

# PhD Program in Biochemistry

## Graduate Degree Programs

### Objectives:

The primary educational objectives of the Ph.D. program are:

- To develop proficiency in the critical analysis of scientific research problems
- To assess which problems are important enough to pursue vigorously
- To pursue and solve a research problem of interest to both the student and mentor

Prospective students are encouraged to contact directly any faculty member whose research program is of interest.

### Program Overview

Biochemistry students accepted into the graduate program are admitted primarily to pursue a Ph.D. The Ph.D. program at UA prepares high-achieving students for senior research positions in industry or government laboratories, or a career in college-level or university-level teaching and research. A number of [interdisciplinary](#) <sup>[1]</sup> research and training programs are also available under the Biochemistry Ph.D. program including, Biological Chemistry Program, Biological Physics Program, Biochemistry and Molecular and Cellular Biology, Biological Physics Program, Applied Math, and the IGERT Program in Comparative Genomics and others.

Students interested in chemistry are encouraged to explore the [Ph.D. program in Chemistry](#) <sup>[2]</sup>.

The Doctor of Philosophy with a major in biochemistry is primarily a research degree. The number and selection of courses is tailored to the individual student's needs and interests according to the guidelines available from the Department of Chemistry and Biochemistry. A dissertation based upon original laboratory research is required. All students must pass a series of written examinations, a comprehensive examination and a final oral defense examination.

### Course Work

Students must complete a minimum of 18 graded credits (typically six classes) in order to fulfill the coursework component of the Ph.D. These courses are chosen from a major coursework

concentration in one Biochemistry in consultation with the research director, plus a minor within the department or in another department.

### *Rotations*

A feature of the biochemistry Ph.D. track is that students undertake three laboratory rotations (two in the Fall and one in the Spring) prior to choosing a dissertation advisor. These rotations allow the student to gain experience in laboratory research, as well as giving them an opportunity to familiarize themselves with the research of faculty in the Department. Toward the end of the Spring semester students are asked to identify a dissertation advisor, from among the faculty that they rotated with, who will guide their research.

### *Written Exams*

Advancement to Ph.D. candidacy involves satisfactory completion of a written examination component. At UA, the written examination in Biochemistry is administered prior to the Comprehensive Examination. Successful completion of the written examination allows the student to continue on to the comprehensive examination.

### *The Comprehensive Examination*

The final step towards advancement to Ph.D. candidacy involves the development and oral defense of an original research proposal formulated by the student, before his/her Dissertation Committee. Students who complete both components of the exam successfully are advanced to candidacy.

### *Dissertation*

The major requirement of the Ph.D. degree is the research dissertation, which presents a new and unique contribution of knowledge to the chemical sciences suitable for publication in a major scholarly journal. Students generally select a research director following completion of laboratory rotations. Three to four years of mentored research follow, culminating in the Final Oral Examination. During this time the student takes progressively increasing responsibility for the direction of his/her research. The transition from student to colleague is completed with the successful defense of the dissertation in front of the student's committee.

### [Graduate](#)<sup>[3]</sup>

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