Renewable Bioproducts Institute (RBI) Graduate Research Fellowships
Request for Proposals
For Academic Year 2026-2027

I. Introduction

The Renewable Bioproducts Institute at Georgia Tech benefits from a substantial endowment that we invest to advance the evolving science and technology needs of the bioproducts industry and emerging bioeconomy through graduate research. Receiving endowment support is a two-step process: (1) faculty propose a research project in early spring semester and awards are announced in late March / early April. (2) For those selected for funding a student is assigned to the fellowship, ideally by the end of the fiscal year. This document describes the request for project proposals from GT faculty for fellowships that will begin in academic year 2026-2027.

A Lunch & Learn event was held on Oct. 7, 2025, where faculty and industry members discussed a vision for research topics for this round of fellowships. These topics are included in Section VI below. It is also recommended that proposers consult with RBI leadership and/or members of the Industrial Advisory Board while developing proposals. RBI's Research Engagement Manager, Belinda Vogel bvogel30@gatech.edu, can assist with identifying an industry member.

Applications, emailed as a pdf to cmeredith@rbi.gatech.edu, are **due by 5 PM on Tuesday February 10, 2026.**

*****IMPORTANT – PROGRAM CHANGES*****

- This cycle will consider fellowships that fund only **1 student** per project in order to maximize the number and diversity of fellowships that can be offered and number of faculty supported.

- Industry Applied Collaboration Option – The RBI Fellowships are primarily aimed for supporting fundamental research, but certain projects may benefit from industrial collaboration and support. This year proposers can indicate on their cover page if they think the project might be suitable (at some point over its lifetime) for collaboration or funding support from a member company to carry out mutually agreed applied work that builds on the proposed Fellowship project. If PIs have a concept for a more applied extension of the proposed research, they may briefly summarize that potential in the project description. The decision to include this is optional and will not impact fellowship funding decision making. Industrial member reviewers will likewise be able to indicate their interest in collaborating in this way on specific projects during their review. When award decisions are made, RBI will make introductions between the interested parties. Any specific future work to be performed under industry support would be based on discussions between the specific PIs and the company or companies.

II. Purpose

The principal mission of RBI is to catalyze and develop interdisciplinary research teams that can establish thought leadership through new bioproduct research directions. Our focus is on pre-competitive, use-inspired research relating to bioproducts that incorporates scientific, engineering, economic, social, and/or policy concepts. The RBI Fellowship supports this mission by promoting two objectives:

(1) Helping teams of faculty to establish new concepts, publish transformative new results, and develop competitive federal, industry, or foundation proposals in the future, and

(2) Training a diverse group of graduate-level professionals who can support the bioproducts R&D workforce.

III. Award Structure and Eligibility

This year, in order to maximize the number of projects that can be supported, RBI is offering **single-Student/Multi-Advisor** fellowships**.** These fellowships are required to have at least two principal investigators with distinct expertise or disciplines who will co-advise 1 student. Fellowships pay for tuition and a graduate stipend for up to 48 months (determined based on the student's entry date). The stipend rate is determined by the student's home school.

IV. Application Requirements

The fellowship application should consist of information in the table below and **should not exceed 6 pages (**including the cover page and references**) plus advisors' biosketches (1 pages per advisor)**. The application must be a standard letter-size (8.5-11 inches) document with 1–inch margins on all sides. The font must not be smaller than 11 point.

Cover page (1 page)	Title PI names and affiliations (all faculty advisors are considered PIs) Abstract • 350 words and one descriptive graphic that is suitable for sharing in RBI communications. Optional: If the PIs anticipate an applied aspect emanating from the work that might benefit from RBI member support, please include the sentence: '*This project may be suitable for an applied extension during its lifetime that may benefit from RBI member collaboration and support.*'
Program Alignment (up to 2 pages)	• *RBI Strategic Thrust alignment* (select at least one of A-D), which is described in detail in Section VI. A. Pulp and Paper Processing B. Bioindustrial Manufacturing and Biorefining C. Circular Materials & Packaging D. Science & Engineering of Natural Feedstocks • *Results from previous RBI fellowship support (if applicable)*. Include how have those results been leveraged to apply to external funding or support technology transfer activities (200 words) ○ If this is a continuation to a previously funded RBI fellowship, how is the proposed application innovative and a/or departure from previous work? (100 words) • *Future support.* How can this award catalyze future external interdisciplinary proposals and what funding sources might be approached? (200 words) • *Student Advisement.* How will the advisement of the RBI fellow prepare them to assume leadership roles in industry or academia? (200 words)

