

ANATOMY AND CELL BIOLOGY (M.S. AND PH.D.)

The Department of Anatomy and Cell Biology offers training for the investigation of biological and biomedical problems using molecular, cellular, and morphological approaches. Faculty members are active in a diversity of research areas, including cell and developmental biology, neuroscience, vision research, and immunology. Study for the Ph.D. degree includes dissertation research in the laboratory of a faculty member and can generally be completed in four to five years. Students who have also been admitted as medical students can typically complete both M.D. and Ph.D. degrees in six to seven years. Admission to the master's degree program is very limited and based on special circumstances.

Admission Requirements

Admission to these programs is contingent upon admission to the Graduate School (<http://bulletins.wayne.edu/graduate/general-information/admission/>) and the graduate programs of the School of Medicine (<http://bulletins.wayne.edu/graduate/school-medicine/programs/>), respectively. Applicants must have an undergraduate degree. A minimum grade point average of 3.0 is required for admission to the Ph.D. program. An interview with the Graduate Committee Chairperson or designated representative is desirable. The Graduate Record Examination is required for admission. Foreign students must be proficient in English as determined by satisfactory performance on the standardized TOEFL English proficiency examination.

Academic Scholarship

All course work must be completed in accordance with the regulations of the Graduate School (<http://bulletins.wayne.edu/graduate/general-information/academic-regulations/>) and the School of Medicine (<http://bulletins.wayne.edu/graduate/school-medicine/programs/>) governing graduate scholarship and degrees.

Assistantships and Research

The Department has graduate research assistantships available for a number of qualified students. All students accepted into the doctoral degree program are considered for financial assistance, and no application forms are necessary for this purpose. Students on assistantships are advised to elect no more than ten credits in a given semester. Two credits are covered during spring/summer semester. All students, whether or not they hold a fellowship or assistantship, are required to assist the graduate faculty in research activities as a component of their educational experience.

The general requirements (<http://bulletins.wayne.edu/graduate/general-information/degree-certificate-requirements/>) for the Master of Science and Doctor of Philosophy degrees may be found in the Graduate School section of this bulletin. The master's degree is offered as Plan A only, which includes a manuscript based on original research.

During their first year, Ph.D. students typically enroll in the School of Medicine's Interdisciplinary Biomedical Sciences (IBS) curriculum.

IBS Systems Curriculum

Code	Title	Credits
IBS 7015	Interdisciplinary Cell and Molecular Biology	6
IBS 7030	Functional Genomics and Systems Biology	2
IBS 7050	Biomedical Neurobiology	2

IBS 7090	Biomedical Immunology	2
IBS 7100	Biomedical Neuropharmacology	2
IBS 7130	Systems Neuroscience: Structure and Function of the Nervous System	2
IBS 7140	Foundations of Data Science	3

Opportunities are provided for the student to become acquainted with the diverse research interests of the faculty and to obtain hands-on experience in selected techniques. Seminars and elective courses broaden the exposure to clinically-relevant areas of research. In the second year, students may select advanced courses in several areas of Anatomy and Cell Biology and choose an advisor to assist in development and implementation of a dissertation research project. The graduate program is flexible and allows for continuing interdisciplinary training; emphasis is placed on designing a program which is tailored to the student's particular goals. In addition to developing research competence, individuals interested in pursuing teaching as part of a career will be able to achieve competence in neuroscience, embryology, and microscopic or gross anatomy.

The graduate students interested in neurobiology subdiscipline should take one of the three courses:

Code	Title	Credits
ANA 7010	Human Gross Anatomy	8
ANA 7030	Human Microscopic Anatomy	4
ANA 7130	Neuroanatomy	4

Graduate Students admitted in the program undergo lab rotation (ANA 7270) prior to selecting a dissertation advisor. Graduate students in the program area also required to register for ANA 7890 seminar course. They also complete written and oral qualifying examinations. The major component of the Ph.D. program is preparation of a dissertation which details the results of original research.

After the completion of PhD candidacy, the thirty credit dissertation registration requirement is fulfilled by registering for the courses ANA 9991, ANA 9992, ANA 9993, and ANA 9994 (Doctoral Dissertation Research and Direction I, II, III, and IV, respectively), in consecutive academic year semesters.

Vision Science Program

Students interested in developing independent careers in the area of vision science may obtain specialty training in this research field. Through course work and clinical interactions, students receive broad based training which integrates basic science and clinical approaches to the understanding of eye function and ocular disease. Three courses (ANA 7055, ANA 7065, and ANA 7075) provide the background for individually directed research projects. Faculty from both the Department of Anatomy and Cell Biology and the Department of Ophthalmology participate as mentors in this unique program.