THE OHIO STATE UNIVERSITY COMPREHENSIVE CANCER CENTER –
ARTHUR G. JAMES CANCER HOSPITAL AND RICHARD J. SOLOVE RESEARCH INSTITUTE

Pelotonia Institute for Immuno-Oncology

2023 Annual Report

The James

The Ohio State University
COMPREHENSIVE CANCER CENTER

FROM THE DIRECTOR

Zihai Li, MD, PhD
Klotz Memorial Chair in Cancer Research
Professor and Founding Director
Pelotonia Institute for Immuno-Oncology
Deputy Director for Translational Research
The Ohio State University Comprehensive Cancer Center

It is with great pleasure and profound gratitude that I share the remarkable progress and pivotal advancements made by the Pelotonia Institute for Immuno-Oncology (PIIO) over the past year. The landscape of immuno-oncology continues to evolve rapidly, calling for an integrated approach that combines cutting-edge science with data-driven insights. In 2023, our institute embraced this challenge head-on, harnessing the power of collaboration and innovation to propel our mission forward.

In our first four years we have recruited 29 top-tier faculty researchers. PIIO faculty have been awarded over $39 million in annual funding from new grants and have published more than 1,200 peer-reviewed articles in scientific journals. In addition, over 230 clinical trials utilizing immunotherapy have been launched since 2019, and more than 80 trials are open to enrollment of patients at Ohio State.

Research accomplishments of the past year include: advancement of our PIIO-1 program to develop Ohio State-brand therapeutics targeting glycoprotein A repetitions predominant (GARP); major NCI funding for the first-in-human triple CAR T-cell clinical trial and for our work in the immunological bases of sex bias in bladder cancer; completion of the inaugural year of the Immunology and Immunotherapeutics Graduate PhD Program (I2GP); and the PIIO's expansion to the **P**elotoni**a** **R**esearch **C**enter (**PaRC**) in Ohio State's Carmenton innovation district. As we reflect on the past year's achievements and milestones, we also look to the future. In fact, we have already started planning to refresh PIIO's strategic plan, which we have dubbed PIIO 2.0. With great optimism, we are excited to engage with all stakeholders to shape the future of cancer immunotherapy.

I would like to extend my gratitude to our dedicated faculty, staff, collaborators and the Pelotonia community for their unwavering support and commitment to our shared mission. Together, we are making a difference in the lives of cancer patients and their families, and I am honored to be a part of this extraordinary journey.

THE OHIO STATE UNIVERSITY COMPREHENSIVE CANCER CENTER – ARTHUR G. JAMES CANCER HOSPITAL AND RICHARD J. SOLOVE RESEARCH INSTITUTE (OSUCCC – JAMES) LEADERSHIP

DAVID E. COHN, MD, MBA
Interim CEO and Chief Medical Officer
James Cancer Hospital and Solove Research Institute

RAPHAEL E. POLLOCK, MD, PhD, FACS
Director, The Ohio State University Comprehensive Cancer Center

To read more about the OSUCCC – James leaders, visit cancer.osu.edu/leaders.

PELOTONIA INSTITUTE FOR IMMUNO-ONCOLOGY ADVISORY BOARDS

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THE OSUCCC – JAMES INVITES YOU TO JOIN OUR ONLINE COMMUNITY

Social media
cancer.osu.edu/socialmedia

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cancer.osu.edu/blog

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TALENT

Faculty Recruits in 2023

Stanley Huang, PhD – Associate Professor, Department of Microbial Infection and Immunity

Research focus: understanding the interplay between cellular signaling and metabolic regulation that dictate immune cell activation during inflammation

Elshad Hasanov, MD, PhD – Assistant Professor, Department of Internal Medicine/Division of Medical Oncology

Research focus: genitourinary malignancies and drug development for central nervous system (CNS) metastasis using single-cell spatial biology tools

Hakimeh Ebrahimi-Nik, PhD, DVM – Assistant Professor, Department of Internal Medicine/Division of Medical Oncology

Research focus: creating scientific know-how about CD8 T cell tumor rejection by studying the interconnection between the stimulatory and inhibitory facets of immune response

Tim Gauntner, DO, PhD – Clinical Assistant Professor, Department of Internal Medicine/Division of Medical Oncology

Research focus: immune regulation in the tumor microenvironment, steroid hormone signaling, hormonal carcinogenesis and genitourinary oncology

Yoshinobu Koguchi, MD, PhD – Research Associate Professor, Department of Internal Medicine/Division of Medical Oncology; Co-Director of Clinical Research, Immune Monitoring for the PIIO Immune Monitoring and Discovery Platform (IMDP)

Glen Barber, PhD, FRS – Professor, Department of Surgery/ Division of Surgical Oncology

Research focus: understanding the role of innate immunity and cancer control, and mechanisms of inflammation-associated cancer (See more information on this senior leadership recruit on the next page.)

LEADERSHIP ANNOUNCEMENTS

Glen Barber, PhD, FRS

Ohio State welcomes Dr. Glen Barber to lead Center for Innate Immunity and Inflammation at PIIO

The Ohio State University Comprehensive Cancer Center – James Cancer Hospital and Solove Research Institute (OSUCCC – James) has announced the recruitment of **Glen Barber, PhD, FRS**, to lead the Center for Innate Immunity and Inflammation (CIIA) within the Pelotonia Institute for Immuno-Oncology (PIIO). Dr. Barber, who will start Aug. 1, 2024, will also be a professor in the College of Medicine, Department of Surgery/Division of Surgical Oncology. He will bring a wealth of experience and expertise in cancer research, immunotherapy and technology commercialization.

He is internationally recognized for his groundbreaking research in cellular sensing mechanisms. His discoveries have advanced the understanding of innate immunity and its role in cancer control, inflammation-associated cancer, and the development of viral oncolytic agents and immunotherapeutics.

Dr. Barber's lab team discovered the cytosolic DNA signaling pathway controlled by the innate immune regulator STING (stimulator of interferon genes), which plays a crucial role in antitumor cellular immunity. His work has not only shed light on the molecular mechanisms underlying innate immune responses but has also led to the development of therapeutic strategies for cancer.

