



UNIVERSITY CANCER RESEARCH FUND

2021 LEGISLATIVE REPORT

Annual Financial Report to the Joint Legislative Education Oversight Committee and the Office of State Budget and Management

Submitted November 1, 2021, in accordance with G.S.116-29.1



**LINEBERGER
COMPREHENSIVE
CANCER CENTER**

North Carolina's investment in the University Cancer Research Fund continues to pay dividends through better patient care, advanced research and a growing economic impact in our state. As Chair of the Cancer Research Fund Committee, I am pleased to share this year's legislative report detailing the many ways the UCRF enables the UNC Lineberger Comprehensive Cancer Center to remain a global leader in cancer care and research.

During the past year, despite the many unprecedented challenges COVID-19 caused, UNC Lineberger's outstanding faculty members – who are world-class experts in their fields – persisted with their collaborative and innovative work. Bolstered by funding from the UCRF, their unwavering focus on cancer genetics, treatments and outcomes is enhancing the world's understanding of one of the leading causes of death in North Carolina. This report highlights some of the groundbreaking work that's supported by the UCRF – whether it's in laboratory-based research, or in a clinical care setting, or in the communities we partner with all across North Carolina.

In addition to its health and research impacts, the UCRF has brought ongoing economic benefits to North Carolina – including direct employment, the awarding of additional research grants, and spin-off jobs and companies. These benefits have grown over time, showing a 12-to-1 return on the state's investment this year. Examples of the economic gains we've seen in FY 2021 include:

- Receiving \$188.8 million in federal research grants based on research supported by UCRF funds, bringing the total to more than \$231.1 million in external funding.
- Creating more than 1,333 jobs in North Carolina.
- Generating \$21.5 million in local and state tax revenue.
- Expanding UCRF dollars invested in research resulted in an expansion of the state's economy by greater than \$679.2 million.
- Recruiting 18 and retaining 5 of the best and brightest faculty members.

As these metrics and research milestones demonstrate, the UCRF continues to make a positive difference in the health of our state's residents and in its economy. On behalf of the patients and families touched by this disease – and on behalf of the doctors and researchers working together to improve cancer care and outcomes – thank you for your ongoing support of this landmark investment in the fight against cancer.



Kevin M. Guskiewicz, PhD

Chair, Cancer Research Fund Committee



INTRODUCTION

INTRODUCTION

The University Cancer Research Fund (UCRF) has been a vital resource in the fight against cancer in North Carolina. It has fueled innovative research aiming to improve prevention and early detection of cancer, to produce better outcomes for cancer patients and survivors, and to ultimately find a cure for the state's deadliest disease.

The General Assembly created the UCRF in 2007 to support world-class research at the UNC Lineberger Comprehensive Cancer Center, a global leader in cancer research and the only public National Cancer Institute-designated center of excellence in the state.

The impacts of this nation-leading investment have been profound. Using UCRF funds, UNC Lineberger has successfully recruited, retained, and supported the research of outstanding faculty who are top experts in their fields of study. The Fund has also fueled the development of core resources – such as cutting-edge collaborative facilities, rich data resources, and advanced equipment and technology – that are essential for making transformative research breakthroughs from the lab to the patient care setting.

The UCRF also plays a key role in UNC Lineberger's mission of education, research and public service: It provides foundational support for research partnerships with other North Carolina organizations, a clinical trials network, educational outreach, technology and shared data resources, and community-based interventions that reach patients and providers in all 100 counties.

In addition to these research impacts, since its creation the UCRF has generated significant economic benefits for North Carolina. For FY 2021 these impacts include:

- The creation of the equivalent of 3,315 new induced or indirect jobs, based on an independent economic evaluation.
- A growing economic impact that reached \$679.2 million.
- More than \$231.1 million in outside funding leveraged; these funds are directly linked to faculty recruited or retained with UCRF funds or attributable to UCRF innovation grants, technology or infrastructure investments.
- An increased return on investment each year, exceeding a 12-to-1 return.

HISTORY

In 2007 the General Assembly created the University Cancer Research Fund, making a landmark investment in cancer care and research. The UCRF was originally funded by a combination of state appropriations, tobacco settlement funds, and taxes on non-cigarette tobacco products such as snuff. In 2013, the legislature consolidated all earmarked tobacco settlement monies into the General Fund, eliminating that source of UCRF support. The portion of UCRF revenue from non-cigarette tobacco product sales varies year by year depending on sales. The total allocation to the UCRF was \$58.1 million in FY 2021.

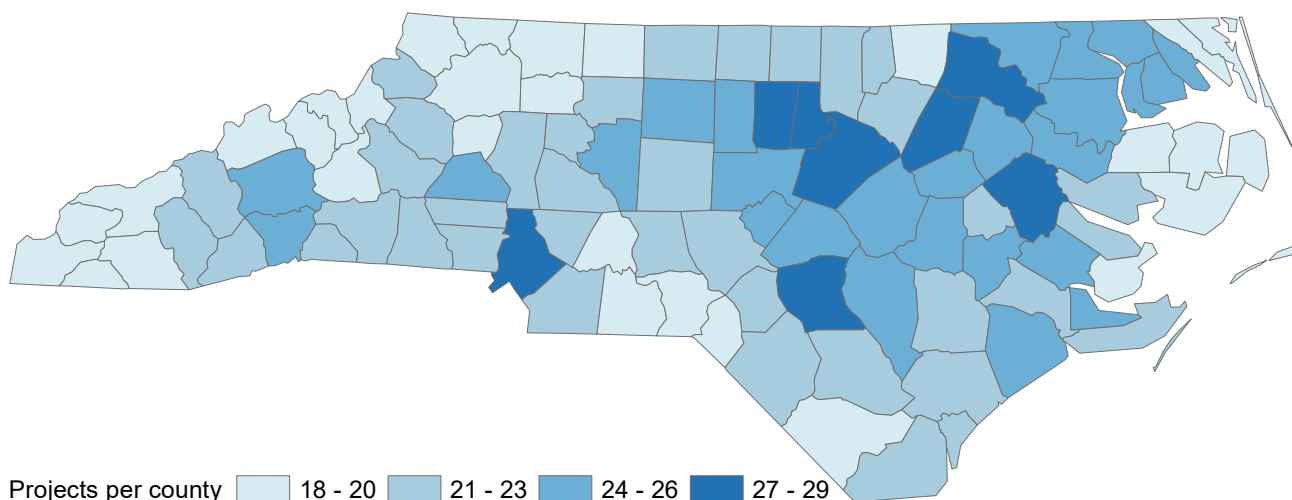
When the UCRF was created, the General Assembly established the Cancer Research Fund Committee to ensure that UCRF resources are invested responsibly. The Committee provides ongoing oversight of the Fund, and a strategic plan adopted in 2009 targets UCRF resources in areas where they can have maximum impact:

- Strategic research priorities in genetics, novel therapies, and outcomes;
- Clinical excellence through selective opportunities that enable UNC to continue to be a leader in a rapidly changing field of research; and
- Critical infrastructure such as technology, training, outreach and other core resources.

Ongoing UCRF support of research and infrastructure is complemented by North Carolina's two major capital investments in cancer care. The N.C. Cancer Hospital opened in 2009 and serves patients from all 100 counties, helping nearly 210,000 patients annually and serving as the clinical "home base" for research. Marsico Hall opened in 2004 as a cutting-edge collaborative research facility, with advanced equipment and technology that further accelerates cross-disciplinary research capabilities.

The Cancer Research Fund Committee has published regular reports on the UCRF's supported activities since 2008. In 2011, the General Assembly mandated an annual financial report that includes the UCRF's effects on the state's economy, details on expenditures of UCRF monies and outside funds leveraged by UCRF support, and other performance measures. As this report shows, the University Cancer Research Fund has generated considerable economic and health benefits that will only continue to grow as UNC remains a global leader in the fight against cancer.

OUTREACH ACROSS NORTH CAROLINA

**A. Cancer Data Resources**

Cancer Information and Population Health Resource (CIPHR)
 UNC Health Registry
 Lung Cancer Screening Registry
 Carolina Breast Cancer Study
 Carolina Senior Registry

B. Understanding Cancer Disparities

Bladder cancer survivorship
 NCCU-LCCC Partnership in Cancer Research
 Community-based breast cancer screening and surveillance
 Effect of breast density legislation on screening
 Comparative effectiveness of screening and evaluation by breast density
 Carolina Head and Neck Cancer Study
 HPV self-collection and cervical cancer screening
 Trends and quality of testicular cancer care in NC
 GMaP: Geographic Management of Cancer Health Disparities Program
 Rural-urban treatment patterns for lung cancer
 Racial disparities hot-spotting to improve breast cancer outcomes
 Well Empowered
 CDC colorectal cancer simulation modeling
 Access to and Value of Treatment Innovation Study
 Enhancing comparative effectiveness research
 Increasing minority recruitment in multiple myeloma clinical trials
 Equity in virtual oncology visits
 Treatment disparities in kidney cancer
 Navigation to increase minority enrollment and retention in clinical trials

C. Cancer Screening

SCORE: Scaling Colorectal Cancer Screening through Outreach, Referral, and Engagement
 Rural Cancer Study in NC
 Carolina Cancer Screening Initiative
 Comparison of multiple FIT tests for detecting colorectal cancer
 Screening outcomes in older women receiving mammography
 Comorbidity in those undergoing lung cancer screening
 Breast cancer sociodemographic disparities study
 Digital outreach intervention for lung cancer screening

D. Cancer Survivorship

Efficacy of mHealth intervention for prostate cancer patients and partners
 mHealth physical activity intervention for AYA cancer survivors
 Cancer Transitions
 Couple-focused mHealth Intervention for prostate cancer symptom management
 Interactive Prostate Cancer Information, Communication and Support Program
 Patient-centered communication about healthy weight in breast cancer patients
 Implementing financial navigation in NC
 Navigator-assisted ecomaps to support to rural cancer caregivers
 Intervention to increase endocrine therapy adherence
 Pills cap shipping to optimize endocrine therapy adherence
 African American survivor engagement to develop physical activity intervention
 Physical activity intervention with Black

colorectal cancer survivors

Addressing financial toxicity in rural oncology care

E. Clinic-based Prevention

Digital weight loss intervention
 Duke – UNC Tobacco Treatment Specialist program
 My Body / My Test
 Maximizing HPV vaccine uptake in young cancer survivors
 EMR-integrated referrals to community services to promote equity
 Impact of AFIX and physician-to-physician engagement on HPV vaccination in primary care

F. Community-based Prevention / Education

ASPIRE: Advancing Science & Practice in the Retail Environment
 Outreach to K-12 science students and curricula
 Outreach to underrepresented STEM high school students
 Tobacco retailer density, sociodemographics, smoking behavior and COPD hospital admissions
 Fort Bragg Tobacco Control Initiative
 Durham Health Ambassador Program
 UNC Superfund Research Community Engagement Core
 A new measure for youth prevention media campaigns
 Impact of e-cigarette prevention messages on adolescents
 Understanding vaping among the vulnerable

G. Improving Treatment Outcomes

Racial differences in financial impact of prostate cancer
 Lay Patient Navigation Initiative
 Improving breast cancer care through navigation

and collaborative partnerships

UNC Lineberger Cancer Network telehealth lectures

UNC Lineberger Cancer Network eTumor Boards

Comparison of operative to medical endocrine therapy for DCIS

Chemotherapy and cognitive decline in acute leukemia

Palliative care intervention for new AM leukemia patients

Exercise program for acute leukemia patients

Mobile health app to promote participation of Black women in breast cancer clinical trials

Care gaps and needs in adolescent and young adult cancers

Testing a prognostic calculator in patients with breast cancer

Treatment options for recurrent bladder cancer

Personalizing kidney cancer communication to support decision-making

Patient priorities after Thoracic Surgery

Acceptability of remote monitoring after lung cancer surgery

Preferences for treatment outcomes in older AM leukemia patients

Exercise therapy for endometrial cancer

Reducing breast cancer mortality by removing barriers to care

Funding patient transportation

Patient-reported outcomes-based performance measures

H. Patient/community advisory board

Immune landscape of non-small cell lung

cancer in African Americans

Improving outcomes for parents with advanced cancer



ECONOMIC
IMPACTS

ECONOMIC IMPACTS

To determine whether the UCRF is achieving its goal of stimulating North Carolina's economy, UNC Lineberger again hired Tripp Umbach, a nationally respected consulting firm, to estimate the UCRF's economic impact for FY 2021. The Fund's overall economic impact was estimated as the sum of its direct and indirect and induced impacts (see the full report in the Appendix). Direct impact resulted from two major sources: expenditures from the UCRF itself, and the expenditure of UCRF-attributable research funds awarded to UNC by federal, foundation and other sources. The indirect and induced impact was calculated by applying standard multipliers to direct expenditures.

For FY 2021, UCRF's total allocation was \$58.1 million. Using standard methodologies, Tripp Umbach estimated that in FY 2021 the UCRF:

- Had an overall economic impact of \$679.2 million, including \$344.6 million in direct spending and \$334.6 million in indirect and induced impact attributable to external grant funding and downstream spending by employees, vendors and contractors.
- Generated nearly \$12 in economic impact for every UCRF dollar spent.
- Supported more than 3,315 jobs, including the direct support of 1,333 jobs in North Carolina and an additional 1,982 jobs through the increased extramural funding and the indirect and induced impacts of those direct jobs and the spending generated within North Carolina.
- Resulted in nearly \$21.5 million in state and local tax revenues to North Carolina.

Tripp Umbach has performed UCRF economic analyses since FY 2013. Earlier economic impact analyses were performed by SRA International and the UNC Center for Competitive Economies (Frank Hawkins Kenan Institute of Private Enterprise) using slightly different methodologies.

Faculty Job Creation and Retention

Outstanding faculty are at the core of the UCRF's successes, heading innovative and groundbreaking research that leads to important advancements in early detection, more effective treatments, and better prevention programs. They hire staff, train students and fellows, purchase equipment, and earn research funding from other sources both inside and outside North Carolina. Since it was created in 2007, the UCRF has enabled UNC Lineberger to recruit and retain nearly 325 world-class leaders in their fields.

- **Recruitment:** The UCRF has supported the recruitment of 18 faculty this year. These faculty are developing a wide range of research programs in that are critical to improving cancer prevention, diagnosis and treatment in our state.
- **Retention:** UCRF support has enabled the retention of 5 faculty this year, allowing top talent to stay at UNC Lineberger where they can continue their research and clinical care.

Extramural Funding Growth

The UCRF's Strategic Plan establishes extramural research funding – particularly competitive federal funding – as a key measure of success. UCRF support is keeping the state at the forefront of research nationally and leveraging significant amounts of extramural research funds for North Carolina. Almost all extramural funds come to UNC from outside the state, adding significantly to North Carolina's economy.

FY 2021 funding from outside sources that is directly attributable to the UCRF totaled \$231.1 million in annual total cost dollars. This amount is based on a snapshot of active attributable extramural funding held by faculty in the first quarter of FY 2021. The dollars represent one year of funding. A complete list of the awards is included in the Appendix.

Intellectual Property, Innovation, and Entrepreneurship

The UCRF supports innovation and discoveries that have created jobs and helped launch companies dedicated to converting research findings into clinical advances. In partnership with UNC's North Carolina Translational and Clinical Sciences Institute, the UCRF promotes an entrepreneurial mindset at UNC and supports specialized staff to maximize the development and licensing of university intellectual property. Thanks to the UCRF, more than 60 startup companies – nearly all of which are located in North Carolina – have launched or expanded their reach. These companies currently employ a workforce of approximately 650 people in North Carolina.





RESEARCH IMPACTS

GUIDING PRINCIPLES

The Cancer Research Fund Committee's strategic plan aims to optimize the use of UCRF monies. The plan calls for UCRF funding to target three specific research priorities – focused on areas in which UNC Lineberger can be a world leader and have meaningful impact – and recommended leveraging the UCRF in support of key clinical and infrastructure resources. The research priorities are:

- **Understanding the Role of Genetics in Cancer Causation and Treatment:** to discover the genes that predispose families to cancer and that predispose cancer patients to poor treatment outcomes – especially by looking for the various genetic mutations in specific cancer subtypes that lead to cancer therapy failure.
- **Developing Novel Therapeutics:** to devise new therapies, including immunotherapy, targeting the specific vulnerabilities of treatment-resistant cancers, and to develop new ways of delivering treatments that reduce toxic side effects for patients. This research priority relates closely to the genetics research priority, and makes key observations that will be used in clinical applications as quickly as possible.
- **Optimizing NC Cancer Outcomes:** to enhance the quality of oncology and survivor care, and to build population-based datasets that track the occurrence and treatment of cancer across North Carolina in order to support research designed to improve community prevention and early detection. The ultimate goal is to understand North Carolina's cancer problem at a level unprecedented in the nation and to design research interventions aimed at rectifying these problems at the practice, health system and community levels.
- **Clinical Infrastructure and Excellence:** UCRF funds allow UNC to adapt to a rapidly changing field by establishing critical infrastructure and by pursuing selective opportunities, outside of the three research priorities, where UNC could strive for clinical excellence and have a major impact in cancer research.

This approach allows the UCRF to seize research or clinical opportunities as they arise and to provide the top minds in the field with the resources they need, building leadership and expertise in key clinical and research areas. Examples include seed funds to recruit top researchers, support of technology and equipment for use by multiple faculty members, and the development of shared research resources. In the clinical setting, UCRF-supported investments in imaging, informatics and fundamental research techniques give UNC's clinician scientists the tools they need to improve patient outcomes, while telemedicine and virtual tumor boards connect doctors and hospitals across the state with UNC's oncology experts. The UCRF provides the opportunity to grow and enhance UNC's multidisciplinary excellence in cancer care and to develop a statewide infrastructure that helps bring leading-edge clinical research and applications into community practices and research institutions across North Carolina.

Shared infrastructure and clinical excellence opportunities provide a vital foundation for our work in cancer care and research. This report highlights some of the key focus areas in our three strategic research priorities – genetics, novel therapies, and outcomes – includes notable faculty awards, and details our outreach efforts across the state.

Expanded community data project will improve understanding of cancer across North Carolina

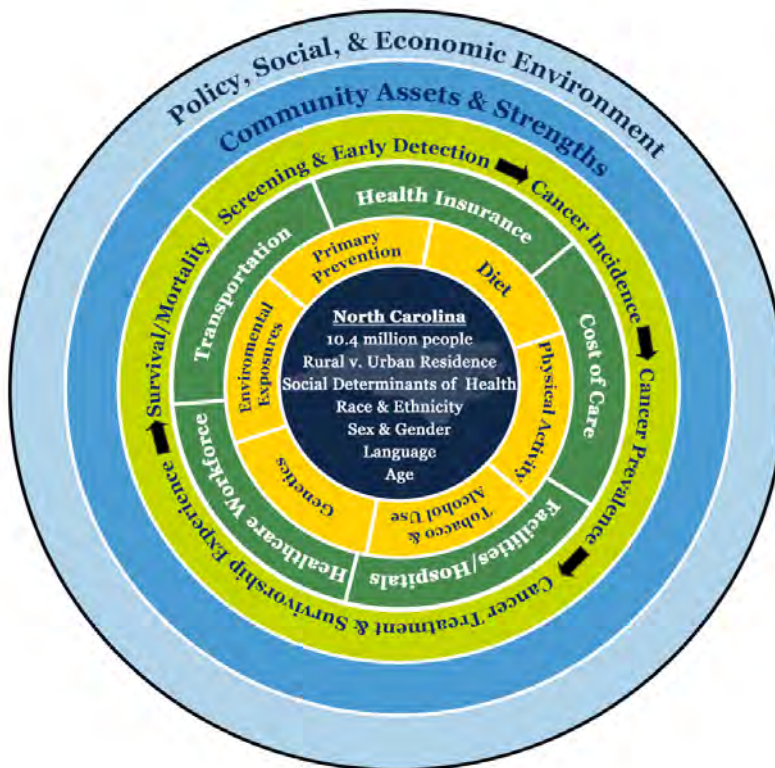
For UNC Lineberger, which sees patients from all 100 counties, involving the community in cancer research programs is critical in developing a better understanding of cancer and its impact in North Carolina. This is the mission of UNC Lineberger's Office of Community Outreach and Engagement (COE), which has begun a major, new data-driven initiative that will comprehensively describe the cancer burden in North Carolina, including factors that influence cancer patterns and outcomes, and especially the needs of cancer patients throughout the state and the resources available to support them.

"Our goal with this comprehensive effort is to generate insights that will improve our understanding of cancer in all 100 North Carolina counties. We are thinking broadly and deeply about the best ways to get answers to what we don't yet know," said UNC Lineberger and UNC Cancer Care Director **Shelley Earp, MD**, Lineberger Professor of Cancer Research and professor of medicine and pharmacology. "These insights will influence how we approach cancer prevention, early detection and treatment research as well as cancer and survivorship care. It will also help to increase

cancer awareness for patients, communities and the public."

The Community Health Assets and Needs Assessment (CHANA) contains three phases and eventually will be a one-stop resource for downloadable, shareable, aggregate and deidentified data, including:

- Collation and analysis of existing public datasets: CHANA is compiling information that is already collected by a range of sources, such as the U.S. Census, and making them available in a downloadable, understandable format.
- In-depth analysis of other secondary data: the Cancer Information & Population Health Resource (CIPHR), a data-rich core internal resource UNC Lineberger built with funding from the UCRF, contains state cancer registry data, health insurance claims data and other information used by UNC researchers to study screening patterns, cancer treatment, outcomes, survivorship and end-of-life care patterns, and other trends for population-based studies of cancer. Under the leadership of Chris Baggett, PhD, CIPHR faculty director and assistant professor, relevant data will be pulled from CIPHR for



North Carolina Cancer Health Assets and Needs Assessment

- NC Population Characteristics
- Cancer Risk Factors
- Healthcare Resource and Access
- Cancer Burden and Needs
- Local Context
- State and National Context

this project to shed more light on cancer care and patient experiences in North Carolina.

- **Primary data collection:** Population-level surveys and qualitative focus groups and interviews with people who have had cancer and with the public at large will provide information about patient experiences, preferences and resources across the state. UNC Lineberger has already awarded six pilot grants to healthcare providers, patient advocacy groups and other community organizations to begin to conduct these assessments within their communities.

“For us, the compilation of these data is a way to clarify in a more comprehensive way the cancer needs and strengths statewide, so that we can be more strategic in where we invest our and the state’s resources, where to grow and expand recruitment and training infrastructure, and where to expand community partnerships,” said UNC Lineberger COE Associate Director **Stephanie Wheeler, PhD, MPH**, professor of health policy and management at the UNC Gillings School of Global Public Health. “But beyond Lineberger, we hope this will serve as a research tool for other researchers and academic institutions, a source of information for policymakers and the legislature, and an easy-to-use resource for patients and communities. Having data about your own community can be powerful.”

