

DESCRIPTION OF INSTITUTIONAL ENVIRONMENT AND COMMITMENT TO TRAINING

The University of Kentucky is the state's flagship public university with ~32,000 students (8,773 graduate students), 16 colleges, 112 undergraduate, 85 masters, and 55 doctoral programs. University research funding was over \$527 million for fiscal year 2024, with \$225 million of that supporting research in the College of Medicine. The Department of Physiology is one of 6 basic science departments in the College of Medicine and has 36 full-time primarily appointed faculty, 26 joint faculty, and 49 current PhD students, and numerous postdocs and staff. Extramural support for the department totaled ~\$15 million in 2023, ranking 7th nationally in NIH funding. The Physiology faculty teach ~2,400 undergraduate, professional, and graduate students in ~50 courses each year.

Educational Information

First year: Most PhD students in the College of Medicine are admitted through a common Integrated Biomedical Sciences Program which enrolls 20-25 students per year. These trainees spend their first year completing a core curriculum that

Semester	1st year	2nd year	3rd year	4th year	5th year +
Fall	Common first-year curriculum for all IBS students	PGY 774 (Journal club)	PGY 774 (Journal club)	optional - other courses of interest	
		PGY 502 / 602 (Systems, Cellular & Molecular Physiology)			
		Oral exam			
Spring		PGY 630-005 (Communication Skills Workshop)	PGY 630-005 (Communication Skills Workshop)		
		optional - PGY 630-004 (Grant Writing Workshop)	optional - PGY 630-004 (Grant Writing Workshop)		
		optional - other courses of interest	optional - other courses of interest		
Other		'Boot-camp' Form PhD Committee	Qualifying exam	Departmental Seminar	optional - Departmental Seminar
	Lab rotations	Research (PGY791)	Dissertation Research (PGY767)		
			Grant applications, publish papers, attend conferences		

includes biomedical ethics, team-taught classes in cellular and molecular biomedicine, elective mini-courses and four separate 8-week research rotations. Students select a mentor from 200 full-time participating faculty within 6 basic science departments. Those choosing a mentor in the Department of Physiology join the Physiology training program at the end of their second semester in.

Second year: Incoming Physiology students take PGY502 (didactic) and PGY602 (discussion based) classes during fall semester which provide 8 hours per week of advanced training in systems, cell, and molecular level physiology. As part of the PGY602 course, students complete a combined written and oral comprehensive examination process consisting of 8 hours of written examinations and a 2-hour oral exam administered by eight Physiology faculty instructors. Students must perform at B-grade or better on the comprehensive exams to continue in the Physiology program.

Additional required coursework in the 2nd year includes PGY774, a one credit, discussion-based class that focuses on reading scientific literature, learning to review manuscripts, and the nuances of experimental design. Spring semester students also complete a Communication Skills Workshop, a weekly meeting that teaches effective presentation and writing styles and in which students present oral presentations related to their research project and receive faculty and student feedback.

Typically, in spring of their 2nd year, PhD students form their advisory committee which consists of:

- 1) The Dissertation Director (who is generally the primary advisor)
- 2) Two or more additional faculty members from the Department of Physiology
- 3) At least one member from a supporting area outside the department

Faculty members in Physiology have diverse research interests, spanning neuroscience, aging, cardiovascular physiology, muscle biology, and respiratory physiology. Thus, nearly all student committees are multidisciplinary. As part of biannual advisory committee meetings, student progress is evaluated by each committee member using standardized metrics. The departmental Graduate Affairs Committee monitors student progress annually.

Third year: All students must complete their formal qualifying exam before the end of their 3rd year fall semester. The procedures for this exam are as follows:

- 1) Students develop and present two separate 500-word abstracts summarizing research proposals which are distinct from the primary advisor's submitted grants.

- 2) The advisory committee selects one of these projects which the student then expands into a F31-style NIH grant proposal over a 4–6-week period.
- 3) The advisory committee examines the student, testing their ability to formulate novel hypotheses and logical experimental designs as well as their knowledge of physiology and their chosen specialized field.

Required coursework includes one semester of PGY774 and one semester of Communication Skills Workshop.

Subsequent years: Students who pass their qualifying exam enroll in PGY767 (2 research credit hours) until they are ready to defend their thesis. The final exam consists of a public one-hour seminar followed by a closed-door meeting with the advisory committee and an outside examiner appointed by the University of Kentucky Graduate School. Students must demonstrate a detailed knowledge of their field of study and defend the conclusions that they present in their written thesis. The quality and extent of the work must be such that the advisory committee regards it as suitable for publication in a reputable scientific journal.

Summary data: The Department of Physiology typically accepts 6 to 8 PhD students per year from the Integrated Biomedical Sciences Program and/or the College of Medicine MD/PhD program. On average, 6 students graduate from the program each year with a mean time to completion of 4.9 years. Recent graduates have moved on to post-docs at nationally ranked institutions, prominent industry positions, and leadership roles at several research Foundations.

Additional training opportunities

In addition to research-specific seminars and journal clubs, all Physiology trainees attend weekly departmental seminars throughout their entire training and present in this forum during in their 2nd and 3rd years.

All students in the program are also encouraged to complete:

- 1) Physiology bootcamp – a summer-long program taken at the end of the first year which focuses on biomedical statistics and experimental design, data and image acquisition, presentation of results, funding strategies, and career development skills.
- 2) Teaching skills workshop – an informal program led by the department's Director of Teaching which helps students to gain experience lecturing to undergraduates and leading discussion groups, laboratory sessions, and lab demonstrations.

All students also attend a wide range of regional, national, and international-level scientific meetings. Typical events include: Kentucky Chapter of the American Physiological Society, Experimental Biology, Biophysical Society, Society for Neuroscience, and American Heart Association Scientific Sessions.

Status of Applicant

Austin Minton is in the 3rd year of his PhD studies at the University of Kentucky. He transitioned into the Physiology program during the summer of 2023 after successfully completing his first year in the Integrated Biomedical Sciences Program. He is in good academic standing and has passed his qualifying exam.

Individual providing this information



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