GREAT LAKES BIOENERGY RESEARCH CENTER

October 2026



Great Lakes Bioenergy

Who We Are

The Great Lakes Bioenergy Research Center (GLBRC) is a cross-disciplinary research center led by the University of Wisconsin–Madison and headquartered at the Wisconsin Energy Institute. With Michigan State University and other collaborators, GLBRC draws on the expertise of more than 300 scientists, engineers, students, and staff to design crops and microbes that turn domestic biomass into bio-based chemicals and materials for American industry.

Our Vision

Combining biosystems design and super intelligence to enable the conversion of non-food crops into cost-competitive, high-value products.

Created in 2007 by the U.S. Department of Energy, GLBRC has built a deep, integrated body of data that links crop and microbial genomes to field productivity and ease of conversion to bioproducts. By pairing that foundational knowledge with computational biology and super intelligence, we are able to more rapidly obtain insights that no single experiment could reveal and closing the gap between fundamental discovery and industrial deployment.

Our mission is simple: creating bio-based products that are industry relevant and economically viable.

A record of success

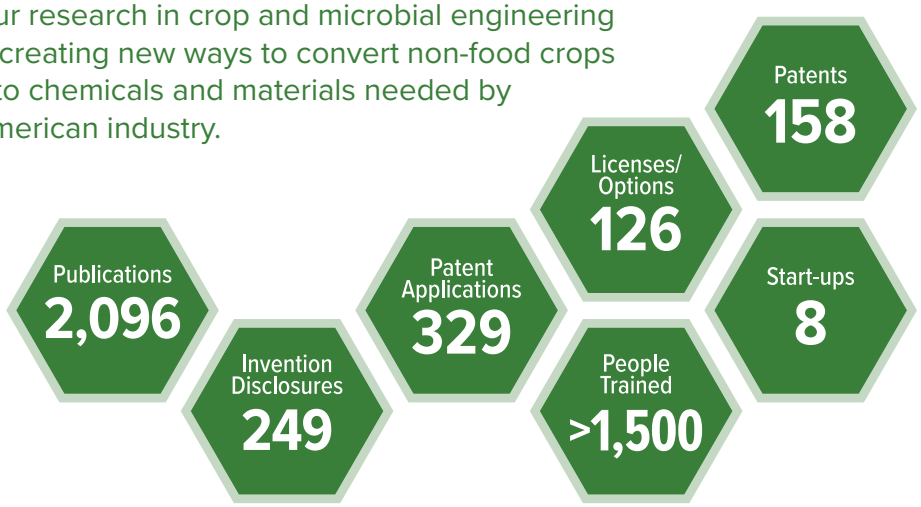
GLBRC research has moved steadily from the lab to the marketplace. Our scientists and engineers have spawned eight start-up companies, over 125 licenses or options, and have trained over 1,500 scientists and engineers for the U.S. workforce.

Integrated research

GLBRC researchers work collaboratively in partnership with many industries to overcome barriers to producing bio-based products to move promising discoveries toward commercial scale.

