



Dalton Cardiovascular
Research Center



*Committed to Interdisciplinary
Collaboration in Research and Teaching*



Formally Space Sciences Research Center
Dedicated in 1969 as Dalton Cardiovascular Research Center

2019

Mizzou on the moon *(from front cover)*

50th anniversary of moon landing shines spotlight on MU's ties to space program

July 21, 2019 marked the 50th anniversary of humanity's first steps on the moon, a feat of technological wizardry and audacity unparalleled in history at that time. Then and now, it nearly defies imagination: Three men guided machinery with less computer power than an iPhone all the way to the moon, and there was no guarantee of success — President Nixon even had a draft of a speech prepared in the event that none of them returned. But the legacy of America's sprint to the moon is more than the awe it inspired. Its impacts can still be felt today at universities across the country, including the University of Missouri.

Mizzou's involvement with the space program stretches back to 1964, when its own Space Sciences Research Center was established. While Mizzou was the epicenter of this project, housed in a \$1.5 million facility (\$12 million adjusted for inflation) that supported dozens of space-related research projects, the center also had a significant presence at Missouri University of Science and Technology in Rolla and the University of Missouri-Kansas City. Kickstarted by more than \$2 million in allocations from the Missouri Legislature, the plan was to create an enormous, system-wide research engine that would lead the nation in university-driven space science research.

At Mizzou, much of the focus was on hibernation — the ability of certain species to survive in unfavorable conditions by slowing their metabolic rate via a process known as depressed metabolism. If humans were going to survive in the hostile environment of space, they would need to learn from animals that survived improbable conditions on Earth. Unsurprisingly, NASA had made this area of research a priority.

<https://showme.missouri.edu/2019/mizzou-on-the-moon/>

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From the Director

The Dalton Cardiovascular Research Center (DCRC) supports the objectives of the University of Missouri in its mission of teaching, research and service. Yet it is unique in its commitment to interdisciplinary collaborative research and teaching among various colleges, schools and departments across the Columbia campus. Under the auspices of DCRC, scientists from the fields of biochemistry, biological engineering, biological sciences, biomedical sciences, electrical engineering, medicine, pharmacology, physiology, physics, and veterinary medicine and surgery all come together and apply their particular expertise to research problems.

Our commitment to collaboration is grounded in the belief that interactions among scientists of diverse backgrounds will lead to multidisciplinary research producing meaningful, far-reaching results. Our commitment to collaboration is grounded in the belief that interactions among scientists of diverse backgrounds will lead to multidisciplinary research producing meaningful, far-reaching results. Research programs at DCRC include investigations into cardiac functions, cystic fibrosis, exercise, kidney failure, membrane transport, muscular dystrophy, neurohumoral control of the circulation, shock, vascular wall biology, diabetes, hypertension, biomedical engineering, protein-protein interactions, and tumor angiogenesis. Because the mission of DCRC is to promote interaction and collaboration, no single group completely defines the research activity of its members.

The center is committed to excellence in cardiovascular research and in the education of students and fellows. Our investigators provide service to the University, the State of Missouri, and the nation through memberships on committees, peer review panels and editorial boards of scientific journals.

The Dalton Cardiovascular Research Center is accredited by both the American Association for the Advancement of Laboratory Animal Care and the American Association of Laboratory Animal Sciences.

Michael A. Hill, PhD

Michael A. Hill, PhD
Interim Director, Dalton Cardiovascular Research Center
Professor, Medical Pharmacology & Physiology



.....CONTENTS.....

- 2. Center Information
- 5. Resident Investigators
- 10. Non Resident Investigators
- 13. Publications

Focused on Understanding the Cardiovascular System During Development, Aging, & Disease
Through Interdisciplinary Collaboration in Research and Teaching with Academic and Industry Partners

CENTER INFORMATION

CORE TECHNOLOGIES

Atomic Force microscopy
Confocal/multiphoton microscopy
In vivo video microscopy
Chronic instrumentation
Electrophysiology
Quantitative PCR
Nanofabrication
Cell tissue culture
Gene expression
Manipulation of protein expression
Fluorescence spectroscopy
Cardiovascular and microvascular models
High Frequency Ultrasound Imaging

CORE FACILITIES

- FV 1000 Olympus confocal systems
- High Speed Spinning disk confocal
- Atomic Force Microscopy Systems
- Research grade fluorescence microscopes
- Molecular and cellular technology core
- Information technology core
- Vevo LAZR Photoacoustic Imaging