Dr. Barber will also serve as associate director for entrepreneurship and technology commercialization at the OSUCCC – James, where he will lead efforts to translate research innovations into practical applications and to foster collaborations with industry partners. His recruitment underscores our commitment to excellence in cancer research and innovation. His leadership and expertise will play a pivotal role in driving the OSUCCC – James' strategic priorities and enhancing its reputation as a leader in cancer immunology.

Zihai Li, MD, PhD

Dr. Li appointed deputy director for translational research

In December 2023, the OSUCCC – James announced the appointment of **Zihai Li, MD, PhD**, as deputy director for translational research, a position he holds in addition to his role as founding director of the PIIO. In his newer role, Dr. Li spearheads the development and implementation of an OSUCCC – James strategy to enhance the translational impact of new cancer therapeutics, bridging the gap between basic science and patient care.

With a strong background in cancer immunology and translational research, Dr. Li brings invaluable expertise to his new position. As PIIO's founding director, he has demonstrated his commitment to advancing innovative approaches to cancer treatment. His leadership as deputy director will accelerate the translation of scientific discoveries into clinical benefits for cancer patients. In this new role, he has embarked on a comprehensive listening tour, engaging with OSUCCC – James leaders, Clinical Trials Office leaders, DSRG leaders, faculty and staff. Through these discussions, he is identifying ways to enhance correlative science in clinical trials to foster the development of more effective cancer therapies.

Dr. Li also works closely with OSUCCC – James leaders to define new pillars and mechanisms for advancing investigator-initiated trials based on cutting-edge science and therapeutics. By fostering collaboration and innovation, he aims to streamline the translational research process, expediting the delivery of groundbreaking treatments to patients.

Dr. Li's appointment is part of a broad restructuring of the OSUCCC – James leadership team that includes the appointments of Matthew Ringel, MD, as deputy director for basic research, and Electra Paskett, PhD, MSPH, as deputy director for population sciences and community outreach. All three report to OSUCCC Director Raphael E. Pollock, MD, PhD, FACS. Together, they oversee the strategic direction of the Comprehensive Cancer Center, ensuring alignment across research, prevention and outreach initiatives.

SCIENTIFIC ACCOMPLISHMENTS


Xue "Sean" Li, PhD (Cedars Sinai)


Dan Theodorescu, MD, PhD (Cedars Sinai)


Zihai Li, MD, PhD


Qin Ma, PhD

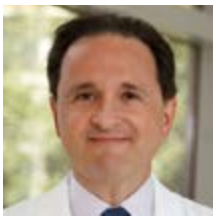

Anil Parwani, MD, PhD, MBA


Deb Sundi, MD


Dongjun Chung, PhD

Sexual dimorphism in T-Cell exhaustion and bladder cancer

Bladder cancer (BC) disproportionately affects men, with a prevalence three to five times higher than in women, even after adjusting for factors like smoking. A program project grant (P01 CA278732) led by researchers at the PIIO, the OSUCCC – James and Cedars-Sinai Medical Center Cancer Center aims to explore "sex as a biological variable" in BC to enhance patient outcomes by identifying sex-specific drivers for targeted therapeutics. The project involves three leading laboratories specializing in immunology, cancer biology/functional genomics and epigenetics. Project 1, led by Zihai Li, MD, PhD, focuses on T-cell exhaustion due to androgen receptor signaling. Project 2, led by Dan Theodorescu, MD, PhD, investigates the role of the Y chromosome in BC progression and immune checkpoint blockade resistance. Project 3, led by Xue "Sean" Li, PhD, examines the tumor-suppressing activity of X chromosome-linked epigenetic regulators. The PPG will benefit from an administrative core and two shared resource cores for data analysis and pathology services led by Qin Ma, PhD, and Anil Parwani, MD, PhD, MBA, respectively. In a recently published **study** on Y chromosome loss in cancer, the team showed that a loss of Y in cancer correlates with poor prognoses and promotes dysfunction of CD8+ T cells, potentially sensitizing them to PD-1-targeted immunotherapy (PMCID: PMC10975863). This inter-institutional collaborative effort highlights the importance of understanding sex-specific factors in cancer biology and underscores the potential for targeted interventions to improve patient outcomes.


Marcos de Lima, MD


Sumithira Vasu, MBBS


Lapo Alinari, MD, PhD

NCI R01 grant awarded for triple CAR T cell first-in-human clinical trial

Drs. Sumithira Vasu, **Marcos de Lima** and **Lapo Alinari** lead a groundbreaking project aimed at enhancing cellular immunotherapy for refractory B-cell malignancies like B-cell non-Hodgkin lymphoma (B-NHL) and B-cell acute lymphoblastic leukemia (B-ALL) (R01CA276374). Despite the success of CD19 targeted chimeric antigen receptor T cells (CAR Ts) in achieving complete remissions, relapse rates, especially within the first year, pose significant challenges. This innovative approach involves the development of trispecific CAR T manufactured at Ohio State's Cell Therapy Laboratory. These CAR T are designed to address two patterns of relapse: antigen-negative and antigen-positive. Early preclinical studies have shown promising results, with trispecific CAR T demonstrating superior activity compared to conventional CD19 CAR Ts. The project's first aim is to conduct a **phase I clinical trial** to evaluate the safety and feasibility of trispecific CAR T in patients with relapsed/refractory B-cell malignancies, while the second aim focuses on understanding the mechanisms underlying efficacy and resistance. By leveraging cutting-edge technologies such as high-dimensional spectral flow cytometry and cellular indexing of transcriptomes and epitopes (CITE)-sequencing, the project aims to enhance CAR T persistence, deepen clinical responses and improve outcomes for patients with refractory B-cell malignancies.

