# 2023 GlycoMIP Annual Meeting

## State of the MIP

Maren Roman
GlycoMIP Director

March 6, 2023

GlycoMIP is funded by the National Science Foundation
through cooperative agreement DMR-1933525.

GlycoMIP
NSF Materials Innovation Platform

# Meet our EAC members

**Katherine Vorvolakos (Chair)**
Deputy Director
Division of Biology, Chemistry, and Materials Science
Office of Science and Engineering Laboratories,
Center for Devices and Radiological Health
**U.S. Food and Drug Administration**

**Natnael Behabtu**
Global Technology Leader
**International Flavors & Fragrances**

**Preethi L. Chandran**
Associate Professor, Department of Chemical Engineering
and Department of Biochemistry and Molecular Biology
Director of Graduate Studies, Chemical Engineering
**Howard University**

**Roger Laine**
Professor, Department of Biological Sciences
and Department of Chemistry
**Louisiana State University**

**Todd Talashek**
Director of Fundamental Sciences
**CPKelco**

**Kathryn E. Uhrich**
Dean, College of Natural and Agricultural Sciences
Professor, Department of Chemistry
**UC Riverside**

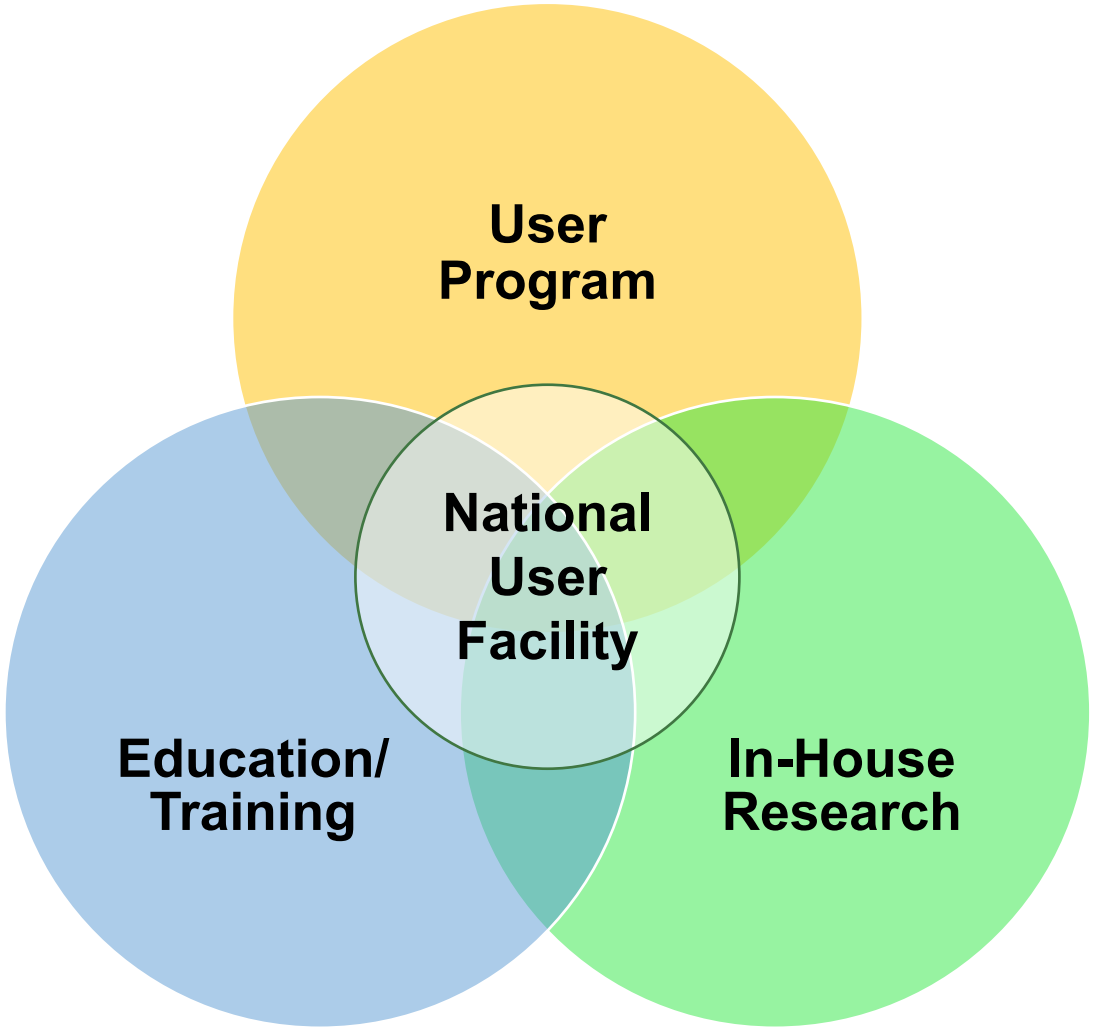
# NSF Materials Innovation Platforms (MIPs)

National Science Foundation (NSF)
Division of Materials Research (DMR)
Materials Innovation Platform (MIP)

Class of 2016

Class of 2020

# Expectations of a MIP




1. The in-house research of a MIP is, at the same time, ***enabled by and supports*** its user facility (user program).
2. MIPs create and support a ***research community***.
3. MIPs ***broaden the participation*** of underrepresented groups and researchers at non-R1 institutions.
4. MIPs facilitate knowledge sharing, and in particular ***data sharing***.
5. MIPs support ***knowledge transfer***.