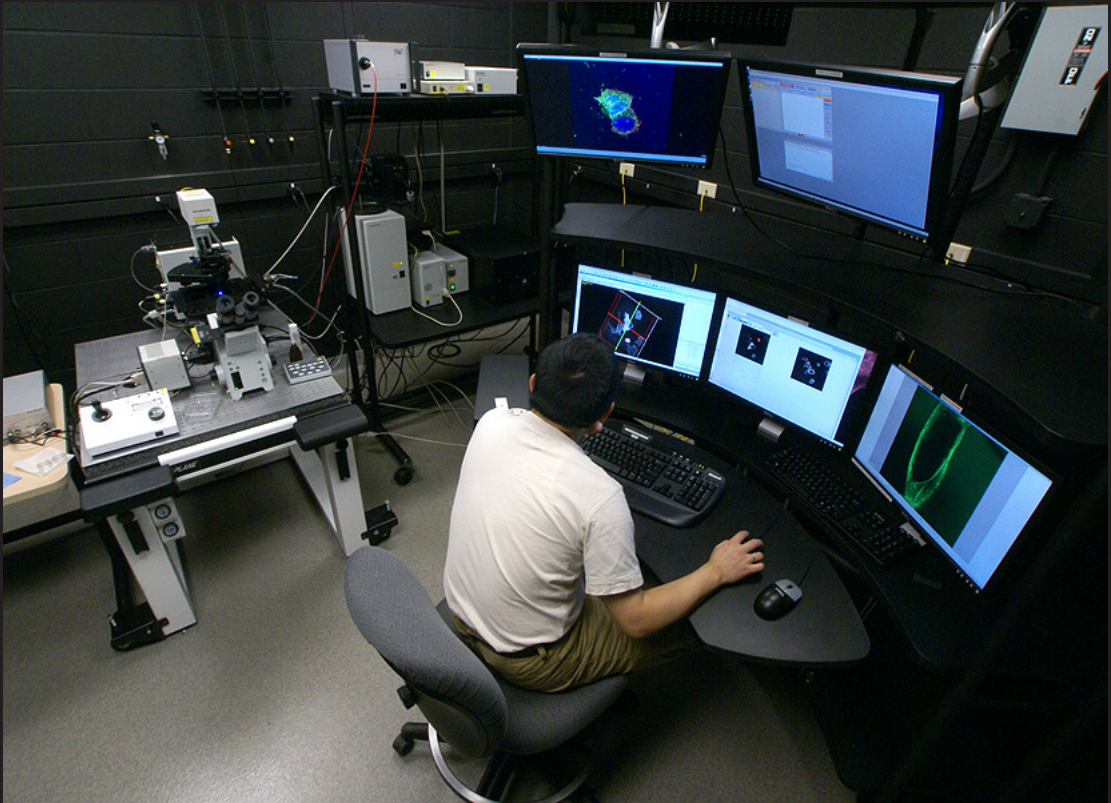
Interdisciplinary Research Interest Groups

Biomedical Engineering
Microcirculation
Exercise/Inactivity
Vascular Biology
Membrane Transport
Cystic Fibrosis
Tumor Angiogenesis
Neurohumoral Control of Circulation
Cardiac Muscle, Development & Disease

Facilities

Erected 1967-1969
33,456 Square Feet
21 Research Labs





The Imaging core is equipped with an Olympus inverted microscope with fluorescence capabilities, a Photometrics digital camera, Dage video camera, dissecting scope and light boxes. Histology, immunofluorescence, autoradiography, dynamic imaging of cellular processes and documentation of gels are all performed in this facility. Investigators have direct access to the imaging core facility, and instruction in the use of equipment and software is available.

Academic Partners

College of Arts and Science
Physics & Astronomy

College of Engineering
Bioengineering, Electrical &
Computer Engineering

College of Veterinary Medicine
Biomedical Sciences

School of Medicine
Biochemistry
Center for Gender Physiology
Medical Pharmacology & Physiology
Internal Medicine
Pathology and Anatomical Sciences

Nutrition & Exercise Physiology

External Sector Collaborations

Domestic

Univ of Calgary (CA)
Univ of IL, Chicago
Univ of IL, Urbana-Champaign
Tulane University
Gilead Sci, Inc.
Proteostasis Therapeutics, Inc
Flatley Discovery Labs
American Autonomic Soc
Nanova Inc

International

Univ of Oxford (UK)
Univ of Sheffield (UK)

Phenotype Facility
with VisualSonics Vevo 2100 System



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Former Director, Dalton Cardiovascular Research Center 1990-2005



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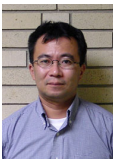
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Yoshiro Sohma, MD, PhD
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Publications

Guidelines for evaluating myocardial cell death. Mishra PK, Adameova A, Hill JA, **Baines CP**, Kang PM, Downey JM, Narula J, Takahashi M, Abbate A, Pirstine HC, Kar S, Su S, Higa JK, Kawasaki NK, Matsui T. *Am J Physiol Heart Circ Physiol*. 2019 Nov 1;317(5):H891-H922. doi: 10.1152/ajpheart.00259.2019. Epub 2019 Aug 16. PMID: 31418596

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Publications

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Publications

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Publications

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