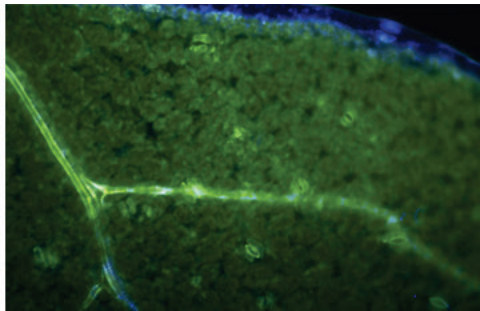
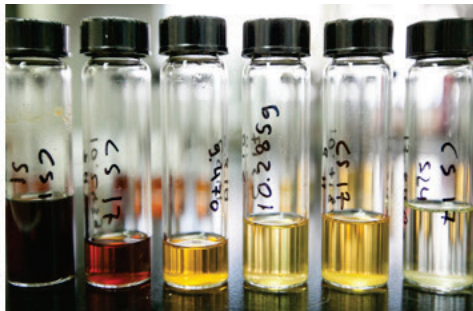


Timothy Donohue
Director, Great Lakes Bioenergy

Fetzer-Bascom Professor of Bacteriology
University of Wisconsin-Madison
Director, Great Lakes Bioenergy
Interim Director, Wisconsin Energy Institute

