



Graduate Program in Molecular and Cellular Integrative Physiology – Research Groups

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Contact Us:

Andrea Doseff, Ph.D.
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Cancer Biology and Immune Function

Focus: Molecular mechanisms, gene and protein networks that lead to the development and progression of breast, lung, and liver cancer and their interaction with the immune system.

Eran Andrechek, Ph.D., Associate Professor, andrech1@msu.edu

Interests: Mouse models of cancer; Bioinformatics; Personalized medicine.

Rupali Das, Ph.D., Assistant Professor, dasrupal@msu.edu

Interests: Cancer immunology, innate T cells, natural Killer T cells, Leukemia and lymphoma, tumor microenvironment, asthma and corticosteroid resistance.

Andrea Doseff, Ph.D., Professor and Graduate Program Director, doseffan@msu.edu

Interests: Immune-regulation, immune-oncology and foods for health. Gene and protein networks that regulate monocyte/macrophage cell fate, apoptosis and metabolism. Anti-inflammatory and anti-carcinogenic mechanisms of dietary flavonoids in obesity and cancer.

Kathleen Gallo, Ph.D., Professor, gallok@msu.edu

Interests: Protein kinase signaling in neurodegenerative diseases and cancer.

Hua Xiao, M.D., Ph.D., Professor, xiaoh@msu.edu

Interests: Molecular mechanisms of liver cancer development with emphasis on identification of signaling pathways and key molecules driving the development of hepatocellular carcinoma concurrent type 2 diabetes.



Molecular Metabolism and Disease

Focus: Understanding mechanisms accounting for disease development, progression and complications (retinopathy, osteoporosis, bone marrow pathology, atherosclerosis and neuroendocrine changes). Diabetes and Inflammatory bowel disease are focus areas.

Julia Busik, Ph.D., Professor, busik@msu.edu

Interests: Diabetes-induced shift in the balance between pro-inflammatory and anti-inflammatory bioactive lipid mediators; the role of sphingolipid signaling and pro-inflammatory and pro-apoptotic ceramide production in the development of diabetic complications with the focus on diabetic retinopathy; the role of exosomes in diabetes-induced retinal damage.

Brian Gulbransen, Ph.D., MSU Foundation Professor, Physiology Associate Professor, gulbrans@msu.edu

Interests: Intercellular communication in gastrointestinal health and disease. Neuroinflammation and the roles of glia in the nervous system.

Laura McCabe, Ph.D., Professor, mccabel@msu.edu

Interests: Type 1 diabetes; inflammatory bowel disease; microbiota gut-bone signaling axis.

Susanne Mohr, Ph.D., Associate Professor, mohrs@msu.edu

Interests: Diabetic retinopathy; hyperglycemic activation of caspase-1/IL-1 β pathway; IL-1 β driven autoinflammation; role of GAPDH in retinal inflammation and cell death; retinal Müller and endothelial cell signaling.

L. Karl Olson, Ph.D., Associate Professor, olsonla@msu.edu

Interests: Regulation of pancreatic β cell function, differentiation, and survival in type 1 and type 2 diabetes. Development of therapeutic approaches to improve β cell function and survival during metabolic and inflammatory insults.

Narayanan Parameswaran, BVSc., Ph.D., Professor, narap@msu.edu

Interests: Cell signaling, Innate immunity, inflammation, macrophages, gut microbiota, probiotics, gut-bone axis, immunology of gut-bone signaling, GPCR signaling, arrestins, G-protein coupled receptor kinases, colitis, inflammatory bowel disease, sepsis, inflammatory models, osteomicrobiology, osteoimmunology.



Immunity and Tissue Inflammation

Focus: Role of innate and adaptive immune cells in disease processes; inflammatory cell signaling pathways in various tissues; role of non-immune cells in tissue inflammation and disease.

Julia Busik, Ph.D., Professor, busik@msu.edu

Interests: Diabetes-induced shift in the balance between pro-inflammatory and anti-inflammatory bioactive lipid mediators; the role of sphingolipid signaling and pro-inflammatory and pro-apoptotic ceramide production in the development of diabetic complications with the focus on diabetic retinopathy; the role of exosomes in diabetes-induced retinal damage.

