

## Cell, Development and Cancer Biology



### Oscar Bizzozero, Ph.D., Department Chair

- Pathophysiology of demyelinating disorders
- Oxidative and nitrosative damage in multiple sclerosis
- Structure and function of myelin proteins



### Paul McGuire, Ph.D.

- Mechanisms of ocular angiogenesis
- Extracellular proteinases in cell migration
- Regulation of vascular permeability in diabetes



### Rebecca Hartley, Ph.D.

- Role of RNA binding proteins in breast tumorigenesis
- Co-regulation of mRNA stability by microRNAs and RNA binding proteins
- Anatomy learning



### Helen Hathaway, Ph.D.

- Novel estrogen receptor biology in breast cancer
- 3D and *in vivo* models of tumor microenvironment
- Epithelial polarity and junctional complex formation and function

## Medical and Graduate Education

### School of Medicine Phase I Curriculum

- Foundations in Medical Science (Bear)
- Anatomy, Histology, & Embryology Thread (Hartley and McGuire)
- Musculoskeletal, Skin and Connective Tissue (Hartley and McGuire)
- Cardiovascular, Pulmonary, Renal (Hathaway and Resta)

### Biomedical Sciences Graduate Program

- Advanced Cell Biology (Biomed 508)
- Graduate Physiology (Biomed 510)
- Experimental Design and Methods in Cellular and Molecular Biology (Biomed 522)
- Advanced Topics in Physiology (Biomed 657)
- Structure and Function of the Cell Nucleus (Biomed 672)
- Cardiopulmonary Physiology Seminar (Biomed 659)

### Cardiovascular Research Training Grant

- 6 graduate students and 2 postdocs supported each year
- Travel, supplies, tuition and stipends

### Teaching Opportunities

- Anatomy teaching (TA in medical curriculum)
- Physiology teaching (TA in graduate curriculum)
- Tutorial teaching (TA medical curriculum)

### Extramural Funding Opportunities for Students

- American Heart Association
- NRSA (NIH)
- American Diabetes Association
- American Physiological Society



The Concentration in Cardiovascular Physiology is designed to ensure broad training in physiology with major research interests in vascular biology, hypoxia, hypertension, sleep apnea, pulmonary hypertension, heart disease, chronic kidney disease, and stroke. Trainees are supported by a *NHLBI-funded Cardiovascular Training Grant*.



### Laura Gonzalez Bosc, Ph.D.

- Role of the adaptive immune system in chronic hypoxia-induced pulmonary hypertension
- Role of smooth muscle NFATc3 in chronic hypoxia-induced pulmonary hypertension
- Effectiveness of endothelin antagonists to prevent and treat kidney disease in an animal model of combined sleep apnea and chronic kidney disease
- Biomarkers of hypoxia exposure



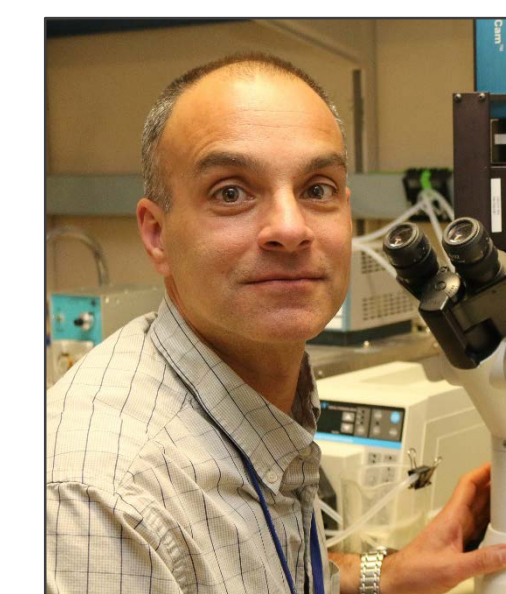
### Nikki Jernigan, Ph.D.

- Metabolic-mitochondrial dysfunction in pulmonary hypertension and pulmonary fibrosis
- Altered calcium homeostasis in the hypertensive pulmonary circulation
- Endothelial dysfunction in the systemic circulation
- Airway smooth muscle hyperresponsiveness in asthma



### Nancy Kanagy, Ph.D., Director of BSGP

- Effect of sleep apnea on progression of chronic kidney disease
- Hydrogen sulfide in sleep apnea induced hypertension
- Effectiveness of endothelin antagonists to prevent and treat kidney disease in an animal model of combined sleep apnea and chronic kidney disease.
- Development of a non-invasive screening device for peripheral vascular disease



### Jay Naik, Ph.D.

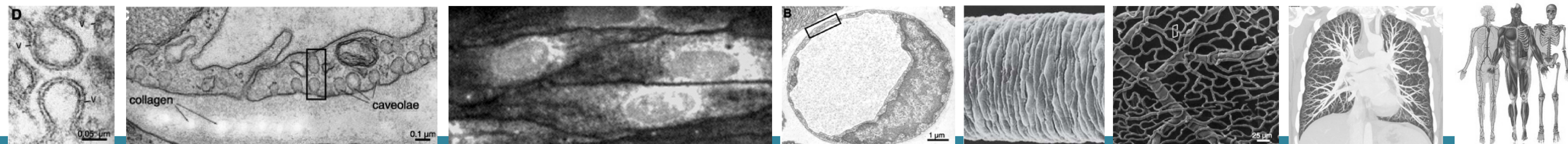
- The role of membrane cholesterol in the regulation of vascular ion channels
- The role of microdomain  $[Ca^{2+}]_i$  events within smooth muscle and endothelial cells in vascular function
- The consequences of impaired oxygenation (hypoxia) on vascular function in both the systemic and pulmonary circulations.



### Tom Resta, Ph.D.

- Mechanisms of chronic hypoxia- and intermittent hypoxia-induced pulmonary hypertension
- Pulmonary vasoreactivity
- Endothelial regulation of vascular tone
- Regulation of vascular smooth muscle by reactive oxygen species, nitric oxide, RhoA and PKC signaling

From cell . . .



. . . to system.