2023 Annual Meeting

User Program Update

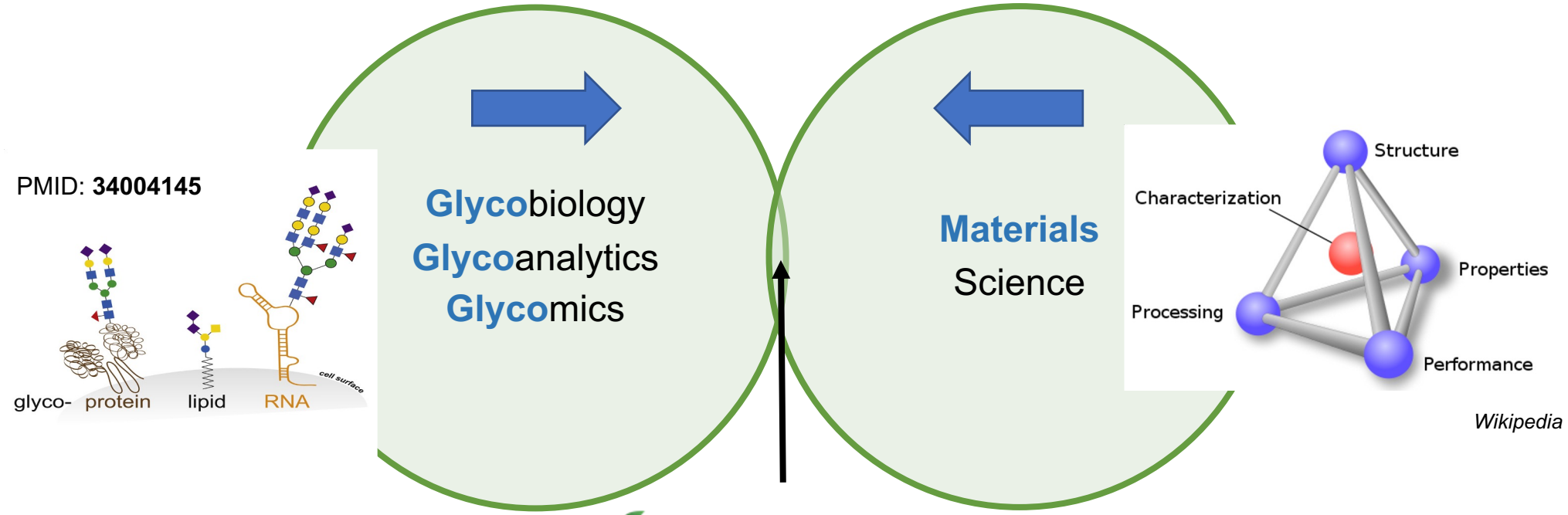
Rich Helm, Director of User Program

March 6, 2023

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

GlycoMIP
NSF Materials Innovation Platform

The Playing Field Needs to Expand



GlycoMIP = **Glycomaterials**

Web Browser Search Tool: "**Glycomaterials**"

Initial Strategies for Expanding Glycomaterials Research

Large in-house user program to help define the field of glycomaterials

---Multi-year activities

---Overlapping research project (Loops).

Service/sample requests

---Do not require peer review, just approval from User Facility Team members.

---Examples

Graduate student preliminary data leading to a multi-year project (Thesis work)

Characterization of a material leads to method/tool/database development (project)