# Glycomaterial-based Technologies

Gelling agents

Wikimedia

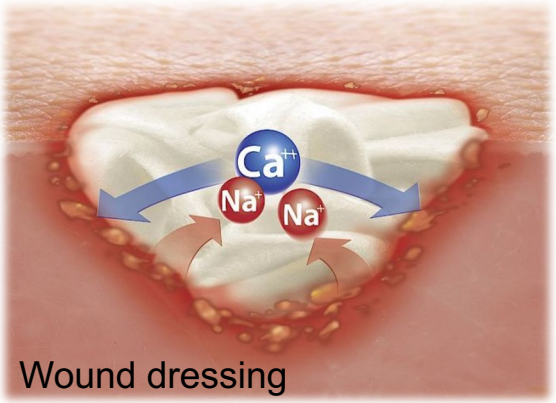
Product thickeners

derypol.com

Emulsifiers

leaf.tv

Water retention agents




precisionmedicalsupplies.com

Coatings and films

celanese.com

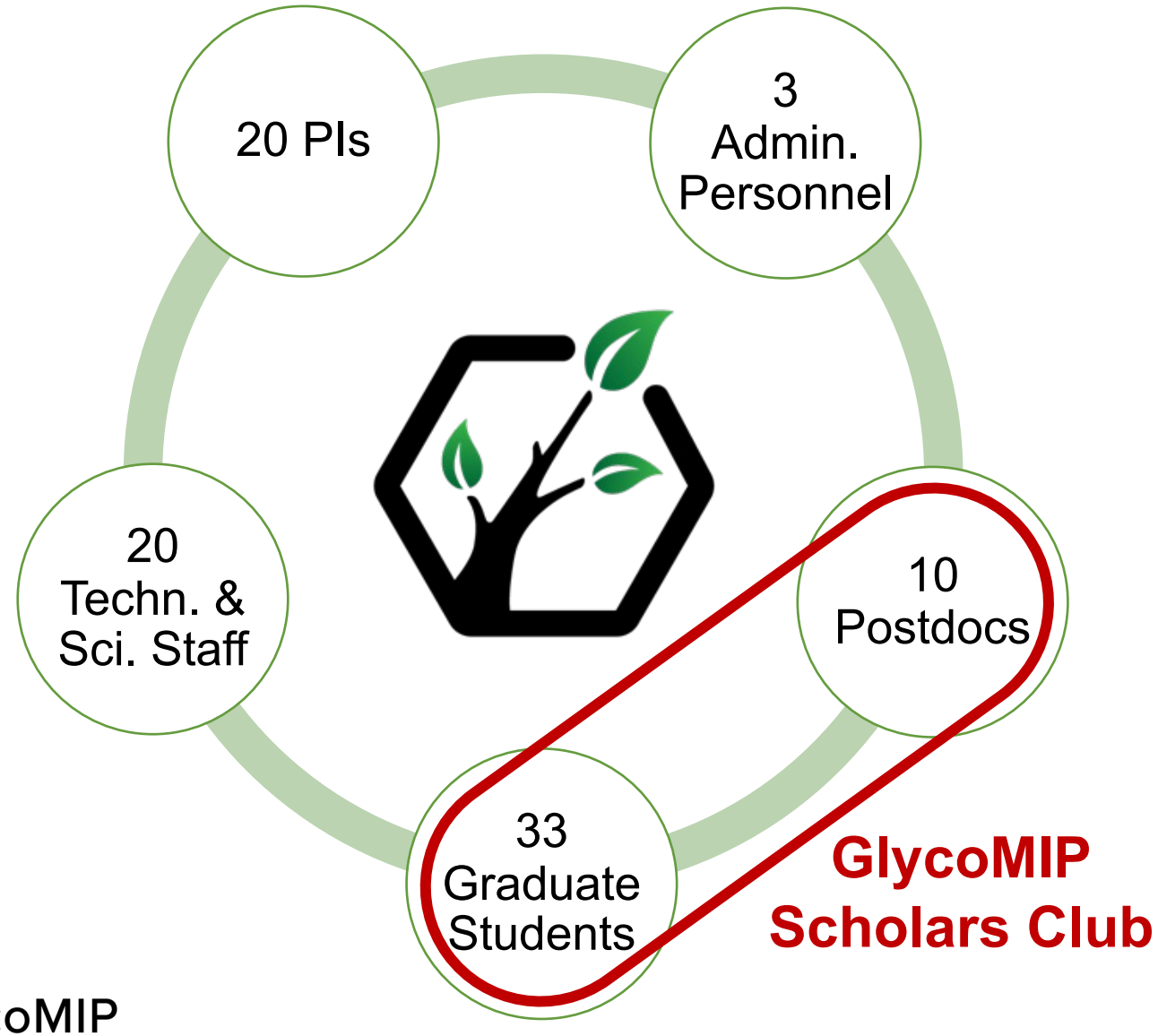
Suspension stabilizers

thriftyfun.com

## Applications

- Foods
- Household
- Personal care
- Cosmetics
- Pharmaceutical
- Therapeutical
- Medical
- Agricultural
- Industrial
- Bldg. Construction

# The GlycoMIP Team




Virginia Tech