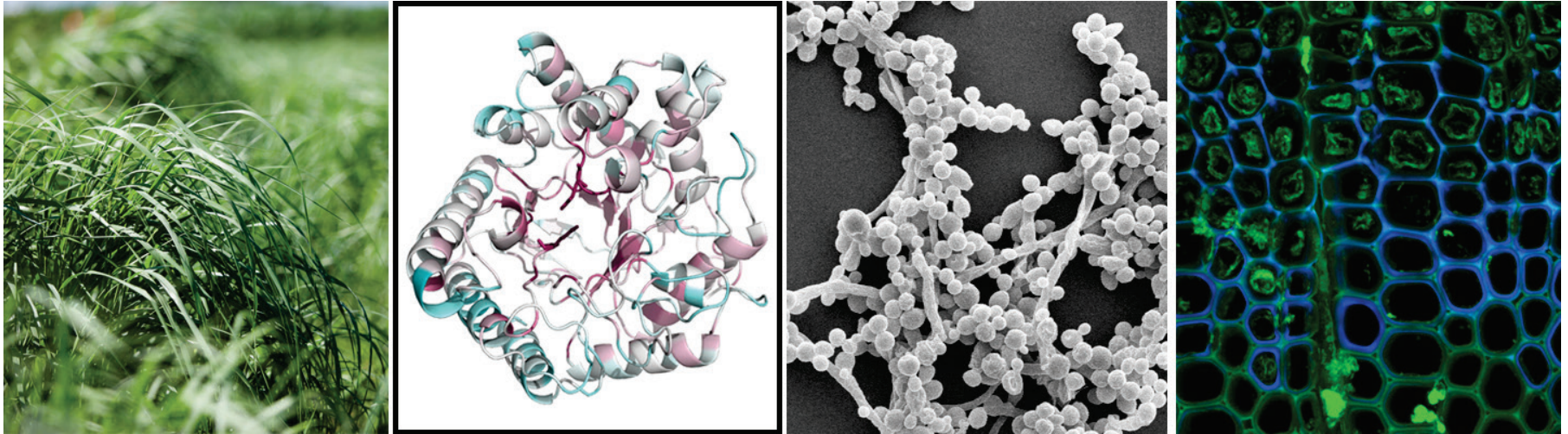
Fall 2017, BERAC Meeting

November 2, 2017



- Mission
- Partners
- Advancing BRC Program Goals

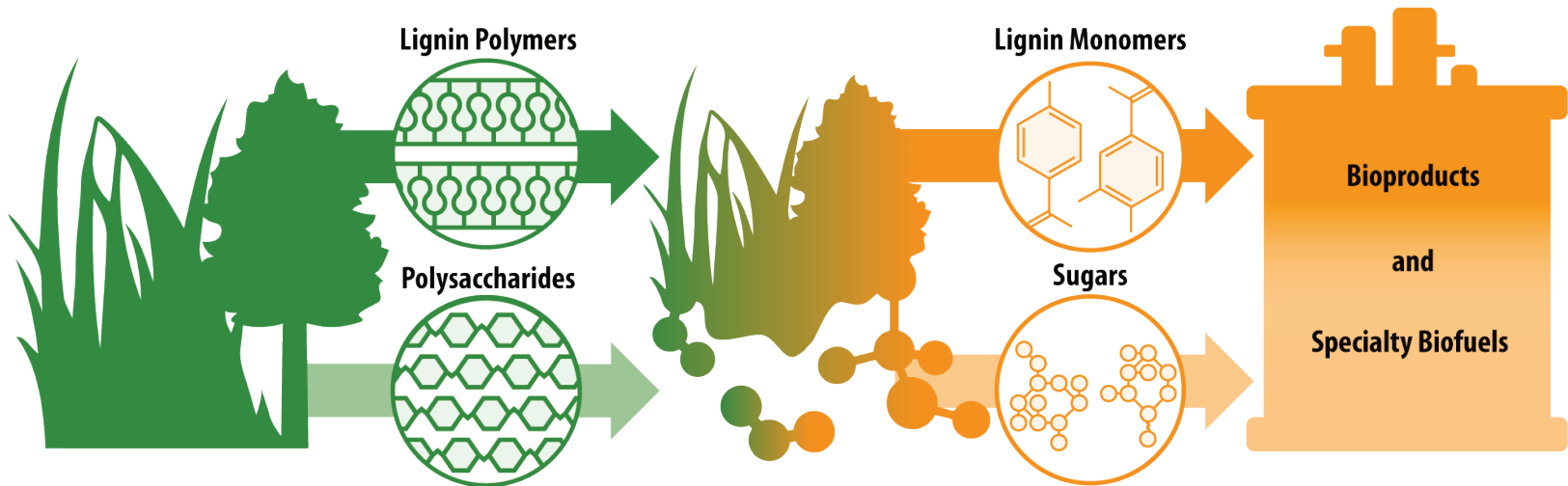
Mission



Generate the knowledge needed to sustainably produce specialty biofuels and bioproducts from lignocellulosic bioenergy crops

Great Lakes Bioenergy Strategy

Field-to-Product Integration



To achieve our mission, we will assemble research teams that cut across all four BRC-defined focus areas



