

Master of Science in Cell Biology and Anatomy

The Master of Science (M.S.) program in Cell Biology and Anatomy prepares the student for a career at the advanced technical level in academia, industry, or government. Graduating students may also find teaching positions at the secondary or junior college level. Incoming students may not directly enroll in the M.S. program; entry will only be granted by the Departmental Director of Graduate Education upon the recommendation of the student's Research Advisory Committee.

The application process is an online process. Application to this graduate program is facilitated through the Interdisciplinary Graduate Program in Biomedical Sciences (IGPBS). (<https://catalog.ku.edu/medicine/graduate-program-biomedical-sciences/>) Detailed instructions on how to apply and the application deadlines are posted on the Interdisciplinary Graduate Program in Biomedical Sciences website <http://www.kumc.edu/igpbs/how-to-apply.html>.

Admission requirements:

- Bachelor's degree from a regionally accredited institution documented by submission of official transcript indicating the degree has been conferred before entering the program. Official transcripts from institutions attended post-baccalaureate are also required. Students with degrees from outside the U.S. may be subject to transcript evaluation indicating the degree is equivalent to a U.S. degree and meets the minimum cumulative GPA requirements.
- A cumulative grade-point average (GPA) of at least a 3.0 on a 4.0 scale for the bachelor's degree.
- Applicants who are not native speakers of English, whether domestic or international, must demonstrate they meet the Minimum English Proficiency Requirement (<https://catalog.ku.edu/graduate-studies/kumc/#EnglishProficiencyRequirement>).
- A background check (<https://catalog.ku.edu/graduate-studies/kumc/#BackgroundCheck>) is required during the admission process; it may affect the student's eligibility to enter the program.
- An official copy of the Graduate Record Examination (GRE) score sent from Educational Testing Service (ETS) to University of Kansas Medical Center - ETS institutional code 6895 - **GRE Scores NOT APPLICABLE TO THE IGPBS.**
- Three letters of recommendation.
- Prerequisite coursework:
 - One year of general chemistry
 - One year of organic chemistry or one semester of organic chemistry and one semester of biochemistry
 - One year of biological sciences
 - One semester of calculus
 - One semester of physics
- Research experience (beyond labs associated with lecture courses) is strongly suggested.
- Interview - the most qualified applicants will receive an invitation for an interview.

Applicants will be assessed based on a combination of GPA, research experience, and interview. After an applicant has been admitted, a program may defer an applicant's admission for one year after which time the applicant must submit a new application.

Admission requirements are subject to change. In most cases, use the catalog of the year student entered the program. *Other years' catalogs*.

Degree Requirements:

- Degree requirements are normally completed within 3 years of admission to the degree program although a maximum of 7 years is allowed.
- Cumulative grade-point average (GPA) of at least a 3.0 for all KU graduate coursework.
- Completion of a minimum of 30 credit hours.
- Enrollment in a minimum of one (1) credit hour the semester the student will graduate.
- Successful completion of either a thesis defense or general examination (<https://catalog.ku.edu/graduate-studies/kumc/#ThesisDefense>) the semester the student will graduate.
- If thesis option is chosen, then enrollment in a minimum of one (1) credit hour of ANAT 899 Master's Thesis and successful thesis submission and publication (<https://catalog.ku.edu/graduate-studies/kumc/#ThesisSubmission>) (according to Office of Graduate Studies policy.)
- Successful completion of the following Interdisciplinary Graduate Program in Biomedical Science (IGPBS) (<https://catalog.ku.edu/medicine/graduate-program-biomedical-sciences/>) courses (or their equivalent):

Code	Title	Hours
GSMC 850	Proteins and Metabolism	2
GSMC 851	Molecular Genetics	2
GSMC 852	Introduction to Biomedical Research I	2
GSMC 853	Cellular Structure	2
GSMC 854	Cell Communication	2
GSMC 855	Introduction to Biomedical Research II	2
GSMC 856	Introduction to Research Ethics	1
GSMC 857	Biographics	1
GSMC 858	Introduction to Faculty Research	1
GSMC 859	Research Rotations	1-4

- Successful completion of the following Anatomy and Cell Biology courses:

Code	Title	Hours
ANAT 845	Graduate Histology	3
ANAT 885	Seminar	1
ANAT 890	Graduate Research	1-10
ANAT 900	Analysis of Scientific Papers	1
ANAT 899	Master's Thesis (if thesis option chosen)	1-6

- Students must be continually enrolled in ANAT 885 Seminar and ANAT 900 Analysis of Scientific Papers each fall and spring semester beginning with fall semester of their second year. These two courses may be waived for one semester after the student has completed all departmental requirements other than the general exam or thesis defense.
- Successful completion of optional elective coursework as determined in consultation with the student's advisor.

