2016-Funded Research Projects

**SITEMAN CANCER CENTER**

**Direct Pharmacological Targeting of Gq/11 in Uveal Melanoma**  
Goal: To complete preliminary tests of the first pharmacological approach to treat uveal melanoma (UM) in tumor samples and animals and ultimately determine if these compounds could lead towards a first-in-class, targeted treatment for UM patients.  
**Principal Investigator:** Kendall Blumer, PhD

**Targeting HER2 Activating Mutations in Metastatic Breast Cancer**  
Goal: To enable the next line of clinical trials for HER2-activating mutations in metastatic breast cancer patients by studying neratinib-based drug combinations in animal models.  
**Principal Investigator:** Ron Bose, PhD, MD

**The Role of Onco-IncRNA-230 as an Epigenetic Regulator of Colon Cancer Metastasis**  
Goal: To develop new treatments for colorectal cancer by studying a recently discovered molecule that plays a central role in enabling a primary tumor to develop in distant organs.  
**Principal Investigator:** Christopher Maher, PhD

**Functional Regulation of DNA Damage Response by the Ubiquitin-selective Protein Segregase VCP**  
Goal: Understand chemotherapy resistance in breast cancer patients to develop novel and reliable ways to predict treatment response and sensitize resistant patients to chemotherapy.  
**Principal Investigator:** Jieya Shao, PhD

**Optimizing Fall-risk Prediction in Older Adults with Cancer**  
Goal: To better understand the risk factors associated with falls in older adults with cancer and ultimately, to create a tailored fall-prevention intervention that can be tested in a clinical trial.  
**Principal Investigator:** Tanya Wildes, MD

**DNA Damage Mediated Checkpoints in Early B Cell Development**  
Goal: To advance our understanding of the development of pediatric leukemia and identify new treatments by studying a newly identified cellular signaling pathway that can play a role in leukemic cell growth and survival.  
**Principal Investigator:** Jeffrey Bednarski, MD, PhD

**Mechanism and Inhibition of PALB2 and BRCA2 Proteins**  
Goal: To better understand how two tumor suppressor proteins are involved in cancer and the development of resistance to drugs used in cancer treatment, and to find inhibitors of these proteins that could be used to improve anticancer therapy or develop alternative treatments in the future.  
**Principal Investigator:** Sergey Korolev, PhD

**A Genetic Model of Perineural Invasion**  
Goal: To discover the molecular causes of cancer metastasis along nerves (perineural invasion) and better understand the molecular basis of this aggressive yet poorly understood form of metastasis.  
**Principal Investigators:** James Skeath, PhD

**Fatty Liver Promotes Hepatic Breast Cancer Metastasis**  
Goal: To better understand the mechanisms by which fatty liver disease - a reversible and preventable disease - promotes breast cancer metastasis to the liver.  
**Principal Investigator:** Steven Teitelbaum, MD

**Nonsense-mediated mRNA Decay in DNA Damage Response**  
Goal: To better understand the effects DNA damage generated by radiation and chemotherapy has on the healthy cells surrounding the tumor in order to develop new therapeutic strategies that will ultimately lessen side effects and cancer relapses.  
**Principal Investigator:** Zhongsheng You, PhD

**RNA as a Target of Alkylation Chemotherapy in Cancer**  
Goal: To better understand the importance of chemotherapy-induced RNA damage of cells which will impact our understanding of how tumors respond to chemotherapy and ultimately may lead to new targets for chemosensitization.  
**Principal Investigator:** Nima Mosammaparast, MD, PhD

**Optimizing Decision Making about Breast Reconstruction after Mastectomy: A Patient-Centered Approach**  
Goal: To develop a clinical decision support tool that will enable physicians and patients to make high quality breast reconstruction decisions, ultimately improving cancer survivorship for women with breast cancer.  
**Principal Investigator:** Terence Myckatyn, MD

**Evaluating Cognitive Function and Functional Connectivity in Breast Cancer Survivors Who Received Chemotherapy**  
Goal: To better understand the basis of chemotherapy-related cognitive impairment (CRCI) in breast cancer patients to ultimately improve the survivorship experience.  
**Principal Investigator:** Jay Piccirillo, MD

**Siteman Cancer Center Breast Cancer SPORE**  
Goal: To create a Breast Specialized Program of Research Excellence (SPORE) program focused on tumor immunology, oncologic imaging, surgical oncology and breast cancer prevention that will enable researchers to quickly translate basic science discoveries to clinical uses for patients with breast cancer.  
**Principal Investigator:** William Gillanders, MD
2016-Funded Research Projects

**St. Louis Children’s Hospital**

**MRI-guided Laser Heat Ablation to Induce Blood Brain Barrier Breakdown in Pediatric Brain Tumors**
*Goal:* Researcher take on one of the biggest obstacles to treating pediatric brain tumors: the blood-brain barrier, which keeps chemotherapy drugs from penetrating the brain.
*Principal Investigator:* Karen Gauvain, MD, MSPH and David Limbrick, MD, PhD

**Sex-specific Super Enhancer Activity in Glioblastoma**
*Goal:* To explore the observation that females are less likely than males to develop glioblastoma (the most devastating form of brain cancer) and when they do, they have better outcomes.
*Principal Investigator:* Rob Mitra, PhD and Joshua Rubin, MD, PhD

**Developing a Novel Reprogramming Strategy for Pediatric Brain Tumor Treatment**
*Goal:* Reprogramming pediatric brain tumor cells into normal neurons.
*Principal Investigator:* Qin Yang, MD, PhD and Dennis Hallahan, MD

**Intraoperative Real-time Fluorescence Image-guided Resection of Pediatric Brain Tumors**
*Goal:* To develop a prototype of a wearable goggle system that enables advanced fluorescence-guided surgery.
*Principal Investigator:* Suman Mondal, PhD and Samuel Achilefu, PhD

**Cutting-edge Neuroimaging and Advanced Computational Analysis to Validate Biomarkers for Cognitive Deficits**
*Goal:* To discover ways to avoid creating cognitive deficits while treating children with brain tumors.
*Principal Investigator:* Joshua Rubin, MD, PhD and Bradley Schlaggar, MD, PhD

**Treatment of Diffuse Intrinsic Pontine Glioma**
*Goal:* To develop an innovative strategy for the improved treatment of DIPG using focused ultrasound (FUS)-enabled delivery of dissolvable, 64Cu-doped, chemotherapy-loaded copper nanoclusters (64Cu-CuNCs).
*Principal Investigator:* Ying Liu, MD, PhD

**Combined Cytokine Activation of White Blood Cells to Combat Myeloid Leukemia**
*Goal:* Utilizing cytokine-induced, memory-like NK cells as a personalized cellular immunotherapy strategy for relapsed pediatric/YA AML patients.
*Principal Investigator:* Todd A. Fehniger, MD, PhD

**Developing Personalized Vaccines to Fight Pediatric Brain Tumors**
*Goal:* The first-ever clinical trial to treat pediatric patients with relapsed or recurrent brain tumors with a personalized vaccine, referred to as a peptide vaccine, developed by targeting genetic abnormalities in each individual tumor.
*Principal Investigator:* Karen Gauvain, MD, MSPH

It takes world-class research to create a world without cancer. Thank you for supporting Pedal the Cause and accelerating cancer research.

A full description of Pedal the Cause-funded research projects are available on our website.

100% of participant donations fund innovative cancer research in St. Louis

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**Sept. 23 & 24, 2017**