Biomedical Sciences, Ph.D.

LEWIS KATZ SCHOOL OF MEDICINE (http://www.temple.edu/medicine)

About the Program

The Ph.D. program is aimed at broad interdisciplinary and translational training in Biomedical Sciences and provides in-depth training in one of five areas of concentration. All students participate in an interdisciplinary first-year experience and then select an area of concentration from among Cancer Biology and Genetics, Infectious Disease and Immunity, Molecular and Cellular Biosciences, Neuroscience, and Organ Systems and Translational Medicine. The curriculum provides students with an interdisciplinary approach to research training, providing new pathways for learning and discovery. The Ph.D. program is intended to educate premier biomedical scientists who will be tomorrow’s leaders in research, education, and government.

Time Limit for Degree Completion: 7 years

Campus Location: Health Sciences. With the permission of the student's Research Advisory Committee, elective courses not offered on the Health Sciences Campus may be taken at other campuses.

Full-Time/Part-Time Status: The Ph.D. degree program is designed as a full-time day program of study.

Interdisciplinary Study: The graduate program in Biomedical Sciences is interdisciplinary and emphasizes translational research. Students have the opportunity to work with faculty in disease-based research centers at the Lewis Katz School of Medicine, including the Center for Inflammation, Translational and Clinical Lung Research; Center for Metabolic Disease Research; Center for Neurovirology; Center for Substance Abuse Research; Center for Translational Research; Comprehensive NeuroAIDS Center; Fels Institute for Cancer Research and Molecular Biology; Independence Blue Cross Cardiovascular Research Center; Shriners Hospitals Pediatric Research Center; Sol Sherry Thrombosis Research Center; and Temple Autoimmunity Center.

Ranking: The 2014 U.S. News and World Report ranked Temple University’s School of Medicine number 54 in Research and among the Best Medical Schools.

Areas of Specialization: This interdisciplinary Biomedical Sciences graduate program offers five areas of concentration for students who plan to earn the Ph.D.:

• Cancer Biology and Genetics
• Infectious Disease and Immunity
• Molecular and Cellular Biosciences
• Neuroscience
• Organ Systems and Translational Medicine

Job Prospects: This well-balanced program has been designed to be individually tailored to meet the interests and needs of each student and to fully prepare each student for a Biomedical Sciences career in academia, industry, and government. The graduate program is designed to provide training in the theory and practice of Biomedical Sciences for eventual placement in research and teaching positions.

Non-Matriculated Student Policy: Non-matriculated students may enroll in some courses with permission from the course instructor and approval from the Office of Graduate Studies at the Lewis Katz School of Medicine.

Financing Opportunities: All students are provided with a competitive stipend, health insurance, and tuition remission. First-year students are supported by Medical School fellowships. After the first year, students receive financial support from extramural funds available to their research mentor, including training grants, research assistantships, and fellowships. Students are expected to work full-time toward the completion of the degree requirements. A satisfactory level of performance must be maintained at all times.

Exceptionally qualified students who apply to the program may be nominated for Presidential, University, and Future Faculty Fellowships. In order to be considered for nomination, prospective students must submit all application materials to the department by February 15.

Admission Requirements and Deadlines

Pre-Application Deadline for International Applicants Only:

All international applicants who have not earned a degree in the United States or from an institution where English is the sole language of instruction are required to complete a Pre-Application for approval before applying. The Pre-Application is found on the Biomedical Sciences website at http://www.temple.edu/medicine/biomedical_sciences/apply/preapp.htm and must be submitted electronically by October 31.

Application Deadline:

Fall: February 15
Applications are processed as they are received.

APPLY ONLINE to this graduate program.

Letters of Reference:
Number Required: 3

From Whom: Letters of recommendation should be obtained from faculty and supervisors of research experiences.

Coursework Required for Admission Consideration: Applicants should have undergraduate training in the life sciences such as Biology, Biochemistry, Cell Biology, or Molecular Biology and Genetics. Students are also expected to have training in Chemistry and Mathematics.

Master's Degree in Discipline/Related Discipline: A master's degree is not required.

Bachelor's Degree in Discipline/Related Discipline: A baccalaureate degree in the Biological or Chemical Sciences is required.

Statement of Goals: Approximately 500 to 1,000 words include your interest in Temple's Biomedical Sciences graduate program; your research interests and past experiences; your future career goals; and your academic and research achievements.

Standardized Test Scores:
GRE: Required. Acceptance by Temple University requires submission of verbal, quantitative, and analytical GRE scores. GRE scores below the 50th percentile are outside the norm set by the Graduate School, and no individual score in the verbal, quantitative, or analytical sections should be below that level.

