# Proposal for a New Degree Program

## I. Information and Rationale

### A. Primary Contact Information

Institution: University of Alabama
Contact: Carmen Coleman
Title: Academic Program Development Specialist
Email: crjones18@ua.edu
Telephone: 205-348-3439

### B. Program Information

Date of Proposal Submission: April 4, 2025
Award Level: Master's Degree
Award Nomenclature (e.g., BS, MBA): MS
Field of Study/Program Title: Translational Science and Medicine
CIP Code (6-digit): 51.1402
Proposed Delivery Method: Main Campus

### C. Administration of the Program:

Name of Dean and College: Richard Friend, College of Community Health Sciences
Name of Department/Division: Translational Science and Medicine
Name of Chairperson: Ravi Kumar
Name of Representative for Proposal (if not chair): N/A

### D. Implementation Information

Proposed Program Implementation Date: 8/1/2026
Anticipated Date of Approval from Institutional Governing Board: 9/12/2025
Anticipated Date of ACHE Meeting to Vote on Proposal: 9/12/2025
SACSCOC Sub Change Requirement (Notification, Approval, or NA): NA
Other Considerations for Timing and Approval (e.g., upcoming SACSCOC review):

### E. Concise Program Description

1. Briefly describe the purpose of the proposed program.

The Master of Science (MS) in Translational Science and Medicine (TSM) prepares graduates for careers as medical scientists. The program adheres to the National Science Foundation's call for convergence across disciplines to solve problems and do so in ways that bridge the theory/practice gap as quickly as possible using a translational science framework. This professional degree will also develop critical thinking, leadership, and entrepreneurial skill sets. The MS TSM program will be the first graduate program in Translational Science and Medicine in the state of Alabama.

The MS TSM program positions graduates to enter and become leaders in the biomedical or pharmaceutical industries, or pursue a PhD in Translational Science and Medicine, Advanced Drug Delivery, or related fields. The program can also be utilized as a "gap experience," a period of years between a student's undergraduate degree and entry into medical school, to better prepare students who wish to pursue medical school by enhancing

their fund of biomedical knowledge for success in medical school, and gain research and publication experience to enhance their application package for medical school.

2. Describe, if applicable, general opportunities for work-based and/or experiential learning within the proposed program.

   The MS in Translational Science and Medicine program offers a range of hands-on learning opportunities to enhance student experience and career readiness. Students can engage in research internships at institutions or pharmaceutical companies, gaining practical lab experience, and collaborate with industry partners on Capstone Projects that address real-world research problems. Participation in faculty-led research enhances their skills, while attending industry seminars provides insights into current trends and challenges. Networking events facilitate connections with alumni and industry leaders for mentorship and job opportunities. Additionally, students can observe medical professionals through clinical shadowing, present their research at professional conferences to engage with the scientific community, and gain practical experience through fieldwork assignments in community health or clinical settings. These experiences collectively equip students with the skills and connections necessary for successful careers in translational science and medicine. The program has also garnered letters of support from various industries, indicating potential opportunities for collaboration and placement through these companies and others.

3. Provide a brief statement regarding how the program's purpose is related to the mission and goals of the department, college, and University.

   By training MS students to conduct original research in translational science and medicine (e.g., innovative therapeutic development for immuno-inflammatory and other disease conditions), this program aligns with CCHS's mission of "promoting the health of individuals and communities in Alabama and the Southeast region" and its goal of establishing an international reputation as a leading health sciences academic research center. Additionally, the program supports UA's strategic plan, particularly Goal #1, which aims to provide premier undergraduate and graduate programs characterized by high-quality scholarship and unique curricular offerings, and Goal #2, which focuses on increasing research productivity that contributes to economic development and societal impact (https://www.ua.edu/strategicplan/goals). Furthermore, it aligns with the UA Graduate School's strategic plan to "develop new graduate programs that reflect faculty expertise and emerging areas of opportunity" (Strategic Plan for Graduate Education 2022 – 2026, part I.B).

## F. Specific Rationale (Strengths) for the Program

List 3-5 strengths of the proposed program as a specific rationale for recommending approval of this proposal.

1. **Research-Intensive Curriculum:** The program's focus on original research equips students with advanced analytical and critical thinking skills, essential for success in biomedical and pharmaceutical careers.

2. **Flexible Degree Tracks:** Offering both Plan I (thesis) and Plan II (non-thesis) tracks allows students to choose a path that aligns with their career goals and personal preferences, accommodating diverse learning styles and aspirations.

3. **Hands-On Learning Opportunities:** The program provides a variety of experiential learning options, including research internships, Capstone Projects, and clinical shadowing, which enhance practical skills and real-world application.

4. **Strong Industry Connections:** Letters of support from various companies indicate a strong industry backing and offer networking and collaborations with industry partners to foster valuable relationships and provide students with mentorship opportunities and potential job placements, thereby enhancing career readiness.

List external entities (more may be added) that may have supplied letters of support attesting to the program's strengths and attach letters with the proposal at the end of this document. (external letters of support are not required but encouraged).

1. Merck. A global healthcare company that develops and produces medicines, vaccines, and other health products. Merck's products are used to treat and prevent diseases in people and animals.

2. Spyre Therapeutics. A biotechnology company that develops treatments for inflammatory bowel disease (IBD). The company uses antibody engineering, precision medicine, and therapeutic combinations to create new IBD products.

3. Astraea Therapeutics LLC. A clinical-stage biopharmaceutical company focused on developing oral medications specifically designed to treat substance addiction disorders, like opioid dependence, smoking, and stimulant abuse.

## II. Background with Context

### A. Student Learning Outcomes

List four (4) to seven (7) of the student learning outcomes of the program.

At the completion of this program, students will be able to:

1. **Utilize appropriate laboratory techniques**. Students will be able to utilize appropriate laboratory techniques to advance their understanding of translational medical research.

2. **Design a research project**. Students will be able to design a scientific research project demonstrating competency in translational science and medicine and advancing knowledge in a selected area.

3. **Critically Appraise Research Information**. Students will be able to critically appraise research literature for its relevance and reliability when conducting scholarly research.

4. **Apply Appropriate Data Analyses**. Students will be able to apply appropriate statistical testing to experimental data.

5. **Communicate Outcomes of a Research Project**: Students will effectively communicate their research findings through written reports and presentations.

Attach an Assessment Plan for the proposed program to include the student learning outcomes, assessment measures, and a curriculum map.

## B. Similar Programs at Other Alabama Public Institutions

List programs at other Alabama public institutions of the same degree level and the same (or similar) CIP codes. If no similar programs exist within Alabama, list similar programs offered within the 16 SREB states. If the proposed program duplicates, closely resembles or is similar to any other offerings in the state, justify any potential duplication.

There are no similar programs within Alabama. The following programs are from SREB schools.

| CIP Code | Degree Title | Institution with Similar Program | Justification for Duplication |
|---|---|---|---|
| 51.1401 | M.S. in Clinical Investigation & Translational Science* | UT Health San Antonio | While the title may seem similar (please see details below), what UA has proposed is quite different. Additionally, there is currently no initiative like this in the state of Alabama. |
| The Master of Science in Clinical Investigation and Translational Science Program at UT Health San Antonio prepares skilled investigators for clinical research through a comprehensive curriculum that emphasizes active learning and interdisciplinary collaboration. Key courses include TSCI 5050, which covers programming in R and SQL for data analysis; TSCI 5070, focusing on ethical research principles; and subsequent courses on patient-oriented research methods, biostatistics, molecular biology integration, and data management, leading to advanced topics like health services research and genomic healthcare, complemented by practical experiences in translational science. The proposed Master of Science in Translational Science and Medicine at UA will focus on pre-clinical translational medicine to train students for industry, while this program from UT Health San Antonio focuses on educating clinicians and health care professionals to be research investigators in translational medicine. https://catalog.uthscsa.edu/biomedicalsciences/translationalscience/clinicalinvestigation/#text | | | |
| 51.1401 | Clinical Translational Science MS | University of Arkansas for Medical Sciences | While the title may seem similar (please see details below), what UA has proposed is quite different. Additionally, there is currently no initiative like this in the state of Alabama. |
| The program comprises 36 credits over two years, with Year 1 concentrating on core courses and mentored research, while Year 2 focuses on further research, a capstone or thesis, and electives. Students in the CTS track develop a strong foundation in clinical and translational sciences through coursework in biostatistics, epidemiology, data management, clinical research methodology, clinical trial design, drug development, responsible research conduct, grant writing, and scientific communications. These courses are available across the College of Medicine, College of Nursing, College of Public Health, and College of Pharmacy. MS students can opt for a non-thesis pathway or collaborate with CTS faculty on thesis research in various clinical areas. The proposed Master of Science in Translational Science and Medicine at UA will focus on pre-clinical translational medicine to train students for industry, while this MS program from University of Arkansas for Medical Sciences focuses on educating students in clinical research to be applied in patient care. https://gradschool.uams.edu/prospective-students/programs/clinical-and-translational-sciences-track | | | |
| 51.1401 | Master of Clinical and Translational Science | Augusta University | While the title may seem similar (please see details below), what UA has proposed is quite different. Additionally, there is currently no initiative like this in the state of Alabama. |
| The Master of Clinical and Translational Science program focuses on applying the principles of Clinical and Translational Science (CTS) through hands-on, mentored research and didactic courses. Its key objectives include providing essential | | | |