SCIENTIFIC ACCOMPLISHMENTS


Lai Wei, PhD


Dwight Owen, MD, MS


Daniel Spakowicz, PhD


David Carbone, MD, PhD

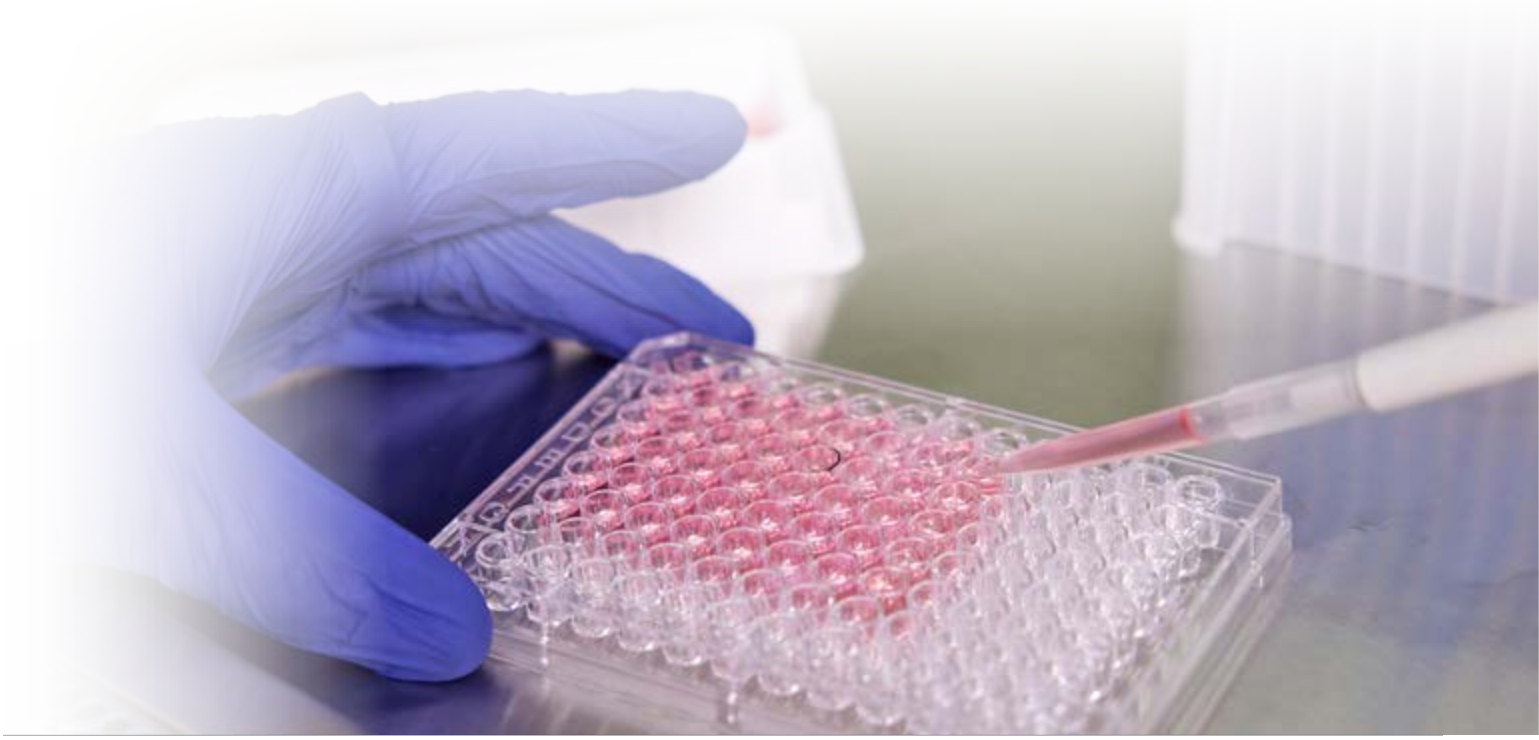

Mikhail Dikov, PhD

Targeting A2B adenosine receptor: Enhancing antitumor immunity through metabolic microenvironment modulation

Drs. **Lai Wei**, **Dwight Owen**, **Daniel Spakowicz**, **David Carbone** and **Mikhail Dikov**, along with other researchers, conducted a study exploring the role of A2B adenosine receptor in regulating immunosuppressive metabolic stress within the tumor microenvironment (*Journal of the National Cancer Institute,* **PMCID: PMC10637048**). Their investigation included testing the novel A2B adenosine receptor antagonist PBF-1129 for its antitumor activity in mouse models, and assessing its safety and immunologic efficacy in a phase I clinical trial involving patients with non-small cell lung cancer.

Their findings revealed that levels of metabolic stress in tumors were closely associated with tumor growth, metastasis and immunosuppression. Inhibiting the A2B adenosine receptor led to the alleviation of metabolic stress, decreased tumor growth and metastasis, and increased interferon γ production. It also enhanced the efficacy of antitumor therapies in animal models, particularly when used in combination with other treatments.

Moreover, in patients with non-small cell lung cancer, PBF-1129 was well tolerated, exhibited pharmacologic efficacy, modulated the adenosine generation system and improved antitumor immunity without causing dose-limiting toxicities. These results underscore the potential of targeting the A2B adenosine receptor as a promising therapeutic strategy to modify the metabolic and immune tumor microenvironment, reduce immunosuppression and enhance the effectiveness of immunotherapies. The study supports the clinical application of PBF-1129 in combination therapies, offering hope for improved outcomes in cancer treatment.



Kai He, MD, PhD

Lifileucel Monotherapy in Advanced NSCLC Patients Resistant to Immune Checkpoint Inhibitors

Kai He, MD, PhD, along with colleagues from multiple research institutes and hospitals in the United States and Europe, recently published results from a first-of-its-kind phase II study revealing lifileucel as a promising treatment for stage 4 lung cancer resistant to other therapies (*Cancer Discovery*, **https://doi.org/10.1158/2159-8290.CD-23-1334**). The study tested lifileucel on 28 patients who had been treated for metastatic lung cancer with chemotherapy and immune checkpoint inhibitors (ICI) but had developed resistance to these treatments. Results showed lifileucel to be safe with no unexpected side effects, and in 19 treated patients, it reduced tumor size in metastatic lung cancer.

Lung cancer is the leading cause of cancer deaths in the Unted States. Patients with advanced stages typically develop resistance to ICI, leaving limited treatment options. Lifileucel, a tumor-infiltrating lymphocyte (TIL) therapy, leverages a patient's lymphocytes to combat metastatic non-small cell lung cancer (NSCLC), the most prevalent lung cancer type. Lifileucel offers a novel immunotherapy approach, potentially prolonging survival and enhancing quality of life. In February 2024, the FDA approved lifileucel for treating melanoma. This study was the first global phase II trial using it against lung cancer. The therapy also shows anti-tumor activity in cervical, head and neck cancers.