Information warehouse

---Focus on “hybrid” glycomaterials work

Project Advocates

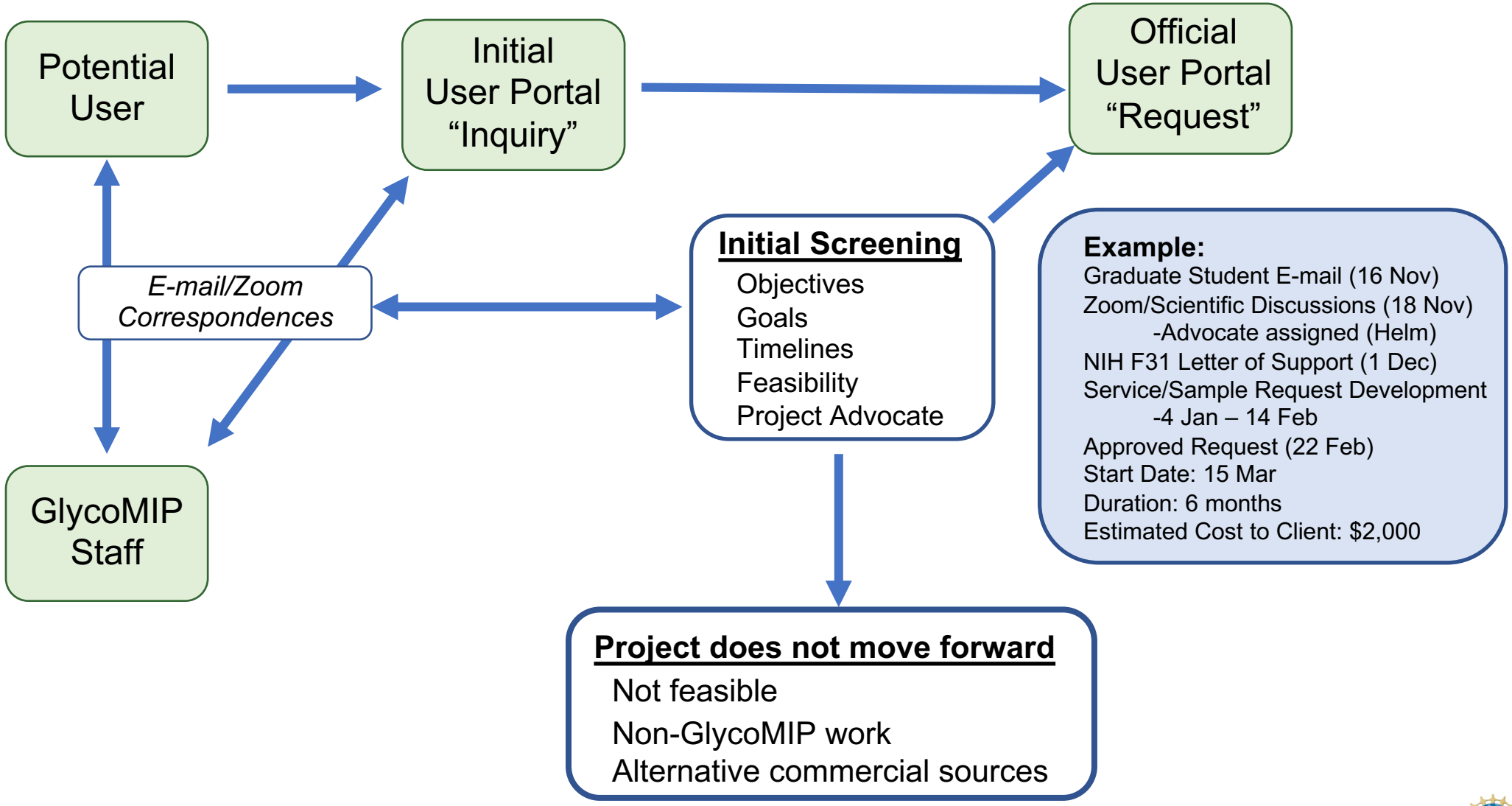
---Guide the client through the process of project development

---Help prepare proposals and statements of work

Avoid a project being rejected by external review

Expand glycomaterials research.