UNC Lineberger’s Associate Director of Population Sciences **Andrew Olshan, PhD**, is lending his epidemiological expertise to the project. He’s also connecting CHANA to other efforts on campus, such the environmental mapping work of **Rebecca Fry, PhD**, the Carol Remmer Angle Distinguished Professor in Children’s Environmental Health, whose research focuses on environmental exposures to toxic substances are associated with human disease in North Carolina.

“Part of our goal is to provide stakeholders with the big picture and access to specific data that factors into cancer occurrence and cancer outcomes,” said Olshan, the Barbara S. Hulka Distinguished Professor in cancer epidemiology at UNC Gillings. “Environmental factors, smoking, obesity, social determinants of health, other community factors all can play a part. If this project is describing the cancer problem from a holistic approach, it can point to ways to intervene or improve prevention to reduce the burden of cancer and improve outcomes. We are striving to make it the best and most informative resource and build a sustainable effort that

will be refreshed on a regular basis with new data and new insights.”

Lisa Spees, PhD, is an assistant professor in health policy and management at UNC Gillings and an expert in survey methodologies and data compilation. As operational lead, she’s constantly updating the outline of what CHANA will encompass, managing student assistants, and determining how to fill the data gaps.

“Our cancer center’s catchment area is the whole state, and that’s unique,” she said. “Because it’s so comprehensive, we are collecting data that has not been compiled before. For example, we realized how little information we have about survivorship care, especially those who are off treatment. What supports do they need not just physically, but emotionally and mentally and financially, and what assets are available to them already in the community?”

Highlighting those assets is something that sets CHANA apart from other health assessments, which focus primarily on the burden of cancer and the needs of patients and survivors. That’s why community engagement is such a big part of the project – from helping to define what and where the problems are, to providing local resources to help, and to working with researchers on understanding the data and moving forward with solutions.

“From the beginning to the middle and until the end, community is integral to the work that we do,” said **Veronica Carlisle, MPH**, COE’s senior community health educator, who has built and maintained relationships with countless people and community groups across the state since joining UNC Lineberger in 2002. “Survivors, caregivers, community-based organizations whose focus is on cancer, and faith-based organizations have their finger on the pulse based on their experience and their work. We are looking to address cancer concerns and needs by working together. We can’t do it without each other.”



Wheeler



Olshan



Carlisle

UNC discoveries lead to clinical trials for better pancreatic cancer treatments

One of the most aggressive and difficult to treat cancers, pancreatic cancer is on the rise in the United States. Pancreatic cancer has the lowest five-year survival rate of all major cancers: Only one in 10 people diagnosed with pancreatic cancer today will still be alive in five years.

UNC Lineberger researchers have been on the forefront of the hunt for more effective ways to treat this aggressive cancer. Clinical trials based on UNC research discoveries are actively enrolling patients across the country, and UNC Lineberger has established a Pancreatic Cancer Center of Excellence to bring together clinicians, researchers, patients and community organizations in a focused, collaborative approach to improve pancreatic cancer care and outcomes.

“Pancreatic cancer is a truly unrelenting cancer, and until we can develop different approaches for early detection and for better local and systemic therapy, the outcomes will continue to be totally unacceptable,” said UNC Lineberger and UNC Cancer Care Director **Shelley Earp, MD**. “Our investment in the center of excellence leverages UNC Lineberger’s basic science, genomics, immunotherapy, biomedical engineering and clinical strengths to blaze a new path toward better patient-centered care and outcomes.”

Led by **Jen Jen Yeh, MD**, the center’s mission is to provide excellent multidisciplinary patient care and generate research discoveries that can be translated into new, more effective approaches and ultimately, cures for pancreatic cancer.



Yeh

“The UNC Lineberger Pancreatic Cancer Center of Excellence formally brings together an outstanding group of researchers, clinicians and staff. Even though we are on one campus, we will have an even more unified and integrated way to think about pancreatic cancer,” said Yeh, who is an Oliver Smithies Investigator and vice chair for research in the Department of Surgery. “We now will have an infrastructure to connect people, to integrate innovative research findings with clinical care. This will enable us to diagnose pancreatic cancer better, to develop new treatments and to make better treatment decisions and improve quality of life.”

Two trials are based on the groundbreaking work of **Channing Der, PhD**, Kenan Distinguished Professor in the UNC School of Medicine Department of Pharmacology, and **Kirsten Bryant, PhD**, assistant professor of pharmacology. Investigating mutations in the KRAS gene that spur pancreatic cancer growth, they discovered in lab experiments that autophagy – an unusual process in which pancreatic cancer cells essentially eat themselves to gain nutrients – is linked to KRAS protein signaling. The trials will evaluate the safety and efficacy of drugs that target KRAS proteins and a drug that blocks autophagy.

Another trial, based on pancreatic cancer subtypes discovered by Yeh and developed into a clinical test by UNC Lineberger’s **Margaret Gulley, MD**, and **Jason Merker, MD, PhD**, will be the first trial to tailor treatment based on pancreatic cancer subtypes.



Der



Bryant

Lung cancer researchers target better treatment, screening

Thanks in part to advances in early detection and treatment, the number of new lung cancer cases and lung cancer deaths continues to decrease. Even so, lung cancer is the leading cause of cancer death among both men and women. UNC Lineberger members are playing key roles in the fight against lung cancer, from helping shape screening guidelines to developing and testing possible new treatment approaches.

Jared Weiss, MD, associate professor of medicine in the Division of Oncology, said UNC Lineberger researchers have helped lead in the development of several new cancer drugs that gained FDA approval within the past year, including:

- Trilaciclib, which decreases the side effects of small cell lung cancer chemotherapy. This was invented by former UNC Lineberger director Ned Sharpless, MD, during his time at UNC. Weiss ran the first study.
- Selpercatinib, a new targeted therapy in non-small cell lung cancer. UNC researchers participated in a Phase I study, and it resulted in FDA approval and two New England Journal of Medicine papers.
- Adagrasib: Weiss presented Phase I data on this novel KRAS inhibitor combined with Cetuximab in colorectal cancer, showing the first real efficacy against KRAS in colorectal and leading to a phase III registrational study.

Also on the horizon are new cancer medicines that aim to personalize treatment and rely on immunotherapy, using a patient's own immune cells to fight cancer cells. Weiss said personalized immunotherapy is a key area of focus that is driving UNC's leadership in cancer research. "I believe that our next big leap in immunotherapy will be from these types of personalized approaches," he said.

UNC Lineberger is one of the world's top institutions in the field of cellular therapeutics, thanks to the leadership of **Jonathan Serody, MD**, **Barbara Savoldo, MD, PhD**, **Gianpietro Dotti, MD**, and **Natalie Grover, MD**. In collaboration with these leaders, Weiss is the principal investigator for two upcoming lung cancer CAR-T cell trials. One study will focus on lung cancer, and the other



Jared Weiss, MD, and Benjamin Vincent, MD

will target head and neck cancer. Additionally, UNC Lineberger has partnered with pharmaceutical companies to provide a novel therapy that harvests the immune cells in a patient's tumor, expands them in a laboratory and gives them back after the administration of chemotherapy.

UNC Lineberger is also a leader in the study of personalized vaccinations. **Benjamin Vincent, MD**, an assistant professor of microbiology and immunology, has developed advanced bioinformatics methods that empower an innovative adaptive vaccine therapy called PANDA-VAC. Because tumors adapt to fend off treatment, the PANDA-VAC was designed to be adaptive. When cancer progresses on the vaccine, the doctors rebiopsy, re-sequence on the new biopsy, redo informatics based on the new data, and work on targeting the tumor's changes.

"The tumor adapts to anything that we do to kill it," Weiss said. "That's why targeted therapies typically last less than two years. We need to adapt to fight back!"

Another common therapy target is protein signaling, or when a protein that activates to set off a chain of activity within a tumor cell. UNC Lineberger's **Chad Pecot, MD**, an associate professor at the UNC School of Medicine, and colleagues have uncovered the first connections between circular RNAs and Golgi bodies and found that a specific circular RNA protein may be a good target for attacking lung squamous cell cancer. This circular RNA, called

CDR1as, works through an unstudied protein called CDR1.

“We found that CDR1as plays a large role in driving metastasis in lung squamous cancer,” Pecot said. “However, because nothing was really known about CDR1, the protein regulated by CDR1as, our journey was just beginning. I’m very hopeful, based on our work and much of what is being done in the field of drug development, that many new medicines are on the horizon.”

While some UNC researchers are focused on innovating lung cancer treatments, others are playing key roles in improving early detection and prevention measures.

Annual screening is recommended for those at high risk of lung cancer because it can help detect disease early. The screening uses low-dose computed tomography (LDCT), with an X-ray machine using a low amount of radiation to make detailed images of a patient’s lungs. As part of the first update of screening guidelines in nearly a decade, UNC researchers and their collaborators evaluated and synthesized data from seven cancer screening trials to arrive at a comprehensive, current assessment of the harms and benefits of screening.

Based on the evidence review, the U.S. Preventive Services Task Force issued new recommendations that could more than double the number of adults eligible for lung cancer screening, according to estimates. Besides participating in the review, UNC Lineberger researchers published their viewpoints in the *Journal of the American Medical Association*.

In one editorial, **Daniel Reuland, MD, MPH**, endorsed the Center for Medicare & Medicaid Services’ requirement that healthcare professionals and patients engage in a shared discussion of benefits and harms before proceeding with LDCT scans. In addition to having patients give fully informed consent, shared decision-making can promote patient engagement, tobacco cessation and screening adherence, which may lead to greater health equity.

“Having yearly CT screening is a consequential decision,” said Reuland, a professor of general medicine and clinical



Ethan Basch, MD, MSc, and Shekinah Elmore, MD

epidemiology. “Patients should understand the benefits, harms and costs involved, and their values and preferences should be considered.”

The studies that led to the new Task Force recommendations contained limited evidence on the effectiveness of lung cancer screening in patients with comorbid conditions and other health factors that could make them ineligible for standard early-stage lung cancer treatments. Thanks to a \$1.5 million grant from the National Cancer Institute, **Louise M. Henderson, PhD**, professor of radiology, and **M. Patricia Rivera, MD**, professor of medicine, are leading a study using population-based registry data to provide evidence-based, real-world data taking those issues into account to help close that research gap.

Henderson, Rivera, and **Ethan Basch, MD, MSc**, the Richard M. Goldberg Distinguished Professor in Medical Oncology and chief of oncology, co-authored a separate editorial suggesting ways to make the new screening recommendations more inclusive of populations that have been historically underserved, citing financial barriers and a healthcare provider’s lack of time as challenges for implementing the recommendations.

UNC Lineberger a national leader in CAR-T immunotherapy

Six years ago, UNC Lineberger made an insightful commitment to be an “early adopter” of cellular immunotherapy, or using a patient’s own genetically reprogrammed immune cells to attack cancer cells. Using UCRF funds, UNC Lineberger recruited renowned immunotherapy pioneers to Chapel Hill, developed a robust clinical research immunotherapy infrastructure partnering with physicians, nurses and other care providers, and built a Good Manufacturing Practices facility where patients’ immune cells can be transformed into cancer-fighting agents.

Thanks to these early investments, UNC Lineberger is one of a select few academic centers in the United States with the scientific, technical and clinical capabilities to develop and deliver adoptive cellular therapy to patients. The program has predominantly focused on the use of chimeric antigen receptor (CAR)-modified T-cells. The process for developing CAR-T immunotherapy involves collecting T-cells, a type of immune cell, from a patient and genetically re-engineering them by transduction with a virus to recognize cancer proteins. The CAR-T cells are reinfused into the patient and circulate in the blood to attack the patient’s cancer cells.

UNC Lineberger’s cellular immunotherapy program – under the direction of **Jonathan Serody, MD**, the Elizabeth Thomas Professor of Medicine, Microbiology and Immunology and chief of the UNC School of Medicine Division of Hematology, **Gianpietro Dotti, MD**, professor



Gianpietro Dotti, MD, Jonathan Serody, MD, and Barbara Savoldo, MD, PhD

of microbiology and immunology, and **Barbara Savoldo MD, PhD**, professor of pediatrics – has become a national leader in this innovative treatment approach.

Last year, UNC Lineberger and Baylor College of Medicine researchers demonstrated for the first time that CAR-T immunotherapy could be used to effectively treat relapsed/refractory Hodgkin lymphoma in patients who had been previously treated and failed multiple other therapies. The clinical trial showed that the treatment was not only safe, but also was highly effective in patients with Hodgkin lymphoma – leading to the complete disappearance of tumor in the majority of patients treated at the highest dose level of therapy with almost all patients having clinical benefit after treatment.

“This treatment showed remarkable antitumor activity without significant toxicity, and we think it should be considered for patients in earlier stages of refractory/

“We’ve become one of the top five centers in the country for developing CAR-T cell therapy and one of the cutting-edge pre-eminent places in the world to iterate on this therapy.”

- Jonathan Serody, MD

relapsing Hodgkin lymphoma,” Savoldo said.

While CAR-T immunotherapy has proven effective in blood cancers, new research led by Serody has found that T-cells can also be used to effectively attack solid tumors, such as breast cancers. Using mouse models, they discovered that adding a small molecule to “boost” the treatment helps recruit more immune cells into battle at the tumor site.

“We know that CAR-T cells are safe for patients with solid tumors but so far they have not been able to cause significant tumor regression in the overwhelming majority of people treated,” Serody said. “Now we may have a new approach to make CAR-T cells work better in solid tumors, which we think could be a game-changer for therapies aimed at an appreciable number of previously untreatable cancers.”

Another potential game-changer is an experimental “safety switch” that UNC Lineberger researchers have developed in hopes of reducing the severity of treatment side effects that sometimes occur with CAR-T therapy. With standard forms of cancer therapies like pills and infused drugs, doctors can stop or lower drug dosing to respond to toxic side effects – but with cell-based immunotherapies, this is not possible after the cells are infused back into the patient. As a possible solution, UNC Lineberger researchers engineered T-cells to include a safety switch called inducible caspase-9, or iC9, that can be activated if toxic side effects develop. Administration of the drug rimiducid “triggers” the safety switch.

“Because of our active Cellular Immunotherapy Program at UNC Lineberger, we can engineer and generate various CAR-T cells for clinical trials. In this case, we have produced specialized CAR-T cells that could benefit patients by enhancing safety,” said UNC Lineberger member **Matthew Foster, MD**, an associate professor in the UNC School of Medicine.

One of the participants enrolled in UNC Lineberger’s early-phase clinical trial to test the safety and efficacy of this approach experienced a severe side effect — immune effector cell-associated neurotoxicity syndrome (ICANS) — after her CAR-T infusion. Her clinicians quickly reduced the severity of the side effects by administering rimiducid to activate the iC9 safety switch. The toxicities were nearly eliminated within one day.

“Even though this is the first cancer test of this safety switch and only documents an outcome in one patient, the fact that the drug was so successful so quickly gives us hope that it could have wider applications in a larger group of leukemia patients,” Dotti said.

Since then, two more patients have been treated with the safety switch to address severe side effects. The toxicity was quickly eliminated and the treatment caused the patients’ cancers to go in remission. Researchers are now starting to explore the effects of lower doses of rimiducid, (the drug that triggers the safety switch) in patients with less severe toxicity as a way to intervene early and prevent severe toxicity.

The safety switch is opening the door for UNC Lineberger to develop other solid tumor trials. An ovarian cancer trial is under way, as is one of the few pediatric solid tumor trials in the country treating patients with metastatic osteosarcoma or neuroblastoma. In most of these trials, UNC is the only place in the country where these therapies are available.

“We’ve become one of the top five centers in the country for developing CAR-T cell therapy and one of the cutting-edge pre-eminent places in the world to iterate on this therapy,” said Serody, whose UCRF-developed program involves more than 70 people. “We continue to learn from our colleagues, and we try to push the field ourselves all in the hope of someday curing different types of metastatic cancer.”

“The safety switch is opening the door for UNC Lineberger to develop new trials to treat a number of solid tumors. We are particularly excited about first-in-human trials in brain cancer, head and neck cancer, pancreatic cancer and lung cancer.”

- Shelley Earp, MD

Research Priority 1: Genetics in Cancer Causation and Treatment

Scientists uncover new mechanism that drives cancer development

UNC Lineberger researchers **Greg Wang, PhD**, associate professor of biochemistry and biophysics, and pharmacology, and **Douglas Phanstiel, PhD**, assistant professor of cell biology and physiology, have discovered a new mechanism that activates specific genes and leads to the development of cancers. Published in the highly read scientific journal *Nature*, their work brings new insights into the complex, multistep process that contributes to the development of disease.

The research team found that a mutation that fuses two unrelated genes can promote a process called liquid phase separation, similar to when oil and water are mixed but do not blend together, inside a cell's nucleus. The researchers discovered this process by performing laboratory experiments in cancer cells with a common gene fusion called NUP98-HOXA9, which is found in blood cells of patients who develop leukemia.

The researchers discovered that phase separation can affect the genome's three-dimensional structure by creating chromatin loops, which organize the genome and help control which regions are active and which are not. These loops can connect regulatory parts of chromatin to cancer genes, driving the development of cancer.

These remarkable findings bring greater understanding of the complex interplay of biology, physics and genetics inside a cell. Since most of this experimental work was done in the lab, the scientists hope to soon study certain aspects of the process in living organisms and other diseases.



Wang



Phanstiel

“Phase separation and its role in cancer has been a missing puzzle piece in understanding the development of human cancers,” Wang said. “This finding is among the first to link phase separation to development of these terrible diseases. We hope to look into possible therapeutic agents that target phase separation as we know that this process can also impact neurodegenerative diseases such as Alzheimer’s.”

Researchers use advanced technology to reveal key DNA sensor in immune system

For the first time, UNC researchers have detailed the structure of a key DNA-sensing protein called cGAS that binds to the nucleosome – the fundamental unit of DNA packaging inside a cell's nucleus – and that plays a major role in the body's innate immune system.

UNC Lineberger members **Qi Zhang, PhD**, associate professor of biochemistry and biophysics, **Pengda Liu, PhD**, assistant professor of biochemistry, and **Robert McGinty, MD, PhD**, assistant professor of chemical biology and medicinal chemistry, published research in the journal *Science* revealing in detail how nucleosomes block cGAS from unintentionally triggering a person's innate immune response to their own DNA.

“A deeper understanding of functions and regulations of this important DNA sensor will have profound impacts on both basic research and translational development of cGAS-targeted therapeutics crucial to the betterment of human health,” Zhang said. “Biomedical scientists will be able to apply our research to fields such as immunology, cancer biology, and gene regulation, as well as to drug discovery for infections, inflammatory diseases, and cancers.”



Zhang



Liu

In mammals, cGAS detects foreign or damaged “self” DNAs as part of the immune system’s process of fighting infections, inflammatory diseases and cancers. To avoid any unintended immune responses, cGAS must be regulated to differentiate harmful DNA from the body’s own healthy DNA. But, until this study, scientists had not discovered exactly how cGAS ignores healthy DNA.

Zhang and McGinty used state-of-the-art cryo-electron



McGinty

microscopy technology that enabled them to see cellular proteins with unprecedented clarity. The high-resolution structure shows that cGAS uses amino acids to anchor to a negatively charged patch on the nucleosome surface, allowing the nucleosome to occupy a critical DNA-sensing surface on cGAS and prevent cGAS from activating immune system responses.

“By seeing how these proteins function normally, we can gain insights into how to manipulate their functions to treat diseases,” McGinty said. “These findings reshape the current paradigm of cGAS regulation and exemplify the role of the nucleosome in regulating diverse protein functions.”

Katherine Hoadley, PhD

UNC Lineberger member Katherine Hoadley, PhD, assistant professor of genetics, is a big believer in “team science” – collaborating with colleagues, patients and potential donors to help make breakthrough discoveries in cancer genetics.

“Different backgrounds are beneficial, and they can change the direction you’re taking,” said Hoadley, assistant professor of genetics. “Everyone’s slightly different area of expertise helps our perspective. I’m always interested in hearing their views, it might help jog a different question or clue or way to analyze the data.”

After starting her research career with the U.S. Department of Agriculture, Hoadley came to UNC-Chapel Hill for graduate school and met UNC Lineberger’s Chuck Perou, PhD, the May Goldman Shaw Distinguished Professor of Molecular Oncology, who would become her mentor. “It set me on this path to study breast cancer, which is the biggest component of my lab,” she said. “At the time, I had no personal connection, no family history of cancer. I really liked the science and mentorship I got from Chuck, so it led me into the cancer field.”

Hoadley’s research focuses on genetic and genomic analyses of breast cancer data, aiming to better classify and investigate aggressive breast cancers. Working with several teams of colleagues and students, her goal is to improve survival outcomes by more accurately predicting patients’ responses to chemotherapy. She had an active role in The Cancer Genome Atlas project, which analyzed more than 10,000 samples from 33 tumor types, and collaborates with fellow UNC Lineberger member Melissa Troester, PhD, MPH, professor of epidemiology, on understanding disparities in breast



Katherine Hoadley, PhD

cancer, using patient data from clinical trials and the Carolina Breast Cancer Study.

Hoadley also takes her work outside of her lab, sharing her research with patients, advocates, potential donors and community members. “We get to engage a lot of survivors and advocates in the community and help show people what their funds are doing and how we’re using them locally to advance cancer science,” she said. “It’s wonderful to see them not be afraid to ask questions and feel more connected to our research – it gets us out of our scientific bubble.”

Research Priority 2: Developing Novel Therapeutics***Immunotherapy could aid bladder cancer patients regardless of genetic mutation***

In a discovery that runs counter to prior assumptions, UNC Lineberger scientists have shown that patients with advanced bladder cancers whose tumors have a genetic mutation respond to immunotherapy treatment similarly to patients without that mutation – a finding that has important implications for patients who have not been offered immunotherapy because of their genetic profiles.

More than 83,700 people in the United States will be diagnosed with bladder cancer in 2021, according to the National Cancer Institute. While the cancer is treatable when diagnosed early, the five-year survival rate is about 6 percent in advanced cases where the cancer has spread to other parts of the body. Within that low survival group of patients, about 15 percent of their tumors have mutations in the FGFR3 gene. These mutations make the gene overactive and contribute to high mortality.

Before this decade, bladder cancer treatment was primarily limited to chemotherapy, but the FDA has approved significant treatment advances in recent years, including a drug called erdafitinib (Balversa) that prolongs survival and immunotherapies to treat advanced cancer.

Prior clinical trials found that bladder cancers with FGFR3 mutations have fewer immune cells than cancers without the mutation. Because tumors with low immune cell levels tend to respond poorly to immunotherapy, it was thought that patients with FGFR3 mutations would have low response rates to immunotherapy. UNC researchers tested this hypothesis by comparing tumor tissue samples and clinical trials data from 17 patients with FGFR3-mutated bladder cancer to 86 patients whose tumors did not have the mutation.