The above-mentioned clinical trial was sponsored by Iovance Biotherapeutics, Inc. Other researchers involved were Adam Schoenfeld (Memorial Sloan Kettering Cancer Center); Sylvia Lee (Fred Hutchinson Cancer Center); Bernard Doger de Spéville (Hospital Universitario Fundacion); Jimenez Diaz and Scott Gettinger (Yale Cancer Center); Simon Häfliger (Bern University Hospital); Ammar Sukari (Barbara Ann Karmanos Cancer Hospital); Sophie Papa (King's College London); Juan Francisco Rodríguez-Moreno (Centro Integral Oncologico Clara Campal); Friedrich Graf Finckenstein, Rana Fiaz, Melissa Catlett, Guang Chen, Rongsu Qi, Emma L. Masteller and Viktoria Gontcharova (Iovance Biotherapeutics Inc.). Some of the researchers have received funding from Iovance.

SCIENTIFIC ACCOMPLISHMENTS


Zihai Li, MD, PhD


J. Bradley Elder, MD


David Carbone, MD, PhD


Chelsea Bolyard, PhD


Jeffrey Patrick, PharmD


Damien Gerald, PhD

PIIO-1: Targeting GARP for novel cancer immunotherapies

A research team led by **Dr. Zihai Li** developed several new molecular entities targeting latent TGFb receptor GARP for therapeutic application in cancer. Glycoprotein A repetitions predominant (GARP) is overexpressed in cancer cells (melanoma, colon, prostate, lung, sarcoma, glioblastoma multiforme), promotes downstream immunosuppression in the tumor microenvironment (TME) and is associated with worsened prognosis. The overarching goal of the PIIO-1 program is to target GARP in the TME to augment immunotherapy or act as a monotherapy. The Zihai Li lab developed two therapeutics modalities targeting GARP for clinical translation - a monoclonal antibody and a second generation CAR T. The team will treat recurrent/refractive cancers (especially glioblastoma) with anti-GARP CAR T-cell therapy (PIIO-1-CAR) and augment existing immune checkpoint blockade (e.g., anti-PD(L)-1 blockers) with monoclonal anti-GARP antibody (PIIO-1) to enhance therapeutic effect against solid tumors, specifically non-small cell lung cancer.

Previously, the team showed the efficacy and mechanism of action of the PIIO-1 monoclonal antibody in murine models of cancer (*Journal of Immuno-Therapy for Cancer*, **PMID: 36096533**). The team has shown that PIIO-1-CAR is effective *in vitro* and *in vivo* against preclinical models of glioblastoma, with no overt toxicity. The OSUCCC – James Cell Therapy Lab has performed process development and chemistry manufacturing and controls activities to develop a clinical product. **Dr. Elder**, director of neurosurgical oncology at Ohio State's Wexner Medical Center, will be the clinical PI of the team's forthcoming clinical trial. The GARP-targeting CAR T platform has the potential to significantly improve the lives of patients with cancer.

Moreover, the integration of PIIO-1 into the OSUCCC – James Drug Development Institute (DDI) portfolio amplifies its impact and translational potential. PIIO-1 is the first biologic accepted in the the DDI pipeline, underscoring the compelling pre-clinical data and de-risking activities associated with its data package. The DDI's expertise in drug discovery and development provides invaluable resources for rapidly translating PIIO-1's research findings into clinically viable therapeutics. This collaboration facilitates optimization of lead compounds, preclinical testing in relevant models, engaging of industry partnership and progression to clinical trials that could transform the landscape of cancer treatment.

Gang Xin, PhD

Jianying Li

Study reveals GPR84 as key metabolic switch for anti-tumorigenic macrophage polarization

A **study** led by **Dr. Gang Xin**, with first authorship by **Jianying Li**, a graduate research assistant in the labs of Drs. Xin and Qin Ma, sheds light on a novel strategy for enhancing adaptive immunity against cancer. Tumor-associated macrophages (TAMs) play a crucial role in facilitating tumor escape from immune checkpoint blockade therapy. The study, published in the journal *Cancer Immunology Research* (**PMCID: PMC10864225**), reveals that TAMs expressing elevated levels of the fatty acid receptor G-protein-coupled receptor 84 (GPR84) exhibit an anti-tumorigenic phenotype.

Through an analysis of single-cell transcriptome data from various tumor models, the team discovered that genetic ablation of GPR84 in mice impairs proinflammatory polarization of macrophages while enhancing their anti-inflammatory phenotype. Conversely, activation of GPR84 by its agonist, 6-n-octylaminouracil (6-OAU), enhances the proinflammatory phenotype via the STAT1 pathway.

Moreover, treatment with 6-OAU not only slows tumor growth but also increases the antitumor efficacy of anti-PD-1 therapy. These findings highlight GPR84 as a crucial metabolic sensing switch for orchestrating anti-tumorigenic macrophage polarization. Pharmacological agonists of GPR84 hold promise for reshaping the immunosuppressive tumor microenvironment, offering a potential strategy to overcome resistance to immune checkpoint blockade in cancer therapy.