Research Narrative (remaining proposal pages)	**1. Innovation and Impact** **1.1 Overview** • Provide a general description of the project and how the proposed technology works in non-technical terms. • Describe the overall project goal. **1.2 Impact** • What is the problem being solved or question being addressed with the proposed research? • What is the project's potential to disrupt or improve current thinking in science or engineering? Alternatively, what is the project's potential to disrupt or improve current technology? **1.3 Innovation** • How does the project provide an innovative solution to an existing scientific or engineering challenge? • What are the technical goals and anticipated results of this project? **2. Proposed Work** • Briefly describe the approach to be taken. • Provide any supporting background theory or experimental data (including from the literature). • What are the critical technical risks? How do will they be mitigated? • Describe the key objectives in appropriate detail and the tasks that need to be accomplished to address the objectives. • 1-2 sentence description about need for and use of materials & supplies funding provided by RBI ($1000/year), or use of RBI analytical facilities.
Biosketch (1 page per coPI)	• A biosketch narrative for each PI should be provided, written in the third person, covering the two topics below. No picture should be included. • PI's research area and how it aligns with the mission of RBI. • PI's expertise and facilities and equipment capabilities relevant to the proposed project. • The 5 most relevant intellectual products to the research proposal

V. Protection of Intellectual Property

Titles, abstracts, TOC images, and program alignment may be shared in RBI communications. To complete the review process, the proposal in its entirety will be shared with RBI member companies and other GT faculty for review. It is recommended that unprotected, competitive, and enabling confidential or proprietary information not be included in the proposal. If it is deemed necessary for review by RBI leadership, please describe it in a separate 1 page document entitled "Confidential Information".

VI. Topic Areas

The following topical areas were suggested during the October 7, 2025 Lunch & Learn based on discussions between faculty and industry representatives. In all the areas below, RBI welcomes work from a broad range of disciplines, with creative combinations of disciplinary expertise. **Work can include science and engineering as well as social, policy, economics, supply chain, and/or other aspects.** Given the federal emphasis on data sciences and AI approaches in the coming fiscal year, we encourage faculty additionally to consider how these could play a role in proposed work.

A. Pulp and Paper Processing

This area focuses on innovative manufacturing technologies and process improvements for pulping and papermaking. Pre-competitive concepts that have the potential to be cost-effective, scalable, and applicable to large-scale markets are of interest. Major industrial goals include pulping and paper-forming innovations, including but not limited to process defossilization, transitions in providing process energy (i.e., electrification or alternative fuels), increasing process efficiency and yields, process improvements to improve product quality, water use/re-use, and applications of sensing, AI, modeling, and/or data analytics to understand and improve processing. Also in scope are novel energy efficient manufacturing processes, including new or better separation technologies and applications and/or alternatives to the current power generation and kraft recovery processes, yielding significant reductions in energy, emissions, and water use. The industry also indicates interest in better approaches to reduce the capital and/or operating cost and improve scalability of carbon capture and emissions reduction technologies.

B. Biorefining and Bio-Industrial Manufacturing

Biorefining is broadly defined as the chemical, biological or mechanical processing of biomass into value-added products. This category includes processes for more efficient breakdown of biomass into cellulose, hemi-cellulose, and lignin, as well as conversion of these products into valuable chemicals and fuels. Work can include feedstock supply chains, feedstock preparation, reaction steps, downstream separations, and product slates. Work may also address aspects of biorefining whether it be at stand-alone biorefineries or at existing petroleum refineries. We are particularly interested in research proposals that address fundamental and manufacturing challenges for future high-margin chemical products from biomass, including renewable monomers, solvents, intermediates and pharmaceutically active compounds. Proposed approaches should have a plausible path to cost-effective production at industrial volumes and a path to offer similar or better performance than currently available approaches. Projects may also focus on enabling novel approaches to process scale-up.

