

PROPOSAL FOR AN AREA OF EMPHASIS

Date: 04 Feb 2025

School/College: Franklin

Department/Division: Biochemistry and Molecular Biology (BCMB)

Program (Major and Degree): BCMB MS

Which campus(es) will offer this program? Athens

Proposed Effective Date: Jan 2026

If major has more than one area of emphasis, submit all areas of emphasis under one major together. A course may appear in more than one area of emphasis, but each area of emphasis should have a distinct focus.

1. **Area of Emphasis Title:** Non-Thesis BCMB MS option (Therapeutics Discovery)
This program of study will be offered under a non-thesis version of the existing BCMB MS degree.

2. **Area of Emphasis Description:**
30 Credit hours for completion. Grade requirements: a "C" grade or better for each course. No residency requirements

Required Courses

NEW BCMB6XXX Organizational Leadership, 3

NEW CBIO6XXX Foundations in Drug Discovery (Dennis Kyle, proposal submitted), 4

PHAR6010 Pharmaceutical, Biotechnology, and Device Industries, 4

NEW BCMB6XXX Project Management, 3

BCMB/CBIO/GENE 8113/8114, 4

NEW BCMB7XXX Spring Break visit to Biotechs in Boston, 1

NEW BCMB7XXX Internship, 3

Elective courses (choose at least 3)

Track One: Small Molecule Drug Discovery

CBIO6500 Medical Parasitology, 3

PMCY6300 Medicinal Chemistry, 3

CHEM6120 Medicinal Chemistry

PMCY6410E Robotic Technology in Drug Discovery, 2

CHEM4615/6615/8390 Soft Materials

Track Two: Biologics

PMCY6600 Biological Therapeutics, 3

BCMB6030L Bioprocess Technology, 4

CBIO6100 Immunology, 4

STAT 6315 Statistical Methods for Researchers, 4

Track Three: Entrepreneurship

UGA Entrepreneurship Program for Electives
COMM6350 Scientific Communication
COMM6550. Organizational Communication, 3

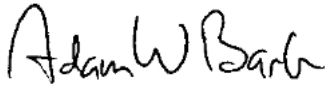
3. Major Requirements:

Entrance Requirements

Apply to the UGA Graduate School and include the following:

1. 3 Letters of recommendation, with the average student having and one or more strong letters of recommendation from Principal Investigators or Industrial Scientists
2. Statement of Purpose (emphasizing career goals, scientific interests, and research experience).
3. Undergraduate transcript. The minimum GPA is 3.0.
4. International students: For students whose primary language is not English, proof of English proficiency is required. Students need to submit official university documents according to the UGA Graduate School requirements. Students will also have to show certificate of finances upon acceptance to the program.

4. Approvals:



Adam W. Barb
Head, BCMB

Anna Stenport
Dean, Franklin College

Ron Walcott
Dean of Graduate School

Therapeutics Discovery MS Program

Opportunity

There is a need for employees with both technical capability and leadership skills in the biotechnology industry, particularly in the area of therapeutics discovery. Current programs at UGA are not tailored with guidance from relevant private industry to provide the highly skilled leaders they seek for positions in Georgia or throughout the country. Furthermore, life sciences undergraduate students from a wide variety of UGA undergraduate programs including Biology, Vet Med, Pharmacy, Cellular Biology, etc, possess skills appropriate for a wide variety of positions and many seek career paths that are not patient-facing. Thus, there is a wealth of student talent present at UGA to address the demand. Demand supports professional programs at other universities that provide student training for positions in private industry, including Northeastern and Johns Hopkins.

Background

UGA boasts a cohort of internationally-renown faculty with expertise in many fundamental aspects of biotechnology and therapeutics discovery. This expertise includes faculty in the departments of Biochemistry and Molecular Biology, Chemistry, and Cell Biology. Research activities of many faculty focus on fundamental aspects of human and animal health including understanding molecular mechanisms of disease and identifying novel avenues to treatment. Though federal mechanisms that fund many UGA labs often promote applied research including therapeutics discovery, individual laboratories lack the ability to pursue therapeutics discovery at a scale comparable to biotech companies. As a result, our students are often trained in fundamental principles though notably lack specialized training in therapeutics discovery relevant to private industry. Furthermore, direct connections between these faculty and biotechnology companies represent an underdeveloped sector of the UGA research portfolio. Leveraging UGA expertise to partner with the biotechnology industry is expected to provide new opportunities for student training and placement, graduate educational program development, and expand collaborative research partnerships.

