2022 PEDAL THE CAUSE FUNDED RESEARCH PROJECTS

SITEMAN CANCER CENTER

Advancing Breast Cancer Risk Assessment among White and Black Women Using Artificial Intelligence and Sequential Mammograms

Goal: Our goal is to discover novel imaging phenotypes of breast cancer risk from mammography and bring effective personalized breast cancer risk models to more racially diverse screening populations.
Principal Investigator: Aimilia Gastounioti, PhD

Exploring Precision Oncology Opportunities Contributed by Transposable Elements

Goal: Exploring Precision Oncology Opportunities Contributed by Transposable Elements
Principal Investigator: Ting Wang, PhD

Phase I Dose Escalation and Dose Expansion Study of Duvelisib Following Chimeric Antigen Receptor T Cell Therapy

Goal: Our goal is to determine if adding the targeted oral drug duvelisib to standard treatment with genetically modified immune cells (chimeric antigen receptor or "CAR" T cells) will decrease cellular immunotherapy-related side effects and help CAR T cells to more effectively kill non-Hodgkin lymphoma.
Principal Investigator: Armin Ghobadi, MD

Phase I trial of CA-4948 in Combination with FOLFOX/PD-1 Inhibitor +/- Trastuzumab for Untreated Unresectable Gastric and Esophageal Cancer

Goal: Our goal is to improve the efficacy of treatment for patients with metastatic gastric and esophageal cancers by combining a new drug called CA-4948 with current chemo-immunotherapy treatments to activate killer T cells.
Principal Investigator: Kian-Huat Lim, MD, PhD

Senescent Stromal Cells Sculpt the Tumor Microenvironment to Drive Breast Tumorigenesis

Goal: Our goal is to develop smarter breast cancer therapies that have a more potent effect at limiting disease progression by interrogating how age-related changes in non-tumor cells contribute to increases in breast cancer.
Principal Investigator: Sheila Stewart, PhD

The Role of Caveolin-1 in Gastric Cancer Response to Immunotherapy

Goal: Our goal is to enhance the efficacy of immunotherapy treatments in gastric tumors. We aim to use molecular imaging techniques to investigate the mechanisms of cancer-cell surface protein regulation to enhance immune checkpoint blockade efficacy in gastric tumors.
Principal Investigator: Patricia Ribeiro Pereira, PhD

Early Phase I Window of Opportunity Trial of Pyrimethamine as an Inhibitor of NRF2 in HPV-negative Head and Neck Squamous Cell Carcinoma

Goal: Test the pyrimenthamine drug as an inhibitor of the NRF2 protein in head and neck squamous cell carcinoma, which if proven true could result in the ability to sensitize NRF2-active cancers to standard of care chemotherapy, radiation therapy, and immune inhibition therapy.
Principal Investigator: Ben Majors, PhD

EPif1 Helicase as a Target for Inhibition in ALT+ Cancers

Goal: Define the role of Pif1 in telomere maintenance in cancer cells and to identify small molecule inhibitors to test the functional outcome of Pif1 inhibition.
Principal Investigator: Roberto Galletto, PhD

Investigating GSTP1 Structure and Signaling in Breast Cancer

Goal: Address critical knowledge gaps in our functional and mechanistic understanding of how silencing the enzyme GSTP1 re-wires cysteine oxidation of the proteome in breast cancer, hopefully providing new ways to inhibit breast cancer growth and transformation.
Principal Investigator: Jason Held, PhD

Understanding the Role of the lncRNA, RAMS11, in Lung Cancer

Goal: Understand how our recently discovered lncRNA, RAMS11, interacts with a pioneering transcription factor to promote tumor growth and metastasis in non-small cell lung cancer patients.
Principal Investigator: Christopher Maher, PhD

PEDAL THeCAUSE℠

2022 PTC FUNDED RESEARCH PROJECTS (CONT.)

SITEMAN CANCER CENTER (CONT.)

Prehabilitation to Revolutionize Oncology: Telehealth Exercise for Cognitive Triumphs (PROTECT)

Goal: Determine the feasibility and preliminary efficacy of a physical therapist-delivered prehabilitation physical activity intervention to prevent cognitive decline in breast cancer patients undergoing chemotherapy, hopefully leading to a significant paradigm shift in the way we implement standard of care rehabilitation during cancer survivorship.
Principal Investigator: Elizabeth Salerno, PhD, MPH

Next Generation Theranostic 89Zr/227Th-conjugated PSMA Inhibitor for Precision Molecular Imaging and Radiotherapy of Metastatic of Prostate Cancer

Goal: Advance a next generation theranostic pair with a novel compound, 89Zr/227Th-Lumi-PSMAUrea, for targeting imaging and alpha particle therapy of metastatic prostate cancer.
Principal Investigator: Hanwen Zhang, PhD,

Visit pedalthecause.org/impact for additional details

SITEMAN KIDS AT ST. LOUIS CHILDREN'S HOSPITAL

NK cell immunotherapy to reduce relapse after hematopoietic stem transplant for high-risk pediatric AML

Goal: This project seeks to implement memory-like (ML) Natural Killer (NK) cells earlier in therapy to address disease relapse as the key limitation of allo-HCT for the treatment of patients with high-risk acute myeloid leukemia (AML). We propose a novel clinical trial using adoptive transfer of donor-derived ML NK cells for children with high-risk AML. We believe this new clinical trial will lead to durable remissions and cure for more children with high-risk AML.
ML NK cells were first discovered at Washington University and our team conducted the first-in-human trials in adult and pediatric patients with AML. We have successfully treated > 100 patients with ML NK cells. Currently, ML NK cell immunotherapy is only available at St. Louis Children's Hospital and Siteman Kids.
Principal Investigator: Thomas Pfeiffer, MD, Assistant Professor of Pediatrics

Regulation of Mutagenic Deaminases in Cancer by the ETV6 Transcription Factor

Goal: The long-term goal of our research program is to define, predict and target the mechanisms of mutagenesis that lead to genomeinstability and cancer evolution in children. One widespread source of mutagenesis in pediatric and adult-onset cancers is caused by the APOBEC3 family of deaminases. We will examine the potential for APOBEC3-mediated mutagenesis to promote leukemia development and/or progression in cells with abnormal ETV6. The culmination of these studies will not only define how ETV6 regulates a common cancer mutagen, but also how APOBEC3 mutational activity drives tumorigenesis.
Principal Investigator: Thomas Pfeiffer, MD, Assistant Professor of Pediatrics

Defining how cellular and mutational factors interact to affect pediatric pilocytic astrocytoma formation and prognosis

Goal: Pilocytic astrocytomas (PAs) are one of the most common solid tumors of childhood and can arise anywhere in the central nervous system (CNS), but are most common in the posterior fossa (pf-PA), supratentorial midline (sm-PA; optic chiasm, hypothalamus, thalamus) and brainstem (bs-PA). I hypothesize that differences in PA tumor biology by location are due to different driver mutations acting upon different cells of origin.
To address this hypothesis, I plan to perform a detailed analysis of the impact of different PA-associated mutations on pLGG COOs and tumor formation in a murine system and define the mechanistic basis behind differential cellular responses. Together, the proposed experiments will help elucidate how tumors with similar histologies, but arising in different brain locations, result in varying clinical outcomes, as well as potentially identify brain region-specific deregulated pathways for future targeted therapy.
Principal Investigator: Nicole Brossier, MD, PhD, Instructor in Pediatrics