Degree requirements and course descriptions are subject to change. Any courses taken as an equivalent must be approved by the Graduate

Director and the Office of Graduate Studies. In most cases, use the catalog of the year student entered the program. *Other years' catalogs*».

Typical Plan of Study

Year 1

Fall	Hours Spring	Hours Summer	Hours
GSMC 850	2 GSMC 853	2 GSMC 859	1-4
GSMC 851	2 GSMC 854	2 May take an elective course from the student's chosen degree program in consultation with the student's advisor.	1-3
GSMC 852	2 GSMC 855	2	
GSMC 856	1 GSMC 859	1-4	
GSMC 857	1		
GSMC 858	1		
GSMC 859	1-4		
10-13		7-10	
			2-7

Total Hours 19-30

Year 2

Fall	Hours Spring	Hours Summer	Hours
ANAT 849 (Advanced Cell Biology)	2 ANAT 845	3 ANAT 831 (Fellowship Grant Development)	3
ANAT 885	1 ANAT 885	1 ANAT 890	1-3
ANAT 890	1-6 ANAT 890	1-6	
ANAT 900	1 ANAT 900	1	
Form and schedule first meeting with Research Advisory Committee			
5-10		6-11	
			4-6

Year 3

Fall	Hours Spring	Hours Summer	Hours
ANAT 885	1 ANAT 885	1 ANAT 890	1-3
ANAT 890 or 899	1-6 ANAT 890 or 899	1-6	
ANAT 900	1 ANAT 900	1	
Thesis defense or general examination may be scheduled as early as this semester if approved by committee to graduate.			

ANAT 885 and ANAT 900 may be waived for one semester after the student has completed all departmental requirements other than the general exam or thesis defense.

3-8

3-8

1-3

Total Hours 22-46

A M.S. in Anatomy and Cell Biology signifies that the holder is prepared for entry into a career at the advanced technical level in academia, industry, or government. Therefore, graduates must have the knowledge and skills to function in a broad variety of classroom and/or laboratory situations. In this manner, all students admitted into the Anatomy and Cell Biology M.S. program must meet the following abilities and expectations:

- Observation:** The candidate must be able to observe demonstrations and experiences in the basic sciences, including, but not limited to, biology demonstrations in animals, cultures, and microscopic studies of tissues in normal and pathologic states. A candidate must be able to observe and analyze experimental detail. Observation necessitates the functional use of the senses of vision and touch.
- Communication:** A candidate should be able to communicate, to understand, and to observe lectures and laboratory instruction. A candidate must be able to communicate effectively in order to present and analyze research data. Communication includes not only speech, but also reading and writing. The candidate must be able to communicate effectively and efficiently in oral and written form with students, staff, and faculty.
- Motor:** Candidates should have sufficient motor function to carry out lab techniques. A candidate should be physically able to do laboratory procedures and analyze data. Such actions require coordination of both gross and fine muscular movements, equilibrium, and functional use of the senses of touch and vision.
- Intellectual-Conceptual, Integrative, and Quantitative Abilities:** These abilities include measurement, calculation, reasoning, analysis, and synthesis. Problem solving, the critical skill demanded of scientists, requires all of these intellectual abilities. In addition, the candidate should be able to comprehend three-dimensional relationships and to understand the spatial relationships of structures.
- Behavioral and Social Attributes:** A candidate must possess the emotional health required for full utilization of his/her intellectual abilities, the exercise of good judgment, and the prompt completion of all responsibilities attendant to the completion of research and teaching responsibilities. Integrity and motivation are personal qualities, which are required for success in science.