University of Georgia

Brandeis University

Rensselaer

The University of North Carolina at Chapel Hill

# Administrative Personnel

**Linda Caudill**
Managing Director
(1 FTE)

- ❑ Planning and oversight of program activities (communications, outreach, fiscal, personnel)
- ❑ User program operation
- ❑ Annual and ad hoc reporting
- ❑ Event planning and implementation
- ❑ Ensure execution of NSF contract (PTC)

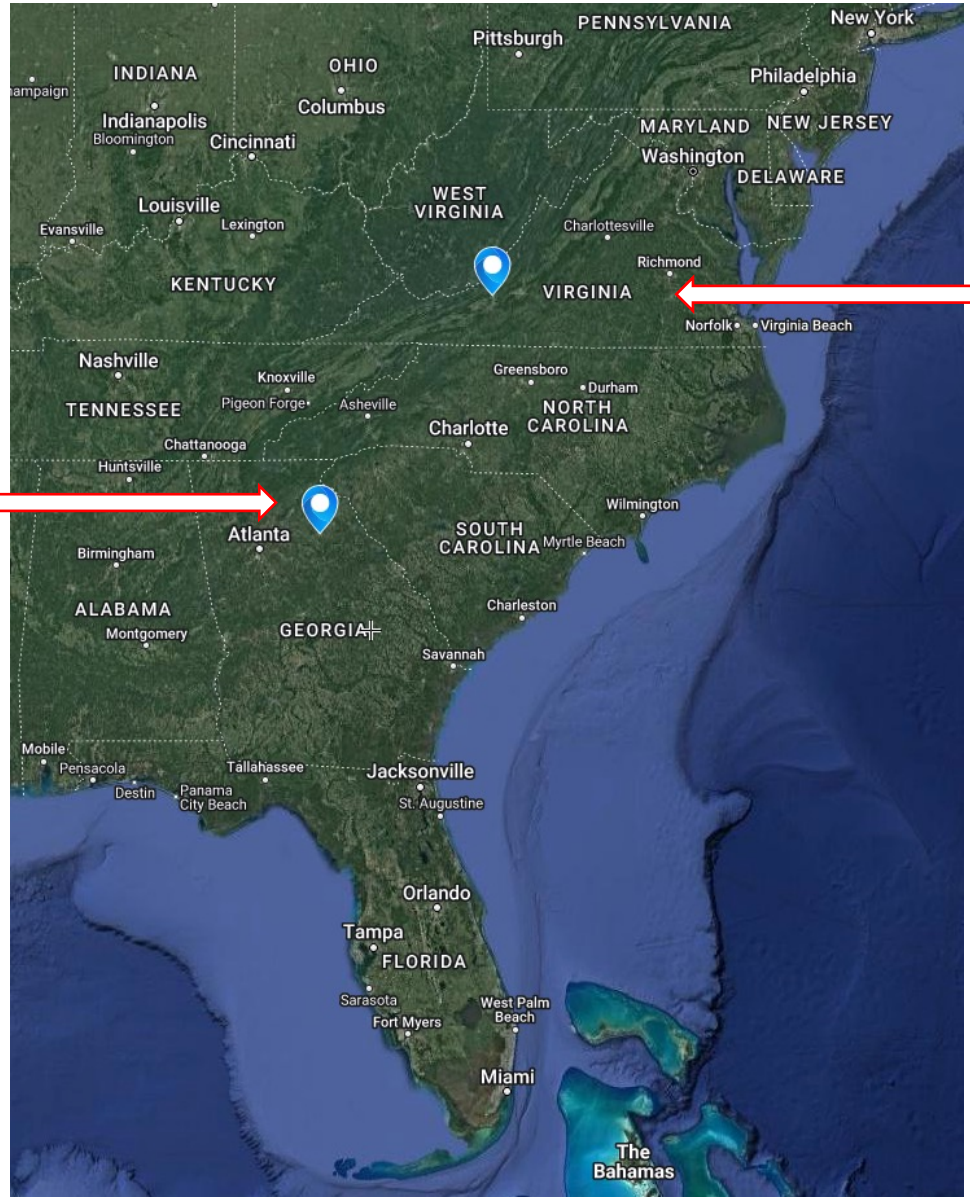
**Lauren Mills**
Program Coordinator
(1 FTE)