| | | | |
|---|---|---|---|
| CTS skills, fostering collaboration among researchers at Augusta University, and enhancing research productivity for junior faculty. The curriculum features courses like Grant Writing (CTRS 7100), Ethical Conduct in Research (MPHC 8011), and various biostatistics and epidemiology classes. Students also complete 6 elective credit hours from options like Methods for Decision Making (CTRS 7210) and Chronic Disease Epidemiology (EPID 7380), totaling 30 credit hours for the degree. The proposed Master of Science in Translational Science and Medicine at UA will focus on pre-clinical translational medicine to train students for industry or PhD in translational science with concentrations in drug delivery, while this MS program from August University focuses on educating students in clinical research with a heavy epidemiology course load. https://catalog.augusta.edu/preview_program.php?catoid=45&poid=10989 | | | |
| 51.1401 | M.S. in Clinical and Translational Investigation | University of Miami Miller School of Medicine | While the title may seem similar (please see details below), what UA has proposed is quite different. Additionally, there is currently no initiative like this in the state of Alabama. |
| The M.S. in Clinical and Translational Investigation (MSCTI) at the University of Miami offers a structured and individualized educational program that trains students in translational science and clinical research. This multidisciplinary program prepares clinicians and researchers to navigate and overcome challenges in translational research. Students gain essential tools for understanding research design, methodology, regulatory issues, and ethical considerations. The curriculum includes courses such as Introduction to Team Science and Entrepreneurship (CTI 605), Medical Biostatistics I (EPH 601), Research Methods (EPH 651), and Clinical Trials (EPH 604). Students also complete a Capstone Project/Master's Thesis (CTI 805), along with courses in Writing for Translational and Clinical Science, Research Ethics, and Epidemiology, culminating in a comprehensive learning experience. The proposed Master of Science in Translational Science and Medicine at UA will focus on pre-clinical translational medicine to train students for industry or PhD in translational science with concentrations in drug delivery, while this MS program from University of Miami Miller School of Medicine focuses on application of problem-solving translational science complexities with methodologies and ethics, without any hands-on laboratory courses.https://med.miami.edu/graduate-studies/master-programs/m,-d-,s,-d-,-in-clinical-and-translational-investigation | | | |

## C. Relationship to Existing Programs withing the Institution

1. Is the proposed program associated with any existing offerings within the institution, including options within current degree programs? **Yes ☒ No ☐**

   (Note: Most new programs have some relationship to existing offerings, *e.g.*, through shared courses or resources). If yes, complete the following table. If this is a graduate program, list any existing undergraduate programs which are directly or indirectly related. If this is a doctoral program, also list related master's programs.

| Related Degree Program Level | Related Degree Program Title | Explanation of the Relationship Between the Programs |
|---|---|---|
| PhD | Interdisciplinary Studies with concentration in Advanced Drug Delivery | The incoming MS students can take some of their electives from the IDS program |

2. Will this program replace any existing programs or specializations, options, or concentrations? **Yes ☐ No ☒**

   If yes, please explain.

3. Will the program compete with any current internal offerings? **Yes ☐ No ☒**

   If yes, please explain.

   *If applicable, attach a letter of support from the competing or overlapping department(s)*

## D. Collaboration

1. Have collaborations with other institutions or external entities been explored? **Yes** ☒ **No** ☐

   Program faculty have been actively cultivating industry relationships, as evidenced by letters of support. These endorsements highlight our program's credibility and signal promising opportunities for collaboration and placement with various companies. Additionally, we are working to establish partnerships with institutions such as Southern Research, further enhancing our network and potential for impactful collaborations.

2. Have any collaborations within your institution been explored? **Yes** ☒ **No** ☐

   The interim chair of the Department of Translational Science and Medicine and the director of the proposed MS program have established a UA Center for Convergent Bioscience and Medicine, which is approved by the Board of Trustees. This center unites faculty from the Colleges of Community Health Sciences, Arts & Sciences, Engineering, and Business, fostering ongoing collaborations that will significantly benefit the proposed program.

## E. Specialized Accreditation

1. Will this program have any external accreditation requirements in addition to the institution's SACSCOC program requirements? **Yes** ☐ **No** ☒

   If yes, list the name(s) of the specialized accrediting organization(s) and the anticipated timeframe of the application process.

2. Does your institution intend to pursue any other non-required accrediting organizations for the program?* **Yes** ☐ **No** ☒

   If yes, list the name(s) of the organization(s) and the purpose of the pursuit.

   If there are plans to pursue non-required external accreditation at a later date, list the name(s) and why the institution is not pursuing them at this time.

   **Note: Check *No* to indicate that non-required external accreditation will not be pursued, which requires no explanation.**

## F. Professional Licensure / Certification

Please explain if professional licensure or industry certification is required for graduates of the proposed program to gain entry-level employment in the occupations selected. Be sure to note which organization(s) grants licensure or certification.

Not required.

## G. Additional Education / Training

Please explain whether further education/training is required for graduates of the proposed program to gain entry-level employment in the occupations selected.

None.

## H. Admissions

Will this program have any additional admissions requirements beyond the institution's standard admissions process/policies for this degree level? **Yes** ☐ **No** ☒

## I. Mode of Delivery

Provide the planned delivery format(s) (*i.e.*, in-person, online, hybrid) of the program as defined in policy along with the planned location(s) at which the program will be delivered (*i.e.*, on-campus and/or at specific off-campus instructional site(s)). Please also note whether any program requirements can be completed through competency-based assessment.

The program will primarily be delivered in a traditional in-person format at the main campus of the University of Alabama. Lectures by industry and regulatory agency experts will be offered via Zoom when in-person attendance is not feasible, ensuring accessibility to valuable insights.

No program requirements will be completed through competency-based assessments.

## J. Projected Program Demand (Student Demand)

Briefly describe the primary method(s) used to determine the level of student demand for this program using evidence, such as enrollments in related coursework at the institution, or a survey of student interest conducted (indicate the survey instrument used), number and percentage of respondents, and summary of results.

To assess the level of student demand, focus groups were conducted for two cohorts (2023-2024 and 2024-2025) of Rural Medical Scholars and Rural Dental Scholars enrolled in the MS in Rural Community Health program and who were accepted into the UAB Schools of Medicine and Dentistry, respectively ($N$ = 28). 18 students (64%) completed undergraduate medically oriented degrees in Biomedical Sciences, Nutrition, Health-Care Management, Neuroscience, and Chemical Engineering with a biomedical focus. 24 students (86%) stated that if they had not been accepted into the Rural Medical/Dental Scholars Programs, then they would "strongly consider" applying for the proposed program as a route into medical school. 14 students (50%) indicated that they would "consider" or "strongly consider" applying to the program as a pathway to a career in industry as a medical scientist, or to pursue a PhD, if medical school or dental school was not an option.

These focus groups demonstrated the perceived utility of the proposed program to gain admission to a health-related professional school, and the potential of this program to become a medical scientist as a career choice. When one considers that there are several thousand undergraduate students at UA who are interested in health-related professional education, extrapolating the results from the focus groups provides evidence for the potential of robust program enrollment.

In addition, without advertisement, and prior to the formation of the Department of Translational Science and Medicine, the proposed program faculty have received over 100 undergraduate student requests to engage in translational science in the past three years from students involved in Randall Scholars and Emerging Scholars from disciplines all over campus. They have backgrounds in chemistry, biological sciences, engineering, and nursing. The student demand is very profound not just on campus, but globally. Institutions

in India have reached out asking to send students over the summers to participate in research in drug delivery and translational medicine.

## K. Standard Occupational Code System

1. Using the federal Standard Occupational Code (SOC) System, indicate the top three occupational codes related to post-graduation employment from the program. A full list of SOCs can be found at https://www.onetcodeconnector.org/find/family/title#17. A list of Alabama's *In-Demand Occupations* is available at https://www.ache.edu/index.php/policy-guidance/.

**SOC 1: 19-1042 Medical Scientists, Except Epidemiologists**
Conduct research dealing with the understanding of human diseases and the improvement of human health. Engage in clinical investigation, research and development, or other related activities.

**SOC 2: 19-1021 Biochemists and Biophysicists**
Study the chemical composition or physical principles of living cells and organisms, their electrical and mechanical energy, and related phenomena. May conduct research to further understanding of the complex chemical combinations and reactions involved in metabolism, reproduction, growth, and heredity. May determine the effects of foods, drugs, serums, hormones, and other substances on tissues and vital processes of living organisms.