The team which included Tracy Rose, MD, MPH, assistant professor



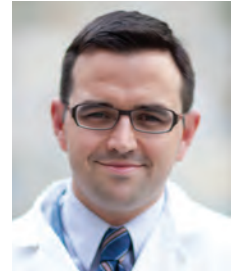
Rose



Milowsky

of oncology, Matthew Milowsky, MD, FASCO, the George Gabriel and Frances Gable Villere Distinguished Professor of Bladder and Genitourinary Cancer Research, and Matthew Nielsen, MD, MS, the John Sloan Rhodes and John Flint Rhodes Distinguished Professor of Urology, found that both groups of patients responded to immunotherapy equally, and at the cellular level both groups of tumors had a similar balance of immune suppression and immune activation signals in tumors – indicating a similar chance of benefiting from immunotherapy. Their findings are published in the British Journal of Cancer.

“Despite prior work suggesting that FGFR3-mutated bladder cancers should not be treated with immunotherapy, our study demonstrates the opposite, so we believe that immunotherapy should be offered without hesitation,” said UNC Lineberger member William Y. Kim, MD, Rush S. Dickson Distinguished Professor of Medicine and professor of genetics.



Nielsen



Kim

Researchers find gene linked to children's bone cancer, identify potential therapy

Each year, about 250 children and young adults in the United States are diagnosed with the bone cancer Ewing sarcoma. About half of those diagnosed will ultimately die of the disease, pointing to the need for more effective treatments.

UNC Lineberger researchers Pengda Liu, PhD, assistant professor of biochemistry and biophysics, and Ian Davis, MD, PhD, G. Denman Hammond Professor of Childhood Cancer, have discovered a gene called OTUD7A that controls a protein linked to the development of Ewing sarcoma – and have identified a potential new treatment that could block the gene's activity.

“By deeply exploring the key cellular processes that lead to cancer, unexpected potential therapeutic avenues can result,” said Davis, who co-leads UNC Lineberger’s Cancer Genetics Program and is associate division chief of pediatric hematology-oncology.

In a study supported in part by UCRF funding, the researchers and their collaborator, Atomwise Inc., used an artificial intelligence program to screen 4 million small molecules. One compound they identified, 7Ai, was tested in lab culture experiments and in mice grafted with human Ewing sarcoma cells. It reduced tumor formation without toxic side effects and did not kill normal cells.

“Treatment with 7Ai could provide a new targeted therapeutic option for patients who become resistant to chemotherapy. Developing an effective drug will require more lab work and then clinical studies,” said Liu, assistant professor of biochemistry and biophysics.

Davis and Liu are now working with the UCRF-supported chemical biology group in the UNC Eshelman School of Pharmacy to improve 7Ai’s potency and specificity.

Scientists find key function of molecule crucial for regulating immunity

The human immune system’s job is to keep us healthy without overreacting so much that it causes other problems. While some molecules are part of our immune system at birth (innate immunity), other defenses – called adaptive immunity – develop in response to specific pathogens or health problems.

Researchers led by UNC Lineberger members **Jenny Ting, PhD**, the William Kenan Distinguished Professor of Genetics, and **Yisong Wan, PhD**,



Liu



Davis

professor of microbiology and immunology, published an article in *Nature* revealing that one innate immunity molecule, AIM2, also plays a key role in adaptive immunity – especially in helping regulatory T cells, or Treg cells, function properly. Treg cells are adaptive immune cells that are critical for the checks and balances of the immune system. If functioning improperly, they can trigger autoimmune and inflammatory diseases.

“Our study unveils an unexpected and previously unappreciated role for AIM2 in Treg cells in adaptive immunity, which is independent of AIM2’s classic function in the innate immunity,” said Ting, director of the Center for Translational Immunology and the UNC Lineberger Immunology Program.

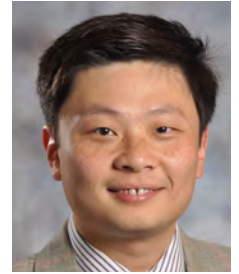
The researchers found that AIM2 was expressed at a much higher level in Treg cells than in innate immune cells. They also discovered a new cellular signaling pathway that regulates the metabolism and function of Treg cells. Scientists hope to modulate the function of molecules in this pathway to eventually affect the outcome of diseases such as cancer or autoimmune disorders.

“Because Treg cells are well-known players in a broad range of diseases including autoimmunity, inflammation, and cancers, our findings will help us identify new molecular targets and develop new therapeutic strategies to test against debilitating and fatal diseases,” Wan said.

Immunotherapy for lung and other cancers may also be beneficial for rare skin cancer

Immunotherapies that are effective against lung cancer and melanoma may also work against cutaneous angiosarcoma, a highly aggressive skin tumor found mainly on the scalps of older white people, UNC researchers have found in a clinical trial.

Teams of UNC scientists from different fields worked together on the study, which sampled tumor tissue from 10 patients who were newly diagnosed with cutaneous angiosarcoma. The researchers looked for two markers – tumor-infiltrating lymphocytes (TILs), which are white

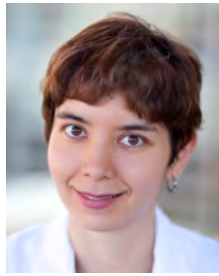


Wan



Ting

blood cells that can kill cancer cells, and the surface protein markers PD-1 and PD-L1 – that play a role in immunotherapy for melanoma and lung cancer. They found PD-L1 and TILs in all 10 tumor samples, suggesting a higher likelihood of immune-effectiveness against the cancer.



Grilley-Olson

“This study is a wonderful example of the bedside to bench, back to bedside,” said UNC Lineberger’s **Juneko Grilley-Olson, MD**, an associate professor of medicine. “Trials in a rare disease require broad-reaching cooperative efforts, and through an extensive network of trial sites supported by the National Cancer Institute, we are bringing our next trial to where patients are, and asking the question of drug effectiveness in the most rigorous scientific way.”

The Phase II trial, run through the NCI-sponsored Alliance for Clinical Trials in Oncology network, seeks to enroll as



Thomas

many as 90 patients with angiosarcoma to fully evaluate genetic and other abnormalities in the disease. For the first time in this cancer, investigators will try to determine how responsive the disease might be to immunotherapy in combination with conventional chemotherapy.

That teams of UNC scientists from different fields collaborated on this study was fitting, because cutaneous angiosarcomas treatment is usually multidisciplinary and involves dermatologists, surgical oncologists, radiation therapists and oncologists.

“It is a big advantage for pushing forward research to have inter-departmental collaboration as seen with this study,” said UNC Lineberger’s **Nancy E. Thomas, MD, PhD**, chair of dermatology at the UNC School of Medicine. “This project required true team science, with investigators bringing complementary and integrated expertise to the project.”

Paul Dayton, PhD

A professor in the UNC & N.C. State Joint Department of Biomedical Engineering, which brings medical and engineering expertise together to solve problems in health care, UNC Lineberger member Paul Dayton, PhD, the William R. Kenan Jr. Distinguished Professor, is at the forefront of using unique tools and technologies to develop targeted cancer therapies.

His research combines the use of engineered microbubbles – microscopic bubbles of gas surrounded by a thin, fatty shell – and ultrasound, with the end goal of producing more effective treatments for cancer. Both tools have been in use for decades, but combining them to explore therapeutic possibilities is a new approach that is revolutionizing cancer research.

Ultrasound is mainly used to evaluate anatomy and tissue differences, and to image blood flow patterns that might indicate disease. Dayton’s lab used an UCRF Innovation Award to explore new ways to use ultrasound to look in greater detail at the body’s tiny blood vessels, or microvasculature. Microbubbles, which are detectable with ultrasound because they scatter sound when they flow through the blood vessels, are a key part of that work.

Microbubbles also can cause a range of biological effects – including changing the permeability of blood vessels, enhancing immune response, and destroying tissue at high intensity ranges – which can be helpful therapeutically if used in a controlled manner in cancer diagnosis and treatment.

“We are still trying to understand exactly what might be going on when trying to treat



Paul Dayton, PhD

cancer with microbubbles. One hypothesis is that ultrasound using microbubbles induces mechanical agitation of diseased cells, leading to an increase in the release of antigens that could stimulate immune responses to attack cancer,” Dayton said.

Working with two local companies he co-founded, Dayton’s team is developing delivery vehicles that can be activated by ultrasound to release a drug to the target site, aiming to attack diseased tissue more effectively and with fewer systemic effects. They also hope to use ultrasound to modify tissue itself – for example, locally modulating the blood/brain barrier to allow systemically circulating drugs to cross the barrier and treat a brain disease.

“We are actively developing lots of different technologies, and if we can get some of them into the clinic to save lives, that would be huge,” he said.

Research Priority 3: Outcomes***Metastatic breast cancer costs will more than double between 2015 and 2030***

Annual costs associated with metastatic breast cancer among U.S. women will total \$152.4 billion in 2030 – nearly two and a half times the estimate for 2015 costs – due to an increase in cases among younger women, UNC Lineberger researchers have found.

The study from the UNC Center for Health Promotion and Disease Prevention (HPDP) is co-authored by UNC Lineberger members and HPDP research fellows **Stephanie Wheeler, PhD, MPH**, and **Justin Trogdon, PhD**, professors of health policy and management at UNC Gillings.

The study, published in the journal JNCI Cancer Spectrum, builds on their previous research on the medical and productivity costs of metastatic breast cancer. The cost of breast cancer in the United States is more than the cost of any other cancer, and metastatic breast cancer, where the cancer has spread to other regions of the body, is the most expensive to treat.

Using multiple data sources, the researchers created a model to estimate how the number of women affected by metastatic breast cancer will change between 2015 and 2030. Their model estimates that 158,997 women were living with the disease in 2015 and projects that number will be 246,194 in 2030, an increase of 54.8%. The study found that

**Wheeler****Trogdon**

cases of metastatic breast cancer are expected to decrease slightly among women ages 65 and up but increase among women ages 18 to 64.

“Our results suggest that the cost of metastatic breast cancer could increase substantially in the coming decade, especially among younger and midlife women,” Trogdon said. “For metastatic breast cancer, it is not just the ‘silver tsunami’ of aging baby boomers that will increase the demands on our care system. We should also be prepared for an increase in younger women requiring treatment and services for metastatic disease.”

Their findings can help policymakers decide where to invest resources to help reduce costs, for example, in early detection of breast cancer and in treatment.

“Treatment and technological advances or major healthcare delivery reforms could begin to ‘bend the curve’ of unrestrained cost growth in metastatic cancer – with potentially the greatest impact among young and midlife women who stand to lose the most if medical and policy innovations are not aggressively pursued,” Wheeler said.

“Our results suggest that the cost of metastatic breast cancer could increase substantially in the coming decade, especially among younger and midlife women. We should also be prepared for an increase in younger women requiring treatment and services for metastatic disease.”

- Justin Trogdon, PhD

Research investigates why Black women have higher breast cancer mortality

One in seven Black women with breast cancer have delays in starting treatment after diagnosis, and Black women have a longer treatment period than white women, according to a study led by UNC Lineberger members Melissa Troester, PhD, professor of epidemiology at UNC Gillings, and Marc Emerson, PhD, assistant professor of epidemiology at UNC Gillings.

Researchers analyzed the course of care of 2,841 women enrolled in the Carolina Breast Cancer Study Phase III, part of a population-based study launched in 1993 to examine how the causes, treatments, and long-term outcomes of breast cancer differ between Black and white women. They found that Black women were more likely than white women (13.4% vs. 7.9%) to have the start of the care delayed by at least 60 days after diagnosis. Black women were also more likely to have longer duration of treatment, as were women under age 50 of all races.

Although they have a similar risk of developing breast cancer, Black women are 42% more likely than white women to die from the disease. Among women younger than 45, the mortality rate for black women is more than double that of white women.

While access to care, tumor status and socioeconomic status did affect treatment start times, these factors had greater impact on the length of care. “The duration of treatment was a particularly sensitive indicator of access,” Troester said. “This suggests that in addition to helping patients start treatment on time, we also have to work toward improving access so treatment doesn’t drag on.”



Melissa Troester, PhD



Marc Emerson, PhD

Although they have a similar risk of developing breast cancer, Black women are 42% more likely than white women to die from the disease. Among women younger than 45, the mortality rate for black women is more than double that of white women.

Microbes in the gut could protect against hazardous radiation exposure

Selected gut bacteria could lessen the toxic effects of radiation therapy, improve the recovery of blood cell production and improve the repair of the gastrointestinal (GI) tract, UNC Lineberger researchers have shown.

Radiation absorbed in a clinical setting or during an accidental exposure can cause damage to tissues and can often lead to GI side effects. UNC Lineberger member **Jenny Ting, PhD**, William Rand Kenan Professor of Genetics, and colleagues published a study in the high-impact journal *Science* showing that mice exposed to potentially lethal levels of total body radiation were protected from radiation damage if they had specific types of bacteria in their gut.

“This truly trans-UNC collaborative effort showed that these beneficial bacteria caused a profound change in gut metabolites,” Ting said.

The mice had two types of bacteria that led to more production of small molecules, or metabolites, that provided long-term protection from radiation, lessened damage to bone marrow stem cell production, mitigated the development of severe gastrointestinal problems and reduced damage to DNA. Researchers found the same bacteria types in leukemia patients with mild gastrointestinal symptoms who underwent radiotherapy, and hope to launch a clinical trial soon in people to test the benefits of giving these metabolites to patients receiving radiation therapy.

New machine learning method may improve treatment decisions, study shows

Researchers at the University of North Carolina and North Carolina State University have developed a machine learning tool that uses a patient’s genomic information to predict optimal cancer treatment decisions, which may aid

in the development of precision cancer treatments.

UNC Lineberger member **Naim U. Rashid, PhD**, an assistant professor of biostatistics at UNC Gillings, was the first author of the study, published in the *Journal of the American Statistical Association*. UNC Lineberger member **Michael Kosorok, PhD**, the W.R. Kenan, Jr. Distinguished Professor of Biostatistics at UNC Gillings, was corresponding author.

The new computational method hinges on analysis of patient-derived xenografts, or PDXs, which are created by implanting part of a patient’s tumor into immunocompromised mice to produce multiple models of the same tumor. PDX lines allow researchers to more efficiently test how an individual patient’s tumor responds to different drugs. Data derived from those studies are used to estimate the potentially most effective therapy for a patient.

The researchers analyzed data from a large PDX screen spanning five cancers, 1000 PDX lines and 38 unique treatments evaluated. Using a new machine learning method tailored to address several unique aspects of PDX data, the researchers discovered that their new approach outperformed existing machine learning methods. Next steps include investigating whether their results can be validated in a clinical trial and in ongoing PDX studies at UNC Lineberger.

“PDX studies represent an untapped resource to exploit for estimating optimal individualized treatment rules, which can be used to recommend best potential therapy in new patients,” Rashid said. “This new machine learning method was tailored to address several unique aspects of PDX data. This work provides us a computational framework to formalize and learn evidence-based optimal treatment decisions given a set of patient biomarkers.”



Ting



Rashid



Kosorok



FACULTY IMPACTS

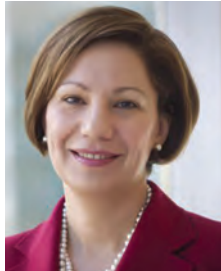
RESEARCH AND SCIENCE

Faculty Impacts

UNC Lineberger members awarded \$1.5 million NCI lung cancer screening study grant



Henderson



Rivera

The National Cancer Institute has awarded UNC Lineberger's **Louise Henderson, PhD**, professor of radiology, and **M. Patricia Rivera, MD, ATSF**, professor of pulmonary and critical care medicine, a four-year, \$1.5 million grant to study comorbidity and functional status in a population undergoing lung cancer screening.

Henderson, Rivera and a multi-disciplinary team that includes UNC Lineberger members **Chris Baggett, PhD**, **Jenny Lund, PhD**, and **Dan Reuland, MD, MPH**, will make innovative use of their existing work using population-based registry data to provide evidence-based, real-world data to inform lung cancer screening in clinical practice, by baseline risk, comorbid conditions, and functional status.

Baric inducted into the National Academy of Sciences



Baric

UNC Lineberger's **Ralph S. Baric, PhD**, has been elected to the National Academy of Sciences, one of the highest distinctions for a scientist in the United States. Baric, the William R. Kenan Jr. Distinguished Professor of epidemiology at UNC Gillings and professor of microbiology and immunology at the UNC School of Medicine, is internationally renowned for his research of norovirus, flavivirus and coronaviruses. His scientific discoveries made a significant impact on the COVID-19 pandemic by identifying antivirals to fight the SARS-CoV-2 virus and by collaborating with the National Institutes of Health to test vaccine candidates.

The National Academy of Sciences is a private, nonprofit institution established in 1863 that recognizes achievement in science by election to membership and provides health policy advice to the federal government and other organizations.

Expertscape recognizes UNC Lineberger faculty as top-rated experts in their fields

Expertscape, an online database that assesses and ranks the expertise and contributions of physicians and medical institutions worldwide based on scientific publications, rated eight UNC Lineberger faculty members as among the top 20 experts in their fields in cancer for its 2021 rankings:

Ralph Baric, PhD

No. 4 expert in the world in SARS and the No. 3 expert in the U.S.

Lisa A. Carey, MD, FASCO

No. 8 expert in breast cancer in the U.S. and the world

Blossom Damania, PhD

No. 3 expert in the world and the U.S. in Kaposi sarcoma

Dirk Dittmer, PhD

No. 4 expert in the world and the U.S. in Kaposi sarcoma

Nigel Mackman, PhD

No. 6 expert in the world in thrombosis and No. 5 in the U.S.

Matthew Milowsky, MD, FASCO

No. 15 expert in the world and the U.S. in bladder cancer

Bryan Roth, MD, PhD

No. 16 expert in the world in pharmacology and No. 6 in the U.S.

Nicholas J. Shaheen, MD, MPH

No. 1 expert in Barrett's esophagus in the world, the No. 2 esophageal diseases expert in the world and the U.S., and the No. 14 expert in gastroesophageal reflux disease (GERD) in the world and No. 10 in the U.S.

Amelio awarded \$2.5M NIH grant for salivary gland cancer research



Amelio

Antonio Amelio, PhD, a UNC Lineberger member and associate professor at the UNC Adams School of Dentistry and the UNC School of Medicine Department of Cell Biology and Physiology, has received a five-year, \$2.49 million grant from the National Institute of Dental & Craniofacial Research to investigate the molecular mechanisms that control tumor cell differentiation in mucoepidermoid carcinomas, the most common type of salivary gland cancer.

When detected and treated early, mucoepidermoid carcinomas have a greater than 60% five-year survival rate – but the survival rate drops to about 30% if the cancer has recurred or spread to other parts of the body. Better understanding the gene expression profiles and differentiation programs that govern the various cell types found in these tumors may enable researchers to design more effective therapies and improve patient survival.

ACS/Pfizer grant funds research of racial disparities in breast cancer care quality in NC



Reeder-Hayes



Wheeler

UNC Lineberger researchers have received a two-year, nearly \$400,000 grant from the American Cancer Society (ACS) and Pfizer to address racial disparities in breast cancer care quality in North Carolina, as part of a national campaign to improve cancer outcomes for people of color by identifying and eliminating systemic race-related barriers and disparities in the delivery of cancer care.

Katherine Reeder-Hayes, MD, MSc, MBA, associate professor and chief of breast oncology at UNC School of Medicine and UNC Lineberger, and **Stephanie Wheeler, PhD, MPH**, professor of health policy and management at UNC Gillings and associate director of Community Outreach and Engagement at UNC Lineberger, are heading the UNC-led study, which will use database analytics, simulations modeling

and community-based qualitative methods to identify North Carolina sub-populations at greatest risk for poor breast cancer outcomes.

UNC Lineberger faculty win new multi-investigator NCI grants in head and neck cancer

The National Institutes of Health's Dental and Craniofacial Research Institute has awarded UNC Lineberger, Yale Cancer Center and Fox Chase Comprehensive Cancer Center a five-year, \$11.7 million Cancer Specialized Program of Research Excellence (SPORE) grant to develop better treatments for head and neck squamous cell carcinoma.



Yarbrough

Roughly 65,000 people in the United States will be diagnosed with head and neck squamous cell carcinoma this year, and more than 13,000 will die from it. The grant will enable the three cancer centers to leverage their faculty members' expertise to investigate and defeat head and neck squamous cell carcinoma's ability to resist treatment, including immunotherapy, DNA-damaging therapy and targeted therapy.

UNC Lineberger's **Wendell Yarbrough, MD, MMHC**, chair of the UNC Department of Otolaryngology/Head and Neck Surgery, will co-lead one of the grant's three primary projects, a clinical trial investigating a new treatment for HPV-associated head and neck squamous cell carcinoma.

Yarbrough was also awarded a \$3.78 million NCI grant to study HPV-related head and neck cancer. The study builds on previous research showing that tumor and blood tests developed at UNC Lineberger could identify with high accuracy which patients with HPV-positive oropharyngeal cancer – cancer of the base of the tongue, throat or tonsils – would experience a recurrence, and identify these recurrences at earlier time points when more effective treatment may be possible. It will also further examine whether biomarkers discovered at UNC could help distinguish oral/oropharyngeal infections from early HPV-oropharyngeal cancers.

Charlot wins grant for study to improve participation in breast cancer trials



Charlot

Marjory Charlot, MD, MPH, MSc, assistant professor of medicine and assistant director of patient-engaged research at UNC Lineberger, is the 2021 recipient of the Conquer Cancer Advanced Clinical Research Award for Diversity and Inclusion. The award includes a three-year, \$450,000 grant from Conquer Cancer, the American Society of Clinical Oncology's (ASCO) foundation, to support her research into a patient-centered mobile health app to increase Black women's participation in breast cancer clinical trials.

Charlot and her colleagues will use the grant to study how Black women with breast cancer use their cell phones for health information, and to develop and test an app created by Black women for Black women with breast cancer to provide useful information and communications about clinical trials.

Better patient-provider communication and more culturally tailored clinical trial information could improve the representation of Black patients in clinical trials, helping to advance cancer treatments and improve cancer survival.

Ramsden leads \$8.8M study of potential inhibitor target for breast and ovarian cancer



Ramsden



Gupta

A nationwide team of researchers led by UNC Lineberger's **Dale Ramsden, PhD**, professor of biochemistry and biophysics, has been awarded a five-year, \$8.8 million grant to study a key enzyme in breast cancer to determine whether it can be an effective therapy target.

The research team, which includes UNC Lineberger member **Gaorav Gupta, MD, PhD**, assistant professor in the UNC School of Medicine Department of Radiation Oncology, brings together experts in molecular biology, cancer cell biology, biochemistry, structural biology and mechanisms, and biophysics.

With the goal of creating better approaches to fighting cancer, the team will focus on an enzyme called DNA polymerase theta (POLQ). POLQ becomes essential in many hereditary breast cancers and could be an excellent target for new drug development. However, little is known about its structure and biology and exactly how it works. Ramsden's team believes potential therapies directed at POLQ could improve the effectiveness of inhibitors for the treatment of breast and ovarian cancers.

