ANATOMY, PH.D.

Saint Louis University’s doctoral degree in anatomy provides training in clinical human anatomy and independent research for individuals seeking a career in teaching and research at the medical school or university level.

Teaching faculty and mentors in Saint Louis University’s anatomy Ph.D. program are drawn from a select group of scientists and clinicians at the School of Medicine. The anatomy faculty are united by their extensive experience teaching and training young scientists, medical students and physicians-in-training.

Curriculum Overview

A total of 48 credits (36 credits of coursework and 12 credits of dissertation research) are required for graduation. A concentration in neurobiology provides training for students preparing for academic or professional careers in neuroscience-related areas.

Dissertation research is related to Saint Louis University’s Center for Anatomical Science and Education’s (https://www.slu.edu/medicine/medical-education/case/) current research focus, including examining clinically relevant topics in neurobiology, pathology, and/or biological structure and function.

Fieldwork and Research Opportunities

Graduate students in anatomy at SLU perform research projects by working with a faculty mentor whose research interests match their own. Doctoral students are expected to publish and present a minimum of two research projects.

Faculty members are engaged in multidisciplinary research of biological structures and function ranging from ultrastructural to gross anatomical levels, with a significant interest in clinically relevant anatomy and neurobiology. Other research interests include cell biology and pathobiology.

Facilities are available for autoradiography, electrophysiology, gel electrophoresis, immunoblotting, immunostaining (immunocytochemistry, immunohistochemistry, immunofluorescence), and high-performance liquid chromatography, in situ hybridization, microsurgery, stereotaxic neurosurgery, microinjection, and animal behavioral assays. The Saint Louis University Center for Anatomical Science and Education is also equipped to perform optical imaging, including bright field, phase contrast, and fluorescence microscopy.

Careers

Possible careers for graduates with a Ph.D. in anatomy include medical doctors, allied health professionals, and university professors.

Admission Requirements

Applicants are admitted on a competitive basis and must have a B.S. or B.A. degree from an accredited U.S. college or university with a minimum overall GPA of 3.0 and/or science GPA of 2.8. In addition, applicants must have a GRE general test score at the 40th percentile.

Application Requirements

- Application form and fee
- Transcript(s)
- Three letters of recommendation
- GRE G scores (GRE S optional)
- Résumé
- Interview
- Professional goal statement

Requirements for International Students

All admission policies and requirements for domestic students apply to international students. International students must also meet the following additional requirements:

- Demonstrate English Language Proficiency
- Financial documents are required to complete an application for admission and be reviewed for admission and merit scholarships.
- Proof of financial support that must include:
  - A letter of financial support from the person(s) or sponsoring agency funding the student’s time at Saint Louis University
  - A letter from the sponsor’s bank verifying that the funds are available and will be so for the duration of the student’s study at the University
- Academic records, in English translation, of students who have undertaken postsecondary studies outside the United States must include:
  - Courses taken and/or lectures attended
  - Practical laboratory work
  - The maximum and minimum grades attainable
  - The grades earned or the results of all end-of-term examinations
  - Any honors or degrees received.

WES and ECE transcripts are accepted.

Application Deadlines

Students should apply by March 1 for fall admission.

Scholarships and Financial Aid

For priority consideration for graduate assistantship, apply by Feb. 1.

For more information, visit the student financial services office online at https://www.slu.edu/financial-aid/index.php (https://www.slu.edu/financial-aid/).

Requirements

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ANAT 5000</td>
<td>Human Gross Anatomy</td>
<td>8</td>
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<tr>
<td>ANAT 5100</td>
<td>Human Histology and Ultrastructure</td>
<td>5</td>
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<td>ANAT 5200</td>
<td>Human Embryology</td>
<td>2</td>
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<td>ANAT 5300</td>
<td>Human Systems Neurobiology</td>
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<td>ANAT 5400</td>
<td>Human Systems Physiology</td>
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<td>ANAT 5440</td>
<td>Basic Research Techniques</td>
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<td>BBS 5100</td>
<td>Ethics for Research Scientists</td>
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<td>BST 5000</td>
<td>Principles of Biostatistics</td>
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<td>ANAT 6900</td>
<td>Anatomy Journal Club</td>
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Elective Courses

Select 5-6 ANAT 6xxx courses

Dissertation Research

ANATOMY, PH.D. 2022-2023
A three-member Ph.D. dissertation committee, chaired by the student’s primary adviser, will be appointed by the director of the anatomy graduate program. The committee must include at least two members of the anatomy graduate faculty. A third member of the committee can be appointed by the graduate program director if they are graduate faculty in other departments or at another university. It is the decision of the anatomy graduate program director to accept the adviser’s recommendation and to identify the final member of the committee. Once the proposal has been approved by the Ph.D. dissertation committee it is then submitted to the Office of Graduate Education.