**SOC 3: 17-2031 Bioengineers and Biomedical Engineers**
Apply knowledge of engineering, biology, chemistry, computer science, and biomechanical principles to the design, development, and evaluation of biological, agricultural, and health systems and products, such as artificial organs, prostheses, instrumentation, medical information systems, and health management and care delivery systems.

2. Briefly describe how the program fulfills a specific industry or employment need for the State of Alabama. As appropriate, discuss alignment with Alabama's Statewide or Regional Lists of In-Demand Occupations (https://www.ache.edu/index.php/policy-guidance/) or with emerging industries as identified by Innovate Alabama or the Economic Development Partnership of Alabama (EDPA).

According to the Alabama Regional Lists of In-Demand Occupations, medical scientists are in high demand in regions 1 and 4, with an average of 15 and 40 openings annually, respectively. This program aims to equip the state of Alabama with graduates who are well-prepared for roles as medical scientists, addressing the growing need for advanced-level research and development in immuno-inflammatory research while also capitalizing on entrepreneurial opportunities in the healthcare industry. Notably, no other university in Alabama offers a Master's in Translational Science and Medicine or a similar program, further emphasizing the uniqueness and relevance of our offering. According to the U.S. Bureau of Labor Statistics (BLS), employment for medical scientists is projected to grow by 11% from 2023 to 2033, driven by advancements in healthcare, biotechnology, and medical research. The median annual wage for medical scientists is approximately $100,890, with career opportunities available in pharmaceuticals, government agencies, and academic institutions. Biochemists and biophysicists are expected to see a growth rate of 9%, earning a median salary of $107,460, with increasing demand in research, biotechnology, and environmental science. Meanwhile, bioengineers and biomedical engineers are projected to grow by 7%, with a median salary of $100,730, fueled by innovations in medical devices and

healthcare technologies. Chemists and materials scientists can anticipate an 8% growth rate, with a median wage of $87,180, and opportunities in pharmaceuticals, environmental sectors, and manufacturing.

Overall, the medical science field offers the strongest growth prospects, while biomedical engineering and biology also present significant career opportunities. To capitalize on these trends, specialized training is essential, which is where the proposed curriculum comes into play. This curriculum not only addresses the needs of medical scientists but also equips biochemists, chemists, and engineers with the skills necessary to succeed in healthcare-related roles. By integrating translational science and medicine into their education, graduates will be better prepared to navigate the evolving landscape of these fields and contribute meaningfully to advancements in healthcare.

## III. Curriculum Information for Proposed Degree Program

**A.** Program Completion Requirements: Enter the credit hour value for all applicable components (enter N/A if not applicable).

**Plan I** is the traditional track in which students are required to perform independent research and submit a formal thesis formatted to university guidelines and give a public defense of the thesis.

| Curriculum Overview of Proposed Program | |
|---|---|
| Credit hours required in **general education** | N/A |
| Credit hours required in **program courses** | 9 |
| Credit hours in **program electives/concentrations/tracks** | 9 |
| Credit hours in **free electives** | 6 |
| Credit hours in **required research/thesis** | 6 |
| **Total Credit Hours Required for Completion** | **30** |

**Plan II** (without thesis) also requires independent research and the completion of a Capstone Experience Research Report, as well as a formal defense of the research.

| Curriculum Overview of Proposed Program | |
|---|---|
| Credit hours required in **general education** | N/A |
| Credit hours required in **program courses** | 9 |
| Credit hours in **program electives/concentrations/tracks** | 12 |
| Credit hours in **free electives** | 6 |
| Credit hours in **required research/thesis** | 3 |
| **Total Credit Hours Required for Completion** | **30** |

**Note: The above credit hours **MUST** match the credit hours in the *Curriculum Components of Proposed Program* table in Section G.

**B.** Maximum number of credits that can be transferred in from another institution and applied to the program:

Up to 12 hours can be transferred or counted from prior graduate study, contingent on department and UA graduate school approval.

**C.** Intended program duration in semesters for full-time students:

3 - 4 semesters

**D.** Intended program duration in semesters for part-time students:

6 semesters

**E.** Does the program require students to demonstrate industry-validated skills, specifically through an embedded industry-recognized certification, structured work-based learning with an employer partner, or alignment with nationally recognized industry standards? **Yes ☐ No ☒**

If yes, explain how these components fit with the required coursework.

**F.** Does the program include any concentrations? **Yes ☐ No ☒**

If yes, provide an overview and identify these courses in the *Electives/Concentrations/Tracks* section in the Curriculum Components of Proposed Program Table in Section G.

**G.** Please provide all course information as indicated in the following table. Indicate new courses with "Y" in the associated column. If the course includes a required work-based learning component, such as an internship or practicum course, please indicate with a "Y" in the WBL column.

| **Program Name:** | Master of Sciences (MS) in Translational Science and Medicine- Plan I Thesis Track | | | |
|---|---|---|---|---|
| **Program Level:** | MS | | | |
| **Curriculum Components of Proposed Program** | | | | |
| **Course Number** | **Course Title** | **Credit Hours** | **New? (Y)** | **WBL? (Y)** |
| **General Education Courses** *(Undergraduate Only)* | | | | |
| | | | | |
| **Program Core Courses** | | | | |
| TSM 501 | Foundations for Biomedicine and Translational Science | 6 | | |
| POPH 522 | Biostatistics | 3 | | |
| **Program electives (Minimum of 6 TSM credit hours, 3 MGT credit hours, and 6 free elective credit hours)** | | | | |
| TSM 661 | Imaginary Logic to Advanced Drug Delivery | 1 | | |
| TSM 662 | Formulations Science Lab | 3 | | |
| TSM 663 | Formulations Testing Lab | 3 | | |
| TSM 664 | Bioanalysis in Drug Delivery Lab I | 3 | | |
| TSM 665 | Bioanalysis in Drug Delivery Lab II | 3 | | |
| MGT 512 | Management Presentations | 3 | | |
| MGT 517 | Leadership & Ethics | 3 | | |

| | | | | |
|---|---|---|---|---|
| MGT 537 | Strategic Human Resources Management | 3 | | |
| MGT 582 | New Venture Development | 3 | | |
| BSC 530 | Introduction to Pharmacology | 3 | | |
| BSC 535 | Immunology | 4 | | |
| BSC 558 | Drug Discovery Laboratory | 3 | | |
| CHE 518 | Tissue Engineering | 3 | | |
| **Research/Thesis** | | | | |
| TSM 599 | Thesis Research | 6 | Y | |
| | ***Total Credit Hours Required for Completion** | **30** | | |

| | |
|---|---|
| **Program Name:** | Master of Sciences (MS) in Translational Science and Medicine- Plan II Thesis Track |
| **Program Level:** | MS |

**Curriculum Components of Proposed Program**

| Course Number | Course Title | Credit Hours | New? (Y) | WBL? (Y) |
|---|---|---|---|---|
| **General Education Courses** *(Undergraduate Only)* | | | | |
| | | | | |
| **Program Core Courses** | | | | |
| TSM 501 | Foundations for Biomedicine and Translational Science | 6 | | |
| POPH 522 | Biostatistics | 3 | | |
| **Program electives (Minimum of 9 TSM credit hours, 3 MGT credit hours, and 6 free elective credit hours )** | | | | |
| TSM 661 | Imaginary Logic to Advanced Drug Delivery | 1 | | |
| TSM 662 | Formulations Science Lab | 3 | | |
| TSM 663 | Formulations Testing Lab | 3 | | |
| TSM 664 | Bioanalysis in Drug Delivery Lab I | 3 | | |
| TSM 665 | Bioanalysis in Drug Delivery Lab II | 3 | | |
| MGT 512 | Management Presentations | 3 | | |
| MGT 517 | Leadership & Ethics | 3 | | |
| MGT 537 | Strategic Human Resources Management | 3 | | |
| MGT 582 | New Venture Development | 3 | | |
| BSC 530 | Introduction to Pharmacology | 3 | | |
| BSC 535 | Immunology | 4 | | |
| BSC 558 | Drug Discovery Laboratory | 3 | | |
| CHE 518 | Tissue Engineering | 3 | | |
| **Research/Thesis** | | | | |
| TSM 598 | Directed Research | 3 | Y | |
| | ***Total Credit Hours Required for Completion** | **30** | | |

***Note**: The total credit hours should equal the total credit hours in the Curriculum Overview table (V.B, p. 9).

## IV. Curriculum Information for Proposed Degree Program

### A. Proposed Program Faculty*

*Current Faculty and Faculty to Be Hired*

Complete the following **New Academic Degree Proposal Faculty Roster** to provide a brief summary and qualifications of current faculty and potential new hires specific to the program.

