UCI Anti-Cancer Challenge

2017 IMPACT REPORT

#WEAREANTICANCER

YOUR SUPPORT OF THE UCI ANTI-CANCER CHALLENGE IS PLANTING THE SEEDS FROM WHICH UCI RESEARCH WILL GROW TO IMPROVE CANCER THERAPIES!

As Orange County's only National Cancer Institute-designated cancer center, the UC Irvine Chao Family Comprehensive Cancer Center has a special mission to conduct research into the causes, prevention, diagnosis and treatment of cancer to improve the outcomes for cancer patients in Orange County and alleviate the burden of cancer on our residents. Cancer centers that lack a research mission can follow treatment guidelines, but they cannot lead in advancing the standards of care.

Every penny of the funds raised by Anti-Cancer Challenge participants are directed towards advancing innovative basic, translational and clinical cancer research that will lead to the next breakthroughs in cancer treatment.

Proceeds from our inaugural event in June 2017 have been directed to support three objectives:

1. Fund pilot projects that help investigators generate crucial preliminary data for high impact research necessary to secure larger grants from the National Institutes of Health and other external agencies.

2. Advance the discoveries of UCI scientists, including innovative diagnostic devices, novel drugs and biobehavioral interventions through the translational pipeline towards clinical application.

3. Support research in cancer population science, health disparities and cancer control.

CANCER RESEARCH GRANT AWARDEES

With the funds raised by enthusiastic Anti-Cancer Challenge participants in 2017, UCI awarded twelve cancer research grants enabling nationally renowned physician-scientists at the UC Irvine Chao Family Comprehensive Cancer Center to explore new ways to fight cancer.

Glutamine supplementation deters melanoma tumor growth via epigenetic reprogramming

Investigator
Mei Kong, PhD
Department of Molecular Biology and Biochemistry

Recent studies indicate that in some tumors, including melanoma skin cancers, levels of the amino acid glutamine are abnormally low, leading to changes in gene methylation and expression and resulting in resistance to therapy with inhibitors targeting the kinase BRAF. Dr. Kong will determine whether dietary glutamine supplementation will inhibit the growth of patient-derived melanoma tumors in mice, and investigate the molecular mechanisms involved.

Repurposing Statins to Enhance Efficacy of BH3 Mimetics in Multiple Myeloma

Investigators
David Fruman, PhD
Department of Molecular Biology & Biochemistry
Elizabeth Brem, MD
Department of Medicine, Division of Hematology Oncology

Venetoclax (Venclexta®) is a member of new class of drugs known as BH3 mimetics that induce cell death in tumor cells, particularly cancers of B-lymphoid cells. Work in Dr. Fruman's laboratory has shown that the lipid-lowering statin medications increase the ability of BH3 mimetic drugs to kill cancer cells from patients with chronic lymphocytic leukemia and non-Hodgkin B-cell lymphoma. Dr. Fruman will collaborate with hematologist/oncologist Dr. Brem to extend these studies to multiple myeloma, a currently incurable cancer of antibody-producing mature B cells.

Circadian Metabolic Deregulation of Colorectal Cancer

Investigator
Selma Masri, PhD
Department of Biological Chemistry

Our biological clock (circadian rhythm) controls many physiological processes in our bodies and has also been linked to cancer development and growth, but the mechanisms are poorly understood. Dr. Masri's laboratory has generated a novel mouse model to elucidate the effects of circadian clock disruption on intestinal cell proliferation and colorectal cancer. Her preliminary analysis identified a central role of metabolism as a key feature of cellular proliferative control. The focus of this research will be to define the contribution of deregulated circadian metabolism that is responsible for influencing growth and survival pathways in the intestine.

Feasibility Study of a Mediterranean Diet Intervention to Reduce Inflammatory Cytokines in Patients with Myeloproliferative Neoplasms

Investigators
Angela Fleischman, MD, PhD
Department of Medicine, Division of Hematology Oncology
Andrew Odegaard, PhD, MPH
Department of Epidemiology
Lari Wenzel, PhD
Department of Medicine and Program in Public Health

Patients with myeloproliferative neoplasms (MPNs) such as polycythemia vera and myelofibrosis have symptoms (weight loss, fatigue) due to increased inflammation and circulating inflammatory cytokines. Dr. Fleischman and her colleagues in UCI Department of Epidemiology and Program in Public Health will test whether a reduction in inflammatory cytokines brought about by adherence to a Mediterranean diet will alleviate disease-related symptoms and also delay disease progression in MPN patients.

