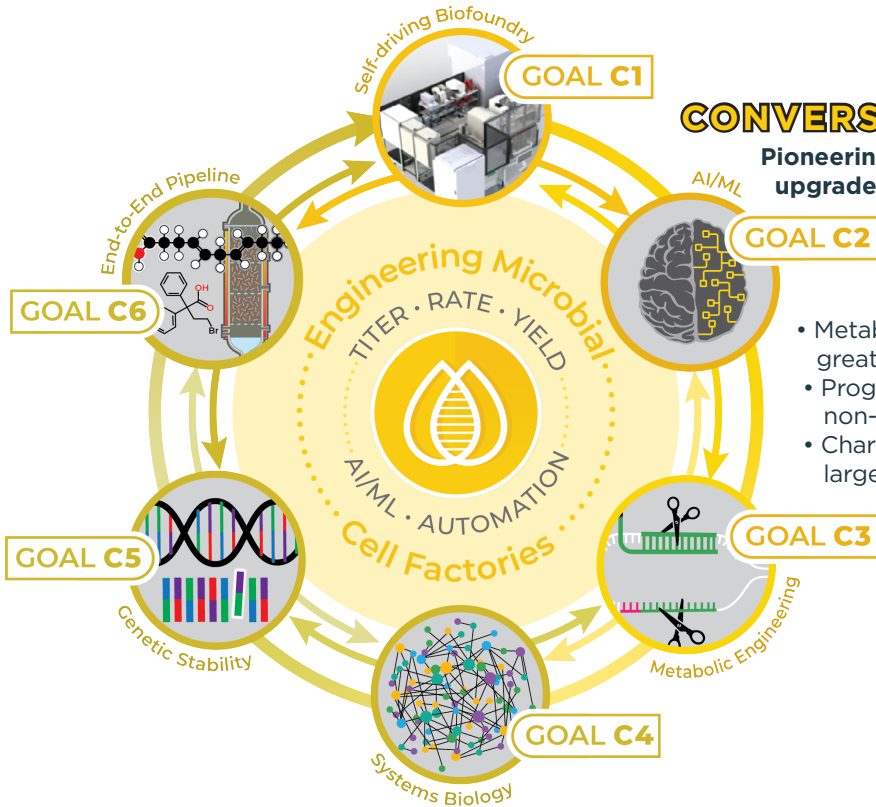
- Improve mechanistic understanding of ecosystem processes related to carbon farming, nutrient loss reduction, and water fluxes
- Innovate resilient and sustainable feedstocks-to-products pathways at refinery scale
- Design sustainable bioeconomy landscapes from field to regional scales



CONVERSION

Pioneering synthetic biology to develop microbes that upgrade plant biomass into biofuels and bioproducts to:

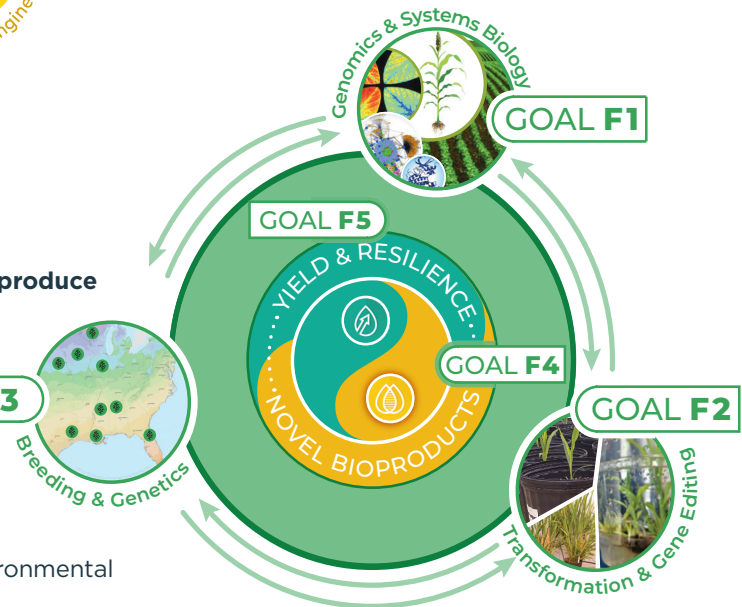
- Accelerate self-driving biofoundry for biosystems design
- Advance AI/ML algorithms for biosystems design
- Metabolically engineer non-model yeasts for greater production of fuels and chemicals
- Progress quantitative, systems-level understanding of non-model yeast metabolism
- Characterize and engineer genetic stability for large-scale fermentation
- Develop an end-to-end pipeline for microbial production of fuels and chemicals



FEEDSTOCK PRODUCTION

Developing more resilient and sustainable crops that also produce oil as a high-value co-product to:

- Enhance tools to efficiently engineer and explore gene function
- Accelerate discovery of the genetic and genomic basis for valuable phenotypes
- Innovate designs for oil-based high-value bioproducts in CABBI crops
- Advance genomic understanding of the grass stem and tools to modify it for bioenergy
- Accelerate engineering of genes for maximum yield, environmental resilience, and resource use efficiency





SUSTAINABILITY

Optimizing the economic value and environmental benefits of bioenergy and bioproducts



FEEDSTOCK PRODUCTION

Developing more productive, resilient, and sustainable crops that produce oil and other high-value products

MISCANTHUS SORGHUM SUGARCANE



BIOPROCESSING



SUGARS

LIPIDS

Issatchenkia orientalis

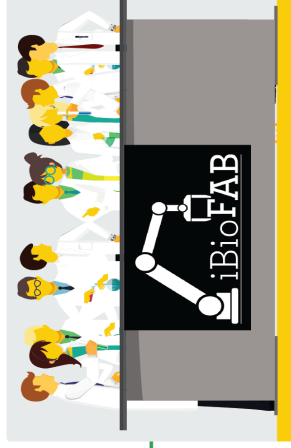
Saccharomyces cerevisiae

Rhodospiridium toruloideis

Yarrowia lipolytica

FATTY ALCOHOLS; CITRAMALATE;
3-HYDROXYPROPIONIC ACID (3-HPI);
TRIAACETIC ACID LACTONE (TAL)

DICARBOXYLIC ACIDS;
POLYUNSATURATED FATTY ACIDS



CONVERSION

Pioneering synthetic biology to develop microbes that upgrade plant biomass into biofuels and bioproducts



LEARN MORE & CONTACT US:

On the Web: cabbi.bio | Email: cabbi-bio@illinois.edu | Twitter/X: [@CABBIBio](https://twitter.com/CABBIBio) | LinkedIn: [/company/cabbi](https://www.linkedin.com/company/cabbi)