***Note**: Institutions must maintain and have current as well as additional faculty curriculum vitae available upon ACHE request for as long as the program is active, but CVs are **not** to be submitted with this proposal.

| Current Faculty | | | |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| **CURRENT FACULTY NAME (FT, PT)** | **COURSES TAUGHT** including Term, Course Number, Course Title, & Credit Hours (D, UN, UT, G, DU) | **ACADEMIC DEGREES and COURSEWORK** Relevant to Courses Taught, including Institution and Major; List Specific Graduate Coursework, if needed | **OTHER QUALIFICATIONS and COMMENTS** Related to Courses Taught and Modality(ies) (IP, OL, HY, OCIS) |
| Dr. Ravi Kumar (FT) | TSM 660 (G) Drug Delivery, 4 credit hours<br><br>TSM 661 (G) Imaginary Logic to DD, 1 credit hour<br><br>TSM 662 (G) Formulation Science Lab, 3 credit hours<br><br>TSM 663 (G) Formulation Test Lab, 3 credit hours<br><br>TSM 664 (G) Bioanalysis in DD Lab-1, 3 credit hours<br><br>TSM 665 (G) Bioanalysis in DD Lab-2, 3 credit hours<br><br>TSM 501 (G) Foundations in Biomed and Trans Sci, 6 credit hours | PhD-Chemistry Specialization-Drug Delivery, Devi Ahilya Viswha Vidyalaya, India | Dr. Kumar is the developer and coordinator of TSM 660, 661, and TSM 501. With 22 years of teaching experience across three continents, he has instructed students at various levels, including undergraduate, postgraduate, graduate, medical students, and professionals. His course offerings in the past include Principles of Drug Action, Pharmaceutics, EnMed Innovation in Medicine, Cardiovascular Pathobiology, Vitamins, Phytomedicinals and Natural Products, Advanced Drug Delivery, Formulation Manufacture and Testing, Drug Delivery, Pharmaceutical Product Development, Biomaterials, Nanotechnology, Dosage Form Design Parameters, and specialized lab experiences. Dr. Kumar has published over 120 manuscripts and delivered more than 200 presentations globally, displaying his expertise and commitment to advancing the field. |
| Dr. Meenakshi Arora (FT) | TSM 660 (G), Term: Fall, Title: Drug Delivery Beyond the Biological Barriers, 4 credit hours<br><br>TSM 662 (G), Term: Fall, Title: Formulations Science Lab, 3 credit hours<br><br>TSM 664 (G), Term: Fall, Title: Drug Delivery Bioanalysis Lab I, 3 credit hours<br><br>TSM 501 (G) Foundations in Biomed and Trans Sci, 6 credit hours | PhD in Chemistry, Specialization- Bioanalysis, from Indian Institute of Technology Roorkee, India. | Dr. Arora brings a wealth of expertise in drug discovery, formulation, and delivery, seamlessly integrating theoretical knowledge with practical application. She earned her PhD in Chemistry, specializing in bioanalysis, and has completed two postdoctoral positions dedicated to developing bioanalytical methods for pharmaceutical analysis. Her research utilizes advanced techniques such as HPLC and LC-MS for pharmacokinetics, bioavailability, and toxicology studies. For over a decade, she has led the development of novel polymers for drug delivery systems. With more than 20 years of experience, over 40 publications, and three patents to her name, Dr. Arora's solid foundation in chemistry and bioanalysis significantly enhances her teaching across relevant courses. She has taught at both undergraduate and postgraduate levels in India and is the developer, instructor, and coordinator of TSM 662 and TSM 664. |

| | | | |
|---|---|---|---|
| Dr. Raghu Ganugula (FT) | TSM 660 (G), Term: Fall, Title: Drug Delivery Beyond the Biological Barriers, 4 credit hours<br><br>TSM 663 (G), Term: Spring, Title: Formulations Testing Lab, 3 credit hours<br><br>TSM 665 (G), Term: Fall, Title: Drug Delivery Bioanalysis Lab II, 3 credit hours<br><br>TSM 501 (G) Foundations in Biomed and Trans Sci, 6 credit hours | PhD in Biotechnology, Specialization- Bioremediation from Acharya Nagarjuna University (India) | Dr. Ganugula's early research in bioremediation focused on isolating carotenoproteins and proteases from shrimp head waste, thereby improving waste management and resource utilization in the food industry. From 2010 to 2014, he investigated the role of functional foods in rodent models of diabetes and its complications. Since 2014, his research has transitioned to translational medicine, where he has developed expertise in inflammatory and autoimmune disease models, including lupus and acute kidney injury. Dr. Ganugula has tested novel bioactives and their innovative formulations, creating ex vivo models that have resulted in publications in high-impact journals. With over 15 years of experience, more than 30 publications, and three patents, Dr. Ganugula's strong foundation in biotechnology and pharmacology significantly enriches his teaching across relevant courses. He has taught at both undergraduate and postgraduate levels in India and is the developer, instructor, and coordinator of CHS 663 and CHS 665. |
| Dr. John Victor Napoleon (FT) | TSM 660 (G) Drug Delivery BBB, 4 credit hours<br><br>TSM 501 (G) Foundations in Biomed and Trans Sci, 6 credit hours | PhD in Bio-organic and medicine chemistry from the Institute of Technology Madras in India | Dr. Napoleon's research centers on the design and synthesis of innovative small molecule immune stimulants targeting cancer and inflammatory diseases. His work includes rigorous in vitro and in vivo testing to assess their efficacy. He is actively developing targeted immunotherapy approaches that utilize small molecule kinase inhibitors for precise immune modulation. By creating bispecific T cell-engaging small molecules, Dr. Napoleon seeks to enhance the immune response against cancer. Additionally, his research involves identifying novel drug targets to fine-tune the characteristics and functions of immune cells, paving the way for more effective therapeutic strategies. In his role as a research assistant, he has taught students at both undergraduate and postgraduate levels and has published over 20 papers related to the subjects covered in CHS 660 and TSM 501. |
| **Additional Faculty (To Be Hired)** | | | |
| **Current Faculty** | | | |
| **1** | **2** | **3** | **4** |
| **CURRENT FACULTY NAME (FT, PT)** | **COURSES TAUGHT** including Term, Course Number, Course Title, & Credit Hours (D, UN, UT, G, DU) | **ACADEMIC DEGREES and COURSEWORK** Relevant to Courses Taught, including Institution and Major; List Specific Graduate Coursework, if needed | **OTHER QUALIFICATIONS and COMMENTS** Related to Courses Taught and Modality(ies) (IP, OL, HY, OCIS) |

| | | | |
|---|---|---|---|
| Assistant Professor (FT) | TSM 660 (G) Drug Delivery BBB, 4 credit hours<br><br>TSM 661 (G) Imaginary Logic to DD, 1 credit hour<br><br>TSM 662 (G) Formulation Science Lab, 3 credit hours<br><br>TSM 663 (G), Formulations Testing Lab, 3 credit hours<br><br>TSM 664 (G) Bioanalysis in DD Lab-1, 3 credit hours<br><br>TSM 665 (G) Bioanalysis in DD Lab-2, 3 credit hours<br><br>TSM 501 (G) Foundations in Biomed and Trans Sci, 6 credit hours | PhD or MD or MD, PhD Specialization- Translational Medicines | The TBD faculty should bring extensive experience in both teaching and research, with a proven ability to develop and coordinate courses across undergraduate, graduate, and professional levels. Expertise in designing curricula focused on translational science, medicine, and specialized laboratory courses is essential. In addition to strong teaching credentials, the faculty should have a deep knowledge of regulatory frameworks for pharmaceuticals and medical devices, including drug development, clinical trials, and product approval. Experience with startup ventures in product development is highly valued, offering insights into the commercialization and scaling of medical innovations. The faculty should also be well-versed in digital medicine, with a focus on integrating technology and healthcare to improve patient outcomes. Expertise in digital therapeutics, health technologies, and data analytics will be key to advancing the field and fostering interdisciplinary innovation. A strong research track record, including scholarly publications and global presentations, is required to demonstrate a commitment to advancing knowledge in pharmaceutical sciences and medical innovations. The faculty should contribute to developing cutting-edge educational offerings that blend traditional drug development expertise with emerging fields like digital health and medical technology. |

**Abbreviations: (FT, PT): Full-Time, Part-Time; (D, UN, UT, G, DU): Developmental, Undergraduate Nontransferable, Undergraduate Transferable, Graduate, Dual: High School Dual Enrollment**
**Course Modality: (IP, OL, HY, OCIS): In-Person, Online, Hybrid, Off-Campus Instructional Site**
**Courses Taught/To be Taught – For a substantive change prospectus/application, list the courses *to be taught*, not historical teaching assignments.**

## B. All Proposed Program Personnel

1. Provide all personnel counts for the program.
**Note: Any new funds designated for compensation costs (Faculty (FT/PT), Administration, and/or Support Staff to be Hired) **should be**

| Employment Status of Program Personnel | | Personnel Information | | |
|---|---|---|---|---|
| | | Count from Proposed Program Department | Count from Other Departments | Subtotal of Personnel |
| Current | Full-Time Faculty | 4 | | 4 |
| | Part-Time Faculty | | | |
| | Administration | | | |
| | Support Staff | 1 | | 1 |
| **New To Be Hired | Full-Time Faculty | 1 | | 1 |
| | Part-Time Faculty | | | |
| | Administration | 1 | | 1 |
| | Support Staff | 1 | | 1 |
| | | | Personnel Total | 8 |

**included** in the **New Academic Degree Program Business Plan Excel file**. Current personnel salary/benefits (Faculty (FT/PT), Administration, and/or Support Staff) **should not be included** in the **Business Plan**.