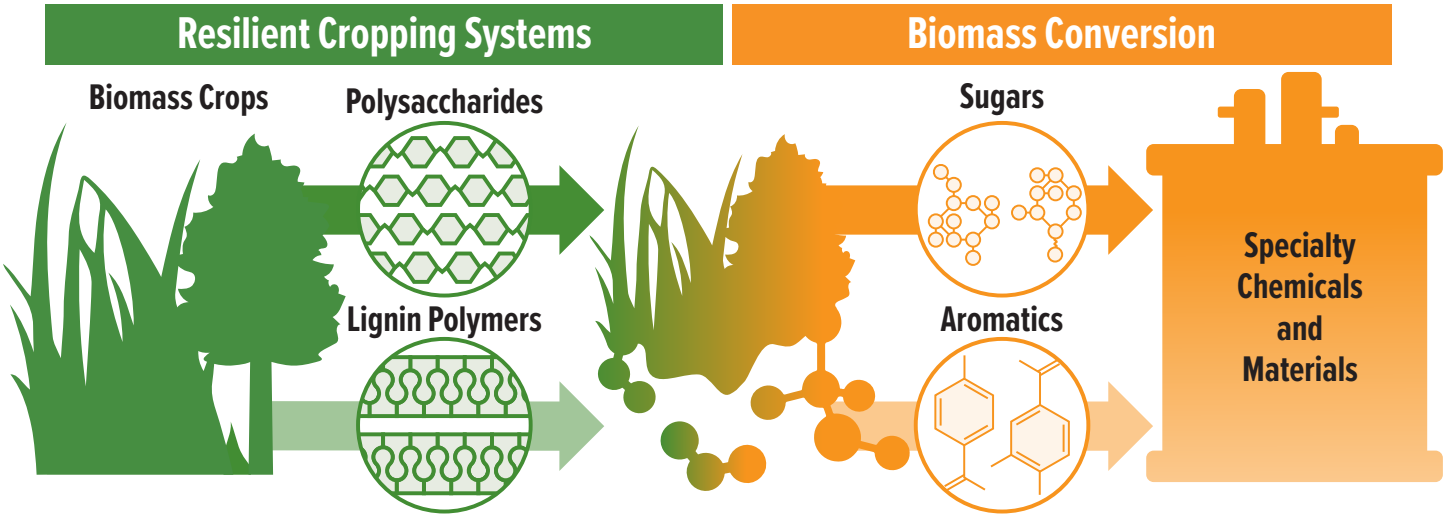
Strengthening American biomanufacturing

Our research in crop and microbial engineering is creating new ways to convert non-food crops into chemicals and materials needed by American industry.



Technology transfer

We partner with licensing experts at the Wisconsin Alumni Research Foundation (WARF) and MSU Technologies to ensure that our research anticipates and enables industrial commercialization and creates new economic opportunities for industry, farmers, and rural communities.



Data-Driven Field-to-Product Optimization

Our Research

Resilient cropping systems

Using data to design high-yield crops for growers and industry

GLBRC's research focuses on crops grown on land unsuitable for food production. Growing crops such as switchgrass, sorghum, or poplar on these fields keeps prime farmland in food production while providing economic and other benefits. Years of field trials paired with genomic data allow us to make predictions on which traits and growing conditions deliver the highest yields of easily converted crops, and where they can be grown most profitably.

Biomass conversion

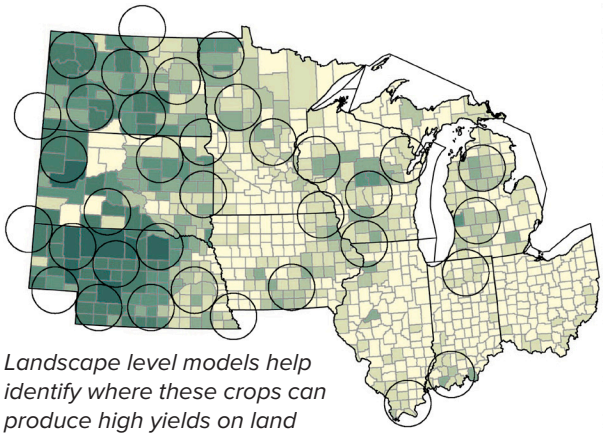
Designing microbes, processes, and products for industry

GLBRC is focused on making these crops cost-competitive raw material for American manufacturers. Realizing this goal requires increasing the efficiency of generating a mix of specialty chemicals, materials, and other products while maximizing use of as much of the crop residue as possible. By combining microbial genomics with automated screening platforms and super intelligence, we can accelerate biodesign and process optimization and ultimately lower processing costs.

Data-driven field-to-product optimization

Connecting every step from field to product

Because GLBRC has studied every step of the pipeline, including crop genetics/design, field performance, conversion to products, and techno-economic analysis, our data is linked across the entire chain. That integration allows us to predict previously unknown connections between a crop's genes, how it grows, and how well it converts to bio-based products, specialty chemicals, and materials, helping us optimize the whole pipeline rather than one step at a time.



Landscape level models help identify where these crops can produce high yields on land unsuitable for food production, providing new income to farmers and abundant, domestic feedstocks for industry while growing food crops on prime farmland.



Proteus, GLBRC's SI-enabled autonomous lab, runs many microbial engineering experiments at once and streams the results straight into machine learning models to speed discovery.

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