Lafata awarded \$750,000 grant to study equity in virtual cancer visits



Lafata



Smith



Wood

UNC Lineberger member **Jennifer Elston Lafata, PhD**, professor and vice chair of Pharmaceutical Outcomes and Policy at the Eshelman School of Pharmacy and co-leader of the Cancer Quality Care Initiative at UNC Lineberger, has received a two-year, \$750,000 Health Equity Innovations Fund grant from the biotechnology company Genentech to study the role of equity in virtual cancer visit programs for cancer care.

Lafata and her colleagues, including UNC Lineberger's **Angela Smith, MD, MS**, associate professor of urology and director of urologic oncology, and **William Wood, MD, MPH**, associate professor of medicine, will focus their research on how oncology care organizations consider equity as they design new virtual visit programs – many of which were established rapidly as alternatives to in-person appointments due to the COVID-19 pandemic – and how virtual visits may hinder or enhance care access and affect outcomes among Black adults diagnosed with cancer.



Bryant

Bryant named 2021 New York Academy of Science Rising Star in Cancer Metabolism

UNC Lineberger's **Kirsten Bryant, PhD**, assistant professor in the Department of Pharmacology, was named a 2021 New York Academy of Science Rising Star in Cancer Metabolism. The designation honors Bryant's work and contributions as an early career researcher.

Bryant's primary research focus is on pancreatic cancer, one of the deadliest types of cancer. She is studying the use of different compounds to improve possible therapeutic combinations, as well as working on identifying mechanisms of resistance.



INFRASTRUCTURE AND SHARED RESOURCES

UNC Lineberger Cancer Network – Education and workforce development



Weissman



Baines



Rorie

The UNC Lineberger Cancer Network hosted the Biology of Cancer, led by UNC Lineberger's Buddy Weissman, PhD, North Carolina Central University's Antonio Baines, PhD, and North Carolina A&T State University's Checo Rorie, PhD. This online college course features 11 lectures and recordings.

Another NCLCN program, the North Carolina Community College Lecture Series, offered four courses designed for students enrolled in nursing and allied health sciences programs at 12 community college sites across the state. These lectures provide opportunities for students to become more familiar with strategies necessary for caring for cancer patients. It is hoped that this series will lead to improvements in cancer care, and a greater interest in oncology-related professions. Workforce development in oncology is crucial for the next decades as our population ages. The NC community college system is an important target audience.

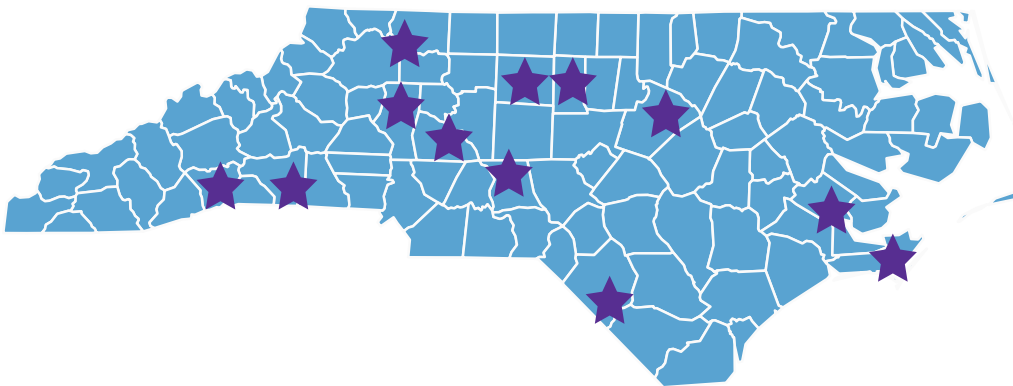
The Biology of Cancer

Exploring the Role of Race, Class, and Socioeconomics in the Underserved and the Underrepresented

Alamance Community College, Graham
Carteret Community College, Morehead City
Craven Community College, New Bern
Forsyth Technical Community College, Winston-Salem

Guilford Technical Community College, Jamestown
Isothermal Community College, Spindale
Mitchell Community College, Statesville
Montgomery Community College, Troy

Robeson Community College, Lumberton
Rowan-Cabarrus Community College, Salisbury
Vance-Granville Community College, Henderson
Wake Technical Community College, Raleigh



In addition, to support and educate care providers and caregivers, the UNC Lineberger Cancer Network assisted with 39 Palliative Care Grand Rounds lectures, which cover topics that impact the practice of palliative medicine. UNCLCN assisted in hosting 50 Caregiver Conversations sessions with the Office of Community Outreach and Engagement as well as nine Schwartz Rounds, which focus on issues related to the emotional impacts of patient care.

UNCLCN also worked with 15 fellowship programs in 11 states to host and record six Fellows ACHIEVE lectures focused on treating patients with COVID-19 and cancer.

UNC Lineberger Cancer Network educates medical professionals, patients

A vital part of UNC Lineberger's mission as a teaching hospital is to provide continuing education to health care providers across the state. Physicians and other health professionals can earn continuing education credits by attending events sponsored by an accredited provider, and can use the credit toward re-licensure, re-certification, and renewal of hospital privileges.

The UNC Lineberger Cancer Network is the main source of continuing education for oncology professionals. The program's bi-monthly continuing education series reaches physicians, nurses and allied health professionals across North Carolina through live, interactive medical and nursing lectures delivered by UNC faculty. The lecture series enables practitioners to access timely, evidence-based oncology therapeutic updates from the convenience of their own practice, while earning continuing education credits. For lecture participation via the telehealth infrastructure this year, medical professionals earned:

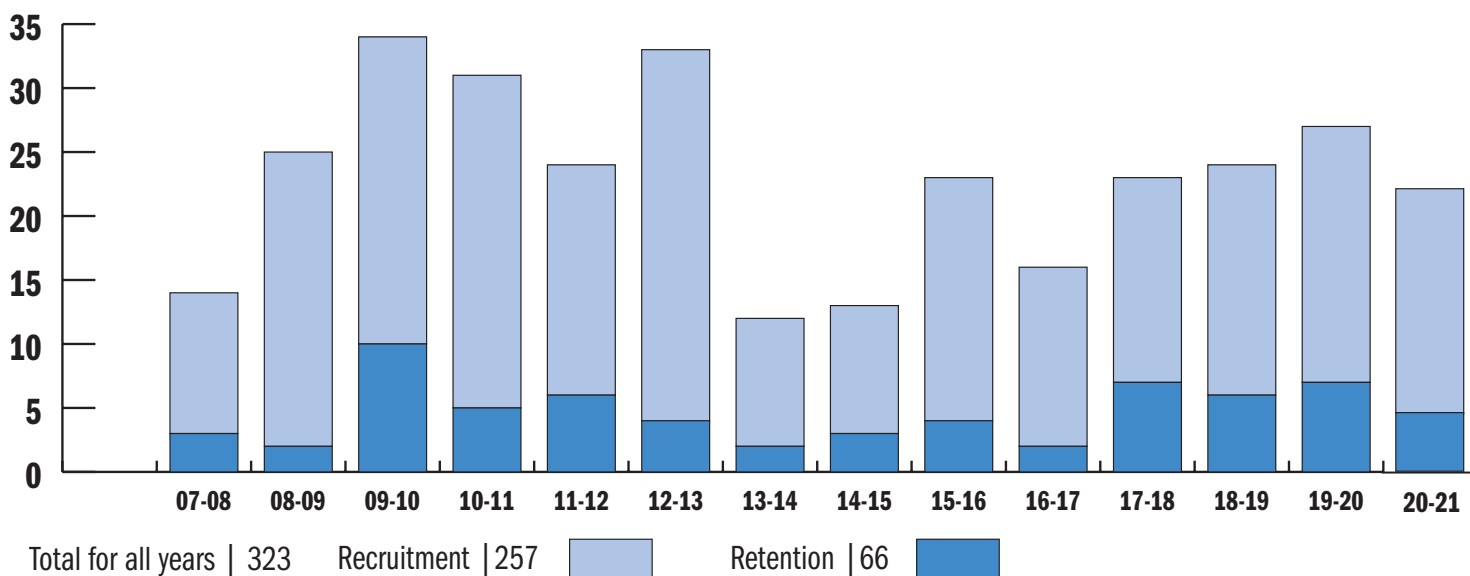
- 53 American Medical Association Continuing Medical Education credits;
- 991 Oncology Nursing Society Nursing Continuing Professional Development credits;
- 180 American Society of Radiologic Technologist credits; and
- 515 Accreditation Council for Pharmacy Education credits.

A total of 3,653 telehealth attendance hours were logged by medical professionals this year. The UCRF has significantly improved UNC's ability to connect with oncologists and cancer patients across North Carolina. Using infrastructure supported by UCRF funds, UNC faculty regularly hold virtual "tumor boards" – in-depth reviews of a particular patient's case with a team of doctors – with doctors in hospitals across the state, and consult in specialties that are not available in rural communities. This year 660 virtual tumor boards, across 17 different disciplines, helped connect community-based medical professionals with UNC oncology experts. Tumor boards, another source for continuing education, provided nearly 7,000 credit hours this year in the following specialty areas:

Bone Marrow Transplant/ Cellular Therapy	1,134
Gastrointestinal	988
Hematology Oncology	687
Breast Radiology Pathology	191
Melanoma	146
Breast	1,291
Pediatrics	1,109
Benign Hematology	771
Head and Neck	582

UNC Lineberger uses the telehealth network to connect in real time with health care providers to discuss best practices for patient care and cutting-edge research, and to hold community education events aiming to raise patient awareness of issues related to cancer. This year, UNC hosted 26 telehealth lectures attended by nurses, doctors, physician assistants, nurse practitioners, pharmacists, social workers, nutritionists and clinic managers in 48 oncology practices across the state.

Recruitment and Retention



FACULTY RECRUITMENT

Optimizing NC Outcomes

Marc Emerson, PhD, MPH

Assistant Professor
UNC Gillings School of Global Public Health
Department of Epidemiology
Social determinants of cancer; epidemiology
University of North Carolina at Chapel Hill

Caroline Thompson, PhD

Associate Professor
UNC Gillings School of Global Public Health
Department of Epidemiology
Cancer outcomes data and informatics; epidemiology
San Diego State University

Emily Pfaff, PhD

Assistant Professor
UNC School of Medicine
Department of Medicine
Division of Endocrinology & Metabolism
Big data, cancer and health informatics
University of North Carolina at Chapel Hill

Ebonee Butler, PhD, MPH

Assistant Professor
UNC Gillings School of Global Public Health
Department of Epidemiology
Prostate and breast cancer epidemiology
National Cancer Institute, NIH

Cancer Genetics

Elizabeth Brunk, PhD

Assistant Professor
UNC School of Medicine
Department of Pharmacology
Multi-OMICS analysis; clinical response
University of California San Diego

Developing New Treatments

Natalie Stanley, MD

Assistant Professor
UNC College of Arts & Sciences
Department of Computer Science
Computational immunogenomics; immunotherapy
Stanford University

Kirsten Bryant, PhD

Assistant Professor
UNC School of Medicine
Department of Pharmacology
Pancreatic cancer genomics and therapy
Cornell University

Hannah Atkins, DVM, PhD, DACVP

Assistant Professor
UNC School of Medicine
Department of Pathology & Laboratory Medicine
Comparative medicine, pathology of cancer models
Penn State University

Kaitlyn Morrison, PhD

Assistant Professor
UNC School of Medicine
Department of Medicine
Cancer regulatory infrastructure for clinical trials
East Carolina University

Opportunity

Andrew Moon, MD, MPH

Assistant Professor
UNC School of Medicine
Department of Medicine
Division of Gastroenterology and Hepatology
Hepatocellular carcinoma
University of North Carolina at Chapel Hill

Maria Aleman, PhD

Assistant Professor
UNC School of Medicine
Department of Pharmacology
RNA splicing and cancer
University of North Carolina at Chapel Hill

Adriana Beltran Lopez, PhD

Assistant Professor
UNC School of Medicine
Department of Biochemistry & Biophysics
Cancer stem cells and organoids
University of North Carolina at Chapel Hill

Critical Infrastructure

Kim Wehner, DNP, FNP-BC

UNC School of Nursing
Oncology nurse practitioner education
UNC Health

Yara Abdou, MD

Assistant Professor
UNC School of Medicine
Department of Medicine
Division of Oncology
Breast cancer clinical and translational research
Roswell Park Cancer Institute

Neeta Venepalli, MD, MBA, FACP

Associate Professor
UNC School of Medicine
Department of Medicine
Division of Oncology
Gastrointestinal malignancy research
University of Illinois Chicago

Shakira Grant, MBBS

Assistant Professor
UNC School of Medicine
Department of Medicine
Division of Hematology
Myeloma; geriatric oncology
University of Washington

Nelson Oyesiku, MD, PhD, FACS

Professor and Chair
UNC School of Medicine
Department of Neurosurgery
Brain tumor research
Emory University

Maureen Kohi, MD, FSIR, FCIRSE, FAHA

Professor and Chair
UNC School of Medicine
Department of Radiology
Vascular interventional radiology; cancer sampling
University of California San Francisco

(Institutions from which the faculty were recruited)

FACULTY RETENTION

Opportunity

Jason Akulian, MD, MPH

Associate Professor
UNC School of Medicine
Department of Medicine
Division of Pulmonary Diseases & Critical Care
Lung cancer translational research

Developing New Treatments

Zibo Li, PhD

Professor
UNC School of Medicine
Department of Radiology
Radiochemistry; cancer imaging

Critical Infrastructure

Jason Long, MD, MPH

Assistant Professor
UNC School of Medicine
Department of Surgery
Division of Cardiothoracic Surgery
Lung cancer surgery



Carrie Lee, MD

Associate Professor
UNC School of Medicine
Department of Medicine
Division of Oncology
Lung cancer; melanoma clinical trials

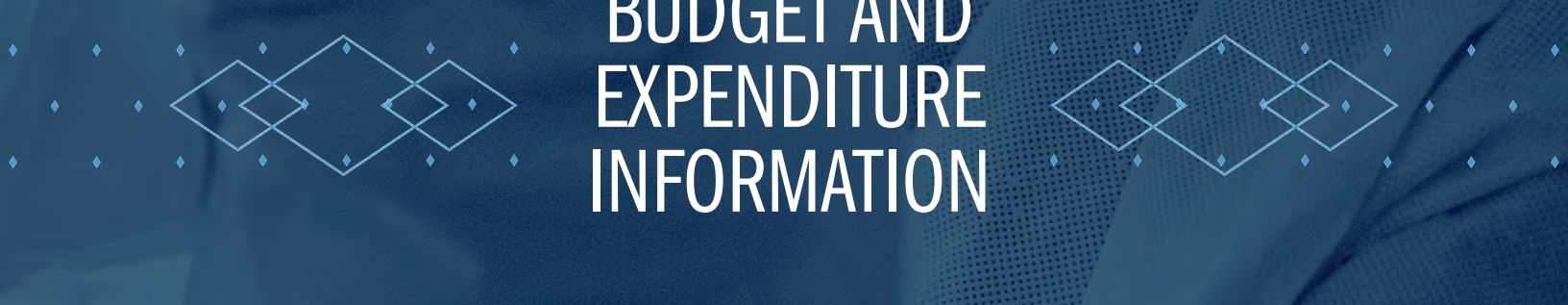
Vickie Bae-Jump, MD, PhD

Professor
UNC School of Medicine
Department of Obstetrics & Gynecology
Endometrial and ovarian cancers

In addition to supporting the recruitment and retention of top researchers and clinicians, the UCRF has funded critical core infrastructure and shared resources such as imaging, informatics and other research tools that are indispensable in the push to advance cancer research and care. The development of virtual tumor boards, telemedicine, community and provider partnerships, and other outreach initiatives have helped UNC Lineberger reach patients and clinical practices in all 100 North Carolina counties.



BUDGET AND EXPENDITURE INFORMATION



BUDGET AND EXPENDITURE INFORMATION

BUDGET AND EXPENDITURE INFORMATION

The UCRF was initially funded by three sources of support: tobacco settlement funds, taxes on other (non-cigarette) tobacco products (OTP) such as snuff, and state appropriations. In the 2013-2014 budget, the General Assembly consolidated all tobacco settlement funds into the State's General Fund. This consolidation eliminated tobacco settlement funds as a source of UCRF support, reducing UCRF revenues by about 16 percent. The OTP tax proceeds, which vary in amount year by year based on product sales, and the original \$16 million state appropriation have remained intact as UCRF revenue sources.

The charts below reflect anticipated and actual revenue for this year, and the fund balance after considering carryover and expenditures.

Anticipated and Actual Revenue	
FY 2021 Anticipated and Actual Fund Revenue	\$ Amount *
Anticipated	
State Appropriation	\$16,020,000
Projected OTP Tax Receipts	\$36,000,000
Total	\$52,020,000
Actual	
State Appropriation	\$16,020,000
Actual OTP Tax Receipts	\$42,040,228
Total	\$58,060,228
* Rounded to the nearest dollar	

Fund Balance	
FY 2021 Budget and Expenditures	Amount \$*
Anticipated Budget	
Revenue	\$52,020,000
Carryover from FY20	(\$49,838)
Carryover from unrealized FY20 OTP tax receipts	\$0
Total	\$51,970,162

Actual Budget	
Revenue	\$58,060,228
Carryover from FY20	(\$49,838)
Carryover from unrealized FY20 OTP tax	\$0
Total	\$58,010,390
Expenditures	\$58,062,113
Balance	(\$51,723)
* Rounded to the nearest dollar	

Restrictions on the Use of UCRF Monies

G.S. 116.29.1 established the UCRF as a special revenue fund and created the Cancer Research Fund Committee to provide accountability and oversight. As the Cancer Research Fund Committee developed the UCRF Strategic Plan, each potential use of UCRF resources was evaluated according to the following questions:

- Will it address North Carolina's needs in terms of the goal of reducing the cancer burden in the state?
- Can we be world class at it? (Does it build on existing strengths, and is there an opportunity to lead?)
- Is there a strong economic model/justification for UCRF investment?

Based on these questions, the Committee developed a clear set of rules to guide how UCRF funds would be best spent. The Committee determined that UCRF funds should focus major resources on a limited set of opportunities to have the greatest impact; fund initiatives where UNC has the opportunity to establish a leadership position; be self-sustaining and provide leverage for additional extramural funding; build fundamental cancer-related research capabilities that benefit UNC research programs; and enhance North Carolina's economy by creating jobs, intellectual property, and startup companies.

To maximize the effectiveness of the state's investment and to ensure wise and responsible use of the funding, the Strategic Plan imposed additional restrictions on the use of these funds, instructing that UCRF funds should *not*:

- Invest broadly in an effort to make incremental improvements everywhere;
- Provide funding that would limit future flexibility;
- Undermine faculty innovation and competitiveness by eliminating the need for extramural grant funding;
- Substitute for existing university or health system funding or new philanthropy;
- Make expenditures based upon institutional or other needs outside cancer research; or
- Negatively impact other research on campus, for example by appropriating shared research infrastructure or resources.

Expenditures of State Funds Related to UCRF

The table below provides an accounting of expenditures of state funding related to the UCRF. Further details regarding these expenditures are included as appendices to this report.

Categories	YTD Actual
Tier 1: Research Priorities	
Optimizing Outcomes	\$7,918,178
Understanding Genetics in Cancer	\$9,967,535
Developing New Cancer Therapies	\$8,358,886
Tier 2: Opportunity Fund	\$13,004,904
Tier 3: Critical Infrastructure	
Clinical Excellence – Research & Outreach	\$8,119,004
Research & Tech Development and Training	\$10,693,607
Total	\$58,062,113

CONCLUSION

With a statewide reach that benefits patients in all 100 counties and with steadily growing economic impacts, the University Cancer Research Fund continues to have a tremendously positive effect in our state. It supports outstanding faculty members and their innovative research, funds critical technology and shared data resources, and enables UNC Lineberger to grow its engagement with patients, partners and communities. Thank you for continuing to support this vital investment and the many health and economic benefits it generates for the people of North Carolina.



The image features a dark blue-tinted photograph of the North Carolina Cancer Hospital. The building's facade is visible, with a large overhang that has the hospital's name inscribed on it. The text "North Carolina Cancer Hospital" is written in a light, serif font, following the curve of the overhang. The building has multiple stories with large windows. In the foreground, there are glass doors and windows reflecting the surroundings. At the bottom right, a few people can be seen walking. The entire image is overlaid with a dark blue filter. Decorative white diamond patterns, each composed of four smaller diamonds, are placed at the top and bottom edges of the page.

North Carolina Cancer Hospital

APPENDIX

CANCER RESEARCH FUND COMMITTEE

The legislatively established Cancer Research Fund Committee, chaired by Kevin M. Guskiewicz, PhD, chancellor of the University of North Carolina at Chapel Hill, oversees the University Cancer Research Fund. The seven-member committee includes five ex-officio members designated by the legislation who elect two at-large members. The at-large members are to be leaders at nationally prominent cancer programs. Currently, the two are Edward Benz, MD, (president and CEO Emeritus, Dana-Farber Cancer Institute) and Gary Gilliland, MD, PhD, (president and director, Fred Hutchinson Cancer Research Center).



Kevin M. Guskiewicz, PhD,
Chair
Chancellor
The University of North
Carolina at Chapel Hill



Edward J. Benz, MD
President and Chief
Executive Officer, Emeritus
Dana-Farber Cancer
Institute



A. Wesley Burks MD, MPH
Dean, UNC School of Medicine
Vice Chancellor for Medical
Affairs CEO, UNC Health Care
The University of North
Carolina at Chapel Hill



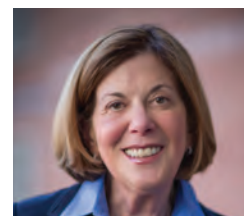
H. Shelton Earp, MD
Director
UNC Lineberger
Comprehensive Cancer
Center
The University of North
Carolina at Chapel Hill



Gary Gilliland, MD, PhD
President and Director
Emeritus
Fred Hutchinson Cancer
Research Center



Angela Kashuba, BSc Phm,
PharmD, DABCP, FCP
Dean
UNC Eshelman School of
Pharmacy
The University of North
Carolina at Chapel Hill



Barbara K. Rimer, DrPH
Dean
UNC Gillings School of
Global Public Health
The University of North
Carolina at Chapel Hill



APPENDIX

*ECONOMIC IMPACT
ANALYSIS*



THE ECONOMIC IMPACT OF UNIVERSITY CANCER RESEARCH FUND

Current economic, employment, government revenue, and generated research funds that assist with the recruiting and retaining of local research talent due to the UCRF at University of North Carolina Lineberger Comprehensive Cancer Center





TABLE OF CONTENTS

Executive Summary	47
Key Findings	48
Impacts of UCRF in 2021	49
Healthcare Cost Savings	51
Commercialization	51
Appendix A: Definition of Terms	52
Appendix B: Methodology	53
Appendix C: Tripp Umbach Qualifications	54

EXECUTIVE SUMMARY

In 2007, the state leaders of North Carolina developed a fund to invest in cancer research in the state through the University of North Carolina Lineberger Comprehensive Cancer Center. Cancer is one of the leading causes of death in North Carolina, and the fund was developed to demonstrate a commitment to the health of the state's residents. Although cancer mortality rates have been decreasing, incident rates of cancer have increased over the past decade.¹ Additionally, lung cancer continues to be the leading cancer-causing death in North Carolina.² The state is investing in this fund, ensuring that future generations of North Carolinians will develop cancer less often and live longer and better when they do.