- ❑ Website & Social Media
- ❑ Metrics visualization
- ❑ GlycoMIP Scholars Club
- ❑ Fiscal support
- ❑ Events coordination
- ❑ User program records

**Mark Baine (UGA)**
UGA Platform Coordinator
(0.5 FTE)

- ❑ Coordinate In-House Research (IHR) meetings
- ❑ Communication with/across IHR team
- ❑ Build/maintain directories of IHR personnel
- ❑ Document IHR event attendance
- ❑ Track/Report instrument usage time for Woods Group
- ❑ Invoice VT for UGA project expenses

# GlycoMIP User Facilities




VIRGINIA TECH

- ❑ Synthesis Facility
- ❑ Characterization Facility – VT

FRALIN LIFE SCIENCES INSTITUTE
VIRGINIA TECH

UNIVERSITY OF GEORGIA

- ❑ Characterization Facility – UGA
- ❑ Modeling Facility

Complex Carbohydrate Research Center
UNIVERSITY OF GEORGIA

MACROMOLECULES INNOVATION INSTITUTE
*Discovery at the nexus of minds and molecules*

# GlycoMIP User Support and Technical Staff

## VT User Facilities (3 FTE)

**Brady Hall (PD)**
Technical Manager - Glycomaterials

**Ryan Porell**
Technical Manager - Glycobiology

**Caylyn McNaul**
Laboratory Technician

## UGA User Facilities (5.4 FTE)

**S. Archer-Hartmann**
Mass Spec.

**Lauren Pepi (PD)**
Mass Spec.

**Bhoj Kumar**
Mass Spec.

**Sergei Shalygin (PD)**
Mass Spec.

**Christian Heiss**
NMR

**Ambrish Kumar**
NMR

**Lachele Foley**
Cyber Resources

**Oliver Grant**
Comp. Simulations

**Amika Sood**
Modeling

**Sawsan Mahmoud (PD)**
Biolayer Interferom.

**Jie Cheng**
Life Sci. Technician

**Charles Exum**
Programmer

**Preston Sheppard**
Programmer

**Daniel Wentworth**
Web Developer

**Andrew Coulter**
Systems Admin.

**Emory Chastain**
Assist. Syst. Admin.

experimentalist

computer-focused

PD: postdoc

# Org Chart

Virginia Tech
SVP and Chief Research and Innovation Officer

Fralin Life Sciences Institute
Executive Director

External Advisory Committee

User Committee

External Reviewer Pool

Platform Director
Maren Roman

Stakeholder Committee (UGA, VT)