Interacting with Users: Initial Contact



Interacting with Users:

The User Portal

GlycoMIP
NSF Materials Innovation Platform

Search …

HOME | SERVICES | USER PORTAL | RESEARCH | EVENTS | HIGHLIGHTS | PEOPLE | CONTACT

GlycoMIP → User Portal

User Portal

Simple requests for facility use, such as methods development, single-instrument characterizations or simple modeling needs, will be submitted as a Service/Sample Request. Service/Sample Requests are intended to lead to Project Proposals. Your Project Advocate can help you determine the proper request mechanism.

If you already have a Project Advocate and have discussed your needs with that person proceed to the "Request GlycoMIP Scientific Services" section below. If you have not yet spoken with anyone about working with GlycoMIP, you can contact us and we will connect you with a Project Advocate, a faculty member with subject expertise, who will guide you through the process.

- ▸ Project Advocate
- ▸ Request GlycoMIP Scientific Services
- ▸ Fee Structure
- ▸ Downloads, Resources and Instructions
- ▸ Tutorials, Training and Information Videos
- ▸ On-site User Resources
- ▸ How to acknowledge GlycoMIP

Interacting with Users: The User Portal

1

▼Project Advocate

A Project Advocate will be assigned to all GlycoMIP user projects. A subject matter expert, the Project Advocate will work directly with users to develop feasible Service/Sample Requests and Project Proposals. The Project Advocate will guide the user throughout the duration of the project.

Project Advocates

Parastoo Azadi
Sanket Deshmukh
Alan Esker
Brady Hall
Rich Helm
Ryan Porell
Maren Roman
Rob Woods

2

▼Request GlycoMIP Scientific Services

Following a discussion with your Project Advocate to determine if you need a Service/Sample Request or Project Proposal, submit an application using the link below.

GlycoMIP Services Form

Project Proposal (reviewed)
Service/Sample Request

3

▼Fee Structure

All scientific services will be charged for consumable supplies required to complete the work. Estimates of the cost of consumable supplies will be provided by the Project Advocate and agreed upon by the user prior to the start of work. Significant deviations from estimates will be communicated by the Project Advocate, and approved by the user before work can continue.

User pays for consumables.
Estimate provided
Proprietary – full fees
Sustainability

Interacting with Users: The User Portal Forms and Resources

4

▼Downloads, Resources and Instructions

GlycoMIP Policy Acceptance Agreement – Non-proprietary
GlycoMIP Service Agreement for Proprietary and/or International Work – VT Only
GlycoMIP Service Agreement for Proprietary and/or International Work – UGA Only
GlycoMIP Service/Sample Request SOW TEMPLATE
Project Proposal TEMPLATE
Project Proposal INSTRUCTIONS
Review Criteria (External Reviewers)

5

▼Tutorials, Training and Information Videos

Tutorials and Instrument Informational Videos
Training documents – Coming soon

6

▼On-site User Resources

Information for on-site users

7

Important for Reporting!!!