NEW GRANTS AWARDED 2023

Principal Investigator	Sponsor	Title
Beane, J	Lyell Immunopharma, Inc.	OSU-22294: A phase 1 study to assess the safety and efficacy of LYL845 in adults with relapsed and/or refractory metastatic or locally advanced melanoma and selected solid tumor malignancies
Benson, D	GlaxoSmithKline	OSU-23103: Expanded access program for belantamab mafodotin in patients with relapsed/refractory multiple myeloma who are refractory to a proteasome inhibitor, and an immunomodulatory agent, and an anti-CD38 antibody (subject 1)
Burd, C	NCI (R01)	Mechanisms of UV-mediated melanoma development SUPPLEMENT
Chung, D; Ma, Q	NCI (R01)	Statistical power analysis framework for multi-sample and cross-platform spatial omics experiments
Eisfeld, A	ACS Inc.	Identification of ancestry-associated molecular features contributing to poor treatment response and survival of acute myeloid leukemia patients
Freud, A	NCI (R01); Columbia University; Research Institute at Nationwide Childrens Hospital	Elucidation of human natural killer cell development
Gatti-Mays, M	IIT	Gemcitabine and ex vivo expanded allogeneic universal donor, TGFβi natural killer (NK) cells with or without naxitamab (Danyelza®) for the treatment of patients with metastatic, GD2-expressing, HER2-negative breast cancer
Ghoneim, H	NIAID (R01)	Enhancing the effectiveness of immunotherapies by T cell epigenetic reprogramming
Green, P; Zaldivar, R	NCI (P01 diversity supplement)	Retrovirus models of cancer P01CA100730 diversity supplement
Han, X	LRF	Targeting PD-1H in the tumor microenvironment of acute myeloid leukemia
Hong, F	NCI (R01)	Defining the role of CNPY2 in promoting tumor progression through mediation of macrophages
Huang, S	Melanoma Research Foundation Career Development Research Grant	Exploiting metabolic vulnerabilities of macrophages for melanoma treatment
Huang, S	Andrew McDonough B+ Foundation Childhood Cancer Research Grant Award	Investigating the role of PSAT1 in tumor-associated macrophages for sarcoma immunotherapy
Huang, S	ACS Research Scholar Grant	Deciphering the role of mitochondrial chaperone TRAP1 in tumor-associated macrophages
Jeremy, E (Mentor: Mundy-Bosse, B)	NCI (F30)	The roles of AP-1 pathway activation in NK cell development and exhaustion programming in AML
Li Z, Theodorescu D (CSMC), Li S (CSMC), Parwani A, You S (CSMC), Ma Q, Grivennikov S (CSMC)	NCI (P01)	Sex, chromosomes and immunity in bladder cancer

Principal Investigator	Sponsor	Title
Li, L; Su, Y; Chen, Y (Vanderbilt University)	NLM (R01)	Machine learning drives translational research from drug interactions to pharmacogenetics
Lio, J	NIGMS (R35)	Molecular mechanisms of TET-mediated gene regulation
Liu, X	Army Medical Research Acquisition Activity	A targeted mitochondrial luminoptogenetic gene therapy to treat triple-negative breast cancer
Liu, X; Carson, W	NCI (R01)	Dual-payload antibody-drug conjugate for chemo-immunotherapy of triple-negative breast cancers
Ma, Q	NIDDKD (R01) - Indiana University #	SCH: Graph-based spatial transcriptomics computational methods in kidney diseases
Meara, A	Rheumatology Research Foundation	Mentored nurse practitioner/physician assistant award for workforce expansion
Reynolds, K (Mentor: Z. Li)	NCI (R01)	Targeting GRP94-TGF-beta pathway for cancer immunotherapy
Roychowdhury, S	Gateway for Cancer Research	Pan-cancer telemedicine registry of immunotherapy responses in patients with structural variations in PD-1 ligands
Rubinstein M, Camp R (Baylor)	NCI (R01)	Defining the role of tumoral MHC class I expression in mediating colorectal cancer racial disparities (6 percentile score)
Searle, B	NIGMS (R35)	Investigating the functional impact of genetic variants in the human proteome
Searle, B	Swedish Health Services	Using proteogenomics to assess the functional impact of alternative splicing events in glioblastoma
Sizemore, G	NCI (R37)	PDGF-BB and the metastatic brain microenvironment
Tuazon, J (MD/ PhD student in Oestreich lab)	NIAID (F30)	The Ikaros zinc finger transcription factor Eos as a candidate regulator of TH2 differentiation and effector function (perfect score [10 impact score; 2 percentile])
Vasu, S; de Lima, M; Alinari, L	NCI (R01)	Trispecific CAR-T cells targeting CD19, CD20 and CD22 to treat B-cell malignancies
Wang, R	NIAID (R01)	Decipher and target GABA metabolism and GABA receptor-mediated signaling in autoimmune diseases
Wesolowski, R	Celcuity Inc.	OSU 22167: A phase III, open-label, randomized, two-part study comparing gedatolisib in combination with palbociclib and fulvestrant to standard-of-care therapies in patients with HR-positive, HER2-negative advanced breast cancer previously treated with a CDK4/6 inhibitor in combination with non-steroidal aromatase inhibitor therapy (VIKTORIA-1)
Xin, G	NCI (R01)	Targeting GPR84 to overcome macrophage-mediated resistance to immunotherapy
Xin, G	ACS	Targeting GPR84 to overcome macrophage-mediated resistance to immunotherapy
Xin, G	Susan G. Komen Breast Cancer Foundation	Targeting GPR84 to overcome resistance to immunotherapy

HONORS


Dionisia M Quiroga, DO, PhD

Dr. Dionisia Quiroga was selected to be a peer reviewer for the **American Society of Clinical Oncology (ASCO) Educational Book**. Dr. Quiroga is a breast medical oncologist and assistant professor in the Division of Medical Oncology. Her research is focused on how breast cancer impacts the immune system and on developing cancer immunotherapeutics.


Erin Jeremy

Erin Jeremy, MD/PhD student in the laboratory of Bethany Mundy-Bosse, PhD, was awarded an **NCI F30 Fellowship**. Her project, titled "The roles of AP-1 pathway activation in NK cell development and exhaustion programming in acute myeloid leukemia (AML)," will reveal mechanisms that hinder natural killer (NK) cell development and function in AML.


Eugene Oltz, PhD

Dr. Eugene Oltz was elected as a distinguished fellow for the **American Association of Immunologists (AAI)**. Dr. Oltz, who chairs the Department of Microbial Infection and Immunity, serves as the Samuel Saslaw Professor of Infectious Diseases, Microbial Infection and Immunity, and chairs the PIIO Internal Scientific Advisory Board (ISAB), was also appointed to the **Novartis Pharmaceuticals Corporation Chair for Clinical Research.**


Sumithira Vasu, MBBS

Dr. Sumithira Vasu was appointed advisory committee chair-elect for the **Center for International Blood and Marrow Transplant Research (CIBMTR).** As scientific director of the Blood and Marrow Transplantation Program and medical director of the Cell Therapy Lab, Blood and Marrow Transplantation Section at Ohio State, Dr. Vasu is interested in developing pharmacologic and immunologic therapies to pre-emptively manage relapse and graft-versus-host disease following bone marrow transplantation.