Diversity Committee

Cyber Resources Committee

Managing Director
Linda Caudill

Associate Director
Robert Woods

Director of User Program
Rich Helm

Director of In-House Research
Robert Woods

Director of User Facility – VT
Rich Helm

Director of User Facility – UGA
Parastoo Azadi

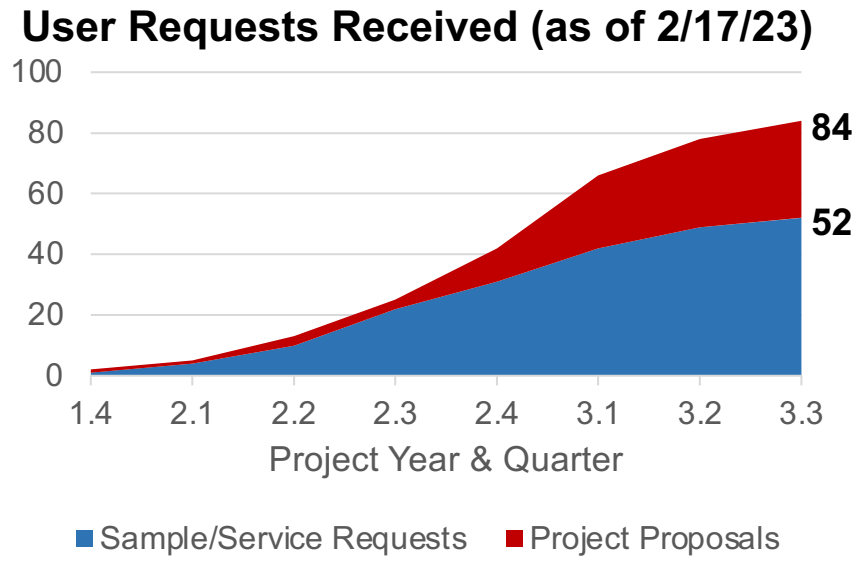
Leadership Team

# Accomplishments

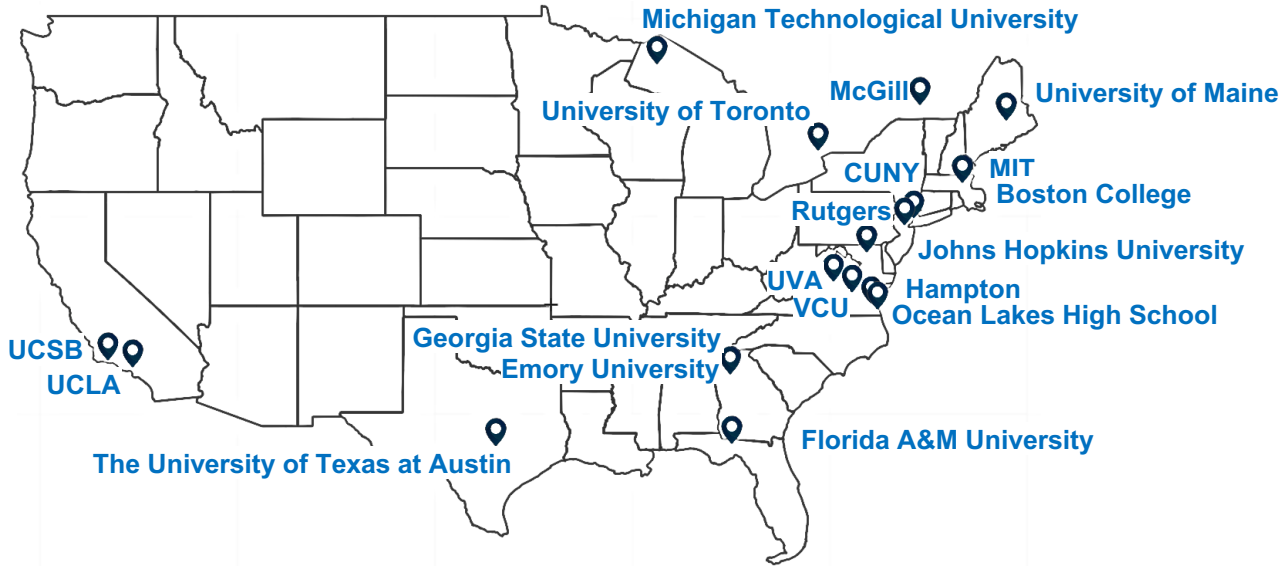
# User Program

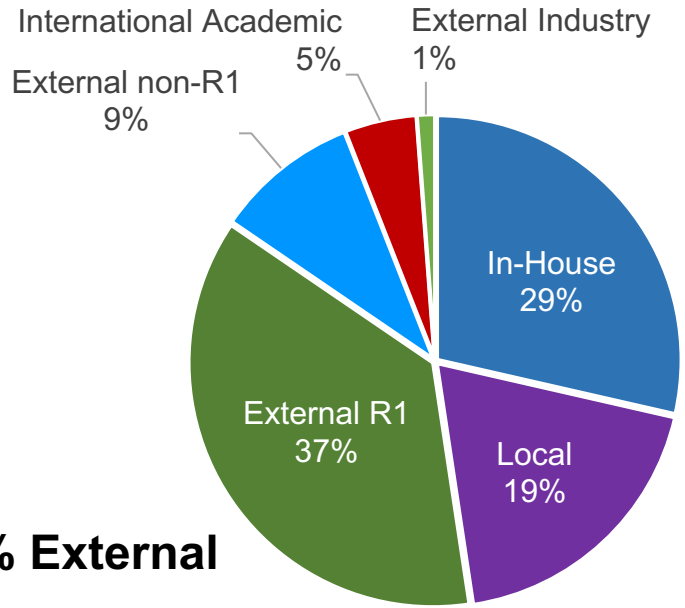
User Program Director:
Rich Helm (VT)

- **44 external user projects**
- **20 unique PI institutions (external)**
  - 14 R1 Academic (incl. 1 MSI)
  - 3 Non-R1 Academic (incl. 2 HBCUs)
  - 3 Other (2 Int. Acad., 1 High School)
- **27 projects completed**