▼How to acknowledge GlycoMIP

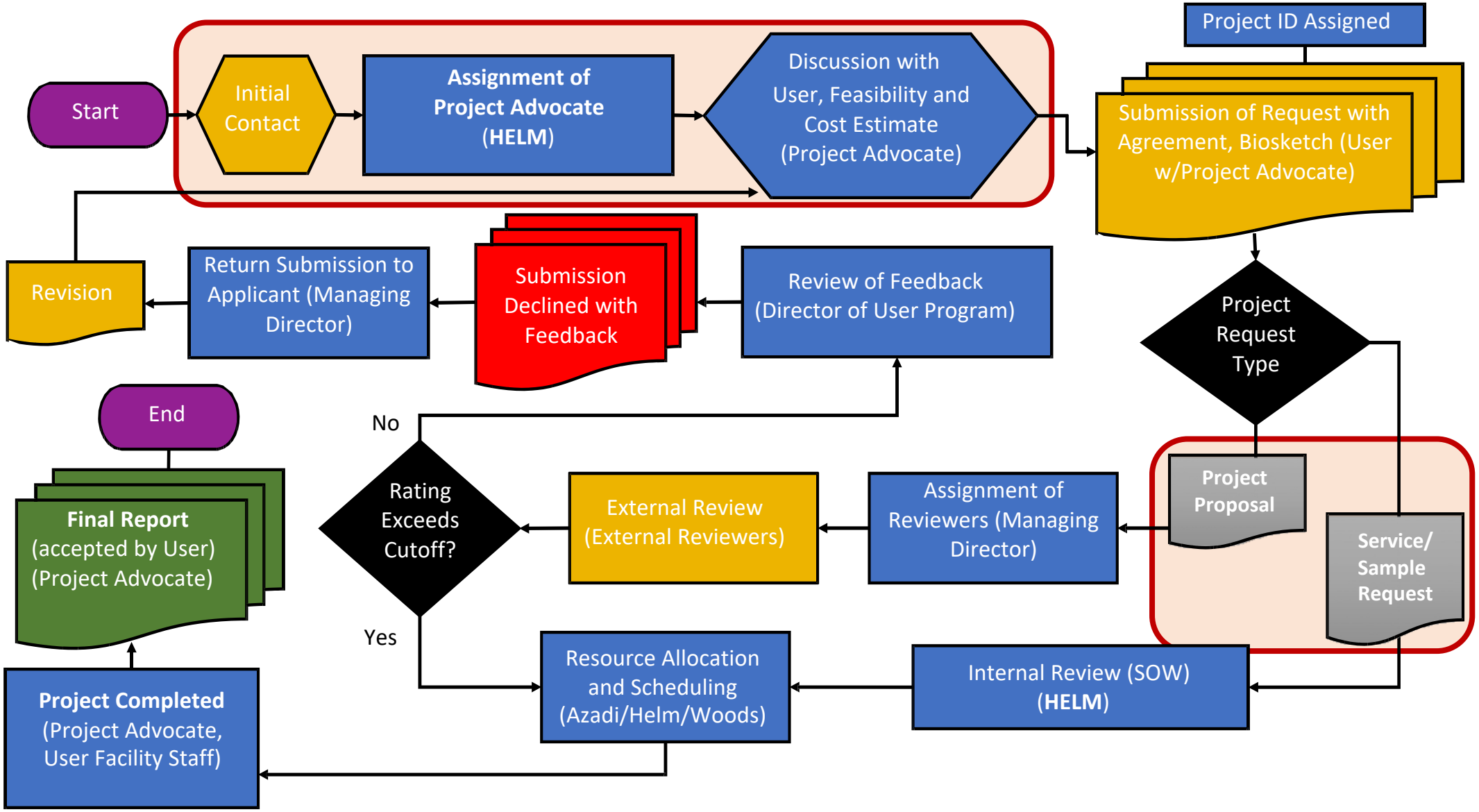
Both the GlycoMIP name and award number (DMR-1933525) must be acknowledged in all publications, presentations, websites, press releases, etc., generated or resulting from research or services by GlycoMIP user facilities, whether in person or remotely. Examples of acceptable acknowledgments include:

This work was supported by GlycoMIP, a National Science Foundation Materials Innovation Platform funded through Cooperative Agreement DMR-1933525.

The (samples/data/model/etc.) used in this study (was/were) provided by GlycoMIP, a National Science Foundation Materials Innovation Platform funded through Cooperative Agreement DMR-1933525.

The authors wish to acknowledge the contributions of (name(s)) in the (synthesis/preparation/characterization/analysis) of (samples/date/model/etc.) provided by GlycoMIP, a National Science Foundation Materials Innovation Platform funded through Cooperative Agreement DMR-1933525.