Ken Oestreich, PhD

Dr. Ken Oestreich was appointed chair of the Molecular Mechanisms of Cytokine Function Symposium at the **American Association of Immunologists (AAI)** Annual Meeting in Washington, D.C. He was also selected as research mentor for the **National Heart, Lung, and Blood Institute (NHLBI)-funded PRIDE program** (Programs to Increase Diversity Among Individuals Engaged in Health-Related Research). Dr. Oestreich is program director of the Immunology and Immunotherapeutics Graduate PhD Program (I2GP). His research interests include investigating regulatory mechanisms of T-cell differentiation and function during immune responses to infection and cancer.


Srijana Pokhrel, PhD

Dr. Srijana Pokhrel received a two-year postdoctoral fellowship from the **American Heart Association**. A postdoctoral scholar in the laboratory of Ken Oestreich, PhD, Dr. Pokhrel is investigating the role of Ikaros family zinc finger protein 1 factor Aiolos in regulating the differentiation and function of CD8+ virtual memory T cells.


Monica Venere, PhD

Dr. Monica Venere received the **2023 Women in Medicine and Science Emerging Leader in Medicine and Science** award. Her research focuses on elucidating points of fragility for glioblastoma using cell and molecular biology, and on using these findings to develop treatment modalities or improve on current standard-of-care therapies.


Zihai Li, MD, PhD

Dr. Zihai Li received the Faculty Research Award at the **Dean's Excellence Award Gala**. Dr. Li and his team are doing groundbreaking work on immune regulation in cancer, including the immunological properties of heat shock proteins in cancer immunotherapy, immune tolerance and hematopoiesis. Dr. Li and his team recently uncovered the roles of androgen and the Y chromosome in mediating the immunological basis of sex bias in cancer.

EDUCATION UPDATES

PhD Student Successful Defenses


Matthew Lordo, PhD

Matthew Lordo, PhD

The laboratory of Aharon Freud, MD, PhD

Thesis title: **"Innate lymphoid cell dysregulation in acute myeloid leukemia"**


Devin Jones, PhD

Devin Jones, PhD

The laboratory of Ken Oestreich, PhD

Thesis title: **"Regulation of cytotoxic programming in CD4+ T cells by Ikaros zinc finger family transcription factors"**


Kaitlin Read, PhD

Kaitlin Read, PhD

The laboratory of Ken Oestreich, PhD

Thesis title: **"Cytokine-and transcription factor-mediated mechanisms of T follicular helper cell regulation"**


Miranda Montgomery Tallman, PhD

Miranda Montgomery Tallman, PhD

The laboratory of Monica Venere, PhD

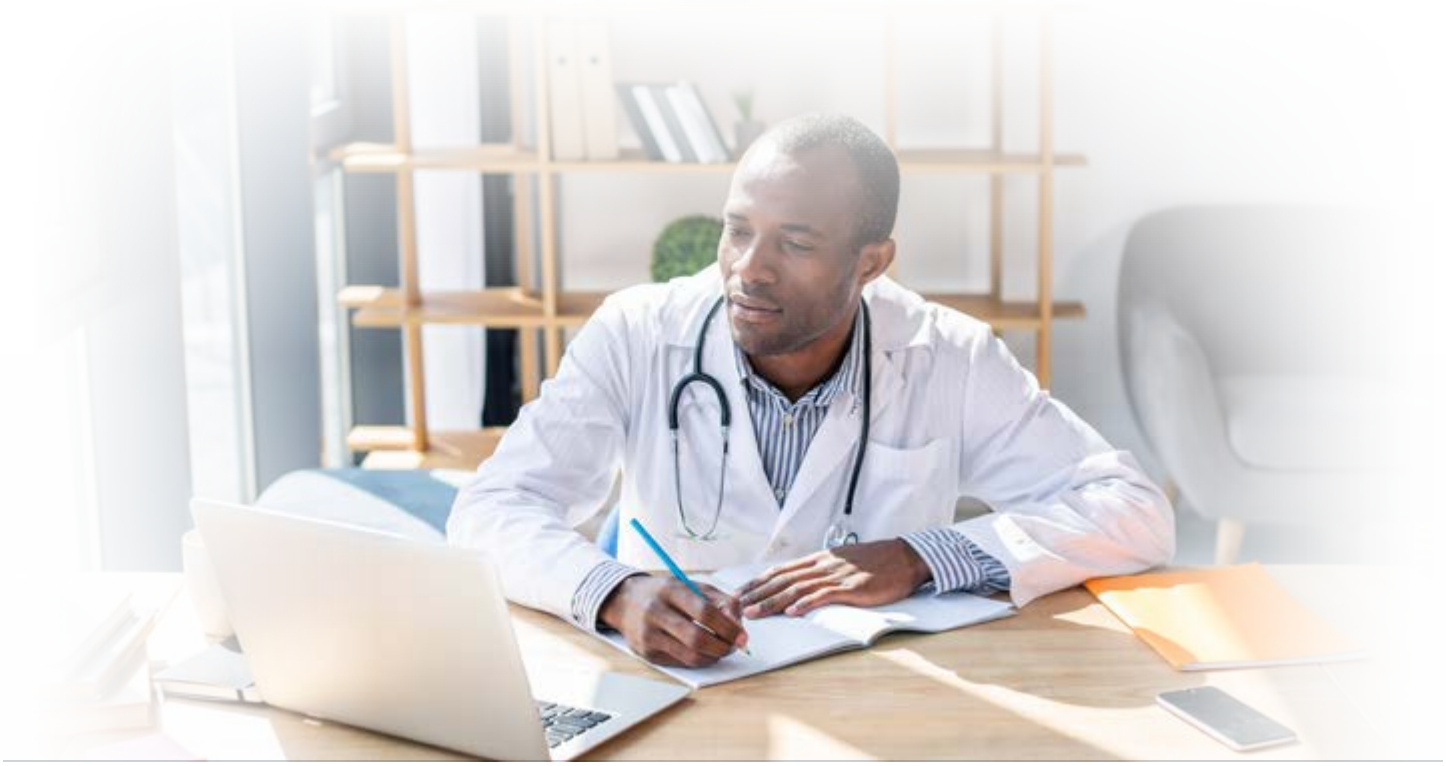
Thesis title: **"Adult and pediatric brain tumors targeted with small molecule drug CBL0137"**


Yuzhou Chang, PhD

Yuzhou Chang, PhD

The laboratories of Zihai Li, MD, PhD, and Qin Ma, PhD

Thesis title: **"Immuno-informatic methods and applications in single-cell and spatial omics"**



EDUCATION UPDATES


Jiacheng (Alex) Jin

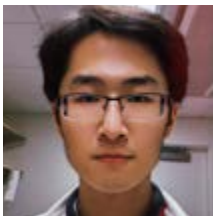

Zachary Miller


Shawn Murphy


Michael Parthun


Evangeline Schott


Madison Sikorski


Blake Wang

Inaugural year of the Immunology and Immunotherapeutics Graduate PhD Program (I2GP)

Ohio State University's Inaugural year of the Immunology and Immunotherapeutics Graduate PhD Program (I2GP) is completing its inaugural year, marking a significant milestone in the institution's commitment to advancing immunological research and training the next generation of immunologists. Spearheaded by **Ken Oestreich, PhD**, and housed within the Department of Microbial Infection and Immunity, the program has already enrolled its inaugural cohort of seven students (listed left).