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Andrea Doseff, Ph.D., Professor and Graduate Program Director, doseffan@msu.edu

Interests: Immune-regulation, immune-oncology and foods for health. Gene and protein networks that regulate monocyte/macrophage cell fate, apoptosis and metabolism. Anti-inflammatory and anti-carcinogenic mechanisms of dietary flavonoids in obesity and cancer.

Brian Gulbransen, Ph.D., MSU Foundation Professor, Physiology Associate Professor, gulbrans@msu.edu

Interests: Intercellular communication in gastrointestinal health and disease. Neuroinflammation and the roles of glia in the nervous system.

Geoffroy Laumet, Ph.D., Assistant Professor, laumetge@msu.edu

Interest: Dr. Laumet's lab interest is focused on understanding the neurobiology of chronic pain. Improving our understanding of how pain transitions from acute to chronic will facilitate the development of novel disease-modifying drugs. Thereby improve the quality of life of those who suffer from chronic pain.

Laura McCabe, Ph.D., Professor, mccabel@msu.edu

Interests: Type 1 diabetes; inflammatory bowel disease; microbiota gut-bone signaling axis

Susanne Mohr, Ph.D., Associate Professor, mohrs@msu.edu

Interests: Diabetic retinopathy; hyperglycemic activation of caspase-1/IL-1 β pathway; IL-1 β driven autoinflammation; role of GAPDH in retinal inflammation and cell death; retinal Müller and endothelial cell signaling.

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Interests: Cell signaling, Innate immunity, inflammation, macrophages, gut microbiota, probiotics, gut-bone axis, immunology of gut-bone signaling, GPCR signaling, arrestins, G-protein coupled receptor kinases, colitis, inflammatory bowel disease, sepsis, inflammatory models, osteomicrobiology, osteoimmunology.



Immunity and Tissue Inflammation (cont.)

Focus: Role of innate and adaptive immune cells in disease processes; inflammatory cell signaling pathways in various tissues; role of non-immune cells in tissue inflammation and disease.

Robert Root-Bernstein, Ph.D., Professor, rootbern@msu.edu

Interests: Origins and evolution of receptors and transporters from complementary modules, drug interactions at receptors and mechanisms of receptor enhancement, theories of autoimmune disease etiology and pathogenesis with a special focus on type 1 diabetes and myocarditis, and aspects of autoimmunity in AIDS.

Hariharan Subramanian, Ph.D., Assistant Professor, subram46@msu.edu

Interests: Mast cells, anaphylaxis and asthma, IgE receptor and G protein coupled receptor signaling in mast cells, T cell mediated immune responses in allergic diseases.

Gastrointestinal Health and Disease

Focus: Gastrointestinal function and disease, including inflammatory bowel disease, diabetes, cancer, cystic fibrosis, and bile atresia; Effect of gut microbiota in the pathophysiology of disease processes.

Brian Gulbransen, Ph.D. MSU Foundation Professor, Physiology Associate Professor, gulbrans@msu.edu

Interests: Intercellular communication in gastrointestinal health and disease. Neuroinflammation and the roles of glia in the nervous system.

Laura McCabe, Ph.D., Professor, mccabel@msu.edu

Interests: Type 1 diabetes; inflammatory bowel disease; microbiota gut-bone signaling axis.

Narayanan Parameswaran, BVSc., Ph.D., Professor, narap@msu.edu

Interests: Cell signaling, Innate immunity, inflammation, macrophages, gut microbiota, probiotics, gut-bone axis, immunology of gut-bone signaling, GPCR signaling, arrestins, G-protein coupled receptor kinases, colitis, inflammatory bowel disease, sepsis, inflammatory models, osteomicrobiology, osteoimmunology.



Neuroscience

Focus: Neural regulation of organ system function, metabolism, intestinal motility, cardiovascular system, spinal cord regeneration, glaucoma, and Parkinson's disease.

Charles "Lee" Cox, Ph.D., Professor and Chair, coxlee@msu.edu

Interests: Neurophysiology and neuroplasticity within thalamocortical circuits. Neurophysiological alterations associated with Developmental disorders (fragile X syndrome, Autism), Epilepsy, and Parkinson's Disease.

Shane Crandall, Ph.D., Assistant Professor, cranda86@msu.edu

Interests: Structure and function of neural circuits in the mammalian brain; Basic physiology of neurons and synapses; Physiology of sensory systems; Optogenetics.