For applicants whose native language is not English, the TOEFL, IELTS, or PTE Academic exam is required:

TOEFL: 79 iBT or 550 PBT minimum
IELTS: 6.5 minimum
PTE Academic: 53 minimum

Advanced Standing: Students who enter the Ph.D. program in Biomedical Sciences may be considered for advanced standing, based on the successful completion of graduate-level courses in the Biological Sciences or Chemistry. The credits must be equivalent to coursework offered at Temple, and the grades earned must be a "B" or better. The Graduate Admissions Committee makes the recommendation on a case-by-case basis as the application is reviewed. The maximum number of advanced standing credits awarded is 24.

Test Waivers: Upon review of the student's background by the Graduate Admissions Committee, applicants with high levels of performance in one or more areas can gain favorable consideration for an application that is otherwise outside the acceptance matrix.

Program Requirements

General Program Requirements:
Number of Didactic Credits Required Beyond the Baccalaureate: 37

Required Courses:

All students participate in a common first-year interdisciplinary experience that includes the following core courses:

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<th>Molecules to Cells</th>
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<td>Organ Systems: Function, Dysfunction and Therapies</td>
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<td>Scientific Design and Biostatistics</td>
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<tr>
<td>Scientific Communications</td>
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<td>Bioinformatics</td>
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<td>Scientific Integrity</td>
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<td>Scientific Grant Writing</td>
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<td>Advanced elective courses in area of concentration/cluster</td>
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<td>Cluster-Based Seminar/Specialized Journal Club</td>
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Additional Requirements:

Research Advisory Committee Meetings:
Students are required to meet with their Research Advisory Committee each term to evaluate their progress toward the degree.

Outside Research Proposal:
In the Spring term of the second year of study, students are required to prepare and defend an NIH-style grant proposal in their area of concentration on a topic that is distinct from the student’s research. This is a requirement for elevation to candidacy.

**Culminating Events:**

**Dissertation Proposal:**
The dissertation proposal demonstrates the student’s knowledge of and ability to conduct the proposed research. The proposal should describe the context and background surrounding a particular research problem and a methodological plan for investigating the problem. The proposal is a requirement for admission to candidacy and should be submitted and approved during the Fall term of the third year in the program.

**Dissertation:**
The Ph.D. degree in Biomedical Sciences is a research degree. Research training begins with three research rotations in the first year of the graduate program and continues with the selection of an area of concentration and a Dissertation Research Advisor, who is a member of the Graduate Faculty from within the selected area of concentration. The areas of concentration include Cancer Biology and Genetics, Infectious Disease and Immunity, Molecular and Cellular Biosciences, Neuroscience, and Organ Systems and Translational Medicine.

Under the direction of the Dissertation Research Advisor, the student develops an original research project. Dissertation research involves meaningful, critical thinking and the execution of ideas in the laboratory through the use of the scientific method. Dissertation research conducted by the student should be an original contribution to scientific knowledge. The quality of the student's Ph.D. dissertation research should be equivalent to that found in reputable biomedical sciences journals.

Upon selection of an area of concentration and a Dissertation Research Advisor, a Research Advisory Committee is formed for each student. This Committee is responsible for the review of the student's research and academic progress twice yearly. It determines whether the content of the student's research is sufficient for the Ph.D. dissertation.

The student submits the dissertation in complete form not less than 14 days prior to the date of the final examination. The dissertation must have been read and approved by the Dissertation Research Advisor prior to distribution. After the student has arranged the time, date, and room for the dissertation defense, the “Announcement of Dissertation Defense” form, found at http://www.temple.edu/grad/forms/, is completed and forwarded to the Graduate School on Main Campus and to the Office of Graduate Studies on the Health Sciences Campus at least 10 working days before the defense. Announcements of the defense are posted and emailed to all members of the cluster/area of concentration.

The Final Examination Committee evaluates the student's dissertation and demonstration of competence within the field of the dissertation and related areas. This Committee consists of five faculty members, including the Dissertation Research Advisor, Research Advisory Committee, and one additional faculty member from another cluster. The Committee evaluates the quality of the dissertation research and the student’s ability to express, both in writing and orally, her/his research question, methodological approach, primary findings, and implications. The Committee votes to pass or fail the dissertation and the defense at the conclusion of the public presentation and private question/answer period.

**Contacts**

**Program Web Address:**
http://www.temple.edu/medicine/biomedical_sciences/

**Department Information:**
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