Sustainability



Feedstock
Development



Deconstruction
& Separation



Conversion

Partners

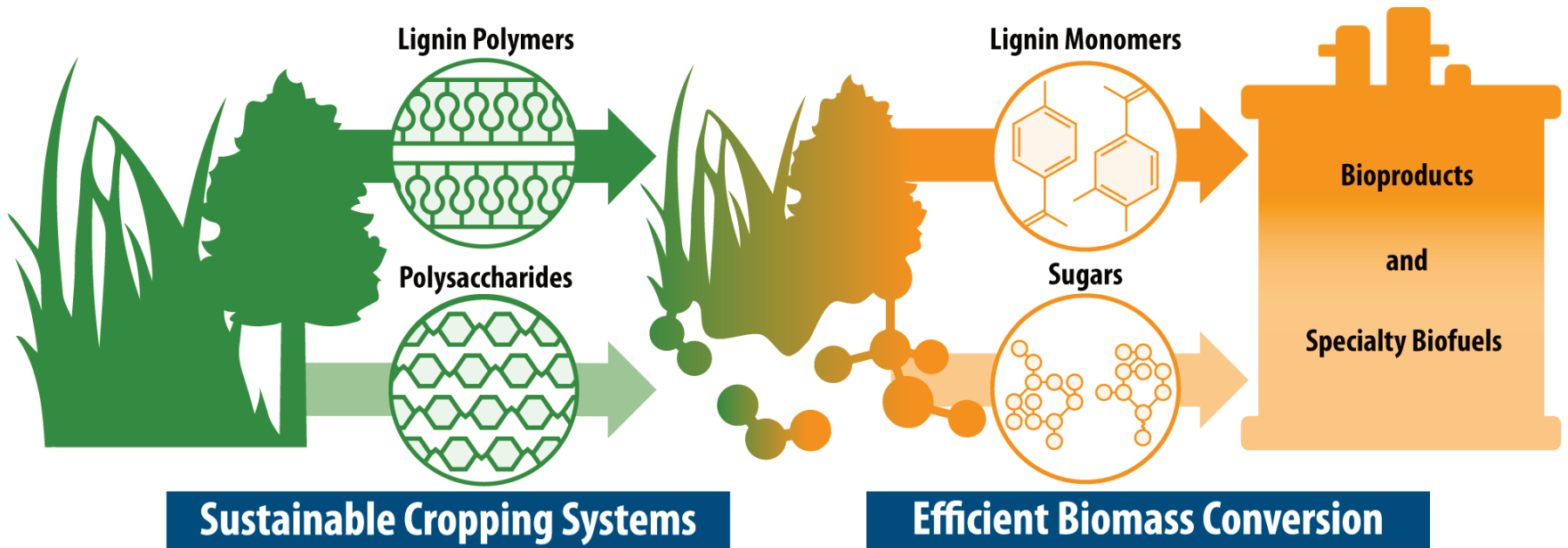


Anchored by two Great Lakes institutions
UW-Madison lead, **MSU** major partner
Partners chosen for expertise, history & interest in
collaboration

Great Lakes Bioenergy Strategy



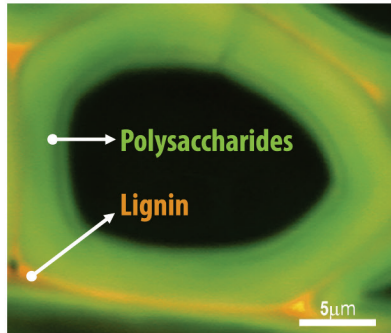
Field-to-Product Integration



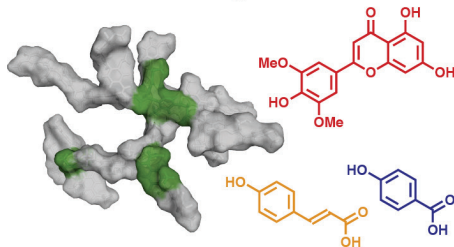
Sustainable Cropping Systems

- Maximize crop performance on marginal lands
- Increase yield & quality of dedicated bioenergy crops
- Understand plant-soil-microbiome interactions to improve switchgrass productivity