## Map of External Users



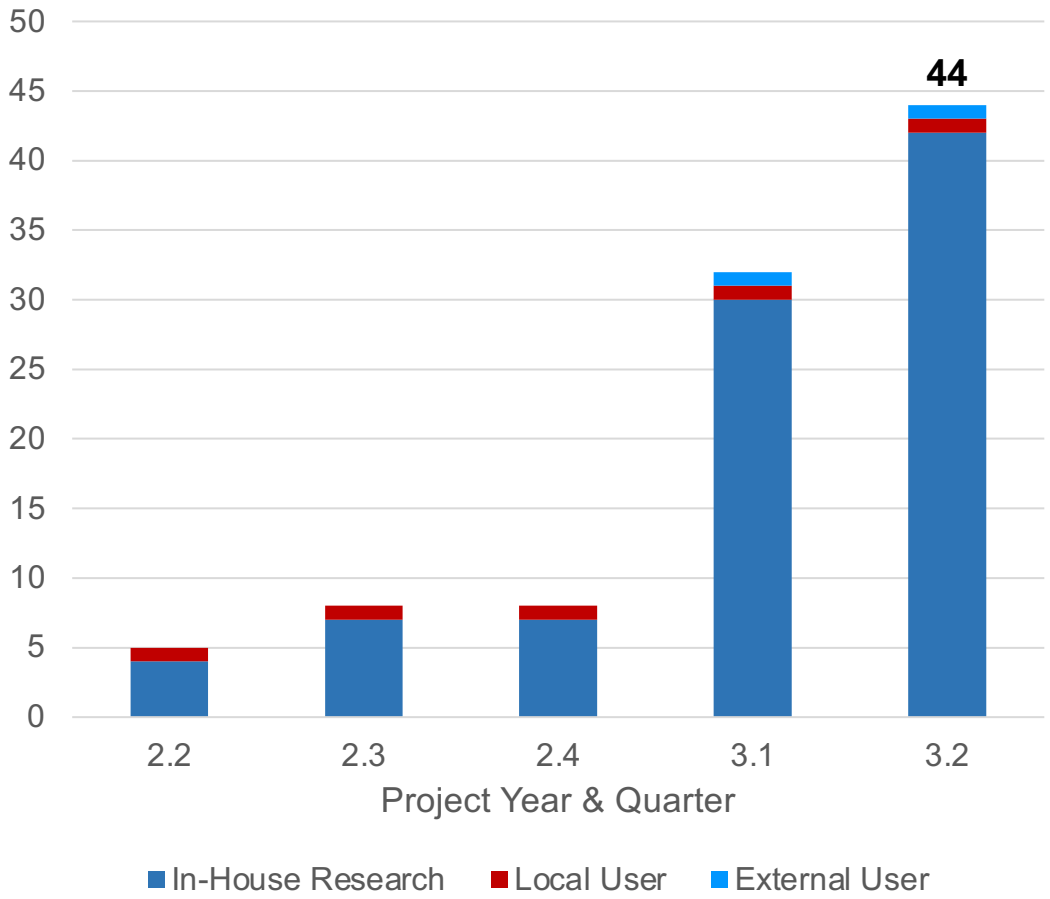




**52% External**

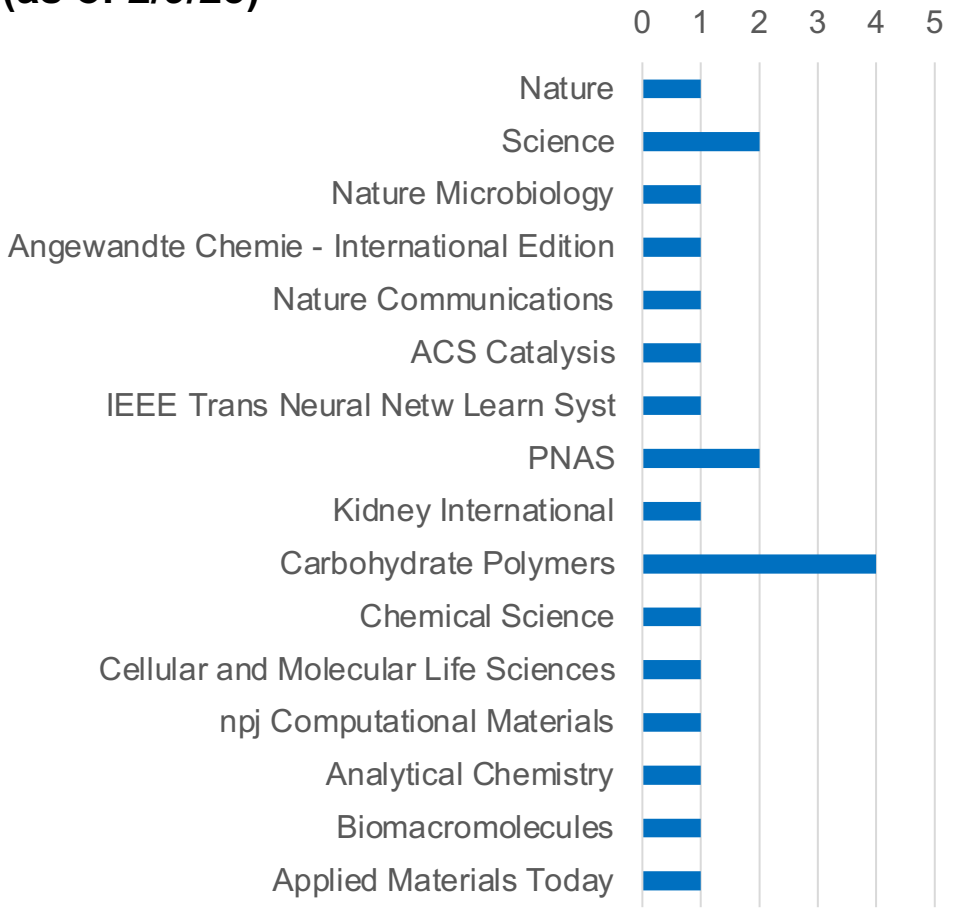
# In-House Research

Associate Director and
Director of In-House Research:
Rob Woods (UGA)

**Publications (cumulative, as of 2/9/23)**




**Journals with a CiteScore >10 (as of 2/9/23)**




GlycoMIP

Rensselaer

# Education & Outreach

Managing Director:
Linda Caudill (VT)

## GlycoMIP Summer School

- ❑ 2021 (virtual), 2022 (in-person)
- ❑ 2023 two planned: 6/23 at VT, 9/23 at UGA

2022 Summer School

## Scientists on Screen (virtual)

- ❑ 6 completed, next scheduled for May 18th

## User Tutorials and Info Videos

- ❑ 2 tutorials
- ❑ 3 info videos

## Summer Undergraduate Research

- ❑ 2021: 1 student, 2022: 4 students (+ 1 in Chem.)
- ❑ NSF REU proposal submitted in Sept. ’22