Developed by **Eugene Oltz, PhD** (Microbial Infection and Immunity) and **Zihai Li, MD, PhD** (OSUCCC – PIIO), the I2GP aims to advance immunotherapy and immune-based treatments for various diseases. The program's emphasis on harnessing the body's immune system underscores its commitment to promoting human health and well-being.

With a focus on molecular and cellular immunology, students are equipped with the knowledge and skills necessary to tackle pressing health challenges, including cancer immunotherapy and global pandemics like COVID-19.

Prospective students interested in joining the program can reach out to **I2GP@osumc.edu** for more information. As the program continues to evolve, it remains at the forefront of curriculum development, offering innovative approaches to immunological research and education.

PIIO Fifth Annual IO Symposium

On Dec. 14, the PIIO hosted its Fifth Annual Immuno-Oncology (IO) Symposium at the Marriott Columbus Ohio State under the theme "**Illuminating the Path Ahead: Uniting Bench and Big Data in Immuno-Oncology.**" External speakers and their seminar titles were:

Identification of Innate Immune Genes that Facilitate Tumor Cell Immunogenicity

Glen Barber, PhD, FRS

Chair and professor in the Department of Cell Biology, Eugenia J. Dodson Endowed Chair in Cancer Research, Sylvester Comprehensive Cancer Center, University of Miami Miller School of Medicine

Spatial-omics to Interrogate Host-Disease Interactions

Sizun Jiang, PhD

Assistant Professor of Medicine, Director of the Immunology Technologies Core Center for Virology and Vaccine Research, Beth Israel Deaconess Medical Center, Harvard Medical School

Harnessing Innate Immunity for Immunotherapy of Cancer

Marco Colonna, MD

Robert Rock Belliveau, MD, Professor of Pathology & Immunology, BJC Institute of Health at Washington University

A Ligand-Based CAR T for Treating B-Cell Cancers

Reshmi Parameswaran, MS, PhD

Assistant Professor in the Departments of Pathology, Pediatrics and Medicine, Member of the Immune Oncology Program, Case Comprehensive Cancer Center

Updates With CAR T cells

Carl June, MD

Richard W. Vague Professor in Immunotherapy, Director of the Center for Cellular Immunotherapies, Perelman School of Medicine, Director, Parker Institute for Cancer Immunotherapy, University of Pennsylvania

Targeting the Microbiome to Promote Health and End Cancer

Jennifer Wargo, MD, MMSc

Professor in the Departments of Surgical Oncology and Genomic Medicine, Leader of the Platform for Innovative Microbiome and Translational Research (PRIME-TR), The University of Texas MD Anderson Cancer Center

First-, second- and third- top-scoring posters in each category of the symposium poster session are listed below:

Postdoc, Residents, Fellows

- First Place: Dr. No-Joon Song – Mentor, Dr. Zihai Li
- Second Place: Dr. Jordan Krull – Mentor, Dr. Qin Ma
- Third Place: Dr. Kinda Sara – Mentor, Dr. Aharon Freud

Graduate Students

- First Place: Erin Jeremy – Mentor, Dr. Bethany Mundy-Bosse
- Second Place: Ruohan Zhang – Mentor, Dr. Gang Xin
- Third Place: Tong Xiao – Mentor, Dr. Zihai Li

Undergraduates, Laboratory Staff

- First Place: Danny Kim – Mentor, Dr. Lapo Alinari
- Second Place: Hajra Hussain – Mentor, Dr. Mark Rubinstein
- Third Place: Hasan Pracha – Mentor, Dr. Steve Oghumu

In addition, an award for best trainee talk was presented to Yi Wang, graduate research assistant – Mentor, Dr. Zihai Li.