The initial investment in 2007 to the University Cancer Research Fund (UCRF) of \$25 million has grown to greater than \$58.1 million for FY 2021. This year alone the FY 2021 \$58.1 million investment produced an economic impact of more than \$679.2 million, Tripp Umbach analysis shows. This investment has translated into innovative research to detect, treat, and prevent cancer and has given an opportunity for UNC to become home to one of the nation's leading public comprehensive cancer centers. University of North Carolina Lineberger Comprehensive Cancer Center (UNC Lineberger) is one of only 52 National Cancer Institute-designated comprehensive cancer centers. The center brings together some of the most exceptional physicians and scientists in the country to investigate and improve the prevention, early detection, and treatment of cancer. With research that spans the spectrum from the laboratory to the bedside to the community, the faculty work to understand the causes of cancer at the genetic and environmental levels, to conduct groundbreaking laboratory research, and to translate findings into pioneering and innovative clinical trials. Investment in the UCRF allows the state an even greater ability to continue its tradition of care for all North Carolinians. It is an investment in making the best care in the world available in North Carolina, and it is difficult to think of a better investment than one for the future health of the state's residents.



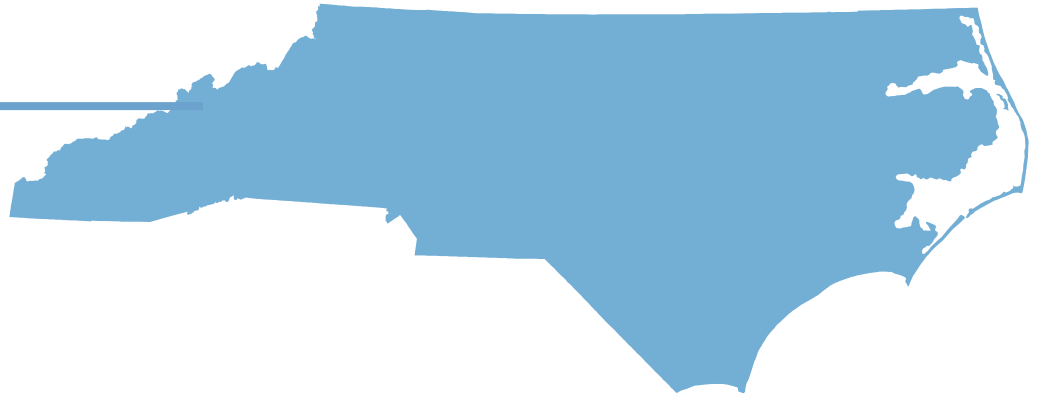
People and place are the keys to the UCRF's success. UCRF is about investing in people – promising researchers with the best ideas for cancer research and master clinicians who know how to bring those findings to patients and others. UNC Chapel Hill and UNC Lineberger have a culture of collaboration – both across the university and with partners beyond the university's walls – that is essential to promote discovery and then turn those discoveries into new ways to treat, find, and prevent cancer. Outside of the obvious impacts that UNC Lineberger provides to North Carolina, the UCRF offers additional impacts through the dollars that directly and indirectly impact the state economy and job numbers.

The aim of this report is to illustrate in detail the positive economic impact that UCRF dollars have on North Carolina's biomedical sector in the current year as well as the history of impacts the fund has shown over the last decade; it is important to note that these impacts have been annual since the fund's inception. Through expanding the state economy, creating jobs, generating tax revenue, encouraging scientific collaboration, and leveraging federal research funds, these dollars have provided a significant benefit to the state of North Carolina.

1. Cancer in North Carolina 2018 Report. North Carolina State Center for Health Statistics.

2. Cancer Statistics Center. 2021 Estimates. <https://cancerstatisticscenter.cancer.org/#/state/North%20Carolina>

KEY FINDINGS



EXPANDING THE STATE'S ECONOMY

UCRF generated more than \$679.2 million in total economic impact in North Carolina in 2021. This includes direct spending of more than \$344.6 million within the state, much of which is a result of the generation of funds from national grants due to research activities that are just a portion of the \$231.1 million in research funding received in 2021 alone. The ripple effect of in-state spending accounts for nearly \$334.6 million in additional funds, representing downstream spending by employees, vendors, and contractors. This is just the impact of the current year (2021). Tripp Umbach estimates that through the commercialization of the discoveries made from this research, the impact by 2030 will be dramatically larger.

CREATING JOBS

UCRF directly supported employment in 2021 of more than 1,333 jobs in North Carolina and an additional 1,982 jobs through both the indirect and induced impacts of those direct jobs and the spending generated from the UCRF within North Carolina. This means the total impact of this fund is more than 3,315 jobs.

GENERATING TAX REVENUE

Tripp Umbach estimates that UCRF provided greater than \$21.5 million in local and state tax revenue in 2021.

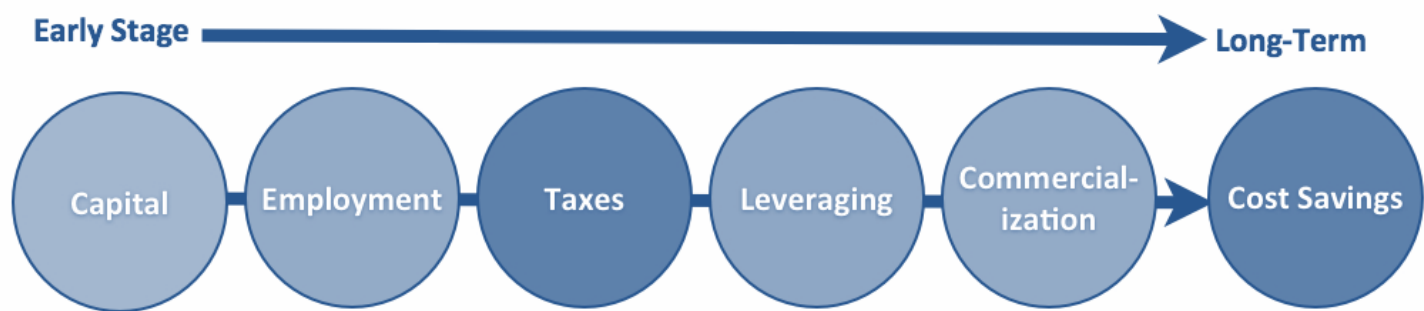
ENCOURAGING SCIENTIFIC COLLABORATION AND LEVERAGING FEDERAL RESEARCH FUNDS

These funds have encouraged recipient institutions to collaborate as well as to apply for and win highly competitive federal grants. Recipients of these state research funds have leveraged federal research funds amounting to more than \$188.8 million in federal research grants, bringing the total to more than \$231.1 million in external funding in 2021 alone. This would not have been possible without the UCRF funding, which elevated UNC Lineberger to the top rankings.

IMPACTS OF UCRF IN 2021

Any discussion of the economic impact of these state funds must be predicated on an understanding that research investments, by their nature, have a multitude of impacts on a state’s economy, both in the present and in the future. Short-term impacts include capital and non-capital investment and employment growth supported by the funds and new federal medical research funding leveraged by North Carolina’s funds that expand the state’s economy. Longer-term impacts include a strengthened ability to compete nationally for funding and to attract world-class scientists; the economic and employment advances that will be achieved when medical research and innovation are translated into commercial products and services; and healthcare cost savings to the state as a result of innovation (see Figure 1):

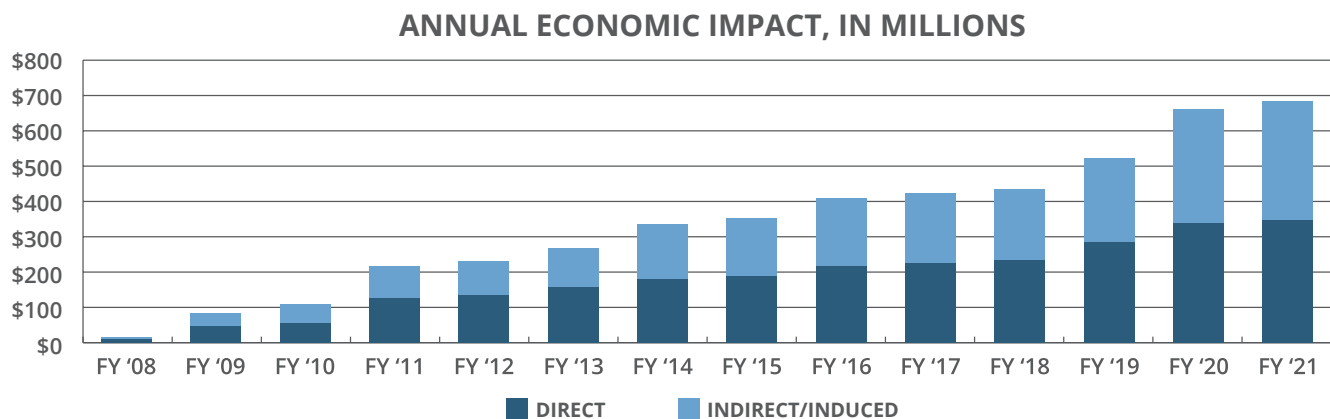
Figure 1: Research Return on Investment Timeline



EARLY-STAGE ECONOMIC IMPACT OF FUNDING

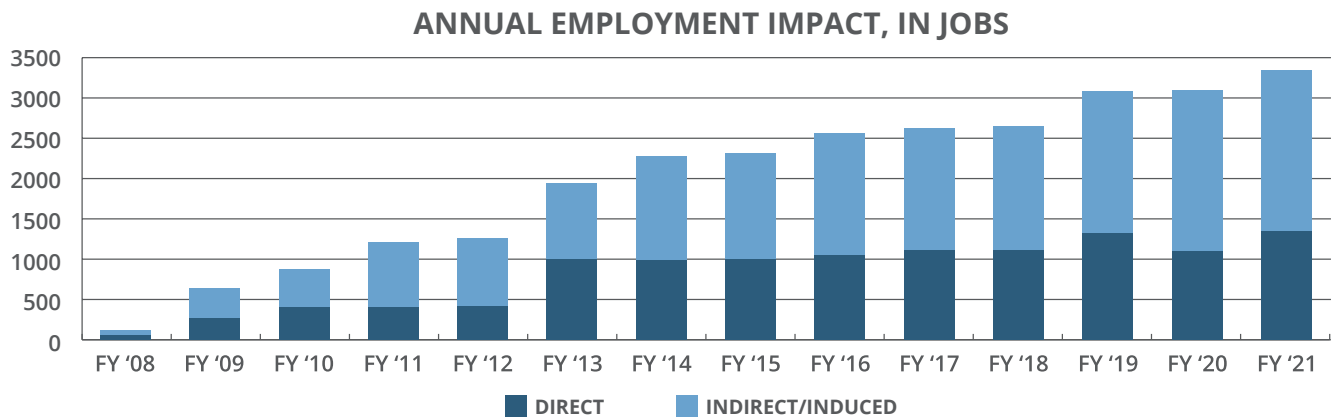
UCRF dollars invested in research in 2021 have resulted in an expansion of the state’s economy by greater than \$679.2 million. Tripp Umbach’s economic impact analysis indicates that even in the early stage (2007-2011), program investments in capital and human resources have returned greater than three dollars to the state’s economy for every one dollar invested. In 2021, this amount has risen to nearly 12 dollars for every dollar invested. Spending attributable to the fund can be divided into two parts: direct and indirect/induced impacts.

The direct impacts of program funding include institutional expenditures for capital improvements and goods and services but also spending by researchers, research staff, subcontractors, and visitors who come to these institutions for conferences and meetings. The indirect impacts of tobacco funds result from these direct, first-round expenditures, which are received as income by businesses and individuals in the state and recirculate through the economy in successive rounds of re-spending. The end result is a multiplied economic impact that is a linear result of the state’s investment in research. The impacts over the last decade are outlined below in the chart below.



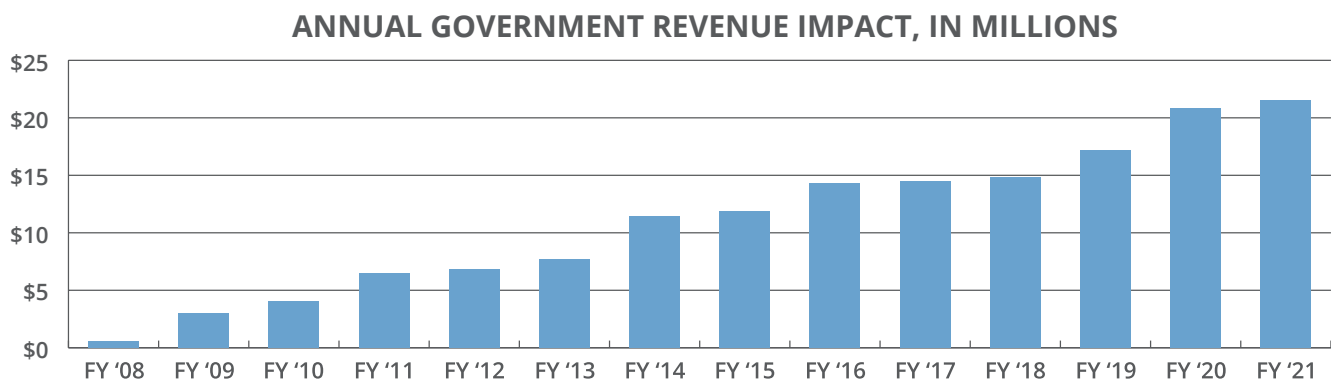
EARLY-STAGE IMPACT OF UCRF DOLLARS ON EMPLOYMENT

Tripp Umbach estimates that in 2021, UCRF dollars for healthcare research have created and sustained 3,069 high-paying research-related jobs throughout the state of North Carolina. This includes both the 1,094 high-paying research-related jobs directly attributed to UNC in addition to the 1,975 indirect and induced jobs supported throughout the state of North Carolina. The economic expansion created by the funds allocated to the UCRF have, in turn, brought about demand for additional employment in the state's economy. The employment impact has continued to grow and provide high-paying jobs to the state of North Carolina.



EARLY- AND LATER-STAGE STATE TAX IMPACTS

Tripp Umbach estimates that funds provided in 2021 have resulted in nearly \$20.8 million in tax revenues to the state of North Carolina. In-state spending by the recipient organizations and spending in the state by out-of-state parties have a significant impact on state tax revenue. Taxes created as a result of spending in the state's economy, and generation of fresh dollars from outside of the state, are expected to grow as early-stage research is commercialized. The tax impacts have increased over the last decade as well as provided a return to the state for the investment.



IMPACTS ASSOCIATED WITH LEVERAGED FEDERAL MEDICAL RESEARCH FUNDS

The North Carolina academic medical industry and growing life sciences industry have been measurably enhanced by these state funds. This federal medical research funding helps fuel clinical enterprises. According to the Association of American Medical Colleges, North Carolina's academic medical industry contributes \$12.44 billion annually to the state's economy. Nationally, that places North Carolina at number 11 in the list of annual economic impact contributions to a state's economy.³

These funds from the state's UCRF have encouraged researchers at the recipient organization to collaborate to apply for and win highly competitive federal grants. These funds have enabled recipients of UCRF dollars to leverage federal research funds amounting to approximately \$188.8 million, bringing the total to nearly \$231.1 million in external funding in 2021 alone.

HEALTHCARE COST SAVINGS

While this study does not include detailed economic impact models that calculate the potential cost savings attributable to research activities, a growing body of literature provides potential insights. Breakthrough research by Silverstein et al (1995) documented \$69 billion in annual economic savings resulted from NIH-supported research. The return on investment calculated by Silverstein was seven dollars in healthcare cost savings for every dollar invested in NIH-sponsored research.⁴

COMMERCIALIZATION

Additional impacts that will be realized because of the UCRF are the levels of commercialization that occur when clusters of research professionals collaborate on a specialty area of research. Tripp Umbach estimates that after 10 years of funding and operations, the commercialization of the UCRF will produce discoveries and spinoff businesses generating additional economic activity in the state of North Carolina. Looking at projected commercialization impact in 2031, Tripp Umbach estimates this to be from \$709.5 million at a conservative level of growth scenario to \$1.3 billion using the aggressive level of growth in additional economic activity within North Carolina. These activities will also create an additional 3,732 (conservative) to 6,798 jobs (aggressive) high-paying jobs. These additional economic and employment impacts will translate into additional state and local government revenue of \$54.5 million to \$44.1 million.

It is important to note that these commercialization impacts are in addition to the annual operational impacts of the UCRF and that these impacts will continue to grow as the research fund continues to be successful. These impacts are realized after years of research once the breakthroughs or discoveries have been made and the discoveries begin to hit the marketplace. Examples of successful spinoff businesses supported by UNC Lineberger include Meryx, G1 Therapeutics, GeneCentric, EpiCypher, Epizyme, Liquidia, and many others. Since 2009, UNC Lineberger startup companies have raised more than \$300 million in non-dilutive financing from the NIH, angel investors, and venture capitalists.

Tripp Umbach's projections are based on 2021 funding and the national experience of peer academic medical centers that have implemented similar academic, clinical, research, and economic development plans during the past 20 years. Since 1995, Tripp Umbach has measured the economic impact of every U.S. academic medical center on behalf of the Association of American Medical Colleges and used historical trending data from this experience in making projections.

3. Economic Impact of AAMC Medical Schools and Teaching Hospitals, 2020.

4. Cost Savings Resulting from NIH Research Support, NIH Publication No. 93. Silverstein, H.H. Garrison and S.J. Heinig, 1995.

APPENDIX A: DEFINITION OF TERMS

STUDY YEAR

Fiscal Year 2021

TOTAL IMPACT

The total impact of an organization is a compilation of the direct impact, the indirect impact, and the induced impact generated in the economy as a result of the organization.

DIRECT IMPACT

Direct impact includes all direct effects the organization has on the regional area due to the organizational operations. These items include direct employees, organizational spending, employee spending, as well as spending by patients and visitors to the organization.

INDIRECT IMPACT

The indirect impact includes the impact of local industries buying goods and services from other local industries. The cycle of spending works its way backward through the supply chain until all money leaks from the local economy, either through imports or by payments to value added. The impacts are calculated by applying direct effects to the Type I Multipliers.

INDUCED IMPACT

The response by an economy to an initial change (direct effect) that occurs through re-spending of income received by a component of value added. IMPLAN's default multiplier recognizes that labor income (employee compensation and proprietor income components of value added) is not leakage to the regional economy. This money is recirculated through the household spending patterns, causing further local economic activity.

MULTIPLIER EFFECT

The multiplier effect is the additional economic impact created as a result of the organization's direct economic impact. Local companies that provide goods and services to an organization increase their purchasing by creating a multiplier.

APPENDIX B: METHODOLOGY

To fully quantify the impact of the funding of UCRF to the operations of UNC Lineberger Comprehensive Cancer Center within the various geographical areas throughout this study, Tripp Umbach established a study methodology. It was critically important that the methodology used would deliver a comprehensive, yet conservative, estimate of the operations' impact, based on information compiled using uniform and consistent techniques. In addition, the study team sought to develop a reproducible methodology, ensuring that subsequent studies could build upon the information and knowledge gained through this effort.

Tripp Umbach determined that the use of the IMPLAN Pro economic impact model software was most appropriate for this analysis. The IMPLAN econometric model operates by estimating the direct impacts, indirect impacts, and induced impacts of specific economic activity. Direct economic impacts are those attributable to the initial economic activity. For example, an operation with 10 full-time employees creates 10 direct jobs. Indirect economic impacts are those economic activities undertaken by vendors and suppliers within the supply chain of the direct activity because of the initial economic activity. For example, suppliers of goods, materials, and services used in the direct activities produce indirect economic impacts. Induced economic impacts result from the spending of wages paid to employees in local industries involved in direct and indirect activities. Tripp Umbach selected the IMPLAN model because of its frequent use in economic impact, in addition to its development independent of local influences.

Tripp Umbach collected employment information concerning the economic activity of UCRF's funding on operations themselves and followed up in person to make certain the data was the most current available.

In this report, the impact was measured using IMPLAN datasets. The IMPLAN data files include information for 546 different industries (generally three- or four-digit SIC code breakdown) and more than 21 different economic variables. IMPLAN sources its employment data from ES202 employment security data supplemented by county business patterns and REIS data. Employment data used in the analysis includes full-time and part-time positions.

It should be noted that, at the time of performing the UCRF assessment, the most recent IMPLAN data files for the state of North Carolina were for 2018. While the data is not for the current year, it is unlikely that the fundamental economic structure of North Carolina's economic fabric has changed to an extent that would invalidate the analysis. IMPLAN data and accounts closely follow the accounting conventions used in the "Input/Output Study of the U.S. Economy" by the U.S. Bureau of Economic Analysis and the rectangular format recommended by the United Nations.

By deriving the direct and actual employment numbers from IMPLAN for each county, Tripp Umbach was able to conduct input/output modeling to analyze the current impact of the industry in each county. Tripp Umbach supplied additional information as required to supplement the data supplied by UNC Lineberger Comprehensive Cancer Center.

APPENDIX C: TRIPP UMBACH QUALIFICATIONS

Tripp Umbach is the national leader in providing economic impact analysis to leading healthcare organizations and academic health centers. The firm has completed more than 250 economic impact studies over the years for clients such as the Mayo Clinic Rochester, The Cleveland Clinic, University of Florida Shands HealthCare, and the Ohio State University Wexner Medical Center. In addition to work on multiple occasions for the six allopathic medical schools and academic medical centers in Pennsylvania, Tripp Umbach has completed statewide studies for multiple institutions in Ohio, Virginia, South Carolina, Wisconsin, and Minnesota.

Tripp Umbach recently completed its fifth national study of all U.S. medical schools and teaching hospital affiliates for the Association of American Medical Colleges.

In addition to completing similar studies for UNC LCCC over the last 12 years, Tripp Umbach has also completed economic impact studies for cancer centers such as the CURE Funding for PA Cancer Alliance, The Wistar Institute, University of North Carolina's Cancer Hospital, Ohio State University's James Cancer Hospital and Solove Research Institute, Ohio State University's Comprehensive Cancer Center, Milton S. Hershey Medical Center's Cancer Institute, Mayo Clinic/Allegheny General Hospital Cancer Services planning, UPMC Hillman Cancer Center feasibility and economic impact projections study, University of Pennsylvania projected economic impact of the Cancer Center as a component of the Civic Center project, and University of Florida Shands HealthCare economic impact projections.

For more information on Tripp Umbach, please go to www.trippumbach.com.