GlycoMIP External and Local User Projects: Submission and Review Process



Reviewing GlycoMIP Proposals

- Consensus **ONE PAGE** review form approved for use by all MIPs.
- Currently 44 external reviewers.
  - **Goal 1:** TWO reviews per year per reviewer.
  - **Goal 2:** 50 total reviewers
  - **Goal 3:** Reach a steady state of approximately TWO new projects per month

Willing reviewers can be a challenge

Example
Leveraging Relationships Among Biopolymer Degradation, Soil Texture, and the Production of Extracellular Polymeric Substances to Increase Soil Aggregate Stability

Project PI: Project ID:

Project Title:

Date sent for review Date to be returned

GlycoMIP Proposal Review Form

Conflict of Interest Statement (Select One):

◯ I certify that I have NO Conflict of Interest with this proposal.

◯ I HAVE a Conflict of Interest with this proposal and am returning it to GlycoMIP without review.

Conflict of Interest situations, per NSF guidelines. 1) Present or past Ph.D. Student or Advisor, 2) Collaboration within the last 48 months, 3) Co-editor within the last 24 months, 4) Any other circumstance where impartiality could be questioned. Reviewers are expected to self-disclose conflict of interest situations, and furthermore are expected to not disclose and benefit from non-public information.

GlycoMIP Focus
The primary goal of the GlycoMIP research program and user facility are the advancement of glycomaterial science technology, and to be a hub for collaboration and sharing of glycomaterial samples, tools, code, data and know-how.