C. Circular Materials & Packaging

The challenges of a carbon-constrained material economy include proliferation of solid material products in landfills and oceans at the end-of-life, reliance on limited resources, greenhouse gas emissions and loss of product value at end-of-life. Packaging of food and pharmaceutical products is one of the major contributors, but others include materials used in construction and automobiles, and plastics used in consumer products. Industry expresses continued interest in moving away from fossil derived components in these materials. Addressing the scientific challenges and developing technologies for new biomass-derived materials that can function in a circular lifecycle can be a significant value to the emerging bioeconomy. In addition, conventional plastic products might be upcycled in a manner that mimics or harnesses natural carbon recycling schemes. We seek proposals that address fundamental questions in enabling the circular materials economy by using biomass-sourced feedstocks, by use of paper- or wood-fiber-based products, or by use of recycling or upcycling of product or process wastes. Areas of specific emphasis include moving from plastics to fiber, functionalization of fiber, barrier coatings, measuring the health effect of micro-plastics, measuring presence/percentage of micro-plastics, and technology to quantify microplastics and replacements for plastics.

D. Science & Engineering of Natural Feedstocks

Plants, together with algae and microbes, are the primary sources for all bio-based products. The global growth and social development of the human population occurring at the same time as the land-base for bio-based production is shrinking generate a need to improve productivity followed by scale-up production of a broad range of optimized organisms and bioprocesses. Furthermore, climate change affects the natural processes essential for bio-based production. Direct effects on human life and eco systems are noticeable changes in weather patterns and increases in natural disasters. Changes that are less direct occur through the growing intensity and frequency of insect attacks, droughts, wildfires, and global stressors like air pollution affecting the living organisms that our lives depend on. Research can include but is not limited to efforts to find new natural products and understand how such products can be produced, employ reverse engineering to find new pathways for manufacturing specific natural products, and engineer new enzymes for tailored biotechnological applications. Systems and synthetic biology approaches are of interest to design organisms with higher adaptability to future climate change, increased productivity, and production of tailored and improved products that can serve as feedstocks to pulp mills and biorefineries. However, to achieve full societal and industrial benefits from such improved organisms, scalable production processes are required. We are interested in understanding the underlying mechanisms for propagation of organisms to design methods supported by automation and AI for large-scale, cost-effective propagation of improved plants and microbes.

VII. Selection of RBI Fellowship Proposals for Funding

Applications will be reviewed by the RBI Industrial Advisory Board, the RBI Fellow Academic Committee, and faculty selected by the Executive Director. Proposals are rated as having low, medium or high priority based on alignment with the criteria described above. Final funding decisions are made by the Executive Director.

VIII. Terms of Awards

RBI fellowships are awarded for a term of up to 4 years (PhD student) or 2 years (MS student) and are contingent upon satisfactory progress toward the degree objective. In the case of a student's having already made progress toward his or her degree before the fellowship award, the award term may be reduced. Advisors are responsible for obtaining any funding required beyond the RBI award term.

IX. Conditions of Support

As a prerequisite to receiving and continuing the RBI Fellowship, we must receive from faculty advisors a commitment to RBI.

A. We require that an annual progress assessment be completed by the student and the faculty advisor to ensure that the RBI Fellow is making satisfactory progress. RBI retains the right to terminate support if project progress is unsatisfactory or the project scope is changed without RBI approval. The report is due on May 31 each year to Carson Meredith (cmeredith@rbi.gatech.edu). The assessment reports may be shared with our member companies, and faculty must therefore be mindful of intellectual property considerations when preparing the assessment reports.

B. We expect RBI Fellows to participate in periodic GT-RBI industry meetings and provide posters and presentations reporting research plans and accomplishments.

C. Students receiving support must complete the 3 course requirements of the RBI Fellowship Program described here.

D. Students must be enrolled full-time to remain eligible for an RBI Graduate Research Fellowship. Internships are encouraged and will be accommodated with the advisor's recommendation and RBI executive director approval.

E. **Faculty and students are to acknowledge RBI support (*e.g.,* in the acknowledgement section) in publications and presentations resulting from RBI endowment-supported work** and are to ~~i~~include the **Renewable Bioproducts Institute in the affiliations at the beginning of the document or presentation**. For papers, a suggested acknowledgement may read "Student X was [partially] supported by an RBI Graduate Research Fellowship from the Renewable Bioproducts Institute at Georgia Tech." Presentations at workshops, seminars and conferences should include the RBI Logo in an acknowledgement slide.