**Tripp
Umbach**



LINEBERGER COMPREHENSIVE
CANCER CENTER



Tripp
Umbach

TrippUmbach.com

ESTABLISHING LEGISLATION

§ 116-29.1. University Cancer Research Fund (as modified by SL 2013-360)

(a) Fund. – The University Cancer Research Fund is established as a special revenue fund in the Office of the President of The University of North Carolina. Allocations from the fund shall be made in the discretion of the Cancer Research Fund Committee and shall be used only for the purpose of cancer research under UNC Hospitals, the Lineberger Comprehensive Cancer Center, or both.

(b) Effective July 1 of each calendar year, the funds remitted to the University Cancer Research Fund by the Secretary of Revenue from the tax on tobacco products other than cigarettes pursuant to G.S. 105-113.40A is appropriated for this purpose are appropriated for this purpose.

(c) Cancer Research Fund Committee. – The Cancer Research Fund Committee shall consist of five ex officio members and two appointed members. The five ex officio members shall consist of the following: (i) one member shall be the Chancellor of the University of North Carolina at Chapel Hill, (ii) one member shall be the Director of the Lineberger Comprehensive Cancer Center, (iii) one member shall be the Dean of the School of Medicine at The University of North Carolina, (iv) one member shall be the Dean of the School of Pharmacy at The University of North Carolina, and (v) one member shall be the Dean of the School of Public Health at The University of North Carolina. The remaining two members shall be appointed by a majority vote of the standing members of the Committee and shall be selected from persons holding a leadership position in a nationally prominent cancer program. If any of the specified positions cease to exist, then the successor position shall be deemed to be substituted in the place of the former one, and the person holding the successor position shall become an ex officio member of the Committee.

(d) Chair. – The chair shall be the Chancellor of the University of North Carolina at Chapel Hill. (e) Quorum. – A majority of the members shall constitute a quorum for the transaction of business.

(f) Meetings. – The Committee shall meet at least once in each quarter and may hold special meetings at any time and place at the call of the chair or upon the written request of at least a majority of its members. (2007-323, s. 6.23(b); 2009-451, s. 27A.5(e); 2010-31, s. 9.12.)

(g) Report. – By November 1 of each year, the Cancer Research Fund Committee shall provide to the Joint Legislative Education Oversight Committee and to the Office of State Budget and Management an annual financial report which shall include the following components:

(1) Accounting of expenditures of State funds related to strategic initiatives, development of infrastructure, and ongoing administrative functions.

(2) Accounting of expenditures of extramural funds related to strategic initiatives, development of infrastructure, and ongoing administrative functions.

(3) Measures of impact to the State's economy in the creation of jobs, intellectual property, and start-up companies.

(4) Other performance measures directly related to the investment of State funds.

(5) Accounting of any fund balances retained by the Fund, along with information about any restrictions on the use of these funds.



APPENDIX

FY 2021 EXPENDITURES

Fiscal Year Expenditures Summary

Fiscal Year 2021 Expenditures			
Strategy	Annual Budget	Year to Date Actual*	Cash Balance
Theme 1: Optimizing NC Cancer Outcomes	\$8,025,000	\$7,918,178	\$106,822
Theme 2: Understanding Genetics in Cancer- Basic approaches & Clinical Applications	\$9,995,000	\$9,967,535	\$27,465
Theme 3: Develop New Cancer Treatments	\$8,270,000	\$8,358,886	(\$88,886)
Tier 2: Opportunity Fund	\$13,060,228	\$13,004,904	\$55,324
Tier 3: Infrastructure- Clinical Excellence and Outreach	\$8,140,000	\$8,119,004	\$20,996
Infrastructure	\$10,570,000	\$10,693,607	(\$123,607)
Grand Total	\$58,060,228	\$58,062,113	(\$1,885)
*Rounded to nearest dollar			

Total Expenses

Expense Category	Year To Date Actual*	Expense to Total Expenditure
Faculty Salaries	\$16,346,199	28.2%
EPA Student Salaries	\$2,700,852	4.7%
Staff Salaries	\$7,586,939	13.1%
Other Staff	\$316,774	0.5%
Benefits	\$7,884,112	13.6%
Phy Benefits	\$262,038	0.5%
Other Staff Benefits	\$193,386	0.3%
Transit Tax	\$80,988	0.1%
Consultants/Contracted Services	\$1,031,657	1.8%
Employee Education	\$42,093	0.1%
Repairs and Maint	\$4,549,769	7.8%
Other Current Services	\$2,991,127	5.2%
Supplies, Other	\$4,382,815	7.5%
Travel	\$73,351	0.1%
Maintenance Contracts	\$1,320,519	2.3%
Advertising	\$12,782	0.0%
Meetings & Amenities	\$903	0.0%
Printing and Binding	\$74,692	0.1%
Communication	\$106,432	0.2%
Computer Services	\$447,291	0.8%
Rental/Lease Facilities	\$910,195	1.6%
Equipment	\$5,079,976	8.7%
Study Subjects & Exp	\$236,334	0.4%
HCS Residents	\$286,734	0.5%
Insurance	\$30,137	0.1%
Student Support	\$1,027,474	1.8%
Legal Fees	\$86,545	0.1%
Grand Total	\$58,062,113	100.0%
*Rounded to nearest dollar		

UCRF Funding by Strategy and Expense

Theme 1: Optimizing NC Cancer Outcomes	Year to Date Actual*
Faculty Salaries	\$2,875,275
EPA Student Salaries	\$218,973
Staff Salaries	\$1,615,880
Other staff	\$131,187
Benefits	\$1,536,697
Phy Benefits	\$8,048
Other Staff Benefits	\$43,311
Transit Tax	\$14,645
Consultants/Contracted Services	\$15,838
Employee Education	\$12,815
Repairs and Maint	\$361
Other Current Services	\$519,750
Supplies, Other	\$203,945
Travel	\$13,876
Maintenance Contracts	\$852
Advertising	\$405
Printing and Binding	\$25,862
Communication	\$29,979
Computer Services	\$24,349
Rental/Lease Facilities	\$415,659
Equipment	\$51,183
Study Subjects & Exp	\$7,338
Student Support	\$151,949
Theme 1: Optimizing NC Cancer Outcomes Total	\$7,918,178
*Rounded to nearest dollar	

Theme 2: Understanding Genetics in Cancer	Year to Date Actual*
Faculty Salaries	\$2,800,522
EPA Student Salaries	\$453,725
Staff Salaries	\$1,209,858
Other staff	\$59,425
Benefits	\$1,396,767
Phy Benefits	\$7,863
Other Staff Benefits	\$37,005
Transit Tax	\$13,553
Consultants/Contracted Services	\$157,770
Employee Education	\$1,695
Repairs and Maint	\$2,347
Other Current Services	\$546,321
Supplies, Other	\$1,131,998
Travel	\$8,299
Maintenance Contracts	\$289,062
Printing and Binding	\$9,473
Communication	\$4,101
Computer Services	\$323,296
Equipment	\$1,437,148
Study Subjects & Exp	\$18,558
Student Support	\$51,389
Legal Fees	\$7,360
Theme 2: Understanding Genetics in Cancer Total	\$9,967,535
*Rounded to nearest dollar	

Theme 3: Developing New Cancer Treatment	Year to Date Actual*
Faculty Salaries	\$1,508,874
EPA Student Salaries	\$247,436
Staff Salaries	\$1,037,283
Other staff	\$6,438
Benefits	\$871,307
Phy Benefits	\$3,728
Other Staff Benefits	\$20,387
Transit Tax	\$8,372
Consultants/Contracted Services	\$213,911
Employee Education	\$4,544
Repairs and Maint	\$40,112
Other Current Services	\$536,301
Supplies, Other	\$1,142,584
Travel	\$7,515
Maintenance Contracts	\$434,681
Advertising	\$2,276
Printing and Binding	\$2,860
Communication	\$25,821
Computer Services	\$10,179
Rental/Lease Facilities	\$470,005
Equipment	\$1,676,850
Study Subjects & Exp	\$10,389
Insurance	\$27,225
Student Support	\$43,950
Legal Fees	\$5,860
Theme 3: Developing New Cancer Treatment Total	\$8,358,886
*Rounded to nearest dollar	

Tier 2: Opportunity Fund	Year to Date Actual*
Faculty Salaries	\$1,139,464
EPA Student Salaries	\$592,510
Staff Salaries	\$887,152
Other staff	\$83,812
Benefits	\$756,753
Phy Benefits	\$19,187
Other Staff Benefits	\$15,310
Transit Tax	\$8,205
Consultants/Contracted Services	\$19,832
Employee Education	\$9,400
Repairs and Maint	\$4,453,609
Other Current Services	\$851,374
Supplies, Other	\$1,674,837
Travel	\$31,895
Maintenance Contracts	\$215,805
Advertising	(\$2,664)
Meetings & Amenities	\$550
Printing and Binding	\$36,160
Communication	\$14,437
Computer Services	\$55,095
Rental/Lease Facilities	\$24,530
Equipment	\$1,803,386
Study Subjects & Exp	\$48,946
HCS Residents	\$19,917
Insurance	\$2,912
Student Support	\$219,214
Legal Fees	\$23,275
Tier 2: Opportunity Fund Total	\$13,004,904
*Rounded to nearest dollar	

Tier 3: Infrastructure - Clinical Excellence and Outreach	Year to Date Actual*
Faculty Salaries	\$5,334,691
EPA Student Salaries	\$97,703
Staff Salaries	\$673,545
Other Staff	\$8,821
Benefits	\$1,496,566
Phy Benefits	\$218,688
Other Staff Benefits	\$20,119
Transit Tax	\$18,372
Consultants/Contracted Services	\$68,427
Employee Education	\$9,559
Repairs and Maint	\$2,352
Other Current Services	\$8,422
Supplies, Other	\$34,748
Travel	\$2,817
Maintenance Contracts	\$7,500
Advertising	\$776
Communication	\$2,285
Computer Services	\$9,838
HCS Residents	\$25,000
Study Subjects & Exp	\$362
Student Support	\$28,363
Legal Fees	\$50,050
Tier 3: Infrastructure - Clinical Excellence and Outreach Total	\$8,119,004
*Rounded to nearest dollar	

Infrastructure	
Faculty Salaries	\$2,687,373
EPA Student Salaries	\$1,090,505
Staff Salaries	\$2,163,222
Other Staff	\$27,091
Benefits	\$1,826,022
Phy Benefits	\$4,524
Other Staff Benefits	\$57,254
Transit Tax	\$17,840
Consultants/Contracted Services	\$555,879
Employee Education	\$4,080
Repairs and Maint	\$50,988
Other Current Services	\$528,959
Supplies, Other	\$194,703
Travel	\$8,948
Maintenance Contracts	\$372,618
Advertising	\$11,988
Meetings & Amentites	\$353
Printing and Binding	\$338
Communication	\$29,809
Computer Services	\$24,535
Equipment	\$111,409
HCS Residents	\$241,818
Study Subjects & Exp	\$150,740
Student Support	\$532,609
Infrastructure Total	\$10,693,607
Grand Total	\$58,062,113