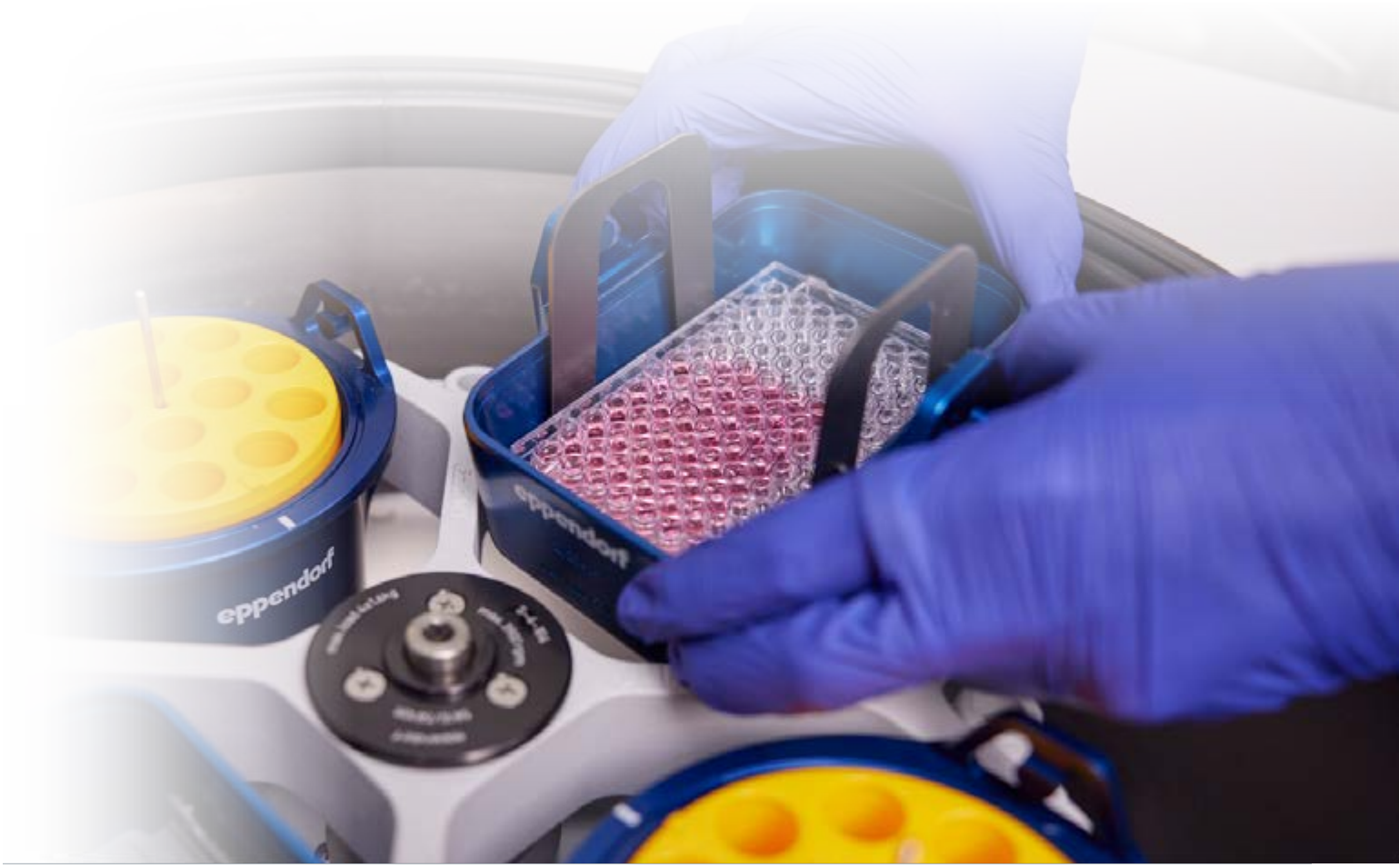
PRIORITY RESEARCH PROGRAM

Brian Searle, PhD

Ariana Shannon

Dr. Brian Searle and Ariana Shannon received a **PIIO Priority Research Voucher Program Award** for their proposal titled "Building a Proteomic Method of Fingerprinting Immune Cells With Mass Spectrometry-Based Proteomics." In this project, the Searle laboratory will leverage mass spectrometry-based proteomics to target specific immune proteins in parallel to reveal 1) the diverse populations of immune cells in the tumor microenvironment (TME) and 2) the functional state of immune cells in the TME with regard to biochemical processing capacity.

Directed by Mark Rubinstein, PhD, under the leadership of PIIO Founding Director Zihai Li, MD, PhD, the Priority Research Program provides resources for well-developed immuno-oncology (IO) projects as a final step prior to manuscript or grant submission. This biannual funding opportunity is open to all members of the PIIO, which supports one or two priority projects each fiscal year, although the scope could change depending on IO research priorities. To learn more, visit go.osu.edu/priorityresearchvoucherprogram.



PIIO EXPANDS TO THE PELOTONIA RESEARCH CENTER

The new state-of-the-art Pelotonia Research Center (PaRC) represents a hub of excellence where researchers from diverse disciplines converge to tackle some of the most pressing challenges in health care. In a significant stride toward fostering team science and innovation, the PIIO has begun its expansion to the PaRC – a pivotal development in the PIIO's commitment to advancing scientific discovery and addressing critical health challenges through collaborative IO research.

Labs moving to the PaRC encompass specialties ranging from cancer immunotherapy to computational immunobiology. Researchers whose labs are moving to the new facility include:

Ephraim Ansa-Addo, PhD

Research area: Tregs and tumor microenvironment

Glen Barber, PhD, FRS

Research area: Viral oncolytics, innate immunity, inflammation-associated cancer

Dongjun Chung, PhD

Research area: Statistical genetics and genomics, predictive modeling

Katherine Collier, MD

Research area: Predictive biomarkers to inform clinical trial design for GU cancers

Hakimeh Ebrahim-Nik, PhD

Research area: Cancer immunotherapy and drug discovery

Tim Gauntner, DO, PhD

Research area: Immune regulation in the tumor microenvironment

PIIO EXPANDS TO THE PELOTONIA RESEARCH CENTER

Xue Han, PhD

Research area: Vista, immune checkpoint molecule

Elshad Hasanov, MD, PhD

Research area: Primary tumor-specific genomic drivers of brain metastases

Feng Hong, MD, PhD

Research area: UPR inhibitors for cancer immunotherapies

Stanley Huang, PhD

Research area: Innate immunity & immunometabolism

Zihai Li, MD, PhD

Research area: Immune regulation and cancer immunotherapy

Qin Ma, PhD

Research area: Omics, single-cell transcriptome

Mark Rubinstein, PhD

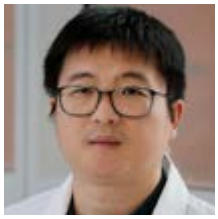
Research area: Adoptive T-cell therapy and cytokine biology

Brian Searle, PhD

Research area: Proteomics, mass spectrometry, bioinformatics

Gang Xin, PhD

Research area: Dual TCR targeting cancer and pathogen



Linghua Zheng, PhD

Research area: PILR-alpha/CD8-alpha: a new T-cell inhibitory axis

The consolidation of these interdisciplinary research endeavors within the PaRC will empower the PIIO to become a leader in driving immuno-oncology breakthroughs.

PIIO SCORECARD

118
Members

$39M+
Annual funding
($22M from NCI)

1135
Publications in peer-reviewed journals, 2019-2023

230+
IO Trials Launched

80+
Currently Open to Accrual

73 & 56
Technologies disclosed | Patents issued
2019-2023

One vision
To work toward cancer cures by advancing IO

Thank you!

To learn more about the PIIO, visit
cancer.osu.edu/PIIO

To learn more about Ohio State's cancer program, visit
cancer.osu.edu

or follow us on social media:

cancer.osu.edu/socialmedia

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