James Brian Byrd, MD, MS

*Research Interest:* The Byrd lab applies innovative approaches to the investigation of hypertension. No health problem has more public health significance than hypertension: the World Health Organization has identified hypertension as the leading risk factor for the global burden of disease. The profound, unparalleled impact of hypertension on populations & individuals motivates the Byrd Lab’s intensive efforts to improve the care of hypertension—locally and globally.

Active areas of investigation include:
1. Novel biomarkers to guide the personalized treatment of resistant hypertension
2. The role of mineralocorticoids in obesity-associated hypertension
3. Primary aldosteronism, or Conn’s syndrome... discovered here at the University of Michigan!

Individuals interested in working on these problems using innovative & rigorous laboratory techniques should contact Dr. Byrd (jbbyrd@med.umich.edu).

Lab website
[https://sites.google.com/a/umich.edu/byrdlab/](https://sites.google.com/a/umich.edu/byrdlab/)

Sharlene Mary Day, MD

*Research Interest:* My research interests encompass genetic and molecular pathways that underly diseases intrinsic to the myocardium, including ischemic cardiomyopathy and genetic cardiomyopathies such as hypertrophic cardiomyopathy. A major area of focus is dysregulation of protein quality control, including the ubiquitin proteasome system and the molecular chaperone network. Our work uses primary cultures of cardiac myocytes, genetically engineered mice, human heart samples from patients with cardiomyopathies, as well as human stem cell-derived cardiac myocytes to model disease

Department profile
[http://www2.med.umich.edu/pcdv2/provider/dsp_provprofile.cfm?individual_id=43665](http://www2.med.umich.edu/pcdv2/provider/dsp_provprofile.cfm?individual_id=43665)

Lab website
[https://sites.google.com/a/umich.edu/sharlenedaylab/home](https://sites.google.com/a/umich.edu/sharlenedaylab/home)

Daniel T Eitzman, MD

*Research Interest:* The major focus of the laboratory is to determine the impact of various genetic alterations on atherosclerosis and arterial thrombosis using in vivo mouse models. We recently used these mouse models to study links between obesity, diabetes and vascular endpoints. To address the broader role of adipose tissue inflammation in vascular disease, we have recently developed a model of visceral fat inflammation and demonstrated that visceral, but not subcutaneous fat inflammation, is sufficient to accelerate atherosclerosis - in the absence of diabetes.

Department profile
Santhi Kalaichelvi Ganesh, MD  
*Research Interest:*  
My lab is investigating the genetic basis of vascular diseases. We are using computational approaches to analyze large scale data sets for gene discovery as well as wet lab experimental approaches to evaluate the functional impact of genetic discoveries in model systems.

Yogen Kanthi, MD  
*Research Interest:*  
We are interested in investigating the molecular mechanisms of inflammation and thrombosis in vascular biology. The laboratory has focused on elucidating mechanisms underlying clinically relevant venous diseases including deep vein thrombosis.

David Joel Pinsky, MD  
*Research Interest:*  
The Pinsky lab focuses on mechanisms driving hypoxic/ischemic modulation of vascular phenotype. By utilizing experimental models we seek to elucidate the role of native genes (CD39, CD73, Egr-1, heme oxygenase, eicosanoids) and their products/reactions in maintaining vascular homeostasis or restoring homeostasis after an ischemic insult.

Jose Jalife, MD  
*Research Interest:*  
Dr. Jalife enjoys an international reputation as a leader in his field of research, which focuses on bringing sophisticated mathematical and biophysical concepts to increase the understanding of the mechanisms of life-threatening cardiac arrhythmias, from the molecule to the bedside. He and his associates have investigated the molecular mechanisms and nonlinear dynamics of heart rhythm and conduction disturbances. Their studies have provided important insight that has led to reevaluation of classical criteria for the diagnosis of complex arrhythmias, including atrial fibrillation and ventricular fibrillation.
Hector Valdivia, MD, PhD  
*Research Interest:*  
Our research encompasses molecular, cellular, whole heart and intact animal approaches to elucidate basic mechanisms of excitation-contraction coupling and the role of calcium mishandling in the generation of ventricular arrhythmias and atrial fibrillation.

Departmental website  
https://www.umms.med.umich.edu/facultysearch/facultyPage.do?facUniqname=hvaldiv

Omer Berenfeld, PhD  
*Research Interest:*  
My research focuses on investigating the mechanisms of ventricular and atrial fibrillation with emphasis on translation of potential therapies from bench to bedside. To accomplish our aims we conduct basic experimental studies in animal and computer models, as well as computational and clinical studies. Our strength is in the integrative physiology perspective of arrhythmias based on the development of novel mapping and analysis methods.