2. Provide justification that the institution has proposed a sufficient number of faculty (full-time and part-time) for the proposed program to ensure curriculum and program quality, integrity, and review.

   The Department of Translational Science and Medicine has four full-time faculty and is in the process of recruiting a Department Chair and is seeking funding to recruit an Assistant Professor faculty line who will also teach within the proposed MS degree program. It is important to note that the Assistant Professor faculty line request is a center/departmental hire, not a program hire. As such, this faculty line is not required to implement the program and is described in greater detail in Section IV.I below.

   All department faculty have extensive research expertise, knowledge of their field, and publications in top-tier journals. This ensures program quality and integrity.

   Apart from the newly approved TSM 501 course, all departmental courses within the proposed program are already being taught as part of the Advanced Drug Delivery Concentration of the Interdisciplinary Studies PhD program which amounts to five courses. The addition of the six credit hour, two-course equivalent TSM 501, brings the total to seven course equivalents. The seven course equivalents will be distributed among the four current full-time faculty, as a 2:2 teaching load creates space for sixteen course equivalents annually. The addition of a department chair, and new assistant professor faculty, will ensure program growth with additional support for course coverage, thesis advisors, and the ability of faculty to grow their already high research and grant portfolios.

## C. Equipment

Will any special equipment be needed specifically for this program? **Yes** ☐ **No** ☒

If *yes*, list the special equipment. Special equipment cost should be included in the **New Academic Degree Program Business Plan Excel file.**

## D. Facilities

Will any new facilities be required specifically for the program? **Yes** ☐ **No** ☒

If *yes*, list only **new** facilities. New facilities cost should be included in the **New Academic Degree Program Business Plan Excel file.**

Will any renovations to any existing infrastructure be required specifically for the program? **Yes** ☐ **No** ☒

If *yes*, list the renovations. Renovation costs should be included in the **New Academic Degree Program Business Plan Excel file.**

## E. Assistantships/Fellowships

Will the institution offer any assistantships specifically for this program? **Yes ☒ No ☐**

If *yes*, how many assistantships will be offered?

One.

The expenses associated with any *new* assistantships should be included in the **New Academic Degree Program Business Plan Excel file.**

## F. Library

Provide a brief summarization (one to two paragraphs) describing the current status of the library collections supporting the proposed program.

The University of Alabama's library collections are largely sufficient for the development and maintenance of a master's degree program. Most published research that appears in scientific journals can be accessed through the library's online databases, and faculty and students can request books or other materials through Interlibrary loan (ILL), which provides free access to materials needed for coursework and research not available in the UA Libraries.

Will additional library resources be required to support the program? **Yes ☒ No ☐**

If *yes*, briefly describe how any deficiencies will be remedied, and include the cost in the **New Academic Degree Program Business Plan Excel file.**

The current collection does not have any foundational textbooks in translational science. The academic librarian will work with the program to acquire approximately 10 to 15 textbooks in the first year, and work to keep this collection current. The initial purchase and on-going maintenance expenses are included in the business plan excel file.

## G. Accreditation Expenses

Will the proposed program require accreditation expenses? **Yes ☐ No ☒**

If *yes*, briefly describe the estimated cost and funding source(s) and include cost in the **New Academic Degree Program Business Plan Excel file.**

## H. Other Costs

Please explain any other costs to be incurred with program implementation, such as marketing or recruitment costs. Be sure to note these in the **New Academic Degree Program Business Plan Excel file.**

## I. Revenues for Program Support

Will the proposed program require budget reallocation? **Yes ☐ No ☒**

If *yes*, briefly describe how any deficiencies will be remedied and include the revenue in the **New Academic Degree Program Business Plan Excel file.**

No budget reallocations are required but requires further explanation.

The new assistant professor line was not originally a program request. The new assistant professor line was originally approved by the Provost for the Center of Convergent Bioscience and Medicine and the creation of the Department of Translational Science and Medicine. A search was successfully conducted in 2023 with the new hire to begin in Spring 2024. The new hire reneged for personal reasons. The center and department faculty are hopeful that the provost will approve this new faculty line during the next round of faculty line requests. If the line is not approved, then the new faculty will not be hired, as the new faculty hire will enhance the proposed program but is not necessary to implement the proposed program.

Therefore, although the costs of the faculty hire are included in the budget form, as directions of the proposal indicate, the cost of the faculty hire is a center or department cost, not a program cost. Including the cost of the new hire creates a seven-year deficit of $488,261. Excluding the cost of the new hire creates a seven-year surplus of $765,509.

Will the proposed program require external funding (*e.g.*, Perkins, Foundation, Federal Grants, Sponsored Research, etc.)? **Yes ☐ No ☒**

If *yes*, list the sources of external funding and include the revenue in the **New Academic Degree Program Business Plan Excel file.**

Please describe how you calculated the tuition revenue that appears in the **New Academic Degree Program Business Plan Excel file.** Specifically, did you calculate using cost per credit hour or per term? Did you factor in differences between resident and non-resident tuition rates?

The tuition revenue was calculated using a per term basis. In State versus Out-of-State students were weighted at 65% In State, 35% Out-of-State basis.

## V. New Academic Degree Program Summary/Business Plan

Use the Excel form from ACHE's Academic Program webpage located on the OIE New Programs and Changes page under forms or at https://www.ache.edu/index.php/forms/, named **New Academic Degree Program Business Plan**, to complete the New Academic Program Degree Proposal.

## ACADEMIC DEGREE PROGRAM PROPOSAL SUMMARY

| | | | |
|---|---|---|---|
| **INSTITUTION:** | **University of Alabama** | | |
| **PROGRAM NAME:** | **Master of Science in Translational Science and Medicine** | **CIP CODE:** | 51.1402 |
| **SELECT LEVEL:** | **GRADUATE (MASTER'S)** | | |

### ESTIMATED *NEW* EXPENSES TO IMPLEMENT PROPOSED PROGRAM

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | TOTAL |
|---|---|---|---|---|---|---|---|---|
| FACULTY | $163,625 | $168,534 | $173,590 | $178,797 | $184,161 | $189,686 | $195,377 | $1,253,770 |
| ADMINISTRATION/STAFF | $64,944 | $66,892 | $68,899 | $70,966 | $73,095 | $75,288 | $77,547 | $497,631 |
| EQUIPMENT | | | | | | | | $0 |
| FACILITIES | | | | | | | | $0 |
| ASSISTANTSHIPS/FELLOWSHIPS | $0 | $71,712 | $72,979 | $74,284 | $75,629 | $77,013 | $78,440 | $450,058 |
| LIBRARY | $3,000 | $1,000 | $1,050 | $1,103 | $1,158 | $1,216 | $1,276 | $9,802 |
| ACCREDITATION AND OTHER COSTS | $30,000 | $30,000 | $30,000 | $30,000 | $30,000 | $30,000 | $30,000 | $210,000 |
| **TOTAL EXPENSES** | $261,569 | $338,138 | $346,518 | $355,150 | $364,043 | $373,203 | $382,639 | **$2,421,261** |

### *NEW* REVENUES AVAILABLE FOR PROGRAM SUPPORT

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | TOTAL |
|---|---|---|---|---|---|---|---|---|
| REALLOCATIONS | | | | | | | | $0 |
| EXTERNAL FUNDING | | | | | | | | $0 |
| TUITION + FEES | $181,000 | $292,000 | $292,000 | $292,000 | $292,000 | $292,000 | $292,000 | $1,933,000 |
| **TOTAL REVENUES** | $181,000 | $292,000 | $292,000 | $292,000 | $292,000 | $292,000 | $292,000 | **$1,933,000** |

### ENROLLMENT PROJECTIONS

***Note: "New Enrollment Headcount" is defined as unduplicated counts across years.***

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | AVERAGE |
|---|---|---|---|---|---|---|---|---|
| FULL-TIME ENROLLMENT HEADCOUNT | No data reporting | 20 | 20 | 20 | 20 | 20 | 20 | **20.00** |
| PART-TIME ENROLLMENT HEADCOUNT | | | | | | | | **0.00** |
| **TOTAL ENROLLMENT HEADCOUNT** | | 20 | 20 | 20 | 20 | 20 | 20 | **20.00** |
| ***NEW* ENROLLMENT HEADCOUNT** | | 10 | 10 | 10 | 10 | 10 | 10 | **10.00** |
| **Validation of Enrollment** | | | **YES** | **YES** | **YES** | **YES** | **YES** | |

### DEGREE COMPLETION PROJECTIONS

***Note: Do not count Lead "0"s and Lead 0 years in computing the average annual degree completions.***

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | AVERAGE |
|---|---|---|---|---|---|---|---|---|
| **DEGREE COMPLETION PROJECTIONS** | No data reporting | | 10 | 10 | 10 | 10 | 10 | **10.00** |

**THE UNIVERSITY OF ALABAMA**

**Resolution**

**Granting Initial Approval of and Permission to Submit to the Alabama Commission on Higher Education (ACHE) a Proposal for a Master of Science (M.S.) degree in Translational Science and Medicine (CIP Code 51.1402) in the Department of Translational Science and Medicine in the College of Community Health Sciences**

WHEREAS, the Department of Translational Science and Medicine was recently established at The University of Alabama to begin offering degree programs and research opportunities in the areas of translational bioscience and medical research; and

WHEREAS, continued post-graduate study in these areas will help prepare students for jobs in the biomedical and pharmaceutical industries and Ph.D., programs in Translational Science and Medicine, Advanced Drug Delivery, and related fields; and

WHEREAS, the proposed Translational Science and Medicine (M.S.) program will provide training with breadth and depth of knowledge related to the field of translational science and medicine to prepare students for professional practice in the biomedical and pharmaceutical industries or doctoral-level study; and

WHEREAS, this program builds on the widely recognized skills and expertise of the faculty in the new Department of Translational Science and Medicine and has a proposed implementation date of fall 2026.

