FACILITIES & OTHER RESOURCES

Laboratory: The Sponsor, Ken Campbell, PhD, is a Professor in the Division of Cardiovascular Medicine at the University of Kentucky. His lab space was remodeled in 2023 and now comprises 1800 square feet of contiguous space with specific areas allocated for wet experiments, sample processing and histology, and biophysical assays.

Office: Dr. Campbell has a new office (212 square feet) located on the same floor as his laboratory. His team have a dedicated conference room (348 square feet) as well as adequate desk-space for lab personnel. Dr Minton shares a large office (~320 square feet) with 3 other graduate students. Lab personnel share an all-in-one scanner/printer which is provided by the department.

Animal: Not applicable to this project.

Computing: Excellent computer resources are available for this project. Each member of Dr. Campbell's laboratory has a modern laptop supplied by the university. At least 5 additional computers are attached to experimental equipment. Three high-end Titan workstations (each with 256 GB of RAM and capable of running 128 threads simultaneously) are available as required. Austin is able to connect to these computers from off-campus which allows him to run analyses and access data from home or while traveling. The university has additional computing power which the team could access for free if it was useful.

All systems are password protected, backed up nightly to off-site storage systems, and protected by a firewall. Computer code, protocols, solution recipes, manuals, and templates are stored, shared, and backed up using GitHub. LabArchives is used as an electronic lab notebook.

Clinical: The University of Kentucky Chandler Hospital is a major academic medical center which provides quaternary level care for ~2 million people. 40,000 patients have been diagnosed with heart failure (ICD10 I50.9) The institution is currently performing ~1% of the world's cardiac transplants (~160 in the last 4 years) and implants another ~40 Ventricular Assist Devices per year. The Mikel D. and Annette C. Smith Echocardiography Lab was the first in Kentucky to receive national accreditation and performs ~100 clinical scans every day.

Dr. Campbell transitioned from the Department of Physiology to the Division of Cardiovascular Medicine in 2022 and became the division's inaugural Director of Translational Research. As part of that role, Dr. Campbell co-directs the Myocardial Recovery Alliance which focuses on heart failure and mechanical circulatory support.

Dr. Campbell leads 3 IRB protocols that cover procurement of biospecimens from patients who provide informed consent and unrestricted research-related access to clinical data from all patients who have received cardiovascular care at the institution (see Protection of Human Subjects).

Other

University of Kentucky Center for Clinical and Translational Sciences (CTSA) is the University of Kentucky's implementation of an NIH-funded CTSA center. The main purpose of this program is to foster and accelerate translational research. Dr. Campbell directs the Center's Biospecimens Core and leads an institution-wide biobanking program that has enrolled >60,000 patients since November of 2013. This center also provides seminars and workshops to discuss bioethics, handling clinical data, and other topics relevant to translational research, which Austin will take advantage of as part of his training plan.

Office of Research Integrity (ORI) is the University of Kentucky's central facility that supports 7 federally mandated review committees: 3 medical and 2 non-medical Institutional Review Boards (IRBs), the Institutional Animal Care and Use Committee (IACUC), and the Radioactive Drug Research Committee (RDRC). The university veterinarian provides guidance in animal care. The ORI maintains an extensive education and training program in all facets of basic and clinical research available for Austin as part of his continuous Responsible Conduct of Research training.

University of Kentucky Biostatistics Consulting Service is jointly supported by the University of Kentucky Colleges of Medicine and Public Health. This multidisciplinary unit provides a broad array of biostatistical and epidemiological consulting services to the entire University of Kentucky community. This service also assists with experimental design, data analysis, and power analysis for intramural and extramural grants.

University of Kentucky Environmental Health and Safety (EHS) is responsible for safety compliance in all operations, including research. EHS assists investigators with laboratory assessments to determine environmental, health, and safety needs and informs them of compliance requirements for their research and assigned space. Assessment results are used to direct investigators to appropriate research review and training resources, as needed (e.g., biological, chemical, or radiological safety). A mandatory chemical hygiene plan, personal protective gear, appropriate fume hoods, and eyewash/safety showers are core components of the annual laboratory inspection and certification process.

University of Kentucky Center for Muscle Biology (CMB) is a group of ~40 PIs and their respective laboratories conducting muscle-oriented research. The Center's mission is to integrate basic, clinical, and translational research at the University of Kentucky to catalyze research projects, strengthen grant applications, and serve as a hub for interdisciplinary research. The network allows for a community of openness between muscle researchers and resource-sharing amongst participating laboratories. The Center houses the Molecular Immunohistochemistry and Molecular Imaging Core and an automated data-processing program for immunohistochemistry (developed in-house). A member of Austin's advisory committee, Esther Dupont-Versteegden, PhD, serves as the director of the Center, which provides unique access to their resources.

University of Kentucky Medical Center Library consolidates the collections and services of all University of Kentucky health profession colleges, making them available to the entire University's community, along with patients and their families. As a resource library with the National Network of Libraries of Medicine (NNLM), Greater Midwest Region (GMR), and a designated outreach library for the Commonwealth of Kentucky, the Library supports outreach efforts designed to facilitate access to health information for users located across the Commonwealth.

University of Kentucky Light Microscopy Core is a multi-faceted facility that offers confocal (Aim 3a), super-resolution, and laser-capture microscopy, along with microscope slide scanners (Aim 2b). The Core contains a central laboratory for sample preparation and computer workstations for data analysis and image processing. Technical support offers training on instrumentation to allow independent use or complete processing and imaging by on-site staff. Austin has already completed trainings to independently book and use the confocal microscopes and slide scanners.