## Outreach to Prospective Users

- ❑ All-MIP Event at ACS Spring Meeting in March
- ❑ “Transforming glycoscience” ACS symposium

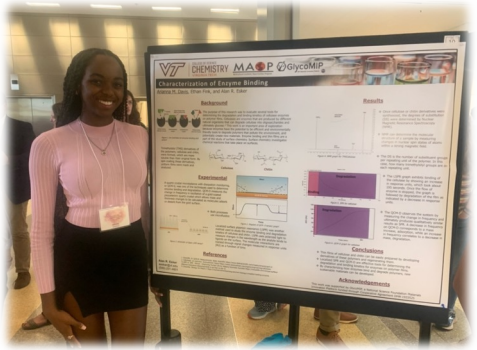
# Broadening Participation

## User Program

- ❑ 10% of user projects from non-R1 institutions
- ❑ 20% of user projects from HBCUs/MSIs

## Education/Training Activities

- ❑ 2022 Summer School: Out of 12 participant organizations, five were HBCUs/MSIs (42%)
- ❑ Summer undergraduate research: 2 HBCU participants (40%)




Summer 2022
Chemistry Dept.

Summer 2022
User Facility Cohort

## MSI Outreach/Collaborations

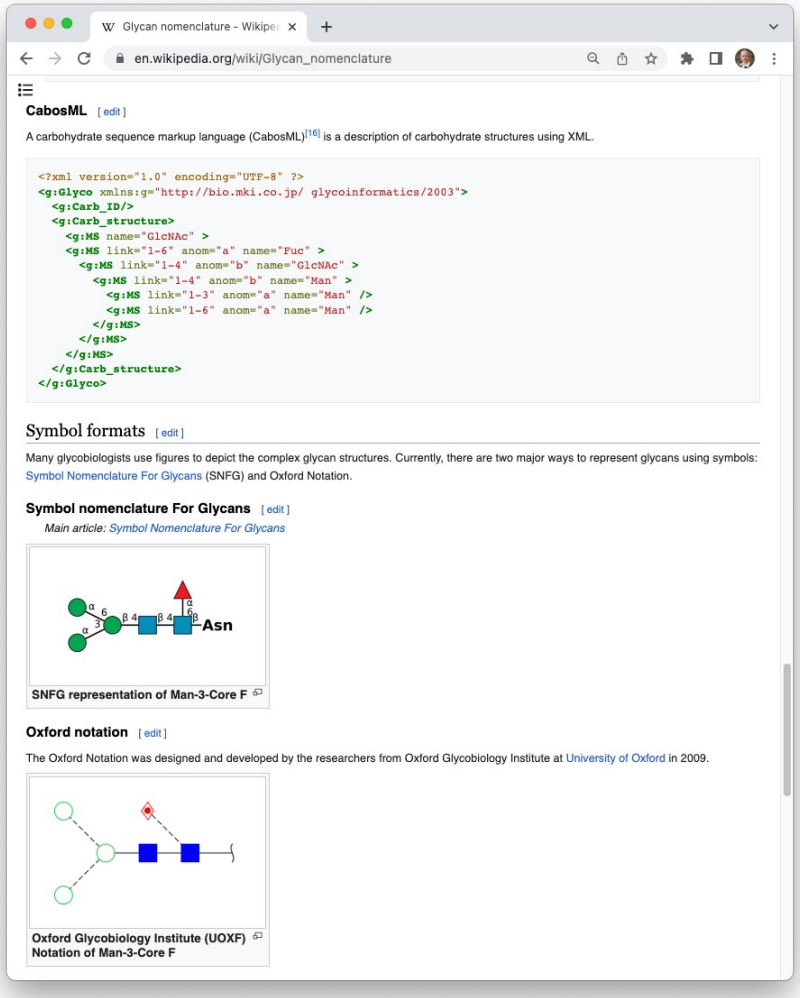
- ❑ Online events:
  - ❑ HBCU/MSI Virtual Preview (4/22),
  - ❑ Virtual Lab Tour (6/22),
  - ❑ Needs Assessment (9/22)
- ❑ NSF PREM (Seed Grant) with Florida A&M University