Kathleen Gallo, Ph.D., Professor, gallok@msu.edu

Interests: Protein kinase signaling in neurogenerative diseases.

Brian Gulbransen, Ph.D., MSU Foundation Professor, Physiology Associate Professor, gulbrans@msu.edu

Interests: Intercellular communication in gastrointestinal health and disease. Neuroinflammation and the roles of glia in the nervous system.

Geoffroy Laumet, Ph.D., Assistant Professor, laumetge@msu.edu

Interests: Neurobiology of chronic pain. Improving our understanding how pain transitions from acute to chronic will facilitate the development of novel disease-modifying drugs to improve the quality of life of those who suffer from chronic pain.

Gina Leininger, Ph.D., Assistant Professor, leinning@msu.edu

Interests: Central regulation of feeding and other motivated behaviors.

Michelle Mazei-Robison, Ph.D., Assistant Professor, mazeirob@msu.edu

Interests: Understanding how dysfunction of ventral tegmental area (VTA) neurons contributes to drug addiction and mood disorders. Identification of molecular and cellular changes in VTA neurons using methods such as translating ribosome affinity purification and evaluate their behavioral relevance using viral and genetic approaches in mouse models.

A.J. Robison, Ph.D., Assistant Professor, robiso45@msu.edu

Interests: Circuit-specific gene transcription in the hippocampus as it relates to three main areas: drug addiction, mood disorders/aggression, and cognitive dysfunction/Alzheimer's disease. We use mouse behavioral models, electrophysiology, molecular biology, and biochemistry to uncover disease etiology from the function of genes all the way up to the function of the whole organism.

Hongbing Wang, Ph.D., Professor, wangho@msu.edu

Interests: Gene function and signal transduction in normal brain and neurological disorder.

Arthur Weber, Ph.D., Professor, weberar@msu.edu

Interests: Structure-function relation of retinal ganglion cells undergoing glaucoma-related degeneration in the primate eye. Development of treatment strategies aimed at mitigating or preventing glaucomatous retinal ganglion cell degeneration.



Cardiac and Skeletal System Pathophysiology

Focus: Cardiac energetics. Mitochondrial physiology. Systems modeling. Ischemia/reperfusion injury and ischemic heart disease. Autonomic and cardiovascular dysfunction in spinal cord injury. Mechanisms of muscle and bone adaptation to disease and aging

Jason Bazil, Ph.D., Assistant Professor, jnbazil@msu.edu

Interests: Cardiac energetics; mitochondrial physiology; ischemia/reperfusion injury; ischemic heart disease; mathematical modeling; mitochondria calcium sequestration; free radical homeostasis; biological network inference; non-linear dynamical systems modeling; biophysics; enzyme kinetics and mechanisms; metabolic networks.

Stephen DiCarlo, Ph.D., Professor, dicarlos@msu.edu

Interests: Spinal Cord Injury Induced Autonomic and Cardiovascular Dysfunction; High Salt and High Fat Induced Autonomic and Cardiovascular Dysfunction.

Laura McCabe, Ph.D., Professor, mccabel@msu.edu

Interests: Type 1 diabetes; inflammatory bowel disease; microbiota gut-bone signaling axis.

Robert Wiseman, Ph.D., Professor, rwiseman@msu.edu

Interests: Metabolic Regulation. Functional Imaging of excitable cells. Cellular adaptation to stress and stem cell plasticity. Blood flow and perfusion.

Pulmonary Diseases

Focus: Mechanisms of acute lung injury and fibrogenesis, Asthma and corticosteroid resistance, T-cell mediated immune responses in allergic diseases.

Rupali Das, Ph.D., Assistant Professor, dasrupal@msu.edu

Interests: Cancer immunology, innate T cells, natural Killer T cells, Leukemia and lymphoma, tumor microenvironment, asthma and corticosteroid resistance.

Bruce Uhal, Ph.D., Professor, uhal@msu.edu

Interests: Mechanisms of acute lung injury and fibrogenesis; regulation of lung epithelial cell death; roles of the angiotensin system in adult and fetal lung injury and repair.

Hariharan Subramanian, Ph.D., Assistant Professor, subram46@msu.edu

Interests: Mast cells, anaphylaxis and asthma, IgE receptor and G protein coupled receptor signaling in mast cells, T cell mediated immune responses in allergic diseases.