



BIOM 8040 Introduction to Faculty Research

The BCB program is the destination for students aspiring to make their mark as a future basic-translational researcher, with an emphasis on “precision medicine”. Housed in a well-equipped and state-of-the-art research facility, BCB is a unique two-track graduate program where students can choose faculty mentors working in different disciplines. BCB mentors offer a diversity of projects and multi-disciplinary approaches to diagnose, prevent and treat a wide range of diseases that include malignancies of different organs, eye diseases, and disorders of inflammatory, immunological, and hematological origins. BCB students may choose either a biochemistry or a cancer-biology track to pursue their graduate thesis work. Students choosing the biochemistry track will be a part of the Department of Biochemistry and Molecular Biology. Students in the cancer-biology track will be a part of the Georgia Cancer Center. Both the Department of Biochemistry and Molecular Biology, and the Georgia Cancer Center work together to nurture a cohesive and collaborative atmosphere for achieving the same student learning objectives. At the heart of each track, is the same emphasis on students’ training in basic and translational research. Biochemistry track has an emphasis on both benign diseases and cancer; whereas, the cancer-biology track focuses primarily on cancer. With motivated, enthusiastic and committed faculty, the BCB program is a home to bench-to-bedside researchers.



Ande, Satyanarayana, PhD

Cancer Biology, CN3150
Associate Professor of
Biochemistry and Molecular
Biology

SANDE@augusta.edu

Dr. Ande’s lab investigates the regulation and function of specific transcription factors and tumor suppressors in liver tumorigenesis and liver tumor angiogenesis. His lab also studies adipose tissue metabolism and obesity and the molecular links between obesity and liver cancer by utilizing knockout and transgenic mouse models.



Arbab, Ali, PhD, MBBS

Cancer Biology, CN 3141
Professor, Biochemistry and
Molecular Biology
Phone: (706) 721-8909

AARBAB@augusta.edu

Our laboratory creates different orthotopic animal models for human glioma. We use in vivo MRI, SPECT and optical imaging to determine the tumor growth, tumor vascular parameters, migration and accumulation of endogenous or exogenously administered stem/progenitor cells in the tumor neovascularization, and accumulation of laminin avid nanoparticle based contrast agents.



Bartoli, Manuela, PhD

Biochemistry, CB 2335
Professor, Dept. of
Ophthalmology,
Phone: (706) 721-9797

mbartoli@augusta.edu

The focus of my research is on identifying the molecular and cellular mechanisms involved in the etiologies of several diseases affecting vascular dysfunction and promoting retinal neurovascular injury. In particular we are studying the contribution of non-coding RNAs to these pathologic processes.



Browning, Darren, PhD

Director, Graduate Program in
Biochemistry and Cancer Biology
Biochemistry, CN 1164
Professor, Biochemistry and
Molecular Biology
Phone: (706) 721-9526

DBROWNING@augusta.edu

Our focus is cGMP signaling through protein kinases (PKG) in the gastrointestinal tract. My lab has characterized anti-tumor properties of PKG in colon cancer, including: blockade of proliferation, angiogenesis, and hypoxic adaptation. Using knockout mice, we showed that PKG2 regulates colon homeostasis and strengthens the mucosal barrier. The lab is currently testing PDE5 inhibitors for the treatment and prevention of colitis and colon cancer in preclinical models.



Chadli, Ahmed, MS, PhD

Cancer Biology, CN 3151
Molecular Chaperone Biology
Associate Professor of Medicine
Phone: (706) 721-4661

ACHADLI@augusta.edu

Research in Dr. Chadli's laboratory focuses on understanding the Hsp90 chaperoning machine and co-chaperones in the initiation and progression of breast and prostate cancers using *in vitro* and mouse conditional knockout models. Targeting the Hsp90 machine have been shown to disrupt the dysfunctional circuitries that underlie cancer. We have discovered new natural products that inactivate the Hsp90 machine. These compounds have a powerful immunotherapeutic impact through combination of Hsp90 machine inhibition and activation of T-cell response to eliminate tumors in mice.



**Cowell, John, PhD, DSc,
FRCPath**

Director, Basic Science, Georgia
Cancer Center
Cancer Biology, CN 4121
Professor of Pathology
Phone: (706) 721-4381

JCOWELL@augusta.edu

Dr. John Cowell studies the molecular genetics of cancer using a variety of genomics, cell, and molecular approaches. He currently studies the role of the WASF3 gene in the promotion of cancer metastasis using *in vivo* models in mice and zebrafish. He also studies of the molecular etiology of Stem Cell Leukemia/Lymphoma (SCLL) syndrome which is characterized by chromosome 8p11 translocations activating the FGFR1 kinase.