Scoring
5 Proposal is of high quality and must be pursued
4 Proposal is of good quality and access should be granted
3 Proposal is acceptable, and access should be granted at GlycoMIP's discretion
2 Proposal has minimal merit and access should be low priority; marginal scope; marginal equipment match
1 Proposal has little merit and access should not be granted; ou of scope; not suitable for available resource

This form will be returned to proposer without modification.

Intellectual Merit (IM) (potential to advance knowledge within the field or across different fields)
Does the proposal contain creative, original, or potentially transformative work, such as the development of new tools or methods?

Broader Impacts (BI) (potential to benefit society or advance desired societal outcomes)
Does the proposed work align with GlycoMIP and NSF program priorities for broader impacts including diversity goals?

Reviewer Score: IM
◯ *5 (highest)* ◯ *4* ◯ *3* ◯ *2* ◯ *1*

Reviewer Score: BI
◯ *5 (highest)* ◯ *4* ◯ *3* ◯ *2* ◯ *1*

Comments on IM and BI (required):

Synergistic Factors
1. Alignment of project scope with GlycoMIP focus.
2. GlycoMIP capabilities are critical to the success of the user project.
3. Level of user participation and commitment ensures project success.

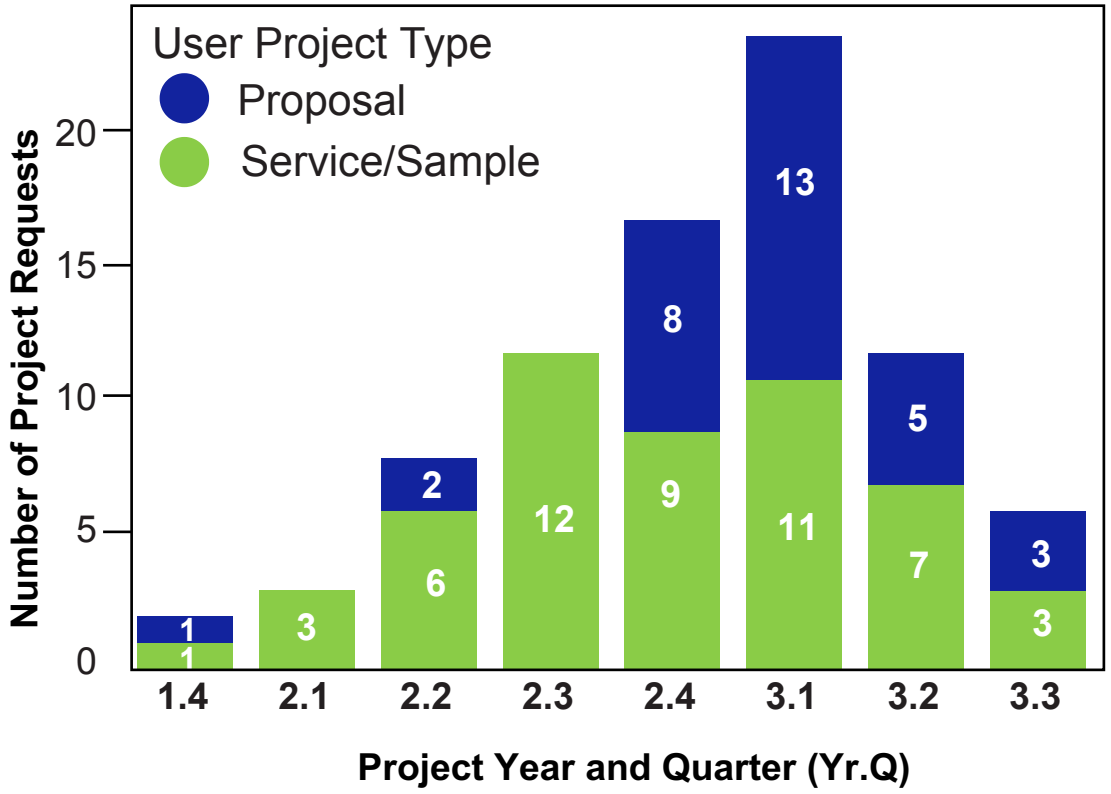
Overall Synergies Rating: ☐ Strongly Synergistic ☐ Synergistic ☐ Not Clearly Synergistic