NOW, THEREFORE IT BE RESOLVED by the Board of Trustees of The University of Alabama that it grants initial approval of and permission to submit to the Alabama Commission on Higher Education (ACHE) a Proposal for a Master of Science (M.S.) degree in Translational Science and Medicine (CIP Code 51.1402) in the Department of Translational Science and Medicine in the College of Community Health Sciences at The University of Alabama.

THE UNIVERSITY OF ALABAMA® | *Office of the* President

February 20, 2025

Chancellor Sid Trant
The University of Alabama System
500 University Boulevard East
Tuscaloosa, Alabama 35401

Dear Chancellor Trant:

I am pleased to endorse the recommendation from Executive Vice President and Provost James Dalton and Deans Susan Carvalho of the Graduate School and Richard Friend in the College of Community Health Sciences for approval of the attached proposal for a Master of Science (M.S.) degree in Translational Science and Medicine (CIP Code 51.1402). The program prepares graduates for careers as medical scientists in the biomedical and pharmaceutical industries or for doctoral and medical studies. The curriculum emphasizes interdisciplinary collaboration, hands-on research, and leadership development, aligning with industry needs. Students gain practical experience through research internships, industry partnerships, clinical shadowing, and professional networking. With strong industry support, the program enhances career readiness and provides valuable opportunities for collaboration and job placement.

If you approve of this proposal for a new degree program, I would appreciate you forwarding this request to the Board of Trustees at your earliest convenience.

Sincerely,

Stuart R. Bell
President

Enclosure

c: Executive Vice President and Provost James Dalton
Dean Susan Carvalho
Dean Richard Friend

203 Rose Administration Building | Box 870100 | Tuscaloosa, AL 35487-0100 | 205-348-5100 | Fax 205-348-7238
president@ua.edu | http://www.ua.edu

THE UNIVERSITY OF ALABAMA | Office for Academic Affairs

February 20, 2025

President Stuart R. Bell
The University of Alabama
203 Rose Administration
Tuscaloosa, Alabama 35487

Dear President Bell:

I am pleased to endorse the enclosed recommendations from Deans Susan Carvalho of the Graduate School and Richard Friend in the College of Community Health Sciences for approval of the attached proposal for a Master of Science (M.S.) degree in Translational Science and Medicine (CIP Code 51.1402). The program prepares graduates for careers as medical scientists in the biomedical and pharmaceutical industries or for doctoral and medical studies. The curriculum emphasizes interdisciplinary collaboration, hands-on research, and leadership development, aligning with industry needs. Students gain practical experience through research internships, industry partnerships, clinical shadowing, and professional networking. With strong industry support, the program enhances career readiness and provides valuable opportunities for collaboration and job placement.

If you approve of this new degree program, I would appreciate you forwarding this request to Chancellor Trant for his approval.

Sincerely,

James T. Dalton, Ph.D.
Executive Vice President and Provost

Enclosure

c: Dean Susan Carvalho
Dean Richard Friend

254 Rose Administration Building | Box 870114 | Tuscaloosa, AL 35487-0114 | 205-348-4890 | Fax 205-348-9137

THE UNIVERSITY OF ALABAMA® | Graduate School

February 6, 2025

Provost James Dalton
The University of Alabama
Office for Academic Affairs
254 Rose Administration Building
Tuscaloosa, Alabama 35487

Dear Provost Dalton:

I join Dean Richard Friend in recommending the approval of the attached proposal for a new M.S. degree program in Translational Science and Medicine offered through the College of Community Health Sciences. The proposed master's degree in Translational Science and Medicine (CIP: 51.1402) meets specific student and programmatic needs and will attract new graduate enrollments.

This degree program was recommended for approval by the Graduate Council of The University of Alabama at its meeting on February 5, 2025. We ask for timely handling of this item so that it may be considered at the April 2025 Board of Trustees Meeting.

If you approve of this proposal, please forward this request to President Bell at your earliest convenience.

Sincerely,

Susan Carvalho

Dr. Susan Carvalho
Associate Provost and Dean of the Graduate School

cc: Dr. André Denham, Associate Dean, Graduate School

THE UNIVERSITY OF ALABAMA | College of Community Health Sciences

December 5, 2024

The College of Community Health Sciences is pleased to support this application for a new Master of Science (MS) degree program in Translational Science and Medicine.

The college actively recruited a cluster hire of faculty with expertise in bioscience and medicine and established the new department of Translational Science and Medicine to develop new degree programs in this area.

The proposed MS program in Translational Science and Medicine is a highly innovative program that will be the first of its kind in Alabama.

Designed to be an experiential, research-intensive professional degree, the program will prepare students for careers as medical scientists. This degree will also develop critical thinking, leadership, and entrepreneurial skill sets. The program will position graduates to enter the biomedical or pharmaceutical industries, or pursue a Ph.D. in Translational Science and Medicine, Advanced Drug Delivery, and related fields.

This program will be the first graduate program in Translational Science and Medicine in the state of Alabama. The program adheres to the National Science Foundation's call for convergence across disciplines to solve problems and do so in ways that bridge the theory/practice gap as quickly as possible using a translational science framework.

Market research highlights that there is a need for medical scientists with the skill set that this program will offer. Therefore, this program is timely and much needed.

The program proposal has been reviewed and approved by the college's Academic and Curriculum Committee, and the faculty and I support the development of this program.

Sincerely,

Richard Friend, MD, FAAFP
Dean and Professor of Family Medicine
College of Community Health Sciences
The University of Alabama
850 Peter Bryce Boulevard
Tuscaloosa, AL 35401
Phone 205-348-1288
rdfriend@ua.edu

THE UNIVERSITY OF ALABAMA | College of Community Health Sciences

December 5, 2024

The Academic and Curriculum Committee (AACC) of the College of Community Health Sciences is pleased to support the proposal for a new Master of Science (MS) degree program in Translational Science and Medicine.

CCHS' process for proposal development is iterative and deliberative. The development of this proposal involved meetings, scheduled biweekly or monthly as needed throughout the summer and fall of 2024, among program faculty, its administrator, and the college's Director of Learning and Evaluation and Associate Dean for Academic Affairs.

During this time, new program courses were developed and approved in parallel with the development of the proposal. As such, the AACC, which meets monthly, has had multiple opportunities to review and provide feedback on the course and program proposals.

A final draft of the proposal was submitted to AACC for its November meeting for a first read and sent to all college faculty to provide feedback. Once all feedback was received and addressed, a specially called AACC meeting was convened to vote on the proposal on December 4, 2024. The results of the vote were:

10 votes to **approve** the MS in Translational Science and Medicine proposal.
0 votes to **NOT approve** the MS in Translational Science and Medicine proposal.

Sincerely,

Cecil Robinson, PhD
Chair, Academic and Curriculum Committee
Director of Learning and Evaluation
Associate Professor, Medical Education
College of Community Health Sciences
The University of Alabama
850 Peter Bryce Boulevard
Tuscaloosa, AL 35401
Phone: 205-348-0523
Email: crobinso@ua.edu

ALABAMA Department of Translational Science and Medicine

November 4, 2024

The faculty of the Department of Translational Science and Medicine have worked collaboratively to develop the Master of Science in Translational Science and Medicine degree proposal over the past several months. All four faculty unanimously voted to approve the proposal.

Sincerely,

Ravikumar Majeti, Ph.D.
Interim Chair, Department of Translational Science and Medicine

850 Peter Bryce Blvd. | Tuscaloosa, AL 35401

Astraea Therapeutics
*Empowering patients fighting substance addiction*

October 2, 2024

Dr. Ravikumar Majeti
Dept of Translational Science and Medicine & Center for Convergent Bioscience and Medicine
College of Community Health Sciences
The University of Alabama
Room 204A - AIME,
720 2nd St, Tuscaloosa, AL 35401

Dear Ravi ,

I am writing to extend my heartfelt Congratulations to you and the University of Alabama on the recent approval of the new Department of Translational Science and Medicine within the College of Community Health Sciences. This milestone reflects your and the University's strong commitment to advancing education and research in a field that is critical for public health.