Furthermore, multiple existing programs are available at UGA to broaden student experience, providing professional skill development in addition to increasing technical capabilities. These programs include the Entrepreneurship Program from the Terry College of Business, the Industrial Organizational Leadership Program in the Psychology Department and the Communication Studies Department.

Solution

We developed the Therapeutics Discovery MS Program as a paradigm for increased partnerships between UGA and the biotech industry. This program will launch in Fall 2026 is expected to establish UGA as a leader in preparing students for careers in biotechnology and therapeutics discovery. A defining feature of the program will be a summer internship in a company, building critical career connections as well as relevant scientific and professional skills. We anticipate forming partnerships with private industry to provide students with paid internships in the Athens area, within Georgia, and throughout the country. We are currently expanding connections between the Franklin College of Arts and Sciences to identify potential partner companies to support these internships. We expect that internship availability may limit program enrollment, though we anticipate participating companies will gain an important opportunity to identify future talent for their workforce. An additional important feature of the program will be coursework in organizational leadership, project management, and communication in addition to specific theoretical and laboratory based scientific training.

This MS program will likewise serve as the basis for new Double Dawgs programs. UGA undergraduate students from various STEM majors will be able to apply for the program, completing a BS and MS degree in a total of five years. Students will enter the program at the beginning of their fourth year in the undergraduate program, completing the BS degree in four years. Students receive experiential learning credits through independent research and emerge as highly trained in the laboratory during this undergraduate period. The chemistry and life sciences departments pride ourselves in being leaders in undergraduate independent research and professional development with a deep history of student success to support these claims. During this fourth year, students take courses that will count toward both the BS and MS degrees.

Potential impact on the state of Georgia

The state of Georgia is poised to emerge as a hub for the biotechnology industry as the bioeconomy expands. Georgia boasts top-tier institutions. Our universities spent \$3.3B on research and development in 2022, with more than \$800M in life-sciences funding from the National Institutes of Health. This activity likewise spurs, attracts and retains biotech companies, including major investments from Boehringer Ingelheim, Johnson & Johnson, Takeda, Aruna Bio, GeoVax Labs, Metaclops Therapeutics, to name a few. Supportive governmental policies, exceptional universities, lower cost of living, favorable climate, a major international airport and now increased worker training programs define Georgia as a hub for growth and innovation. We believe that demonstrating a willingness to partner with companies will promote further program development at UGA and increased student placement as this sector grows within Georgia. Lastly, workers with graduate education earn significantly high salaries compared to their BS-only peers, further driving economic growth.

We anticipate three primary impacts from this program. First, this program was inspired by a significant philanthropic commitment to UGA and creates an opportunity to engage our graduates active in this space to support future program development and implementation. Second, working closely with leading biotechnology companies will provide greater connections which will provide student placement and potential scientific collaborations. Lastly, success of this program will be evident from increased sponsored research support for UGA laboratories. Once we establish a training pipeline for these BS/MS students, we anticipate UGA will become renown as a valuable source for highly skilled PhD graduates, postdocs, and sponsored research collaboration. The majority of research funds go towards salaries and thus increased research expenditures are increased economic development.

Conclusion

Increased corporate partnerships, developed following the implementation of our Therapeutics Discovery Program, are expected to provide new career opportunities for UGA students, establish UGA as a leader in training students for these jobs, promote growth of the biotech sector in Georgia, and increase sponsored research in the biotechnology sector at UGA.

Adam W. Barb, Dec 19, 2024

Developed with a committee consisting of Dennis Kyle (CBIO), Belen Cassera (BCMB), Rob Phillips (CHEM), Paula Lemons (FCAS/BCMB), Ali Elyaman (FCAS), Jason Locklin (CHEM) and James Lauderdale (CBIO)