Explanation of Synergies Rating (required):

Save with original file name and return by email to Linda Caudill, Managing Director at lcaudill@vt.edu

Activities to date

Reporting through February 2023



Ratio of Proposals to Service/Sample requests reaching a steady state of 1:1.

Mechanism: Start with Service/Sample request, show success, move to a Project.

We will ALWAYS utilize the Service/Sample Request mechanism, especially to engage new users and for methods development.

Training the Future Glycomaterials Scientists

Summer Undergraduate Research Fellowships at VT

- -Summer 2021 One student
  - -LC-MS training
  - -PhD Program, UGA, Fall 2023
- -Summer 2022 Four students
  - -LC-MS (2)
  - -Glyconeer (1)
  - -Glycomaterials (1)
- -Summer 2023 Two students anticipated

Undergraduate Research

Fall 2022-present One student
Accepted into VT Biochemistry BS/MS program

22 trained users to date at VT
8 users trained in modeling to date at UGA

Graduate Student On-Site Training at VT

University of Texas (Glyconeer, 4)
- -UTexas Glyconeer installation 2023

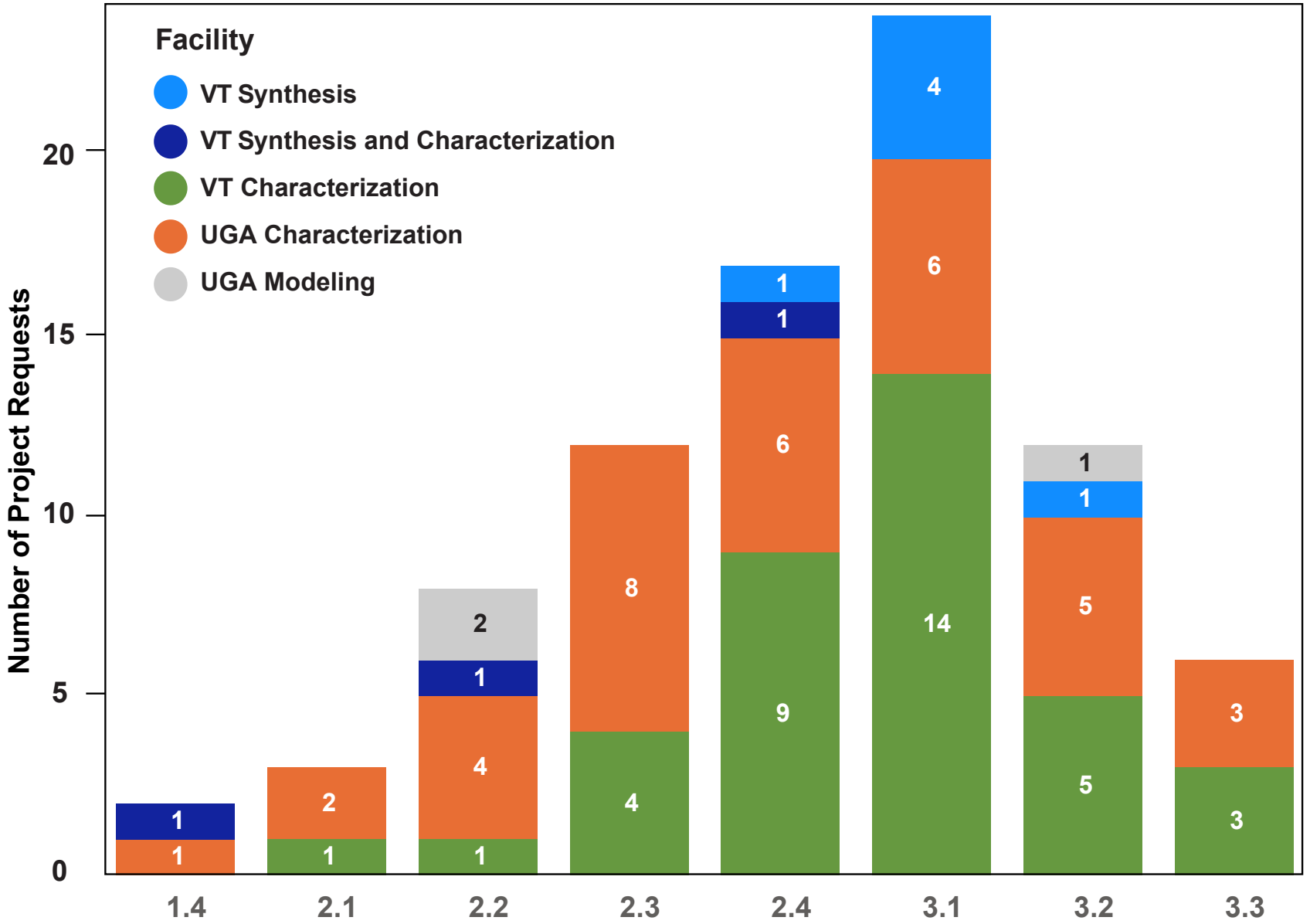
University of Illinois Chicago (LC-MS, 1)
Virginia Tech (17)
- -LCMS (students now training students)
- -Glyconeer
- -SEC-MALLS
- -Rheometry
- -Flow chemistry

Montana State University (1, Summer 2023, LC-MS)

