The Molecular and Cellular Biosciences PhD Track in the Graduate School of Arts and Sciences at Wake Forest University seeks to recruit highly motivated students with an interest in cell and molecular biology, biochemistry, host-pathogen interactions and the immune response, cancer, and translational science. Students will benefit from a low student to faculty ratio and a collegial atmosphere that promotes faculty-student interactions and a strong training environment.

Program Characteristics
- Entry into an integrated first year curriculum
- Core course examines macromolecular synthesis, structure and function, regulation of gene expression and genetics, cell structure and cell communication
- Analytical skills development, three electives, and three research rotations
- Program-specific courses and electives taken in second year
- All students receive full tuition scholarship and stipend
- Small class size, approximately 15 incoming students per year
- Diverse student body drawn from national and international universities

Programs of Study
Thesis research will be conducted in laboratories from the following graduate programs:

**Biochemistry & Molecular Biology**
Training in structural biology, molecular biology, genetics/genomics and proteomics/metabolomics. Research interests include signal transduction in cancer, inflammation, cardiovascular disease, DNA repair and defense against cellular damage, redox biology, and metabolic diseases.

**Cancer Biology**
Research projects range from basic science to clinical trials; areas include DNA damage and cellular defense, cell growth and survival, tumor microenvironment, regenerative medicine, cancer stem cells, human genomics, oncolytic viruses in cancer therapy, drug design, tumor metabolism, tumor angiogenesis, metastasis, and molecular cancer epidemiology and cancer control.

**Microbiology & Immunology**
Research interests include development of viral vaccine vectors and adjuvants, host-pathogen interactions, T and B lymphocyte activation, respiratory immunity, neutrophil biology and biochemistry, the molecular basis for bacterial and viral diseases, and viruses used for cancer therapy.

**Molecular Genetics & Genomics**
Areas of active investigation include: control of gene expression; molecular pathogenesis; protein biosyntheses and compartmentalization; cell development and differentiation; carcinogenesis; development of cellular resistance to cancer; genetic basis of disease; clinical cytogenetics; molecular mechanisms of mutagenesis; and signal transduction.

**Molecular Medicine & Translational Science**
Offers translational research with significant clinical exposure that links knowledge from the laboratory to the bedside to further medical science. Students receive dual mentoring by PhD and MD scientists in the fields of lipid sciences (pathology), regenerative medicine, biochemistry, genetics, cancer biology, microbiology & immunology, internal medicine, physiology and neuroscience.
Graduate Recruiting

The MCB program accepts students with a variety of undergraduate or Master’s degrees including majors in the biological sciences, chemistry and biochemistry. Courses in biology, general chemistry, organic chemistry, physics, and mathematics through calculus are prerequisites, and courses in biochemistry, genetics and molecular and cellular biology are desirable. Applications are evaluated by a recruitment committee with faculty from all MCB graduate programs. Grade point average in undergraduate and/or Master’s level degree work, the verbal and quantitative scores on the Graduate Record Examination (GRE), the Test of English as a Foreign Language (TOEFL) in the case of applicants for whom English is not the native language, letters of reference, and a personal statement are required for evaluation. Applicants with significant research experience will be most competitive. Selected applicants will be invited for an interview during the process of consideration.

Degree Requirements

MCB students take 25 hours of formal coursework which includes a core first-year course covering molecular and cellular biology, biochemistry, and physiology. First year coursework also encompasses scientific techniques and ethics training. Students undertake three lab rotations to choose a research advisor. At the beginning of the second year, students choose a program of study, and complete program-specific coursework and electives. Thesis research also begins in the second year. A preliminary examination is completed at the end of the second year, after which the student becomes a PhD candidate. In subsequent years students primarily continue with laboratory research under the direction of their research advisor. Completion of the PhD degree requires the student to generate a body of original research, and an oral defense of a written research dissertation. Most of our students publish several first-author peer-reviewed papers and present research at national and international meetings prior to graduation.

Research Facilities

The primary basic science and clinical departments which participate in the programs of study contain state-of-the-art equipment and facilities for research, including ample wet laboratory space. Core facilities include microscopy, whole-body imaging, crystallography, DNA and protein sequencing, animal housing and flow cytometry. Research facilities are located on the Bowman Gray campus, in the downtown Research Park and the undergraduate campus of Wake Forest University, which are all located within a few square miles. Frequent daily shuttle service between the campuses promotes cross-campus collaborations.

Financial Aid

All doctoral students who submit their application by December 6, 2013 will be considered for full financial aid in the form of a tuition scholarship and stipend for living expenses. First year students are supported by a Graduate Fellowship from the WFU Graduate School. Stipend support in subsequent years is provided by research advisors, training grants, or special scholarships.

The University

Wake Forest University has earned a reputation of distinction among institutions of higher learning and supports a community of widely-acclaimed scholars in many disciplines, and is ranked among the 50 most competitive American colleges and universities. The medical center ranks among the top 40 institutions nationally in federal research funding. Wake Forest is located in Winston-Salem, a city of about 170,000 in the northern Piedmont region of North Carolina noted for its exceptional programs in the fine arts. Within easy driving distance to the Appalachian Mountains, recreational activities include hiking, biking and rafting.

Correspondence and Information

Tina Payne, Administrative Secretary
Molecular and Cellular Biosciences
Wake Forest University Graduate School
Winston-Salem, NC 27157
Phone: 336-716-0087 | Fax: 336-716-0185 | tmpayne@wakehealth.edu
Information Request Form: http://mcb.graduate.wfu.edu/information-form/