Increase Deconstructability of Lignin



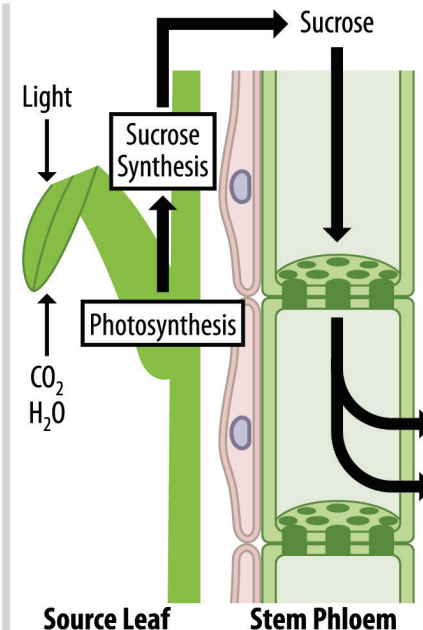
Increase Lignin Value



Increase Hemicellulose and Cellulose in Stems

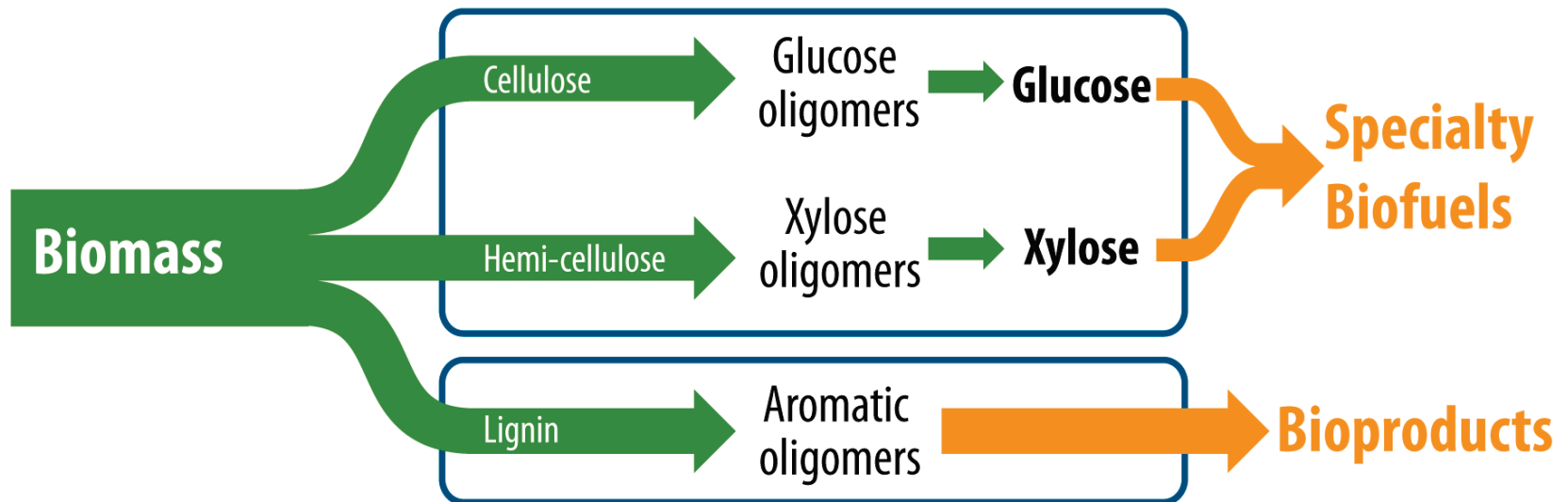


Increase Sink Strength and Yield

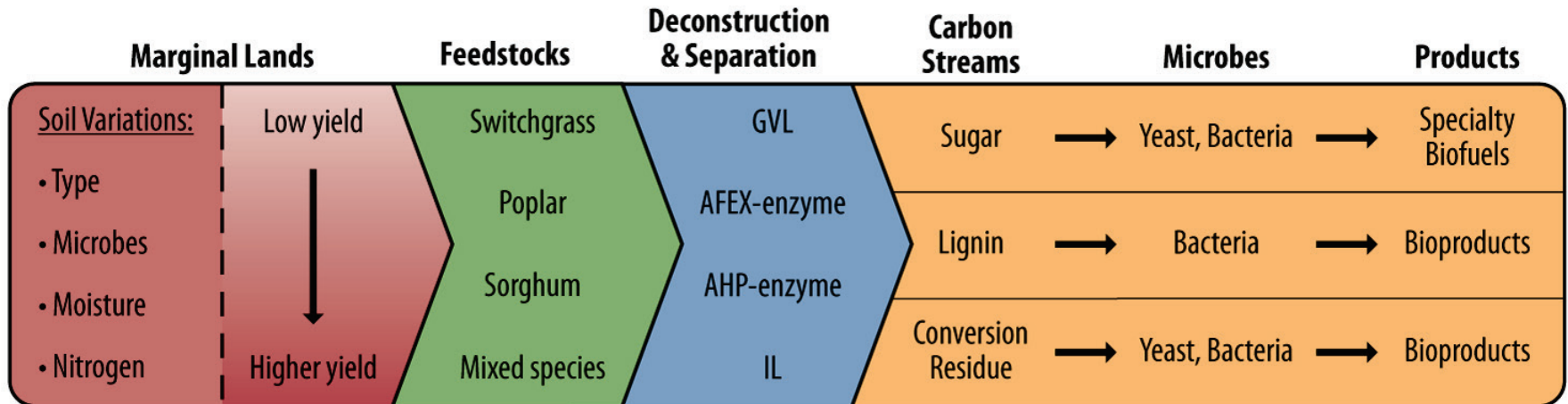


Efficient Biomass Conversion

- Cost- and atom-economical deconstruction (GVL, CMX enzymes) & fractionation techniques
- Reprogram microbes to produce industry-ready specialty biofuels (isobutanol, etc)
- Produce valuable products from conversion residue