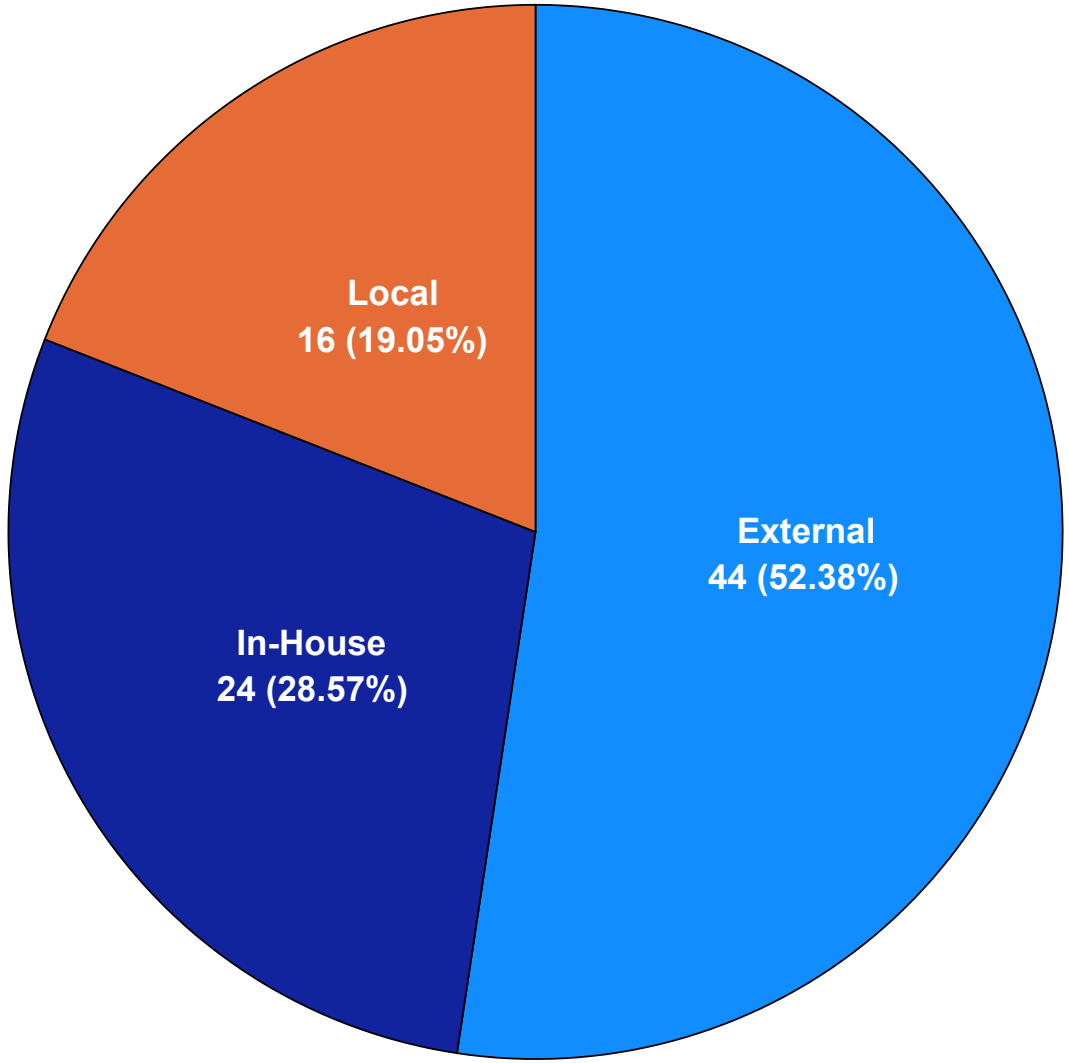
GlycoMIP On-Site Training at UGA

BLI
LC-MS
Modeling

Activities at UGA and VT—characterization leads the way



External Projects are approximately 50% of User Program efforts



External Breakdown

R-1	31
non-R1	8
International Academic	4
Industry	1
Proprietary	2

NSF mandate: Sustainability of Facility

Critical Needs and Sustainability @ VT

VT is the lead institution for GlycoMIP

-Empty laboratories on Day One….required an initial set of plans and goals.

-Year 3…what have we learned and how do we move forward?

Reassessment of User Program Strengths and Weaknesses

-The Project Advocate-Client mechanism works. → *Need more Advocates*

-Characterization is presently utilized more than synthesis or modeling. → *Need to do better*

-The projects that need synthesis are valued but time-consuming. → *More people power*

-What does a sustainable facility look like? → *Industry support*

Phase II — Addressing the needs

Post Doc Search — Synthetic Carbohydrate Chemistry

-structure/function studies from In House projects that support the rational design (synthesis ⟷ modeling)

Additional Project Advocates from the In House Research Team

-must follow system in place

Sustainability — Direct engagement of industry

-what are their needs….one-on-one conversations, “listening tour”