As the Founder of Astraea Therapeutics, a clinical-stage biotech company located in the Silicon Valley, Northern CA, I am deeply passionate about our mission to develop transformative treatments for substance addiction, particularly targeting opioid painkillers, smoking, and psychostimulants. Our work centers on discovering and developing innovative oral medications that address the neurobiology of relapse by focusing on two key brain pathways: one genetically linked to addictive behaviors, and another identified through clinical imaging in patients struggling with addiction. This comprehensive approach aims to create effective solutions for those battling substance use disorders.

The need for skilled talent in the biomedical and pharmaceutical sectors is more pressing than ever, with expectations that this shortage will continue to grow in the coming years. The upcoming launch of the Master of Science in Translational Science and Medicine program in Fall 2026 presents a unique opportunity for students and industry partners alike. This initiative will equip a new generation of professionals with the knowledge and skills needed to meet the evolving demands of our field.

As an entrepreneur, I encourage students to embrace challenges, seek mentorship, and remain adaptable. The path to innovation is rarely linear, but perseverance and a willingness to learn from failures can lead to groundbreaking achievements. Astraea is eager to collaborate with your program to help bridge the gap between academia and industry, ensuring that graduates are well-prepared to make meaningful contributions to the workforce.

Congratulations once again on this significant development of a groundbreaking initiative that aims to address critical gaps in advancing health care and medication development. I look forward to the potential collaborations that lie ahead.

Sincerely,

Nurulain Zaveri

***Nurulain T. Zaveri, Ph.D.***
***Founder, President and Chief Scientific Officer***
Astraea Therapeutics, LLC.
320 Logue Avenue, Suite 142
Mountain View, CA 94043.

Tel: 650-254-0786
Cell: 408-718-4810
Email: nurulain@astraeatherapeutics.com

24-Sep-2024

126 East Lincoln Avenue
P.O. Box 2000
Rahway, NJ 07065
T: 267-750-9984
E: filippos.kesisoglou@merck.com

merck.com

To Whom it May Concern:

I am writing to convey my strongest support for the launch of a Master of Science (MS) in Translational Science and Medicine program by the University of Alabama, Department of Translational Science and Medicine. I believe the planned MS program is meticulously designed to prepare students for impactful careers in the biomedical and pharmaceutical sciences or to advance their research through a PhD.

I am currently a Distinguished Scientist (Executive Director) in Pharmaceutical Sciences at Merck & Co., Inc. (Rahway, New Jersey, USA). Merck is a leading global biopharmaceutical company with about 72,000 employees and present in more than 100 countries. I hold MSc and PhD degrees in Pharmaceutics from the University of Michigan and I am an experienced leader in the field of biopharmaceutics and formulation development. I have been a key contributor to several NDAs including BELSOMRA, ZEPATIER, PREVYMIS, DELSTRIGO and PIFELTRO. I have authored/co-authored more than 90 manuscripts/book chapters and more than 85 conference abstracts/podium presentations in several national/international meetings in the fields of biopharmaceutics, PBPK modeling, formulation development and drug delivery, and was recently included in Stanford's list of world's top 2% scientists. For my contributions to the field of pharmaceutical sciences, I was elected as a Fellow of the American Association of Pharmaceutical Scientists (AAPS) in 2017. I currently serve as an editor for "Journal of Pharmaceutical Sciences" and on the the Editorial Advisory Board for AAPS Journal and Pharmaceutical Research.

The increased complexity of biopharmaceutical research to develop new therapies for a wide array of diseases requires scientists that are able to tackle this challenge. For example, a key component of development of new pharmaceutical products is the selection of an appropriate formulation technology for any development compound that would provide the most optimal performance for the patients. This is an area that my group executes extensive preclinical experiments including studying the dissolution and permeation of drug compounds and formulations as well using state of the art modeling approaches to correlate the formulation characteristics to their clinical bioavailability. Conducting and translating the outcome of the research to a dosage form requires a strong fundamental understanding of formulation and clinical science principles. The course offerings for the planned MS program in Translational Science and Medicine well position future students to be prepared for this challenge.

I will be more than happy to support this program by providing a guest lecture and promoting it with my industry peers and in professional societies I participate in.

Sincerely,

Filippos Kesisoglou, PhD, FAAPS
Distinguished Scientist, Pharmaceutical Sciences

SPYRE
THERAPEUTICS

Tapan Das, Ph.D., FAAPS
Executive Director
Analytical Development & Quality Control
Spyre Therapeutics

September 22, 2024

Dear Ravi,

Thank you for sharing the exciting news. I want to extend my heartfelt congratulations to you and the University of Alabama on the recent approval of the new Department of Translational Science and Medicine within the College of Community Health Sciences. This milestone reflects a strong commitment to advancing education and research in this critical field.

At Spyre Therapeutics, we are developing potential best-in-class monoclonal antibodies, rational therapeutic combinations, and precision immunology approaches aimed at creating therapies for Inflammatory Bowel Disease (IBD) with uncompromising efficacy and convenience. We believe that fostering talent in translational science is essential for driving progress in the pharmaceutical and life sciences sectors.

As you know, these sectors are facing a growing challenge in finding skilled talent for years, with expectations that this shortage will worsen in the next five years. The upcoming launch of the Master of Science in Translational Science and Medicine program, set for Fall 2026, presents an exciting opportunity for both students and industry partners. This initiative is poised to equip a new generation of professionals to meet the evolving demands of the biomedical and pharmaceutical industries.

It will be of interest collaborating with your program to help bridge the gap between academia and industry, ensuring that graduates are well-prepared for the workforce.

Congratulations once again on this important development.

Best regards,

Tapan

Tapan Das, Ph.D., FAAPS
Executive Director, Analytical Development & Quality Control
Spyre Therapeutics
tapan.das@spyre.com
1-609-429-0750

University of Alabama System®

# New Program Proposal Supplement

In addition to the items ACHE has requested for program proposals, please include the following additional items when developing and submitting academic program proposals to the System Office and the Board of Trustees for approval.

**1. Institution:**

☑ UA ☐ UAB ☐ UAH

Please select more than one institution for cooperative, joint, and shared degree programs.

**2. Program Identification**

Program name: Translational Science and Medicine

Degree Nomenclature: MS

Date of NPP submission: December 5. 2024

**3. Six-digit CIP Code:** 51.1402

**4. Executive Summary (not to exceed two pages)**

This graduate degree in Translational Science and Medicine is an experiential professional degree designed to prepare students for careers as medical scientists will a heavy focus on bench work. Not only will it be research intensive, but, students will leave the course with critical thinking, leadership, and entrepreneurial skill sets enabling them to progress into the biomedical or pharmaceutical industry, or pursue a PhD in Translational Science and Medicine, Advanced Drug Delivery, or related discipline.

This program will be the first graduate program in Translational Science and Medicine in the state of Alabama, and the proposed program can provide the opportunity for students pursuing medical scientist careers and act as a pathway for the PhD program. It is expected that the MS degree program will accept 10-15 students annually.

This program adheres to the NSF call for convergence across disciplines to solve problems and do so in ways that bridge the theory/practice gap as quickly as possible using a translational science framework.

This will be a 30-hour graduate program, with two tracks: a thesis option, where students will begin in the first year with an introductory course to the program, the Proseminar, and turn to a narrow focus on foundational courses, the second year will be an exploration into broader but still related topics, and a capstone course where students will lead discussions, present their research, and engage in critical discussions with fellow graduate students. Students will be required to conduct independent research while participating in either the Plan I (with thesis) or Plan II (without thesis) degree tracks leading to the MS in Translational Science and Medicine.

According to the U.S. Bureau of Labor Statistics (BLS), employment for medical scientists is projected to grow by 11% from 2023 to 2033, driven by advancements in healthcare, biotechnology, and medical research. The median annual wage for medical scientists is approximately $100,890, with career opportunities available in pharmaceuticals, government agencies, and academic institutions. Biochemists and biophysicists are expected to see a growth rate of 9%, earning a median salary of $107,460, with increasing demand in research, biotechnology, and environmental science. Meanwhile, bioengineers and biomedical engineers are projected to grow by 7%, with a median salary of $100,730, fueled by innovations in medical devices and healthcare technologies. Chemists and materials scientists can anticipate an 8% growth rate, with a median wage of $87,180, and opportunities in pharmaceuticals, environmental sectors, and manufacturing. Overall, the medical science field offers the strongest growth prospects, while biomedical engineering and biology also present significant career opportunities.

To capitalize on these trends, specialized training is essential, which is where the proposed curriculum comes into play. This curriculum not only addresses the needs of medical scientists but also equips biochemists, chemists, and engineers with the skills necessary to succeed in healthcare-related roles. By integrating translational science and medicine into their education, graduates will be better prepared to navigate the evolving landscape of these fields and contribute meaningfully to advancements in healthcare.