Daddacha, Waaqo, PhD

Biochemistry, CN 2176
Assistant Professor, Biochemistry
and Molecular Biology
Phone: (706) 721-0272

wdaddacha@augusta.edu

DNA double-strand break (DSB) repair and nucleotide metabolism are critical determinants of resistance to many types of cancer treatments, including chemotherapy and ionizing radiation (IR). Therefore, expanding our knowledge of both pathways is of considerable significance for discovering a novel therapy as well as improving the existing options. Our laboratory contributes to this effort by investigating the overlaps between the two pathways and implication to cancer. We mainly focus on delineating functions and regulation of genes like SAMHD1, a known player in nucleotide metabolism and DNA damage response, while determining its coordination with RNR, a well-established nucleotide regulator. Our ultimate goal is exploring the possibility of utilizing knowledge gained to identify biomarkers and therapeutic targets for cancers such as malignant glioma.



Ding, Han-Fei, PhD

Cancer Biology, CN 4132
Professor of Pathology
Phone: (706) 721-4286

HDING@augusta.edu

The research program of the Ding laboratory is to define the molecular and cellular basis of cancer development in select model systems. Ongoing projects include developmental biology of neuroblastoma and NF- κ B signaling in the pathogenesis of lymphoma.



He, Yukai, MD, PhD

Molecular Med., CN 4150
Professor of Medicine
Phone: (706) 721-2728

YHE@augusta.edu

Dr. He studies the basic mechanisms of how vaccines activate the immune system and the innovative design of cancer vaccines. His research focus is on creation of cancer vaccines for melanoma and hepatocellular carcinoma in mice and on translation of animal studies into clinical applications.



**Horuzsko, Anatolij, MD,
PhD**

Molecular Med., CN 3154
Professor of Medicine
Phone: (706) 721-8736

AHORUZSKO@augusta.edu

Dr. Horuzsko's studies focus on organ transplantation and the role of Human Leukocyte Antigen-G (HLA-G). His aim is to improve allograft survival in patients and address allergy, autoimmune diseases and graft-versus-host disease. His work in transplantation is relevant to cancer, but he also studies the inflammatory mechanisms of host defense and carcinogenesis.



**Korkaya, Hasan, DVM,
PhD**

Cancer Biology, CN 2136
Assistant Professor of
Biochemistry and Molecular
Biology
Phone: (706) 721-2429

HKORKAYA@augusta.edu

Dr. Korkaya develops mouse xenograft models of human malignancies and uses these models to investigate the mechanisms of metastasis and therapeutic resistance. He aims to identify drivers of epithelial to mesenchymal transition and self-renewal in cancer stem cells. His lab showed that high levels of IL6 in tumors, promotes the metastatic phenotype and blocking this pathway is therapeutic in mouse preclinical models.



Li, Honglin, PhD

Biochemistry, CN 2176
Associate Professor, Biochemistry
and Molecular Biology
Phone: (706) 721-6143

HLI@augusta.edu

Dr. Li studies the roles of the Ufm1 conjugation system (a novel ubiquitin-like system) and its associated proteins in animal development, signal transduction, stress response and tumorigenesis.



Liu, Kebin, PhD

Biochemistry, CN 1173
Professor of Biochemistry and
Molecular Biology
Phone: (706) 721-9483

KLIU@augusta.edu

A graduate of the University of Oklahoma, Dr. Liu studies epigenetic and genetic regulation of tumor suppressor gene expression, molecular mechanisms of apoptosis resistance in tumor immune evasion and escape, and development of molecular target-based chemotherapy to enhance the efficacy of cancer immunotherapy.



Lokeshwar, Bal, PhD

Director, Graduate Program in
Biochemistry and Cancer Biology
Cancer Biology, CN 3130
Professor of Medicine
Phone: (706) 723-0033

BLOKESHWAR@augusta.edu

The research program is focused on two aspects of cancer: cancer prevention using natural products and understanding the mechanism of cancer progression leading to metastasis. Current projects in his laboratory investigate the role of CXC chemokines and their receptors (CXCRs) that contribute to cancer progression and metastasis. The laboratory is engaged in translational research, where the group is investigating novel compounds isolated from dietary spices that may prevent cancer development and enhance response to existing therapy for prostate and breast cancers.



Lokeshwar, Vinata, PhD

Biochemistry, CN 1161
Professor and Chair
Biochemistry and Molecular
Biology
Phone: (706) 721-7652

VLOKESHWAR@augusta.edu

The major focus of the laboratory is to examine how extracellular matrix-driven tumor cell signaling promotes tumor growth, metastasis and angiogenesis. The emphasis is to discover and validate accurate diagnostic and prognostic biomarkers for prostate, bladder and renal cell carcinomas and to design biomarker-driven targeted treatments and chemodietary prevention strategies for metastatic cancers. The laboratory provides training in translational research and a collaborative atmosphere.



