SELECTION OF SPONSOR AND INSTITUTION

Institution

I chose the University of Kentucky because it is my state's flagship university . It is 1 of only 22 institutions in the U.S. to have an NIH Clinical and Translational Science Award, NIH Alzheimer's Disease Center, and NIH National Cancer Institute. The College of Medicine contains 7 basic science and 18 clinical departments, along with numerous biomedical centers in areas such as cardiovascular, diabetes and obesity, drug addiction, and infectious diseases. I found interest in the College of Medicine's Integrated Biomedical Sciences Program, which provides 1 year of undifferentiated curriculum to serve as an entry point for 6 doctoral programs. Admission to this Program allowed me to commit 32 weeks of laboratory rotations in the Departments of (1) Neuroscience, (2) Microbiology, Immunology and Molecular Genetics, and (3) Physiology.

Of the 3 Departments I rotated in, the Department of Physiology stood out as ideal for my doctoral training. My interest sparked due to the cohesivity of investigators in distinct research areas, which allows trainees to participate in multi-disciplinary science ranging from molecular to broad-scale levels. The Department has 36 full-time primary and 26 associated faculty. Collectively, these investigators received $15.2 million in extramural funding in 2024, ranking 7th-highest on the Blue Ridge Rankings for Departments of Physiology.

The Department of Physiology is committed to fostering an environment that promotes individual development and networking skills for trainees, including instruction to provide a knowledgebase of cellular, molecular, and organ-system physiology. As a graduate student in the Department, I attend weekly research seminars with 12 seminars hosting external speakers each semester. Along with providing an opportunity to learn about current scientific advancements, the Department holds an informal lunch with each seminar presenter to promote collaboration between trainees and guest speakers. Additionally, the Department offers a broad range of research equipment for trainee utilization, preventing limitations based on instrument availability.

Sponsor

I selected Kenneth Campbell, PhD, as my mentor and sponsor due to his distinguished reputation in translational research pertaining to heart failure. Dr. Campbell is the Director of Translational Research in the Division of Cardiovascular Medicine and the Director of the Biospecimens Core in the Kentucky Center for Clinical and Translational Science. He has a strong publishing history (>130 publications, h-index of 42 including manuscripts in Nature, JCI, and PNAS) and a successful record of mentoring trainees into academia and industry. According to the Blue Ridge Institute for Medical Research, Dr. Campbell was in the 8th percentile of most-funded Physiology investigators in 2023.

Dr. Campbell's lab embraces the complexity of heart failure by incorporating experimentation involving muscle mechanics, biochemistry, histology, and computational modeling. The lab also maintains a myocardial repository containing an excess of 20,000 samples from 650 human hearts. Utilizing worldwide connections in cardiovascular physiology, Dr. Campbell shares samples with labs from over 30 institutions, 1, of which, resulted in a Nature publication describing the first single-molecule-level structural depiction of the cardiac thick filament (*Cryo-EM structure of the human cardiac myosin filament*). A high level of productivity is sustained in Dr. Campbell's lab, as he grounds the team's projects in synchrony with medical professionals at the Albert B. Chandler Hospital, the flagship component of UK HealthCare.

I spent 18 of my 32 weeks of laboratory rotations in the lab of Dr. Campbell. During this time, he offered the opportunity to lead a project that involved identifying genetic variants within his myocardial repository. I eagerly assumed this role, which built upon my previous research experiences in genetics and has led to numerous poster/oral presentations at regional and national/international conferences. In this endeavor, Dr. Campbell unveiled my everlasting desire to use bench science as a conduit to improve medicine and overall treatment of patients in heart failure.

Collectively, Dr. Campbell's expertise, mentorship, and research-orient align directly with my research interests and will be crucial in my aspiration to become a renowned principal investigator in translational cardiac research.