Doctoral Oral Qualifying Examination
The oral qualifying exam will be scheduled after the student has submitted a detailed dissertation research proposal, conducted preliminary experiments to substantiate the proposal and the dissertation advisory committee formed. The committee will consist of five members of the graduate faculty and will be approved by the program director. The oral exam will be public and designed to test the student’s fundamental knowledge of their proposed studies, background for the studies, and critical analysis and thinking.

Non-Course Requirements
Qualifying Examination and Defense
After completing the core curriculum, Basic Research Techniques in Anatomy and Principles of Biostatistics, the student must prepare for and successfully pass the doctoral qualifying examination.

Doctoral Qualifying Examination
The qualifying exam is a written examination that is designed to test the student’s fundamental knowledge of human structure and function, critical analysis and thinking, and design of an independent research proposal. An ad hoc exam committee will be constituted by the director of the anatomy graduate program and include five members of the graduate faculty, four of which shall be anatomists. The program director or associate director shall chair the committee. The written test shall occur over a five-day period (excluding weekends).

The committee will request the faculty to submit questions on:

- Material covered in any of the coursework completed by the student to date
- Research papers or reviews that will be provided to the student
- And/or philosophical matters related to the history of anatomy and medicine or national or world events that impact medical education and biomedical research.

The committee will review the submitted questions and questions will be selected or created by the committee to ensure the questions are fair and appropriate, that they test the student’s knowledge base for areas of anatomy (gross anatomy, neuroanatomy, histology and embryology), and that they help evaluate the problem-solving skills of the student.

Failing the qualifying exam will result in the student being recommended to be dropped from the Ph.D. program. In this case, the director of the anatomy graduate program can elect to offer the failed student the option of completing a terminal master’s degree.

Once the student has passed the doctoral qualifying examination, the student must register for Dissertation Research. A minimum of 12 credits are required for degree completion and typically occurs over 2-3 academic years. Initially, the student must identify a research project under the guidance of a faculty member. A Ph.D. dissertation committee will then be formed as the student prepares their research proposal.

A three-member Ph.D. dissertation committee, chaired by the student’s primary adviser, will be appointed by the director of the anatomy graduate program. The committee must include at least two members of the anatomy graduate faculty. A third member of the committee can be appointed by the graduate program director if they are graduate faculty in other departments or at another university. It is the decision of the anatomy graduate program director to accept the adviser’s recommendation and to identify the final member of the committee. Once the proposal has been approved by the Ph.D. dissertation committee it is then submitted to the Office of Graduate Education.
Following all questioning, the student is excused from the room and the committee members, without discussion, complete the defense ballot.

**Continuation Standards**
Students must maintain a cumulative GPA of 3.00 in all required graduate/professional courses.

**Learning Outcomes**
1. Graduates will be able to demonstrate:
   a. knowledge and application of the underlying concepts, advanced knowledge and analytical approaches used in general and advanced gross anatomy, microscopic anatomy, neuroanatomy, physiology, and embryology;
   b. the application of current scientific literature, especially in areas representing gaps of knowledge, through framing hypotheses-driven experiments, independent reading and the completion of additional work; and
   c. the application of designing and conducting experiments and to analyze and interpret data.
2. Graduates will be able to demonstrate:
   a. the ability to gather data to verify the existence of a problem, conduct extended research/analysis into a problem/topic, evaluate the evidence, generate ideas for possible solutions and formulate a thesis based on analysis; and
   b. the ability to read materials carefully and analyze them critically
3. Graduates will be able to demonstrate:
   a. written communication skills with respect to clarity, use of appropriate grammar, syntax and vocabulary appropriate to the development of a NIH-style grant proposal; organizes research materials to support an original thesis; and, present ideas and arguments clearly, logically and with an appropriate balance of text and graphic materials; and
   b. oral communication skills with respect to designing, organizing and presenting main points concisely and clearly; providing persuasive arguments, using data and information, that are appropriate for the audience and occasion; using language vocal variety, pronunciation and physical behaviors that support the verbal message for the audience and occasion; using visual aids appropriate for technical presentation, and ability to answer audience questions.