Manicassamy, Kumar, PhD

Biochemistry, CN 4158A
Professor, Biochemistry
and Molecular Biology

SMANICASSAMY@augusta.edu

The overall goal of our research is to understand how the innate immune system regulates adaptive immune responses to pathogens, tumors and self-antigens, and harness this knowledge in the design of vaccines and therapeutics.



Martin, Pamela, PhD

Biochemistry, CN 1160
Associate Professor, Biochemistry
& Molecular Biology, and
Ophthalmology
Phone: (706) 721-4220

PMMARTIN@augusta.edu

Dr. Martin's focus is on the discovery and analysis of novel biochemical transporters and receptors in retina which may be useful in the development of new therapeutic targets in the treatment and prevention of diabetic retinopathy.

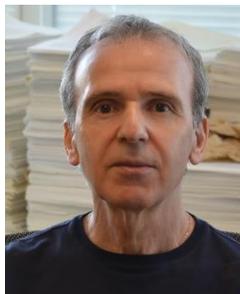


Mivechi, Nahid, PhD

Cancer Biology, CN 3153
Professor, Radiology/Radiation
Oncology, Molecular Chaperone
Biology
Phone: (706) 721-8759

NMIVECHI@augusta.edu

Dr. Mivechi's laboratory focuses on understanding the molecular mechanisms of stress response using genetically engineered mouse models and zebrafish. The comparison between conserved biochemical and molecular pathways in mice and zebrafish facilitates understanding of how animals and thereby humans respond and cope with their environment.



Moskofidis, Dimitrios, MD

Cancer Biology, CN 3143
Molecular Chaperone Biology
Professor of Medicine
Phone: (706) 721-8738

DMOSKOFIDIS@augusta.edu

Dr. Moskofidis explores basic processes in the immune response against acute and persistent viral infections in well-established mouse models, with long-term goals of developing or improving vaccination strategies for the prevention and treatment of viral infections in humans. He also studies molecular chaperones in cancer and neurodegenerative diseases.



Munn, David, MD
Senior Advisor to Cancer Center
Director
Molecular Med., CN 4141
Professor of Pediatrics
Phone: (706) 721-7141

DMUNN@augusta.edu

Dr. Munn's lab studies mechanisms that suppress the immune system, making the body tolerant of a malignancy. He has identified the enzyme indoleamine 2,3-dioxygenase (IDO) as a linchpin for suppression and opened the way to novel strategies to block its activity. Research interests include macrophage and dendritic cell differentiation; regulation of T cell activation, IDO and trp metabolism; clinical trials of IDO inhibitors in cancer, HIV.



Nagendra, Singh, PhD
Biochemistry, CN 1176
Professor of Biochemistry and
Molecular Biology
Phone: (706) 721-6238

NASINGH@augusta.edu

Dr. Singh's Lab studies molecular and cellular mechanisms of generation of antibody responses against bacteria, viruses, pathogens, and vaccines. Once induced how long these antibody responses last. The latter is directly linked to how long antibodies induced following vaccination and infections protects us against future infections. The second project in his laboratory focuses on how T cells are activated, and how do they generate immune responses and help other immune cells to successfully eliminate invading pathogens and cancers



Pace, Betty, MD
Francis J. Tedesco, MD
Distinguished Chair in Pediatrics
Acting Chief of Pediatrics, Section
of Pediatric
Hematology/Oncology,
Professor of Pediatrics and
Biochemistry & Molecular Biology
Phone: (706) 721-6893

BPACE@augusta.edu

The Pace laboratory conducts research related to the developmental regulation of globin gene expression using primary erythroid progenitors. The major effort has been the role p38 MAPK cell signaling in drug-mediated fetal hemoglobin induction as a treatment for sickle cell disease. The laboratory also has conducted high throughput drug screens to identify novel gamma globin inducers. Genome-wide studies are being conducted to identify genetic modifiers of fetal hemoglobin.



Prasad, Puttur, PhD

Biochemistry, CN 1163
Prof of Obstetrics and Gynecology
Biochemistry & Molecular Biology
Phone: (706) 721-1761

PPRASAD@augusta.edu

Dr. Prasad studies the nutrient and drug transporters in the placenta as well as post-partum depression.