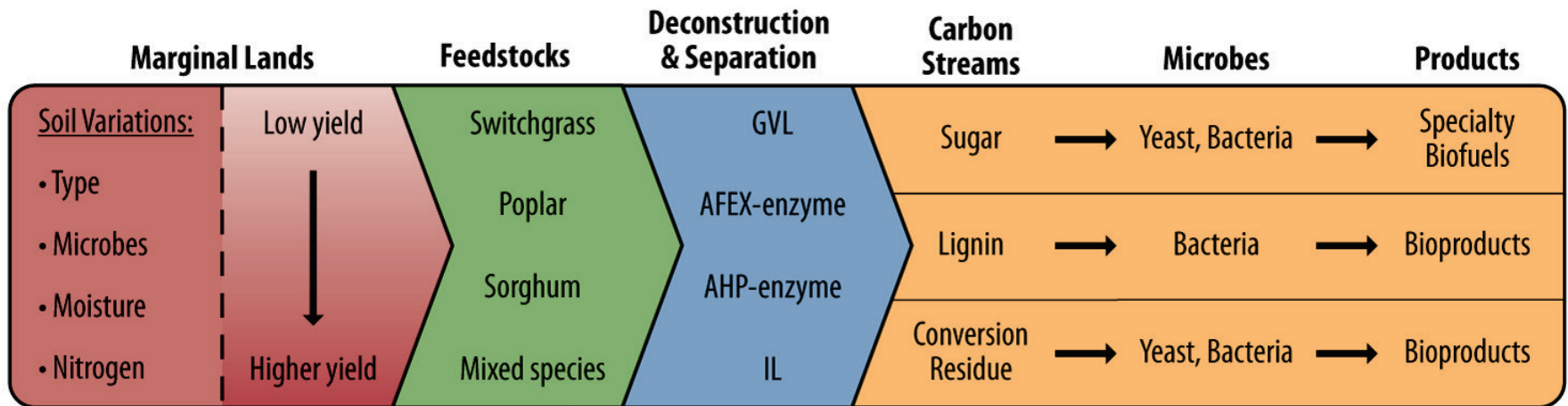


Field-to-Product Integration



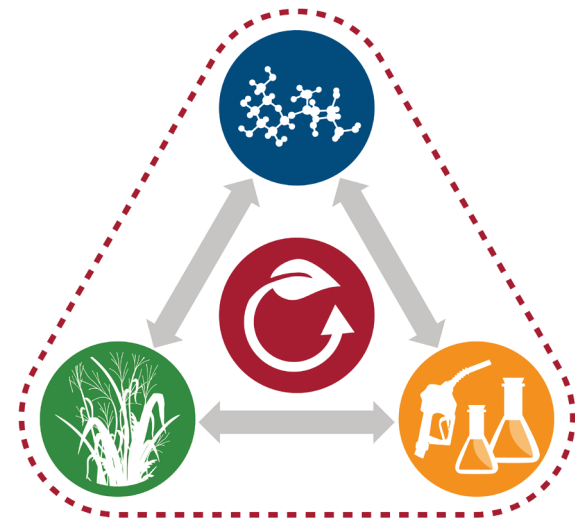
- Understand & mitigate the impact of biomass variability on conversion
- Cross-cutting activities to create products from lignin
- Optimize plant and microbial production of terpenoid fuels & products
- Model & optimize field-to-product activities

Great Lakes Bioenergy Strategy



Integrated & iterative activities

Knowledge to help a sustainable bioindustry convert lignocellulosic biomass into specialty biofuels and bioproducts



Coordination to Advance the BRC

Mission



Four BRCs, One Program

- Membership on GLBRC SAB
- Participate in GLBRC annual scientific meeting
- Joint workshops, collaborative products

DOE Partners

- JGI – projects, methods & products
- KBase – access to data & tools
- User facilities

Host Institutions