EXTRAMURAL
AWARDS

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Akulian	Jason	Lung Therapeutics, Inc	LTI-01-2001	5/19/20	5/19/24	A Phase 2, Randomized, Placebo-controlled, Double-blind, Dose-ranging Study Evaluating LTI-01 (single-chain urokinase plasminogen activator, scuPA) in Patients with Infected, Non-draining Pleural Effusions	\$35,441.08
Recruitment	Akulian	Jason	Biodesix		10/24/19	10/31/22	(INSIGHT): An Observational Study Assessing the Clinical Effectiveness of VeriStrat® and Validating Immunotherapy Tests in Subjects with Non-Small Cell Lung Cancer BDx00146	\$30,934.12
Recruitment	Aleman	Maria	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK124773-01-02	7/1/20	4/30/25	Iron-sensitive RNA regulation during erythropoiesis	\$401,946.00
Recruitment	Alexander	Thomas	AbbVie, Inc.	M16-106 83476/PO#4200911030	11/7/17	6/30/21	A Phase 1 Dose Escalation, Open-Label Study of Venetoclax in Combination with Navitoclax and Chemotherapy in Subjects with Relapsed Acute Lymphoblastic Leukemia	\$12,805.12
Recruitment	Alexander	Thomas	St. Jude Children's Research Hospital, Inc.		6/1/20	5/31/21	Pediatric Cancer Registry	\$11,500.00
Recruitment	Amelio	Antonio	NIH National Institute of Dental and Craniofacial Research	1-R01-DE030123-01A1	7/1/21	4/30/26	Role of CRTC1-MAML2 in Salivary Mucoepidermoid Carcinoma Pathobiology	\$493,947.00
Recruitment	Amelio	Antonio	NIH National Institute of Dental and Craniofacial Research	5-F31-DE028749-03	7/1/19	6/30/23	FELLOW: R. MURPHY Investigating the role of NRF2 in promoting radioresistance in oral squamous cell carcinoma.	\$46,836.00
Recruitment	Ariel	Pablo	NIH Office of the Director	1-S10-OD030223-01	6/1/21	5/31/22	Andor Dragonfly spinning disk confocal for the University of North Carolina at Chapel Hill	\$474,445.00
Recruitment	Armistead	Paul	Conquer Cancer Foundation		7/1/21	6/30/22	Engineering and evaluating an RNA-nanoparticle vaccine targeting leukemia-associated minor histocompatibility antigens	\$50,000.00
Recruitment	Arthur	Janelle	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK124617-01-02	6/1/20	5/31/25	Microbiota-mediated fibrotic remodeling in the inflamed intestine	\$391,217.00
Recruitment	Arthur	Janelle	NIH National Institute of Allergy and Infectious Diseases	1-R21-AI159786-01	2/13/21	1/31/23	Novel high-throughput in vivo approach to define pathobionts driving colitis	\$233,250.00
Recruitment	Aube	Jeffrey	Cornell University Medical Campus	203533-05	7/1/15	6/30/21	Tri-institutional TB research unit: persistence and latency 1U19AI111143 - Chemistry Core	\$613,287.00
Recruitment	Aubé	Jeff	American Chemical Society	21-4582	8/1/21	7/22/22	MEDI Graduate Fellowship	\$30,000.00
Retention	Bae-Jump	Victoria	NIH National Cancer Institute	5-R37-CA226969-01-04	3/14/18	2/28/23	Obesity-driven Metabolic and Molecular Biomarkers of Metformin Response in Endometrial Cancer	\$355,706.00
Retention	Bae-Jump	Victoria	V Foundation for Cancer Research	T2017-015	11/1/17	11/1/21	Metabolic and Molecular Biomarkers of Metformin Response in Obesity-driven Endometrial Cancer	\$150,000.00
Retention	Bae-Jump	Victoria	Epirium Bio	21-0003	9/17/20	9/16/21	Novel Epicatechins in the Treatment of Obesity-driven Endometrial Cancer	\$80,000.00
Retention	Bae-Jump	Victoria	Duke University		7/1/19	7/1/23	Endometrial Cancer Molecularly Targeted Therapy Consortium	\$30,000.00
Retention	Bae-Jump	Victoria	Foundation for Womens Cancer		4/1/20	3/31/21	Pre-Clinical Assessment of Induced Neural Stem Cells as Innovative Therapy for Ovarian Cancer	\$30,000.00
Retention	Bae-Jump	Victoria	Foundation for Womens Cancer		4/1/20	3/31/21	Impact of Race, Obesity and the Microbiome on Endometrial Cancer Treatment	\$25,000.00
Recruitment	Baker	Rick	Cornell University	87367-11331	1/1/20	3/31/24	Molecular regulation of the AP2 clathrin adaptor complex	\$82,591.00
Theme Investment (CC)	Baric	Ralph	NIH National Cancer Institute	1-U54-CA260543-01	9/30/20	8/31/22	North Carolina Seronet Center for Excellence	\$3,974,612.00
Theme Investment (CC)	Baric	Ralph	NIH National Institute of Allergy and Infectious Diseases	75N93020F00001 HHSN	7/14/17	7/13/24	Animal Models II Umbrella	\$2,434,819.00
Theme Investment (CC)	Baric	Ralph	NIH National Institute of Allergy and Infectious Diseases	5-U01-AI149644-03	4/19/19	3/31/24	Respiratory Virus Vaccine and Adjuvant Exploration	\$1,000,000.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Theme Investment (CC)	Baric	Ralph	Fred Hutchinson Cancer Research Center	0001041684	9/4/20	11/30/21	CoVPN 3002 A Phase III Randomized, Double-blind, Placebo-controlled Multicenter Study in Adults to Determine the Safety, Efficacy, and Immunogenicity of AZD1222 for the Prevention of COVID-19 LAB	\$740,391.00
Theme Investment (CC)	Baric	Ralph	Battelle Memorial Institute	US001-0000796806	9/11/20	6/30/21	WARP Speed Assay development	\$682,384.00
Theme Investment (CC)	Baric	Ralph	Fred Hutchinson Cancer Research Center	0001042325	9/17/20	11/30/21	CoVPN 3003 A Phase 3 Study to Assess the Efficacy and Safety of Ad26.COVS.2 for the Prevention of SARS-CoV-2-mediated COVID-19 in Adults Aged 18 Years and Older LC.(Janssen)	\$597,596.00
Theme Investment (CC)	Baric	Ralph	University of Alabama at Birmingham	000520254-SC002	3/1/19	2/28/22	Antiviral Drug Discovery and Development Center	\$575,103.00
Theme Investment (CC)	Baric	Ralph	Pfizer International, LLC	21-4572	4/21/21	4/20/22	Characterization of the efficacy of novel Pfizer compounds in a Mouse SARS-CoV-2 Infection Model	\$339,099.00
Theme Investment (CC)	Baric	Ralph	Bill and Melinda Gates Foundation	INV-006232	7/22/20	6/30/21	COVID-19: Advancing approved drugs as potential therapeutics	\$280,501.00
Theme Investment (CC)	Baric	Ralph	Pfizer International, LLC	20-4207	3/15/20	3/14/21	Assessment of activity of a novel SARS-CoV 3CL protease inhibitor against COVID-19 in a primary human airway epithelial cell assay	\$258,078.00
Theme Investment (CC)	Baric	Ralph	Leland Stanford Junior University	62624322-116098	4/13/21	3/31/26	SARS CoV-2 Lung Organoid Interactions in Replication and Pathogenesis (Project 3)	\$222,097.00
Theme Investment (CC)	Baric	Ralph	Leland Stanford Junior University	3U19AI116484-05S1	6/5/20	2/28/21	Human lung and intestinal organoid models of SARS-CoV-2 infection	\$155,500.00
Theme Investment (CC)	Baric	Ralph	University of Minnesota	N005402801	6/7/16	5/31/21	Receptor recognition and cell entry of coronaviruses	\$120,384.00
Recruitment	Baron	John	Medical University of South Carolina	A21-0071-S002	9/1/20	8/31/24	The immune contexture of colorectal adenomas and serrated polyps	\$145,904.00
Retention	Basch	Ethan	NIH National Cancer Institute	5-U01-CA233046-03	9/30/18	8/31/23	Analyzing and Interpreting PRO-CTCAE with CTCAE and Other Clinical Data to Characterize Drug Tolerability	\$530,934.00
Retention	Basch	Ethan	Alliance for Clinical Trials in Oncology Foundation	IHS-1511-33392	11/1/16	1/31/22	Electronic Patient Reporting Of Symptoms During Outpatient Cancer Treatment: A U.S. National Randomized Controlled Trial	\$524,718.50
Retention	Basch	Ethan	NIH National Cancer Institute	5-T32-CA116339-13	7/1/05	7/31/23	Cancer Care Quality Training Program	\$256,704.00
Retention	Basch	Ethan	Patient-Centered Outcomes Research Institute	ME-1507-32079	8/1/16	12/31/20	Patient-Reported Outcomes-based Performance Measures (PRO-PMs)	\$224,209.13
Retention	Basch	Ethan	University of Michigan	3004700015 3006162149	8/17/17	3/31/22	Advanced Development and Dissemination of EMERSE for Cancer Phenotyping from Medical Records	\$39,991.00
Recruitment	Batrakova	Elena	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS102412-01-04	3/1/18	11/30/22	Cell-based Platform for Gene Delivery to the Brain	\$338,580.00
Recruitment	Batrakova	Elena	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS112019-01-03	9/1/19	6/30/24	Extracellular Vesicles for CNS Delivery of Therapeutic Enzymes to Treat Lysosomal Storage Disorders	\$297,568.00
Recruitment	Batrakova	Elena	Michael J Fox Foundation for Parkinson's Research	17846	1/1/00	8/14/21	Bio-inspired Nanoformulation of GDNF for Treatment of Parkinson's Disease (PD)	\$148,500.78
Recruitment	Batrakova	Elena	University of Texas Rio Grande Valley	1R01AI147731-01A1 (01)	7/16/20	6/30/25	A targeted anti-HIV drug delivery to the GALT	\$78,647.00
Recruitment	Batrakova	Elena	Florida International University	800010088-01UG/000309	9/1/19	2/28/22	Characterize siBeclin1-lipid nanoparticles that can silence HIV via intranasal delivery	\$19,979.00
Innovation Award	Bautch	Victoria	NIH National Heart, Lung, and Blood Institute	5-R35-HL139950-04	1/1/18	12/31/24	Molecular and cellular control of angiogenesis	\$922,295.00
Innovation Award	Bautch	Victoria	Johns Hopkins University	2004080385	8/15/18	7/31/21	New Roles for VEGFR1 in Angiogenesis	\$206,626.00
Innovation Award	Bautch	Victoria	American Heart Association	829371	4/1/21	3/31/23	FELLOW:MORGAN OATLEY Overlapping functions of SMAD6 and SMAD7 in vascular development and stability	\$134,236.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Innovation Award	Bautch	Victoria	American Heart Association	20PRE35080143	7/1/20	6/30/22	Trafficking and secretion of soluble VEGFR1 as a regulator of angiogenic sprout guidance	\$62,032.00
Theme Investment (CC)	Baxter	Victoria	NIH National Institute of Health	5-K01-OD026529-01-04	8/1/18	7/31/23	Pathogenesis of and Host Response to Chikungunya Virus Infection of the Central Nervous System	\$126,222.00
Retention	Bear	James	NIH National Institute of General Medical Sciences	5-R35-GM130312-01-03	2/1/19	1/31/24	Systematic analysis of the actin cytoskeleton and directed cell migration	\$581,059.00
Retention	Bear	James	North Carolina State University	2014-0702-02	7/1/18	5/31/22	Multiscale modeling of wound healing	\$350,398.00
Retention	Bear	James	National Science Foundation	CBET-1706019	7/1/17	6/30/21	Collaborative Research: Mechanisms of Gradient Sensing by 'Feel' in Cell Migration Directed by Extracellular Matrix	\$70,842.75
Retention	Bear	James	NIH National Institute of General Medical Sciences	1-F31-GM133094-02	8/1/19	7/31/22	FELLOW: Z.KING Dissecting the mechanistic contributions of Coronin 1B and Coronin 1C to directed cell migration.	\$45,520.00
Investment (Protocol)	Beaven	Anne	Alliance Foundation Trials, LLC	AFT-32	1/21/21	2/2/31	A Phase II Study of Palbociclib (PD-0332991) in Combination with Ibrutinib in Patients with Previously Treated Mantle Cell Lymphoma	\$8,500.00
Recruitment	Bennett	Antonia	Boston University Board of Trustees	4500003048	7/1/18	12/31/21	Access to and Value of Treatment Innovation Study	\$57,343.00
Recruitment	Bennett	Antonia	Alliance for Clinical Trials in Oncology Foundation	PCS-1505-30497	7/1/16	6/30/23	Comparison of Operative to Medical Endocrine Therapy (COMET) for Low-Risk DCIS	\$33,623.00
Recruitment/ Theme Investment	Berg	Jonathan	NIH National Human Genome Research Institute	5-U41-HG009650-04	9/12/17	7/31/21	The Clinical Genome Resource - Expert Curation and EHR Integration	\$3,214,945.00
Recruitment/ Theme Investment	Berg	Jonathan	NIH National Human Genome Research Institute	3-U01-HG006487-08S1	12/5/11	5/31/21	North Carolina Clinical Genomic Evaluation by Next-gen Exome Sequencing 2	\$1,423,766.00
Recruitment	Bjurlin	Marc	Janssen Research & Development, LLC	WO# 56021927PCR3011	6/21/19	12/31/27	A Randomized, Double-blind, Placebo-controlled, Phase 3 Study of Apalutamide in Subjects with High-risk, Localized or Locally Advanced Prostate Cancer Who are Candidates for Radical Prostatectomy	\$92,019.15
Recruitment	Bjurlin	Marc	Altor BioScience		6/22/20	12/31/23	A study of intravesical Bacillus Calmette-Guerin (BCG) in Combination with ALT-803 in Patients with Non-Muscle Invasive Bladder Cancer	\$20,876.56
Recruitment	Bjurlin	Marc	UroGen Pharma Ltd.	BL006-UGN-102	12/9/20	12/31/24	A Randomized, Controlled, Open-label Study of the Efficacy, Durability, and Safety of UGN-102 With or Without TURBT in Patients with Low Grade Intermediate Risk Non-Muscle Invasive Bladder Cancer (LG IR-NMIBC) (ATLAS)	\$13,380.26
Recruitment	Bjurlin	Marc	Medpace, Inc.		7/1/16	5/31/22	A Phase III, Open Label Study to Evaluate the Safety and Efficacy of INSTILADRIN (rAD-IFN/Syn3) Administered Intravesically to Patients with High Grade, BCG Unresponsive Non-Muscle Invasive Bladder Cancer (NMIBC)	\$11,067.28
Recruitment	Bjurlin	Marc	MDxHealth Inc,		1/31/17	1/31/23	Prospective Validation of Prostate Bio markers for Repeat Biopsy:The PRIORITY Study	\$8,799.99
Recruitment	Bjurlin	Marc	Hoosier Cancer Research Network		7/18/19	8/11/29	PhAse 1/2 StuDy of Modern ImmunotherApy in BCG-RelaPsing UroThelial Carcinoma of the BLADDER - (ADAPT-BLADDER) HCRN GU16-243	\$4,019.00
Recruitment	Bowers	Albert	NIH National Institute of General Medical Sciences	5-R35-GM125005-01-04	9/5/17	8/31/22	Chemoenzymatic Synthesis, Mode of Action and Evolution of Natural Product-based Macrocycles	\$383,398.00
Recruitment	Branca	Rosa	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	1-R01-DK123206-01A1	9/1/20	8/31/22	Enabling accurate identification and quantification of brown adipose tissue mass by xenon enhanced computed tomography	\$493,240.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Branca	Rosa	NIH National Institute of Biomedical Imaging and Bioengineering	1-R21-EB031319-01	4/1/21	1/31/23	Gas microbubbles as a hyperpolarized-xenon carrier and as a contrast agent for MRI	\$225,891.00
Recruitment	Brewer	Noel	NIH National Institute on Drug Abuse	5-R01-DA048390-01-02	7/1/20	4/30/25	Informing ENDS policies: Studying the impact of e-cigarette warnings on behavior	\$1,043,829.00
Recruitment	Brewer	Noel	NIH National Cancer Institute	1-R01-CA246606-01A1	9/10/20	8/31/23	Understanding Uncontrolled Vaping Among Vulnerable Populations	\$459,285.00
Recruitment	Brewer	Noel	World Health Organization	202558056	6/30/20	12/31/20	Senior specialist expertise to guide testing and validation of a childhood vaccination survey to measure drivers of vaccination uptake	\$17,000.00
Recruitment	Broaddus	Russell	University of Texas MD Anderson Cancer Center	3001701567	9/1/19	8/31/21	MD Anderson Gynecologic SPORE for Uterine Cancers	\$337,653.00
Recruitment	Broaddus	Russell	University of Texas MD Anderson Cancer Center	3001688155	9/1/20	8/31/21	Administrative Supplement: MD Anderson Gynecologic SPORE for Uterine Cancers	\$210,976.00
Recruitment	Broaddus	Russell	University of Texas MD Anderson Cancer Center	3001704190	9/1/19	8/31/21	MD Anderson Gynecologic SPORE for Uterine Cancers	\$79,437.00
Recruitment	Broaddus	Russell	University of Texas MD Anderson Cancer Center	3001704196	9/1/19	8/31/21	MD Anderson Gynecologic SPORE for Uterine Cancers	\$79,437.00
Recruitment	Brown	Nicholas	NIH National Institute of General Medical Sciences	3-R35-GM128855-03S1	8/1/18	7/31/23	Spindle Assembly Checkpoint Silencing	\$388,750.00
Recruitment	Brudno	Yevgeny	North Carolina State University	572956	2/1/20	1/31/22	Image-guided, ultrasound-enhanced long-term intracranial drug delivery	\$52,860.00
Recruitment	Brudno	Yevgeny	North Carolina State University	567698	4/16/21	3/31/26	Biomaterial Scaffolds for Ex Vivo and In Situ CAR-T Cell Production	\$29,008.00
Recruitment	Bryant	Ashley	New York University	F1456-04	9/1/20	8/31/22	Care-Partner Assisted Intervention to Improve Oral Health for Individuals with Mild Dementia - Diversity Supplement	\$202,872.00
Recruitment	Bryant	Ashley	NIH National Institute of Nursing Research	1-R34-NR019131-01A1	3/9/21	2/28/23	A Nurse-Led Palliative and Supportive Care Intervention for Newly Diagnosed Adults with Acute Myeloid Leukemia	\$194,375.00
Recruitment	Bryant	Ashley	American Cancer Society	DSCN-20-076-01-SCN	9/1/20	8/31/22	Chemotherapy-related Cognitive Impairment in Adults with Acute Leukemia	\$30,000.00
Recruitment	Bryant	Kirsten	NIH National Cancer Institute	5-R37-CA251877-01-02	7/1/20	6/30/25	Mechanistic dissection and inhibitor targeting of autophagy in RAS driven cancers	\$446,895.00
Recruitment	Bryant	Kirsten	American Association for Cancer Research	15-70-25-BRYA	11/1/19	10/31/21	Exploiting Pancreatic Cancer Metabolism for Therapeutic Gain	\$187,500.00
Recruitment	Bryant	Kirsten	Sky Foundation, Inc.		5/1/20	4/30/22	Identification of novel signaling nodes for autophagy inhibition	\$25,000.00
Investment (GeriOnc)	Busby-Whitehead	Jan	HRSA Bureau of Health Workforce	5-U1Q-HP28734-05-00	7/1/15	6/30/24	Carolina Geriatric Workforce Enhancement Program	\$755,000.00
Investment (GeriOnc)	Busby-Whitehead	Jan	Duke Endowment	6722-SP	7/1/18	12/31/21	Advancing and Embedding the Dementia-Friendly Hospital Initiative in North Carolina	\$240,000.00
Investment (GeriOnc)	Busby-Whitehead	Jan	DHHS Health Resources and Services Administration	1-T1M-HP39080-01	5/1/20	4/30/21	Geriatrics Workforce Enhancement Program COVID	\$90,625.00
Investment (GeriOnc)	Busby-whitehead	Jan	American Geriatrics Society		3/15/16	9/30/22	Geriatrics Workforce Enhancement Program (GWEP) Coordinating Center	\$71,950.67
Investment (GeriOnc)	Busby-Whitehead	Jan	NIH National Institute on Aging	1-R13-AG072860-01	4/1/21	3/31/26	The Network for Investigation of Delirium: Unifying Scientists (NIDUS)'s 9th to 13th Annual Delirium Bootcamps: A Foundation for Future Exploration	\$50,000.00
Investment (GeriOnc)	Busby-whitehead	Jan	Hebrew Rehabilitation Center	10.10.91561	9/30/16	4/30/21	Network for Investigation of Delirium Across the U.S.	\$33,204.90
Investment (GeriOnc)	Busby-Whitehead	Jan	Hebrew Rehabilitation Center	90108	6/1/21	2/28/26	NIDUS II: Advanced-Stage Development and Utilization of the NIDUS Research Infrastructure to Advance Interdisciplinary Aging Research in Delirium	\$18,672.40
Investment (GeriOnc)	Busby-Whitehead	Jan	NIH National Institute on Aging	2-T35-AG038047-11	6/1/20	5/31/25	UNC-CH Summer Research Training in Aging for Medical Students (MSTAR)	\$7,290.00
Investment (Informatics)	Buse	John	NIH National Center for Advancing Translational Sciences	5-UL1-TR002489-04	3/30/18	2/28/23	NC TraCS Institute - home of the CTSA award at UNC	\$3,499,229.25
Recruitment	Calabrese	Mauro	NIH National Institute of General Medical Sciences	5-R01-GM136819-01-02	5/1/20	2/29/24	Cooperative control of Polycomb Repressive Complexes by long noncoding RNAs, CpG island DNA, and RNA-binding proteins	\$386,771.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Calabrese	Mauro	NIH National Institute of General Medical Sciences	5-R01-GM121806-01-05	1/23/17	12/31/21	Mechanisms of gene silencing induced by long noncoding RNAs	\$316,144.00
Recruitment	Calabrese	Mauro	NIH National Institute of Child Health and Human Development	1-F31-HD103370-01	8/1/20	7/31/23	FELLOW:KEENAN BRACEROS Control of gene silencing by long noncoding RNAs in trophoblast stem cells	\$37,408.00
Recruitment	Calabrese	Mauro	NIH National Institute of Child Health and Human Development	1-F31-HD103334-01	8/1/20	7/31/23	Regulation of Polycomb by long noncoding RNAs during pre-implantation development	\$37,027.00
Recruitment	Cameron	Craig	NIH National Institute of Allergy and Infectious Diseases	5-R37-AI053531-17-18	9/20/19	1/31/23	Picornavirus Genome Replication	\$982,162.74
Recruitment	Cameron	Craig	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI161841-01	3/15/21	2/28/26	Coronavirus Genome Replication	\$677,301.00
Recruitment	Cameron	Craig	NIH National Institute of Allergy and Infectious Diseases	2-R01-AI045818-22A1	9/1/19	6/30/26	RNA-dependent RNA Polymerase	\$469,982.00
Recruitment	Cameron	Craig	NIH National Institute of Allergy and Infectious Diseases	5-R21-AI149312-01-02	6/3/20	5/31/22	Contribution of IL-32 gene expression to viral persistence	\$189,509.00
Retention	Campbell	Sharon	NIH National Institute of General Medical Sciences	5-R35-GM134962-01-02	2/1/20	1/31/25	Structure and Mechanism of G-proteins and cell adhesion proteins in regulation of cell growth and motility	\$642,221.00
Retention	Campbell	Sharon	American Cancer Society	PF-20-140-01-CDD	1/1/21	12/31/22	Oncogenic KRAS Q61 mutants possess novel targets for drug discovery	\$119,500.00
Investment (Genomics)	Carey	Lisa	NIH National Cancer Institute	5-R01-CA229409-01-03	6/1/19	5/31/24	Optimizing HER2-targeting using RNA- and DNA-based predictive algorithms	\$542,931.00
Investment (Protocol)	Carey	Lisa	NIH National Cancer Institute	5-UG1-CA233373-03	5/1/19	2/28/25	UNC Lead Academic Participating Site	\$502,489.00
Investment (Protocol)	Carey	Lisa	Breast Cancer Research Foundation	BCRF-20-023	10/1/18	9/30/21	The Assessment of Genomic Instability in Breast Cancer Patients	\$175,000.00
Investment (Protocol)	Carey	Lisa	Susan G Komen for the Cure	SAB180006	11/19/18	11/18/22	Optimizing HER2-targeting using RNA and DNA-based predictive algorithms	\$133,333.33
Investment (Protocol)	Carey	Lisa	Incyte Corporation		1/23/20	12/31/20	Window of Opportunity Study of Parsaclisib in Subjects with Newly Diagnosed Stage I-IIIC Triple-Negative and ER-Negative / HER2-Positive Breast Cancer	\$51,887.76
Investment (Protocol)	Carey	Lisa	Seattle Genetics, Inc		10/7/20	10/21/30	SGNTUC-016: Randomized, double-blind, phase 3 study of tucatinib or placebo in combination with ado-trastuzumab emtansine (T-DM1) for subjects with unresectable locally-advanced or metastatic HER2+ breast cancer(HER2CLIMB-02)	\$40,865.00
Investment (Protocol)	Carey	Lisa	Novartis Pharmaceuticals Corporation		3/11/19	12/15/22	A phase II open-label, randomized, three-arm, multicenter study of LAG525 given in combination with spartalizumab (PDR001), or with spartalizumab and carboplatin, or with carboplatin, as first or second line therapy in patients with advanced triple-negati	\$23,176.00
Investment (Protocol)	Carey	Lisa	Alliance for Clinical Trials in Oncology Foundation		12/2/14	12/31/21	A Randomized, Placebo-Controlled, Double-Blind, Phase 3 Study Evaluating Safety and Efficacy of the Addition of Veliparib Plus Carboplatin Versus the Addition of Carboplatin to Standard Neoadjuvant Chemotherapy Versus Standard Neoadjuvant Chemotherapy	\$20,708.86
Investment (Protocol)	Carey	Lisa	Mayo Clinic		5/1/12	9/26/24	BO25126/BIG 4-11/TOC4939GB025126 A randomized multicenter, double-blind, placebo-controlled comparison of chemotherapy plus trastuzumab plus placebo versus chemotherapy plus trastuzumab plus pertuzumab as adjuvant therapy in patients with operable HER	\$4,038.60
Innovation Award	Caron	Kathleen	NIH National Heart, Lung, and Blood Institute	5-R01-HL129086-05-06	4/1/16	6/30/24	Cardiac Lymphatics in Development and Repair	\$583,072.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Investment (Chair Package)	Caron	Kathleen	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK119145-01-03	4/1/19	1/31/24	GPCR-mediated pathways for regulation of intestinal lymphatic function	\$517,480.00
Investment (Chair Package)	Caron	Kathleen	NIH National Institute of General Medical Sciences	5-T32-GM133364-02	7/1/20	6/30/25	Training Program in Cellular Systems and Integrative Physiology	\$192,984.00
Investment (Chair Package)	Caron	Kathleen	NIH National Center for Advancing Translational Sciences	1-R03-TR003368-01A1	5/1/21	4/30/22	Illuminating Orphan GPCRs in Lymphatics	\$155,500.00
Investment (Chair Package)	Caron	Kathleen	NIH National Institute of Child Health and Human Development	1-K99-HD104900-01	5/5/21	4/30/23	Investigating Implications of E-Cigarettes on Pregnancy Success and Reproductive Fitness	\$101,628.00
Investment (Chair Package)	Caron	Kathleen	American Heart Association	834898	7/1/21	6/30/23	Elucidating the VE-cadherin protein network governing lymphatic function and permeability	\$63,040.00
Investment (Chair Package)	Caron	Kathleen	Burroughs Wellcome Fund	1021105	9/1/20	8/31/23	Lymphatic Development Response During Implantation	\$60,000.00
Recruitment	Charlot	Marjory	Conquer Cancer Foundation		7/1/21	6/30/24	A User-centered Mobile Health App to Promote Participation of Black Women in Breast Cancer Clinical Trials	\$150,000.00
Recruitment	Charlot	Marjory	Lung Cancer Research Foundation	20-5421	12/1/20	11/30/22	Understanding the immune landscape of Non-Small Cell Lung Cancer in African Americans	\$150,000.00
Recruitment	Charlot	Marjory	V Foundation for Cancer Research	DM2020-004	1/15/20	1/15/22	Use of Artificial Intelligence and the Electronic Health Record to Enhance Enrollment of Minority Cancer Patients in Cancer Clinical Trials	\$40,000.00
Investment (Protocol)	Coghill	James	Millennium Pharmaceuticals, Inc.		10/24/19	12/1/27	A Randomized, Double-Blind, Placebo-Controlled, Multicenter Study to Evaluate the Efficacy and Safety of Vedolizumab in the Prophylaxis of Intestinal Acute Graft-Versus-Host Disease in Subjects Undergoing Allogeneic Hematopoietic Stem Cell Transplantation	\$13,567.65
Recruitment	Coombs	Catherine	Loxo Oncology, Inc.		3/29/19	3/29/29	A Phase 1/2 Study of Oral LOXO-305 in Patients with Previously Treated Chronic Lymphocytic Leukemia/Small Lymphocytic Lymphoma (CLL/SLL) or Non-Hodgkin's Lymphoma (NHL)	\$603,353.34
Recruitment	Coombs	Catherine	Prostate Cancer Foundation	19YOUN07	10/1/19	9/30/22	Examining the interaction between clonal hematopoiesis and clinical outcomes among patients with metastatic castration-resistant prostate cancer treated on A031201	\$112,500.00
Recruitment	Coombs	Catherine	H3 Biomedicine Inc.		12/4/17	7/28/22	An Open-label, Multicenter Phase 1 Trial to Evaluate the Safety, Pharmacokinetics and Pharmacodynamics of Splicing Modulator H3B-8800 for Subjects With Myelodysplastic Syndromes, Acute Myeloid Leukemia, and Chronic Myelomonocytic Leukemia	\$27,706.85
Investment (Training)	Cox	Adrienne	NIH National Cancer Institute	5-T32-CA071341-24	9/30/96	8/31/22	Cancer Cell Biology Training Program	\$147,058.00
Investment (HTSF)	Crowley	James	NIH National Institute of Mental Health	5-R01-MH110427-01-05	8/1/16	4/30/22	OCD: Novel Comparative Genomic Approaches to Identify Disease and Treatment Mechanisms	\$595,175.00
Investment (HTSF)	Crowley	James	NIH National Institute of Mental Health	1-R01-MH124675-01	12/15/20	10/31/25	2/2 Rare Genetic Variation and Risk for Obsessive Compulsive Disorder	\$77,750.00
Investment (HTSF)	Crowley	James	Massachusetts General Hospital	234362	4/1/19	1/31/24	Large-scale collaborative genetic and epigenetic studies of Tourette Syndrome	\$22,707.00
Retention	Damania	Blossom	NIH National Cancer Institute	5-P01-CA019014-37-41	5/1/97	6/30/22	Herpesviral, Oncogenesis, Latency and Reactivation	\$1,812,045.00
Retention	Damania	Blossom	NIH National Cancer Institute	1-U54-CA254564-01	8/13/20	7/31/25	Innovations for screening and prognosis in HIV+ cancers including Kaposi sarcoma, cervical cancer, and lymphoma in Malawi and South Africa	\$1,180,460.00
Retention	Damania	Blossom	NIH National Institute of Dental and Craniofacial Research	5-R01-DE028211-01-04	9/11/18	6/30/23	Modulation of Innate Immunity by KSHV	\$420,266.00
Retention	Damania	Blossom	Lymphoma Research Foundation of America		3/1/21	2/28/23	Adenosinergic signaling as a novel target for viral lymphomas	\$105,000.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Damania	Blossom	NIH National Cancer Institute	3-R01-CA096500-18S1	7/15/02	7/31/23	Role of KSHV Viral Proteins in Signaling and Pathogenesis	\$72,294.00
Retention	Damania	Blossom	Burroughs Wellcome Fund	1020293.01	4/1/21	3/31/22	Characterizing the role of the PI3K/Akt/mTOR pathway in KSHV-associated malignancies	\$1,000.00
Investment (HTS)	Dangl	Jeff	National Science Foundation	IOS-1758400	8/1/18	7/31/22	Structure-Function Analyses of Plant NLR receptors	\$333,000.00
Investment (HTS)	Dangl	Jeff	NIH National Institute of General Medical Sciences	5-R01-GM107444-05-08	9/1/13	8/31/21	The intersection of development and the innate immune system function in arabidopsis	\$265,905.00
Investment (HTS)	Dangl	Jeff	European Molecular Biology Organization	ALTF 743-2019	1/1/20	12/31/21	Specificity in the plant-microbiome ecosystem	\$70,412.12
Investment (HTS)	Dangl	Jeff	National Science Foundation	08/31/2022	9/1/19	8/31/22	Synthetic bacterial communities to dissect and direct plant microbiome function	\$40,000.00
Investment (Genomics)	Davis	Ian	V Foundation for Cancer Research	T2020-003	11/1/20	11/1/23	Combining Cellular and Epigenetic Therapies to Treat Pediatric Solid Tumors	\$200,000.00
Investment (Genomics)	Davis	Ian	Duke University	3021646	5/1/19	4/30/21	Unified Program for Therapeutics in Children (UPTiC)	\$118,924.00
Investment (Genomics)	Davis	Ian	EpiCypher, Inc.		6/20/19	12/31/21	SBIR: Quantitative Assessment of Response to Epigenetic-Targeted Therapy	\$50,000.00
Investment (Genomics)	Davis	Ian	Howard Hughes Medical Institute	GT11538	9/1/19	8/31/22	FELLOW: S. MARCEL Loss of SETD2 alters transcriptional response to hypoxia	\$50,000.00
Investment (Genomics)	Davis	Ian	Burroughs Wellcome Fund	1020289.01	4/1/21	3/31/22	FELLOW:T. VITAL - Exploring the mechanism underlying a small molecule inhibitor of chromatin accessibility	\$1,000.00
Retention	Dayton	Paul	NIH National Cancer Institute	5-R01-CA220681-01-04	8/10/17	7/31/22	High Frame Rate 3-D Super Resolution Ultrasound Microvascular Imaging	\$307,304.00
Retention	Dayton	Paul	NIH National Cancer Institute	5-R01-CA232148-01-04	6/1/18	5/31/23	Treating Tumoral Hypoxia via Ultrasound-Guided Oxygen Release for Improving Radiation Therapy	\$139,283.00
Retention	Dayton	Paul	NIH National Cancer Institute	5-R21-CA246550-01-02	4/1/20	3/31/22	Parametric optimization of ultrasound-mediated immuno-modulation for pancreatic cancer therapy	\$108,171.00
Retention	Dayton	Paul	North Carolina State University	572402	7/1/18	3/31/22	Acoustic Angiography Using Dual-Frequency and Ultrawideband CMUT Arrays	\$95,234.00
Retention	Dayton	Paul	North Carolina State University	572469	8/15/18	6/30/22	Forward viewing catheter-delivered microbubble enhanced sonothrombolysis (FV-CAMUS)	\$47,164.00
Retention	Dayton	Paul	NIH National Cancer Institute	5-F31-CA243177-02	8/1/19	7/31/21	Toward Clinical Translation of Acoustic Angiography: Optimization of Microvascular Ultrasound Imaging on a Novel Dual-frequency Array	\$37,444.00
Retention	Dayton	Paul	North Carolina State University	570253	4/13/15	3/31/21	Ultrasound Molecular Imaging to Assess Therapeutic Response	\$22,043.00
Retention	Dayton	Paul	SonoVol, Inc.		9/11/19	7/31/21	SBIR: A turnkey research platform to accelerate clinical translation of focused-ultrasound (FUS) oncology therapies	\$5,500.00
Retention	Dees	Claire	Debiopharm International SA		5/13/19	5/23/29	A Phase II basket study of the oral selective pan-FGFR inhibitor Debio 1347 in subjects with solid tumors harboring a fusion of FGFR1, FGFR2 or FGFR3 (Study # Debio 1347-201)	\$788,238.84
Retention	Dees	Claire	inVentiv Clinical LLC		7/25/16	7/24/28	Phase 1B study to assess the safety, tolerability, and clinical activity of gedatolisib in combination with Palbociclib and either letrozole or fulvestrant in women with metastatic or locally advanced/recurrent breast cancer (MBC)	\$192,097.21
Retention	Dees	Claire	Apollomics, Inc.		7/30/19	8/14/29	Phase 1 / 2 Multicenter Study of the Safety, Pharmacokinetics, and Preliminary Efficacy of APL-101 in Subjects with Non-Small Cell Lung Cancer with c-Met EXON 14 skip mutations and c-Met Dysregulation Advance Solid Tumors	\$123,102.74

