CANCER GENETICS

CS

Mentor: Sebastian Battaglia, PhD
Assistant Professor of Oncology

Research Interests: Cancer is a heterogeneous disease that results from a number of genome-wide anomalies. As each patient presents a unique set of alterations, our lab focuses on identifying them through bioinformatics and genomics approaches. We then aim to utilize those results to develop T cells-based therapies or to redeploy current pharmacological interventions with the final goal of maximizing response to therapy. Depending from the project, students can work on a wet- or dry-lab setting, but preferably he/she will work with/learn both.

CANCER PREVENTION AND POPULATION SCIENCES

CS

Mentor: Maciej Goniewicz, PhD, PharmD
Assistant Professor of Oncology

Research Interests: Dr. Goniewicz's primary research area is in nicotine pharmacology, with a focus on nicotine dependence and smoking cessation. He has research experience in smoking cessation behavioral treatment, pharmacotherapy, and pharmacokinetics in both clinical and community-based settings. Dr. Goniewicz's current research is focused on new nicotine-containing products and alternative forms of tobacco. He examines safety and efficacy of electronic nicotine delivery devices, commonly called e-cigarettes. These studies include the laboratory evaluation of the products, pharmacological and toxicological assessment, surveys among their users, and their potential application in harm reduction and smoking cessation. He also evaluates implementation of new tobacco control laws and role of community pharmacists in smoking cessation.

CELL STRESS BIOLOGY

CS

Mentor: Asoke, Mal, PhD
Assistant Professor of Oncology

Research Interests: The research in our laboratory focuses on rhabdomyosarcoma (RMS), a highly aggressive soft-tissue sarcoma which primarily affects children and adolescents. The prognosis of RMS has improved in the past several decades due to multidisciplinary care. However, the prognosis of patients with metastatic or refractory has not been substantially improved, with a 5-year overall survival rate being 20-30%. Furthermore, current aggressive treatments involve traditional chemotherapy cocktails which are associated with significant lifelong side effects in young patients. Thus, there is a clear need to develop new RMS-specific therapeutic strategies to both improve long term survival and minimize treatment-related morbidity. The goal of our laboratory is to better understand the molecular pathways that are relevant to the pathogenesis of RMS in order to identify novel targeted therapeutic strategies. We take approaches, spanning both basic and translational research, which include molecular biology, biochemistry, genetics, cell biology, and other disciplines to address clinically relevant questions to RMS biology.

IMMUNOLOGY

CS

Mentor: Elizabeth Repasky, PhD
Professor of Oncology
The Dr. William Huebsch Professorship in Immunology
Member Graduate Faculty, Roswell Park Graduate Division,
University at Buffalo

Research Interests: Dr. Repasky's research program focuses on exploration of physiological (homeostatic) responses which can be manipulated to alter the tumor microenvironment and improve the efficacy of cancer therapies, including immunotherapies. For her research, she has helped to develop improved mouse models for testing novel therapies. A large amount of effort has been placed on understanding the role of body temperature on anti-tumor immune activity and on vascular function.

CS

Mentor: Joseph Barbi, PhD
Assistant Professor of Oncology

Research Interests: In order for the immune system to function properly, it must be tightly regulated. Failure to do so can inappropriately unleash the immune system's impressive destructive power. Preventing the collateral damage and autoimmune disease that can result form out-of-control immune activation are a number of safeguards including Regulatory T cells. While these are necessary for immune control, they can also oppose the mounting of robust anti-tumor immune responses, limiting the benefits of many anti-cancer therapies. My research interests focus on the factors and processes that influence Regulatory T cells and other mechanisms of immune control. My lab is exploring the regulatory cell types and processes capable of controlling the immune system with an emphasis on unappreciated factors that may enhance or inhibit their suppressive functions. By advancing our understanding of how certain environmental cues, inflammatory stresses, and metabolic factors influence the mechanisms of immune regulation we will discovery ways to fine-tune immune responses and reveal new targets for future anti-cancer immunotherapies.

CS

Mentor: Scott Abrams, PhD
Professor of Oncology
Member Graduate Faculty, Roswell Park Graduate Division, University at Buffalo

Research Interests: Our research interests have been devoted to understanding how the immune system achieves or fails to achieve a successful antitumor response. More specifically, our work focuses on mechanisms of tumor escape, immune suppression and immunotherapy. During the course of these studies, our laboratory has defined pivotal roles for interferon regulatory factor-8 (IRF8), a member of the IRF family of transcription factors, in tumor immunology. Key findings showed that when IRF8 is expressed it acts as a positive regulator of tumor-cell response to certain forms of cell death, as well as a negative regulator of myeloid-derived suppressor cell (MDSC) development. MDSCs are known to be potent inhibitors of antitumor immunity and their production appears to IRF8-dependent. Thus, we have identified previously unrecognized roles for IRF8 in tumor biology. Altogether, our goals are to better understand how the neoplastic process impairs host antitumor immune responses, thereby providing new avenues for prognostic or therapeutic opportunities.

MOLECULAR PHARMACOLOGY AND THERAPEUTICS

CS

Mentor: Michael Feigin, PhD
Assistant Professor of Oncology
Member, Molecular Pharmacology and Cancer Therapeutics Graduate Program
Member, Experimental Therapeutics CCSG (Comprehensive Cancer Support Grant) Program

Research Interests: The goal of this study is to evaluate the antitumor effect of newly identified small molecule inhibitors for Mdm2-MdmX E3 in leukemia cells. Single or combination treatment will be tested. Cell proliferation and cell death will be analyzed. Cell culture, cell growth assay, Western blotting analysis of target proteins and biochemical events of apoptosis will be performed.

CS

Mentor: Dhyan Chandra, PhD
Title: Associate Professor of Oncology
Member Graduate Faculty, Roswell Park Graduate Division, University at Buffalo

Research Interests: The research focus of Dr. Chandra's laboratory is to identify and define various mitochondrial regulators of prostate cancer cell death. He also investigates the underlying mechanisms of prostate cancer health disparities among African American and European American men. The ultimate goal of his laboratory is to develop effective agents for prostate cancer therapy by targeting mitochondria.

CS

Mentor: Xinjiang Wang, PhD
Title: Assistant Professor

Research Interests: The goal of my research is to evaluate the antitumor effect of newly identified small molecule inhibitors for Mdm2-MdmX E3 in leukemia cells. Single or combination treatment will be tested. Cell proliferation and cell death will be analyzed. Cell culture, cell growth assay, Western blotting analysis of target proteins and biochemical events of apoptosis will be performed.