Immunotherapeutics Targeting Altered N-glycosylation in Cancer

Investigator
Michael Demetriou, MD, PhD, FRCP
Departments of Neurology and Microbiology and Molecular Genetics

T-lymphocytes from patients with cancer that are engineered to identify and kill tumor cells (so-called CAR-T cells) are a promising new approach to cancer therapy, but the technology has been difficult to apply to common cancers like breast, colon, and lung cancer. Dr. Demetriou's laboratory has developed a chimeric protein that recognizes abnormal carbohydrate antigens expressed exclusively on a diverse array of cancer cells. This proposal will optimize the design and test this approach in a mouse cancer model, with the potential of developing an entirely new class of immunotherapeutic agents for cancer.

Identifying the Anti-neoplastic Targets of SH-BC-893

Investigator
Aimee Edinger, PhD
Department of Developmental & Cell Biology

Dr. Edinger's laboratory has developed a novel set of drugs that have broad anti-cancer properties by affecting nutrient pathways and the trafficking of certain growth-modulatory proteins through the cell nucleus. This proposal will investigate

potential molecular targets of this class of drugs and determine the mechanism of the anti-cancer effects. These results will be important in the effort to move these agents into human clinical trials.

Pilot Study of the Safety and Feasibility of Immediate Adjuvant Chemotherapy in Patients with Invasive Colonic Adenocarcinoma

Investigator
Alessio Pigazzi, MD, PhD
Department of Surgery

Patients with stage III colon cancer (with lymph node involvement) should receive adjuvant chemotherapy after surgical resection of the primary tumor, but delays in delivering chemotherapy may lead to the development of distant metastases. This proposal will determine the feasibility, safety and tolerability of chemotherapy that is started in the immediate preoperative period, and study effects on circulating tumor cells, which may mediate spread of the cancer.

Pilot Study of Mirtazapine for the Dual Treatment of Depression and Temozolomide-induced Nausea and Vomiting in Newly-diagnosed Glioma Patients

Investigators
Daniela Bota, MD, PhD, Department of Neurology
Thomas Taylor, PhD, Department of Epidemiology
Charles Nguyen, MD, Department of Psychiatry
Robert Bota, MD, Department of Psychiatry

Patients with brain cancer (glioblastoma) suffer frequently from depression, as well as nausea and vomiting induced by their chemotherapy. Mirtazapine is a antidepressant drug with anti-nausea properties, but its safety and efficacy in brain cancer has not been studied. This project is a single institution clinical study of the efficacy and tolerability of mirtazapine when administered to depressed glioma patients, aimed at reducing depression and nausea, and maintaining patient weight.

Analysis of Hippo Signaling in Breast Cancer Development

Investigator
Wenqi Wang, PhD
Department of Developmental and Cell Biology

Dysregulation of the Hippo signaling pathway and overexpression of its downstream effector YAP are associated with a broad spectrum of cancers. Previous studies from Dr. Wang's laboratory have demonstrated a crucial role of YAP in breast cancer development through its ability to transform normal mammary epithelial cells, accelerate breast cancer cell proliferation and survival, maintain breast cancer stem cells, and promote breast cancer metastasis. This proposal will determine if breast cancer cells are "addicated" to YAP, and develop approaches to target activated YAP for breast cancer therapy.

Feasibility of a Family Focused Intergenerational Social Media Intervention for Orange County Vietnamese Families to Increase Preventive Cancer Screenings

Investigator
Suellen Hopfer, PhD
Program in Public Health

Orange County's large Vietnamese community has historically

lower rates of screening for cancer. Effective intergenerational communication with an upstream and interactive flow of preventive cancer information in the context of group family chats has been shown to be effective in improving cervical cancer screening in such communities. This study will identify effective intergenerational messaging for online, family focused social media platforms that are designed to increase breast, cervical, colorectal, and liver cancer screening behaviors among first and 1.5 generation Vietnamese community members.

RhoJ Inhibitors — A Novel Treatment for Early Stage Melanoma

Investigator
Anand K. Ganesan, MD, PhD
Departments of Dermatology and Biological Chemistry

While kinase inhibitors and immunotherapies are effective at treating metastatic melanoma, their use in tumors that have not yet disseminated systemically is limited by their side effects. The Ganesan laboratory previously determined that RhoJ, a gene highly expressed in BRAF mutant melanomas that metastasize to lymph node, promotes both the growth and metastasis of melanoma tumors in a mouse model. Here, they will test the efficacy of novel compounds that inhibit RhoJ function as anti-cancer agents against melanoma and other RhoJ-expressing cancers.

Modulation of the Immune Response Against Metastatic Melanoma Using CD47 Blocking Antibodies

Investigator
Alexander Boiko, PhD
Department of Molecular Biology and Biochemistry

Studies in the Boiko laboratory have shown that metastatic melanomas frequently express CD47, a cell surface protein that sends a “don’t eat me” signal to macrophages, protecting the tumor from the immune response. This project will test characterize the therapeutic potential of CD47–blocking antibodies in a novel immune-competent mouse model bearing human melanoma tumors.