Departmental profile  
http://www.med.umich.edu/arrhythmia_research/faculty/berenfeld.htm

Justus Anumonwo, PhD  
*Research Interest:*  
- Molecular interactions involved in the regulation of cardiac ion channels  
  Our objective is to determine protein-protein interactions involved in the biogenesis and regulation of major (Nav1.5, Kv4.X, Kir2.X) cardiac ion channel proteins, as well as to determine the impact of such interactions on cardiac impulse formation and propagation.

- Arrhythmia mechanisms in animal models and in patient-specific, stem cell-derived cardiac myocytes  
  This research uses a combination of molecular, biochemical, optical and electrophysiological strategies to study inherited arrhythmogenic diseases. Our investigations are conducted in stem cell-derived cardiac cells and in animal models, which express mutant forms of cardiac ion channels and associated proteins.

- Excess adiposity induced electro-mechanical dysfunction of the heart  
  Excess biofactors released from fat cells (adipocytes) can deleteriously remodel myocyte electrophysiology, and may predispose the myocardium to arrhythmogenesis. A multidisciplinary approach is used to target up- and downstream signaling molecules in cardiac cells that may be involved in the electro-mechanical remodeling.

Lab website  
http://www.med.umich.edu/arrhythmia_research/faculty/anumonwo.htm

Todd J Herron, PhD  
*Research Interest:*
My laboratory is focused on cardiovascular regeneration research and the development of cell based therapies. We generate patient specific pluripotent stem cells by reprogramming skin cells collected from a biopsy. The stem cells are directed in vitro to become functional beating heart tissue in the laboratory and can be used to study patient specific disease mechanisms, to test drug therapies and to develop new regenerative therapies.

Departmental profile
http://www.med.umich.edu/arrhythmia_research/faculty/herron.htm

**Isom Lori, PhD**  
*Research interest:*  
Mutations in ion channels and their non-pore-forming subunits can lead to neurological or cardiovascular diseases called "channelopathies". Disruption of any member of a sodium channel signaling complex in vivo has the potential to disrupt channel function, resulting in paroxysmal disease, including epilepsy and cardiac arrhythmia, and can lead to SUDEP - sudden unexpected death in epilepsy - which occurs via a mechanism that includes cardiac abnormalities. We are collaborating with Dr. Jack Parent and Dr. Miriam Meisler to study human patient-derived induced pluripotent stem cell neurons and cardiac myocytes to understand the mechanism of inherited epilepsy and co-morbid cardiac arrhythmias linked to mutations in sodium channel genes. Previous work has reported the first SCN1B human mutation linked to Dravet Syndrome.

Lab website: https://sites.google.com/a/umich.edu/isom/  
Departmental website: http://medicine.umich.edu/dept/pharmacology  
Center for SUDEP Research: http://csr.case.edu/index.php/Main_Page

**Margaret Westfall, PhD**  
*Research Interest:*  
Understanding the roles played by protein kinase C and downstream myofilament targets in the modulation of cardiac performance under physiological and pathophysiological conditions. In addition Dr. Westfall’s lab is involved in investigating basal lamina remodeling and its contribution to cardiac dysfunction during compensatory and decompensatory heart failure.

Lab website: http://sitemaker.umich.edu/westfall_lab/research_interests

**David Ginsburg, MD**  
*Research Interest:*  
David Ginsburg is interested in understanding the components of the blood clotting system and how disturbances in their function lead to human bleeding and blood-clotting disorders.

Lab websites  
http://wwwlsi.umich.edu/labs/david-ginsburg-lab  
http://ww.hhmi.org/scientists/david-ginsburg

**Yuqing Chen, MD/PhD**  
*Research Interest:*
The long-term goal of Dr. Chen’s laboratory is to stimulate bench-to-bedside research that sheds light on molecular mechanisms underlying the development and progression of diabetes-induced cardiovascular diseases (CVD) and stroke. Discoveries from innovative and multi-disciplinary projects will reveal novel and effective intervention strategies to prevent and treat diabetes and CVD.

Departmental websites:
http://medicine.umich.edu/medschool/node/3856
https://www.umms.med.umich.edu/facultysearch/facultyPage.do?facUniqname=echenum
https://camtrast.med.umich.edu/

**Stephen Weiss, MD**

*Research Interest:*
The Weiss Laboratory focuses on the transcriptional regulators and proteolytic effectors that control cardiac development, vasculogenesis and angiogenesis *in vivo, ex vivo* as well as 3-dimensional model systems that recapitulate morphogenic and differentiation programs *in vitro.*

Lab website
http://www.lsi.umich.edu/labs/stephen-weiss-lab