Saini, Sharanjot, PhD

Biochemistry, CN 1161
Associate Professor, Biochemistry
and Molecular Biology
Phone: (706) 721-0856

ssharanjot@augusta.edu

Saini lab focusses on harnessing the potential of exosomes, tiny vesicles released by cells in our bodies, as a source of novel cancer biomarkers and for engineering novel therapies against cancer. Specific focus areas include: (i) developing novel diagnostic and prognostic tissue-based and non-invasive biomarkers against aggressive, late-stage prostate cancer; (ii) developing novel targeted extracellular vesicle (EV)/ exosome based therapeutic strategies against aggressive cancers, with a primary focus on prostate cancer. (iii) Deciphering novel molecular pathways underlying metastasis of prostate cancer to various organs such as bone and visceral organs. Within this area, role of small non-coding RNAs/microRNAs in prostate cancer progression, recurrence and metastasis are being studied.



Sakamuro, Daitoku, PhD

Biochemistry, CN 2177
Associate Professor of
Biochemistry and Molecular
Biology
Phone: (706) 721-1018

DSAKAMURO@augusta.edu

The Sakamuro laboratory is interested in the signaling mechanisms by which advanced cancer cells acquire resistance to DNA damage, p53-dependent apoptosis, and substratum dissociation stress, and reverse EMT. One focus is the dual roles of the c-MYC transcription factor in genomic instability and DNA damage resistance. Another is the mechanisms of apoptosis induced by the p53 tumor suppressor in the presence of chromatin remodeling factors.



Shi, Huidong, PhD
Cancer Biology, CN 2138
Professor of Biochemistry and
Molecular Biology
Phone: (706) 721-6000

HSHI@augusta.edu

Dr. Shi studies epigenomics, and development of high-throughput technologies for dissecting the complex epigenetic regulation in normal and tumor cells. Epigenetics is heritable chromatin organization and gene expression not coded by DNA sequence. While epigenetics refers to the study of single genes or sets of genes, epigenomics is the global analyses of epigenetic changes across the genome.



**Thangaraju, Muthusamy,
PhD**
Biochemistry, CN 1161
Associate Professor of
Biochemistry and Molecular
Biology
Phone: (706) 721-0272

MTHANGARAJU@augusta.edu

Dr. "Raju" is interested in the role of plasma membrane transporters in the uptake of histone deacetylase (HDAC) inhibitors into tumor cells; Relevance of these transporters to tumor suppression in mammary gland via HDAC inhibition; Physiologic role of these transporters in apoptosis during mammary gland involution; Epigenetic mechanisms for silencing of these transporters in breast cancer.



Thompson, Stuart, PhD
Biochemistry, CB 2607
Professor, Division for Infectious
Diseases, and
Biochemistry and Molecular
Biology,
Phone: (706) 721-7277

STTHOMPS@augusta.edu

My lab studies *Campylobacter* and *Helicobacter*, bacteria that cause gastroenteritis and gastric cancer, respectively. We use molecular and biochemical techniques to elucidate the mechanisms by which these pathogens cause disease. Specifically, we study gene regulation events that link motility with formation of biofilms, bacterial communities that resist antibiotics and the host immune system.

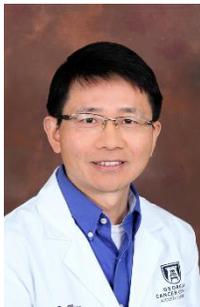


Yan, Chunhong, PhD

Cancer Biology, CN 2134
Professor
Phone: (706) 721-0099

CYAN@augusta.edu

Dr. Yan's lab utilizes biochemical approaches and genetically-engineered mouse models to study tumor suppressor networks and understand how cancer is generated and progressed. Current interests include the p53 pathway and protein modifications (e.g., ubiquitination and acetylation) in cellular responses to DNA damage and metabolic stresses. He is also interested in developing novel therapeutic strategies targeting aberrant protein translation in cancer.



Zhou, Gang, PhD

Molecular Med., CN 4140
Professor, Medicine, Dept. of
Biochemistry and Cancer Biology
Phone: (706) 721-4472

gzhou@augusta.edu

Dr. Zhou's lab studies the molecular and cellular mechanisms underlying tumor-induced immune tolerance. Major efforts in Dr. Zhou's lab include identifying and characterizing novel CD4+ T cell-potentiating chemotherapeutic agents, elucidating the mechanisms by which CD4+ effector cells activate other tumor-reactive immune cells, determining the molecules/pathways involved in sustaining or attenuating the function and survival of CD4+ effector cells. Findings from these studies will provide mechanistic basis for the design of more effective chemo-immunotherapy strategies that capitalize on the therapeutic potential of CD4+ T cells to cure cancer.

The current projects in his laboratory focus on investigating the functional status of tumor-specific T cells and myeloid cells, and their interactions with cancer cells. These projects provide training opportunities for research involving animal models, T cell engineering, tumor immune evasion mechanisms, tumor metabolism, and next-generation sequencing analysis