FAMU – GlycoMIP PREM Meet Up at Virginia Tech

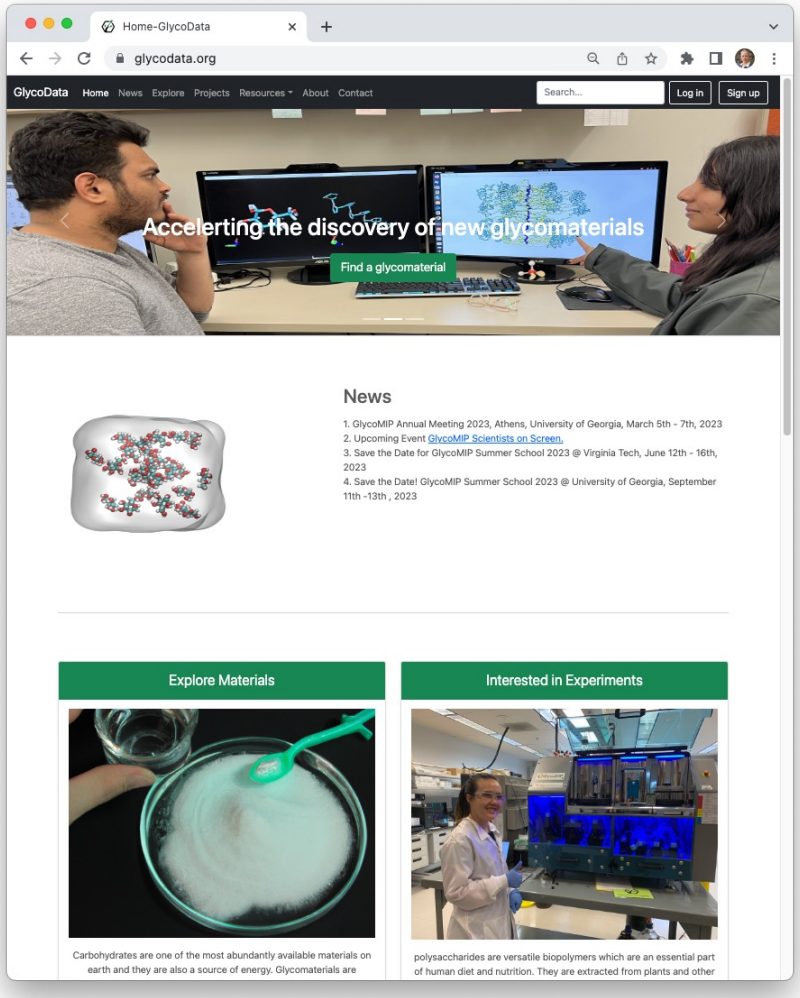
# Knowledge/Data Sharing

Cyber Resources
Sanket Deshmukh (VT)

## Wikipedia: “Glycan Nomenclature”




## GlycoData



# Goals for this Meeting

Get the team together *in person* to learn, plan and exchange ideas

Improve User Facility and In-House Research integration

- Use of the user facility for in-house research
- Support of the user facility activities by the research team

Identify opportunities to…

- Integrate experimental and computational methods
- Close the cycle of synthesis, characterization, modeling

# Program Highlights

## This morning

- In-House Research Program
- Cyber Resources & Data Sharing
- Education & Outreach Program

## 1:00 p.m. (open to UGA community)

- Guest Lecture by Todd Talashek
- Poster Sessions (2)

## 3:00 p.m.

- User Program
- Committee Meetings

## 6:30 p.m.

- Networking reception and dinner at Hotel Indigo (Rialto Room)

## Tomorrow morning (8:30 a.m.)

- EAC Working Session
- Research Target Selection
- Next Year's Research Objectives

## 11:30 a.m.

- Feedback from EAC

## 1:00 p.m.

- Meeting ends