**5. Steps taken to determine if other UA System institutions might be interested in collaborating in the program.**

There is no current plan to collaborate with other UA System institutions. We are open to conversations on future prospects that would benefit both institutions.

**6. Summary of other campus comments, internal to the UA System or external (if any), regarding your plans for developing this program. Please include substantive feedback from the pre-proposal process.**

First, while the UAB MS Program in Multidisciplinary Biomedical Science does not bill itself as "translational," some students on the thesis track perform translational research. There are concerns regarding the "uniqueness" of the proposed program, particularly in relation to similar offerings statewide, including at the University of Alabama.

Response: "This program will be the first graduate program *of any kind* in Translational Science and Medicine in the state of Alabama" was edited to remove "of any kind." The removal of this phrase recognizes that students in the state do translational research but also acknowledges that this proposal is the first degree program using the CIP of translational science. No other program in the state currently does so.

Additionally, while the inclusion of a focus group is appreciated, it is unclear whether rural medicine programs alone provide a sufficiently broad representation.

Response: Page 8 of the proposal describes over 100 unsolicited undergraduate student requests. "In addition, without advertisement, and prior to the formation of the Department of Translational Science and Medicine, the proposed program faculty have received over 100 undergraduate student requests to engage in translational science in the past three years from students involved in Randall Scholars and Emerging Scholars from disciplines all over campus. They have backgrounds in chemistry, biological sciences, engineering, and nursing. The student demand is very profound not just on campus, but globally. Institutions in India have reached out asking to send students over the summers to participate in research in drug delivery and translational medicine."

Lastly, the use of the term "pipeline" should be clarified, as it implies a guarantee of interview or admission. A more accurate term, such as "pathway," may better convey the intended meaning.

Response: Pipeline changed to pathway in the NPP. Pipeline not used in full proposal, only pathway.

**7. Describe the process that will be used by your institution for routine internal and/or external program review.**

All departments at The University of Alabama undergo academic program review (APR) approximately every eight years. The APR process includes a departmental self-study, an on-site visit by a review team with internal and external members, and a department-created strategic action plan informed by the review team's recommendations.

**8. Describe the process that will be used in assessing program outcomes (to include student learning outcomes).**

All academic programs are required to submit annual assessment reports that includes student learning outcomes, measures to collect data, analysis of data, and plans for the use of data for continuous improvement.

Student Learning Outcomes (SLOs) for MS in Translational Science and Medicine:

1. Utilize appropriate laboratory techniques. Students will be able to utilize appropriate laboratory techniques to advance their understanding of translational medical research.

2. Design a research project. Students will be able to design a scientific research project demonstrating competency in translational science and medicine and advancing knowledge in a selected area.

3. Critically Appraise Research Information. Students will be able to critically appraise research literature for its relevance and reliability when conducting scholarly research.

4. Apply Appropriate Data Analyses. Students will be able to apply appropriate statistical testing to experimental data.

5. Communicate Outcomes of a Research Project: Students will effectively communicate their research findings through written reports and presentations.

**9. Other pertinent information, if any.**

N/A

University of Alabama System®

**Board Rule 502**
**Notice of Pending Proposal (NPP) for a New Program of Instruction**
*(To be completed by the Provost's Office)*

**1. Institution:**

☑ UA ☐ UAB ☐ UAH

Please select more than one institution for cooperative, joint, and shared degree programs.

**2. Date of NPP Submission (mm/dd/yyyy):** December 5, 2024

**3. Contact Information**

Institutional Contact Person: Carmen Coleman
Telephone: 205-348-3439
Email: crjones18@ua.edu

**4. Program Identification**

Program Name: Masters in Translational Science and Medicine
Degree Nomenclature: MS

**5. 6-digit CIP Code:** 51.1402

**6. Program Mode of Delivery**

Provide the planned delivery format(s) (i.e., in-person, online, hybrid) of the program along with the planned location(s) at which the program will be delivered (i.e., on-campus and/or at specific off-campus instructional site(s)). Please also note whether any program requirements can be completed through competency-based assessment.

- [x] In-person
- [ ] Online
- [ ] Hybrid
- [ ] On-campus
- [ ] Off-campus
- [ ] Competency-based
- [ ] Other, please describe:

**7. Select a meeting for Board consideration:**

- ○ April 11-12, 2024
- ○ June 6-7, 2024
- ○ September 12-13, 2024
- ○ November 7-8, 2024
- ○ February 6-7, 2025
- ◉ April 3-4, 2025
- ○ June 5-6, 2025
- ○ September 11-12, 2025
- ○ November 6-7, 2025
- ○ February 5-6, 2026
- ○ April 2-3, 2026
- ○ June 4-5, 2026

**8. Is the proposed academic degree program currently listed on your campus Three-Year Academic Program Planning Report that is annually submitted to the Board of Trustees?**

- (●) Yes
- ( ) No

**If no, please explain.**

**9. Provide a brief description of the program.**

This graduate degree in Translational Science and Medicine is a experiential professional degree designed to prepare students for careers as medical scientists will a heavy focus on bench work. Not only will it be research intensive, but, students will leave the course with critical thinking, leadership, and entrepreneurial skill sets enabling them to progress into the biomedical or pharmaceutical industry, or pursue a PhD in Translational Science and Medicine, or Advanced Drug Delivery.

This program will be the first graduate program of any kind in Translational Science and Medicine in the state of Alabama, and the proposed program can provide the opportunity for students pursing medical scientist careers and act as a pipeline for PhD programs. It is expected that the MS degree program will accept 10-15 students annually.

This program adheres to the NSF call for convergence across disciplines to solve problems and do so in ways that bridge the theory/practice gap as quickly as possible using a translational science framework.

This will be a 30-hour graduate program, with two tracks: a thesis option, where students will begin in the first year with an introductory course to the program, the Proseminar, and turn to a narrow focus on foundational courses, the second year will be an exploration into broader but still related topics, and a capstone course where students will lead discussions, present their research, and engage in critical discussions with fellow graduate students. Students will be required to conduct independent research while participating in either the Plan I (with thesis) or Plan II (without thesis) degree tracks leading to the MS in Translational Science and Medicine.

## 10. Relationship of program to other programs within the institution.

### 10.1. How will the program support or be supported by other programs within the institution?

The Master of Science (MS) in Translational Science and Medicine curriculum includes business courses from the Culverhouse College of Business to allow students to engage in leadership theory, human resources, management, and entrepreneurship to be fully equipped for the industry workplace. In addition, the program curriculum has Biostatistics from CCHS Population Health listed as a core requirement. The interim chair of the department and the director of the proposed MS program also has an established Center for Convergent Bioscience and Medicine, which is approved by the Board of Trustees. This center unites faculty from four colleges, fostering ongoing collaborations that will significantly benefit the proposed program.

### 10.2. Will this program replace any existing program(s) or specialization(s), option(s) or concentration(s) within existing programs?

○ Yes

◉ No

**If yes, please explain:**

## 11. If this program is similar or duplicative of any other programs in the system or the state, please give your rationale for program duplication.

There are no similar programs in the UA system or state.

## 12. Do you plan to explore possible program collaboration with other institutions? Please explain.

At this time, no collaborations have been explored with other in-state institutions but the opportunity is there. UAB has a Center for Clinical and Translational Science but they do not offer any graduate degrees. The type of research they do in the translational science field provides a great partnership in pipelining students to do a research fellowship at UAB's center after graduating with their Masters's from UA.

## 13. Please describe the need and/or level of student demand for this program.

To assess the level of student demand, focus groups were conducted for two cohorts (2023-2024 and 2024-2025) of Rural Medical Scholars and Rural Dental Scholars enrolled in the MS in Rural Community Health program and who were accepted into the UAB Schools of Medicine and Dentistry, respectively (N = 28). 18 students (64%) completed undergraduate medically oriented degrees in Biomedical Sciences, Nutrition, Health-Care Management, Neuroscience, and Chemical Engineering with a biomedical focus. 24 students (86%) stated that if they had not been accepted into the Rural Medical/Dental Scholars Programs, then they would "strongly consider" applying for the proposed program as a route into medical school. 14 students (50%) indicated that they would "consider" or "strongly consider" applying to the program as a possible career in industry as a medical scientist, or to pursue a PhD, if medical school or dental school was not an option.

These focus groups demonstrated the perceived utility of the proposed program to gain admission to a health-related professional school, and the potential of this program to become a medical scientist as a career choice. When one considers that there are several thousand undergraduate students at UA who are interested in health-related professional education, extrapolating the results from the focus groups provides evidence for the potential of robust program enrollment.

In addition, without advertisement the Department of Translational Science and Medicine at UA has received over 100 undergraduate student requests to engage in translational science in the past three years from students involved in Randall Scholars and Emerging Scholars from disciplines all over campus. They have backgrounds in chemistry, biological sciences, engineering, and nursing. The student demand is very profound not just on campus, but globally. Institutions in India have reached out asking to send students over the summers to participate in research in drug delivery and translational medicine.