Multidisciplinary Graduate Program in Anatomical Sciences

The Department of Anatomical Sciences, within the Health Sciences Center, offers a multidisciplinary graduate program leading to the Ph.D. degree. Students receive comprehensive training to prepare them for teaching and research in the areas of evolutionary morphology, systematics, functional morphology, musculoskeletal biology, and vertebrate paleontology. Graduate students are guided through a program of courses designed for their particular needs. In this regard, the Department of Anatomical Sciences interacts not only with other departments in the School of Medicine but also with those in the College of Arts and Sciences (e.g., Anthropology, Geosciences, and Ecology and Evolution), as well as other regional doctoral programs (City University of New York, American Museum of Natural History, Richard Gilder Graduate School).

The program trains students in the analysis and interpretation of gross vertebrate structure with the goal of testing hypotheses in systematics, paleoecology and adaptation. Training and research focus on applying an evolutionary perspective to the study of morphology, including functional morphology and phylogenetic systematics. Field-based projects for the discovery of new fossils are typically underway every year. Both the locomotor and the craniodental anatomical systems are regions of current interest and investigation within the program. Several faculty in the department specialize in the application of experimental and quantitative techniques to the analysis of the relationship between form and function. Studies of skeletal adaptations are also facilitated by collaboration with the Musculoskeletal Research Laboratory of the Department of Orthopaedics. Questions of systematics are approached at different levels, ranging from alpha taxonomy to higher-order relationships and we provide training using contemporary methods of phylogenetic systematics and biogeography. Students in the program have the opportunity to master a variety of research methods and analytical strategies: multivariate morphometrics, phylogenetic systematics, biogeography, CT-based anatomical reconstructions, behavioral ecology, and principles of paleontological fieldwork.

Anatomical Sciences does not accept students whose goal is a master’s degree.

Admission Requirements of Anatomical Sciences Department

In addition to the minimum Graduate School requirements, the following are required:

A. A bachelor’s degree typically in a field with ties to research in our department.

B. Letters of reference.

C. Resume/CV

D. Proof of English proficiency for non-native speakers of English.

E. Acceptance by the Department of Anatomical Sciences and by the Graduate School.

Facilities of Anatomical Sciences Department

The department has exceptionally well-equipped research facilities. These include facilities for experimental functional morphology. For students with a focus on paleontology, the department has a Vertebrate Fossil Preparation laboratory with contemporary equipment for preparation, molding and casting original fossil material. The department also has access to CT scanners and associated software for research purposes. The department also has extensive cast collections, and original specimens from several ongoing paleontological field projects.

Anatomical Sciences does not accept students whose goal is a master’s degree. In exceptional instances, a student already in the program may be awarded an M.S. degree upon completing an approved course of study, including a minimum of 30 graduate credit hours, and either passing a comprehensive examination, or submitting and defending a master’s thesis.
Graduate Studies in Anatomical Sciences does not accept students whose goal is a master’s degree. In exceptional instances, a student already in the program may be awarded an M.S. degree upon completing an approved course of study, including a minimum of 30 graduate credit hours, and either passing a comprehensive examination, or submitting and defending a master’s thesis.

Requirements for the Ph.D. Degree in Anatomical Sciences

In addition to the minimum requirements of the Graduate School, the following are required:

A. Formal Course Requirements

The following courses are required for all students in the program:

1. HBA 560: Regional Anatomy for non-Healthcare Students
2. A statistics course approved by the advisor or Graduate Program Director
3. GRD 500: Responsible Conduct of Research and Scholarship
4. HBA 695: Practicum in Teaching
5. Three elective courses (for a minimum of 9 credits)

A student must achieve a grade of B or higher in each of the required courses, and must maintain a B average or higher in all elective courses.

B. Preliminary Examination

All students are required to take a preliminary examination upon completion of formal course requirements.

C. Advancement to Candidacy

The faculty will recommend a student to the Graduate School for advancement to candidacy upon satisfactory completion of all required coursework and the preliminary examination. The student then becomes a formal candidate for the Ph.D.

D. Dissertation Proposal Examination

Following advancement to candidacy a student must prepare and submit a dissertation proposal that is acceptable to the dissertation committee and program in Anatomical Sciences.

E. Ph.D. Dissertation

A student, under the supervision of their Dissertation Committee, performs the research leading to the preparation of their written dissertation. The dissertation must contain the results of an original and significant investigation. Students should enroll in an HBA Dissertation Research Course (HBA 699, HBA 700, or HBA 701) to document completion of the doctoral research project.

F. Dissertation Defense

Following completion of the dissertation research project, a student must submit their dissertation to their examining committee and present their findings in a formal public oral defense. Following the oral presentation of results and questioning by the audience, the student defends their results before the dissertation committee.

For procedural details, please refer to the Department of Anatomical Sciences website.

Faculty of Anatomical Sciences

Distinguished Professor

Fleagle, John G., Ph.D., 1976, Harvard University: Evolutionary biology of higher primates; vertebrate paleontology; behavioral and experimental analysis of comparative musculoskeletal anatomy; skeletal growth and development.

Emeritus Distinguished Service Professor

Krause, David W., Ph.D., 1982, University of Michigan: Vertebrate paleontology; mammalian evolution; functional morphology of masticatory and locomotor systems.

Emeritus Distinguished Teaching Professors


Emeritus Professors

Demes, A. Brigitte, Ph.D., 1982, University of Bochum, Federal Republic of Germany: Biomechanics; functional morphology; scaling effects on locomotion.
Professors
Larson, Susan G., Ph.D., 1982, University of Wisconsin: Functional morphology of human and nonhuman primate locomotor systems; human and primate evolution; telemetered electromyography.

O'Leary, Maureen A., Ph.D., 1997, Johns Hopkins University: Vertebrate paleontology; phylogenetic systematics; mammalian evolution.


Associate Professors

Assistant Professors
Andrew Moore, Ph.D., 2018, The George Washington University: vertebrate paleontology, archosaur evolution


Stephanie Maiolino, Ph.D., 2015 Stony Brook University: Physical anthropology, primate evolution.

Adjunct and Joint Faculty
Grine, Federick E., Ph.D., 1984, University of Witwatersrand, South Africa: Hominid evolution; functional morphology of the masticatory system; vertebrate paleontology; dental structure and comparative odontology.

Leakey, Maeve, Ph.D., 1968, University of North Wales: Evolution of hominoids; evolution of Late Cenozoic faunas in East Africa.

Martin, Lawrence B., Dean of the Graduate School, 1 Ph.D., 1983, University of London, England: Primate evolution; thickness, development, and microstructure of dental enamel; neogene vertebrate paleontology.


Rubin, Clinton T., Ph.D., 1982, Bristol University, England: Structural adaptation in bone; skeletal remodeling and morphology.

Additionally, the department has a group of Instructors that changes annually. These faculty members are early-career Ph.D. scientists who contribute to the teaching and research mission of the department.

Number of teaching, graduate, and research assistantships annually: 4-6

1) Joint appointment, Department of Anthropology
2) Joint appointment, Department of Physiology
3) Joint appointment, Department of Orthopaedics
4) Joint appointment, Department of Earth and Space Sciences

NOTE: The course descriptions for this program can be found in the corresponding program PDF or at COURSE SEARCH.