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Dees	Claire	Meryx, Inc.		7/19/18	7/31/28	A Phase I Dose Escalation Study of the Safety, Pharmacokinetics and Pharmacodynamics of MRX-2843 in Adult Subjects with Relapsed/Refractory Advanced and/or Metastatic Solid Tumors	\$109,068.00
Retention	Dees	Claire	Ohio State University	60075824	5/5/20	2/28/21	OSU ETCTN supplement to add UNC	\$95,185.00
Retention	Dees	Claire	Boehringer Ingelheim Pharmaceuticals, Inc.		11/19/18	11/18/28	An open label, phase Ib, dose-escalation study evaluating the safety and tolerability of xentuzumab and abemaciclib in patients with locally advanced or metastatic solid tumours and in combination with endocrine therapy in patients with locally advanced o	\$81,576.12
Retention	Dees	Claire	G1 Therapeutics		6/20/18	6/30/28	A Phase 1, Open-Label, Multicenter Study to Assess the Safety, Tolerability, Pharmacokinetics, and Preliminary Antitumor Activity of Ascending Doses of G1T48 in Women with Estrogen Receptor-Positive, HER2-Negative Advanced Breast Cancer	\$55,024.90
Retention	Dees	Claire	H3 Biomedicine Inc.		4/12/18	4/30/28	A Phase I-II multicenter, open label trial of H3B-6545, a covalent antagonist of estrogen receptor alpha, in women with locally advanced or metastatic estrogen receptor-positive, HER2 negative breast cancer	\$44,132.92
Retention	Dees	Claire	NRG Oncology		3/1/19	2/28/25	NRG Oncology Prime eIPF	\$15,785.00
Retention	Dees	Claire	TESARO, Inc.		2/15/17	4/30/21	Phase 1/2 Trial of Niraparib in Combination with Pembrolizumab in Patients with Advanced or Metastatic Triple-Negative Breast Cancer and in Patients with Recurrent Ovarian Cancer	\$5,732.00
Retention	Dees	Claire	Carisma Therapeutics, Inc	CT-0508-101	11/18/20	11/30/30	A Phase 1, First in Human Study of Adenovirally Transduced Autologous Macrophages Engineered to Contain an Anti-HER2 Chimeric Antigen Receptor in Subjects with HER2 Overexpressing Solid Tumors.	\$3,000.00
Retention	Dees	Elizabeth	Merck Sharp and Dohme Corp.		7/24/13	7/31/22	A Phase Ib Multi-Cohort Study of MK-3475 in Subjects with Advanced Solid Tumors	\$252,538.48
Retention	Dees	Elizabeth	Eli Lilly and Company		4/11/14	5/1/24	A Phase 1b Study of LY2835219 in Combination with Endocrine Therapies for Patients with Hormone Receptor Positive, HER2 Negative Metastatic Breast Cancer	\$19,807.00
Investment (HTSF)	Dellon	Evan	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R21-DK122297-01-02	4/27/20	3/31/22	Molecular and epigenetic predictors and mechanisms of tr	\$116,505.00
Investment (Training)	Der	Channing	NIH National Cancer Institute	5-T32-CA009156-45	7/1/80	7/31/22	Integrated Training in Cancer Model Systems	\$935,418.00
Investment (Proteomics)	Der	Channing	NIH National Cancer Institute	5-R35-CA232113-03	9/1/18	8/31/25	Targeting undruggable RAS for cancer treatment	\$918,610.00
Investment (Proteomics)	Der	Channing	Dana-Farber Cancer Institute	1203003	6/8/18	3/31/23	The Role of RHOA in Diffuse Gastric Cancer	\$183,205.00
Investment (Proteomics)	Der	Channing	Columbia University Trustees	1(GG016891-01) G15730	4/2/21	3/31/23	The Role of RHOA in Diffuse Gastric Cancer	\$183,205.00
Investment (Proteomics)	Der	Channing	SpringWorks Therapeutics, Inc		8/1/20	1/31/22	Evaluation of PIKFYVE inhibition in combination with MAPK inhibition	\$180,127.00
Investment (Proteomics)	Der	Channing	American Association for Cancer Research	15-90-25-DER	7/1/15	6/30/21	Defining novel combination KRAS-targeted therapeutic strategies	\$166,666.67
Investment (Proteomics)	Der	Channing	American Cancer Society	PF-20-069-01-TBG	10/1/20	9/30/22	Defining roles of ERK MAPK in driving KRAS-mutant pancreatic cancer growth	\$119,500.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Investment (Proteomics)	Der	Channing	Deciphera Pharmaceuticals, Inc.	DDC-1843	4/23/19	4/22/21	Evaluation of the Deciphera Pharmaceuticals ULK 1/2 inhibitor	\$67,847.00
Investment (Proteomics)	Der	Channing	NIH National Cancer Institute	5-F32-CA232529-03	1/2/19	1/1/22	FELLOW: C. STALNECKER Defining the contributions of wild-type RAS in RAS-mutant lung cancer	\$67,446.00
Investment (Proteomics)	Der	Channing	American Cancer Society	PF-18-061-01-TBG	7/1/18	6/30/21	FELLOW:A WATERS Defining the Molecular Basis of KRAS Addiction in Pancreatic Cancer	\$54,500.00
Investment (Proteomics)	Der	Channing	NIH National Cancer Institute	5-F30-CA243253-02	7/9/19	7/8/23	FELLOW: J. DIEHL Validation of WEE1 kinase as a clinical target in KRAS-mutant pancreatic cancer	\$43,878.00
Investment (Proteomics)	Der	Channing	The Slomo and Cindy Silvian Foundation, Inc.		1/1/21	12/31/21	Revolutionizing pancreatic cancer treatment by targeting	\$33,000.00
Investment (Proteomics)	Der	Channing	NIH National Cancer Institute	5-F32-CA239328-02	8/15/19	9/14/20	FELLOW: J.KLUMP Defining the roles of ERK MAPK in driving KRAS-mutant pancreatic cancer growth.	\$10,317.00
Investment (Training)	Deshmukh	Mohanish	NIH National Institute of General Medical Sciences	3-T32-GM008719-22S2	7/1/99	6/30/24	Medical Scientist Training Program	\$1,170,524.00
Retention	Dittmer	Dirk	NIH National Cancer Institute	5-R01-CA239583-01-03	5/1/19	4/30/24	Mechanisms of KSHV transmission	\$583,738.00
Retention	Dittmer	Dirk	NIH National Institute of Dental and Craniofacial Research	5-R01-DE018304-11-13	5/15/07	4/30/24	ART Modulation of Viral Pathogenesis	\$369,313.00
Retention	Dittmer	Dirk	NIH National Cancer Institute	5-R01-CA163217-06-10	9/1/11	7/31/22	Targeted Therapies for HIV-Associated Kaposi Sarcoma and Lymphoma	\$342,759.00
Retention	Dittmer	Dirk	EMMES Corporation	13748	9/1/20	8/31/25	AIDS Malignancy Consortium (AMC)	\$93,300.00
Retention	Dittmer	Dirk	Tulane University	TUL-HSC-558039-20/21	4/1/20	2/28/22	Exploratory Research on HIV Contribution to Heart and Lung Comorbidities	\$77,241.00
Recruitment	Dittus	Christopher	EMMES Corporation	13748	9/1/20	8/31/25	Clinical trials unit (CTU) for the AIDS Malignancy Clinical Trials Consortium (AMC)	\$77,750.00
Recruitment	Dittus	Christopher	Millennium Pharmaceuticals, Inc.	218558	8/28/17	12/31/20	A Phase 1b Dose Escalation Study to Determine the Recommended Phase 2 Dose of TAK-659 in Combination With Bendamustine (± Rituximan), Gemcitabine, Lenalidomide, or Ibrutinib for the Treatment of Patients With Advanced Non-Hodgkin's Lymphoma After At Least	\$29,550.30
Recruitment	Dittus	Christopher	AstraZeneca Pharmaceuticals LP		3/3/20	3/2/30	A Phase II Trial of Acalabrutinib in Relapsed/Refractory Primary and Secondary CNS Lymphomas	\$24,868.05
Recruitment	Dittus	Christopher	QuintilesIMS		11/17/14	12/31/20	A Phase Ib Study of the Safety and Pharmacology of MPDL3280A Administered with Obinutuzumab in Patients with Relapsed/Refractory Follicular Lymphoma and Diffuse Large B-Cell Lymphoma	\$15,434.10
Recruitment	Dittus	Christopher	Seattle Genetics, Inc		10/18/17	11/1/22	Brentuximab Vedotin with Cyclophosphamide, Doxorubicin, Etoposide, and Prednisone (BV-CHEP) for the treatment of Adult T-Cell Leukemia/Lymphoma: A Phase II Trial of the Rare Lymphoma Working Group	\$4,858.88
Recruitment	Doerschuk	Claire	NIH National Heart, Lung, and Blood Institute	5-R01-HL145396-01-03	1/1/19	12/31/22	Trafficking and function of macrophage subpopulations within the lung microenvironment during pneumonia	\$585,761.00
Recruitment	Doerschuk	Claire	NIH National Heart, Lung, and Blood Institute	5-T32-HL007106-44	7/1/75	4/30/22	Multidisciplinary research training in pulmonary diseases	\$249,573.00
Investment (Chair Package)	Dohlman	Henrik	NIH National Institute of General Medical Sciences	2-R35-GM118105-06	5/1/21	4/30/26	Negative and positive feedback in cell signaling	\$659,119.00
Investment (Chair Package)	Dohlman	Henrik	North Carolina Biotechnology Center	2021-IIG-2110	5/1/21	4/30/22	Advanced liquid handling workstation to enable a state-of-the-art arrayed CRISPR screening platform	\$150,000.00
Recruitment	Dominguez	Daniel	Yale University	GR 109212 (CON-80002335)	6/1/20	5/31/23	Altered mRNA splicing dependent on mutant p53 identifies novel therapeutic vulnerability in pancreatic cancer	\$69,182.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Dominguez	Daniel	University of Pennsylvania the Orphan Disease Center	ZARD-21-102	1/1/21	12/31/21	Nucleic acid binding by ZC4H2	\$50,000.00
Recruitment	Dotti	Gianpietro	NIH National Cancer Institute	1-R01-CA256898-01	2/1/21	1/31/26	Targeting B7-H3 in ovarian cancer.	\$632,310.00
Recruitment	Dotti	Gianpietro	NIH National Cancer Institute	1-R01-CA247436-01A1	1/1/21	12/31/25	Tuning CAR-T Cell Functions.	\$496,990.00
Recruitment	Dotti	Gianpietro	NIH National Cancer Institute	5-R01-CA243543-01-02	9/1/19	8/31/24	Cellular Immunotherapy of Ovarian Cancer	\$395,109.00
Recruitment	Dotti	Gianpietro	Fastback Bio, LLC		10/1/20	9/30/22	Development of improved HVEM-based chimeric antigen receptor (CAR) T cells	\$318,952.00
Recruitment	Dotti	Gianpietro	University of California at Los Angeles	0125 G XA917	7/1/19	6/30/24	Platelets-Mediated Delivery of Checkpoint Inhibitors for Post-Surgical Cancer Immunotherapy	\$59,784.00
Recruitment	Dotti	Gianpietro	Massachusetts General Hospital	233220	9/1/18	7/31/23	T cell plasticity, fusion proteins and CAR T cell-based immunotherapy of head and neck cancer	\$51,970.00
Recruitment	Dotti	Gianpietro	Massachusetts General Hospital	237271	9/1/20	8/31/24	B7-H3-specific antigen receptor (CAR) T Cell immunotherapy for metastatic triple negative breast cancer (mTNBC).	\$51,270.00
Recruitment	Downen	Jill	NIH National Institute of General Medical Sciences	5-R35-GM124764-01-04	9/1/17	7/31/22	Regulation of chromosome structure and gene expression by architectural proteins	\$386,074.00
Recruitment	Downen	Rob	NIH National Institute of General Medical Sciences	5-R35-GM137985-01-02	7/1/20	5/31/25	Regulation of lipid homeostasis by proliferative signaling pathways	\$385,143.00
Recruitment	Downs-Canner	Stephanie	American College of Surgeons		7/1/20	6/30/22	Identification of tumor-specific antibodies in triple negative breast cancer	\$60,000.00
Recruitment	Downs-Canner	Stephanie	American College of Surgeons		7/1/19	6/30/21	Inhibition of Th17 into Treg conversion as a novel component of immunotherapy in triple negative breast cancer	\$40,000.00
Investment	Earp	Shelton	NIH National Cancer Institute	2-P30-CA016086-45	6/1/97	11/30/25	Cancer Center Support Grant	\$7,827,615.00
Investment (CBCS)	Earp	Shelton	NIH National Cancer Institute	3-U54-CA156733-10S1	9/28/10	8/31/21	NCCU-LCCC Partnership in Cancer Research (2 of 2)	\$472,000.00
Theme Investment	Earp	Shelton	NIH National Cancer Institute	3-P30-CA016086-44S4	6/1/97	11/30/20	Cancer Center Core Support Grant	\$468,375.00
Theme Investment	Earp	Shelton	NIH National Cancer Institute	5-R01-CA205398-01-05	2/1/17	1/31/22	MerTK and the Innate Immune Response to Melanoma	\$347,700.00
Investment (CBCS)	Earp	Shelton	Susan G Komen for the Cure	OGUNC1202	5/1/12	4/30/23	Carolina Breast Cancer Study: PHASE III	\$240,000.00
Recruitment	Elmore	Shekinah	Conquer Cancer Foundation		9/1/20	8/31/21	Determining Hormone Receptor Profile and Adherence to Breast Cancer Therapy for Women with HIV and Breast Cancer in Zimbabwe	\$50,000.00
Retention	Elston	Timothy	NIH National Institute of General Medical Sciences	5-R35-GM127145-01-04	7/1/18	6/30/23	Mathematical modeling of cellular signaling systems	\$450,950.00
Recruitment	Elston Lafata	Jennifer	The Genentech Foundation	G-89311	1/1/21	12/31/22	How to Pursue Equity in Oncology Virtual Visits	\$749,994.00
Recruitment	Elston Lafata	Jennifer	NIH National Cancer Institute		8/10/20	8/9/21	IPA assignment agreement	\$60,466.40
Recruitment	Elston Lafata	Jennifer	Memorial Sloan-Kettering Cancer Center	BD525155B	9/25/18	8/31/23	Using a Mixed Methods Approach to Understand Shared Decision-Making in Lung Cancer Screening	\$42,500.00
Recruitment	Elston Lafata	Jennifer	Virginia Commonwealth University	FP00005212_SA001	7/1/17	6/30/21	Unveiling the role of physician implicit bias and communication behaviors in dissatisfaction, mistrust, and non-adherence in Black patients with Type 2 diabetes	\$35,857.56
Recruitment	Emanuele	Michael	NIH National Institute of General Medical Sciences	5-T32-GM135095-02	7/1/20	6/30/25	Pharmacological Sciences Training Program	\$487,629.00
Recruitment	Emanuele	Michael	NIH National Institute of General Medical Sciences	5-R01-GM134231-01-02	5/1/20	2/29/24	Deubiquitinases in Cell Cycle Control	\$352,617.00
Recruitment	Emanuele	Michael	NIH National Institute of General Medical Sciences	5-R01-GM120309-01-05	9/1/16	8/31/21	SCF Ubiquitin Ligases in Cell Cycle Control and Chromosome Stability	\$301,840.00
Recruitment	Emanuele	Michael	American Cancer Society	RSG-18-220-01-TBG	1/1/19	12/31/22	Ubiquitin Ligases in Breast Cancer Proliferation and Therapeutic Resistance	\$264,000.00
Recruitment	Emanuele	Michael	NIH National Cancer Institute	5-F99-CA245724-02	9/19/19	8/31/21	FELLOW: M.AGAJANIAN Mechanistic studies and therapeutic targeting of the WNT signaling pathway.	\$33,328.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Emanuele	Michael	American Cancer Society	TLC-21-008-01-TLC	2/1/21	1/31/22	Harnessing the ubiquitin system as a therapeutic approach in TNBC	\$30,600.00
Recruitment	Engel	Larry	NIH National Institute of Environmental Health Sciences	5-R01-ES031127-02	8/1/20	5/31/24	Neurological Effects of Environmental Styrene and BTEX Exposure in a Gulf of Mexico Cohort.	\$519,092.00
Recruitment	Engel	Larry	National Institutes of Health	2479801	5/1/19	4/30/22	IPA for Lawrence Engel to the NIEHS	\$26,817.04
Theme Investment (CC)	Faber	J	NIH National Institute of Neurological Disorders and Stroke		4/1/19	3/31/24	Targeting the Pial Collateral Circulation for Mitigation of Cerebral Ischemia	\$462,314.00
Recruitment	Flick	Matthew	NIH National Heart, Lung, and Blood Institute	5-U01-HL143403-03	8/1/18	7/31/23	Targeting the Plasminogen Activation System to Limit Pancreatic Cancer Progression and Associated Thrombosis	\$458,395.05
Recruitment	Flick	Matthew	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK112778-02-03	12/20/18	11/30/22	Fibrin(ogen) control of metabolic inflammation and obesity	\$372,318.00
Recruitment	Flick	Matthew	Michigan State University	RC110120 UNC	7/1/19	3/31/24	Novel determinants of fibrinogen pro-repair activity in acetaminophen-induced liver toxicity	\$69,706.00
Recruitment	Flick	Matthew	Vanderbilt University Medical Center	VUMC75873	5/11/19	12/31/20	Timing and site of plasminogen activation regulates injured muscle calcification	\$9,031.00
Recruitment	Flick	Matthew	NIH National Cancer Institute	5-R01-CA211098-03-05	6/19/17	5/31/22	Thrombin-dependent mechanisms of pancreatic ductal adenocarcinoma disease	\$5,030.00
Retention	Foster	Matthew	MacroGenics, Inc.		5/18/16	5/17/28	A Phase 1, First-in-Human, Dose Escalation Study of MGD006, a CD123 x CD3 Dual Affinity Re-Targeting (DART) Bi-Specific Antibody-Based Molecule, in Patients with Relapsed or Refractory Acute Myeloid Leukemia or Intermediate- 2/High Risk Myelodysplastic Sy	\$152,083.18
Retention	Foster	Matthew	Rafael Pharmaceuticals, Inc.		12/9/19	11/13/29	Phase III Multicenter Open-Label Randomized Trial to Evaluate Efficacy and Safety of CPI-613 in Combination with High Dose Cytarabine and Mitoxantrone (CHAM) Compared to High Dose Cytarabine and Mitoxantrone (HAM) in Older Patients (?60 years) with Relaps	\$59,568.03
Retention	Foster	Matthew	Beat AML, LLC		2/25/19	11/2/22	BAML16-001 (BEAT)_Phase 1/2 Umbrella Study-A Master Protocol for Biomarker-Based Treatment of AML (The Beat AML Trial)	\$17,665.56
Recruitment	Franco	Hector	DOD DA Army Medical Research Acquisition Activity	W81XWH1910049	3/1/19	2/28/22	Mechanisms of Non-Coding Enhancer RNA Function in the Triple Negative Breast Cancer	\$194,375.00
Recruitment	Franco	Hector	Susan G Komen for the Cure	CCR19608601	9/5/19	9/4/22	Crosstalk Between Estrogen and Inflammatory Signaling in Metastatic Breast Cancer.	\$150,000.00
Recruitment	Franco	Hector	American Cancer Society	134261-PF-20-059-01-RMC	9/1/20	8/31/22	Defining Enhancer RNA Function in the Pathogenesis of Breast Cancer	\$119,500.00
Recruitment	Franco	Hector	V Foundation for Cancer Research	V2019-015	11/1/19	11/1/21	Mining Transcriptional Enhancers to Identify Regulatory Addictions in Ovarian Cancer	\$100,000.00
Recruitment	Frerichs	Leah	NIH National Heart, Lung, and Blood Institute	5-K01-HL138159-01-04	8/1/17	7/31/22	Identifying and disentangling social and physical environmental effects on physical activity in diverse adolescent and young adult populations	\$151,156.00
Recruitment	Frerichs	Leah	Avera Health	R01DA050696-S2UNC	10/1/20	5/31/24	Community Based System Dynamics Models of Alcohol and Substance Exposed Pregnancy in Northern Plains American Indian Women.	\$45,219.00
Recruitment	Frerichs	Leah	Duke University	A034101	8/19/20	6/30/21	Parks & Pediatrics Fit Together: Translating knowledge into action for child obesity treatment in partnership with Parks and Recreation	\$25,729.00
Retention	Fry	Rebecca	NIH National Institute of Environmental Health Sciences	5-P42-ES031007-02	2/20/20	1/31/25	The UNC Chapel Hill Superfund Research Program (UNC-SRP)	\$3,383,327.00
Retention	Fry	Rebecca	NIH National Institute of Environmental Health Sciences	5-T32-ES007018-45	7/1/77	6/30/22	Biostatistics for Research in Environmental Health	\$1,296,220.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Frye	Stephen	Emory University	A377279	9/30/19	8/31/24	Open Drug Discovery Center for Alzheimer's Disease	\$2,307,222.28
Retention	Frye	Stephen	NIH National Institute of General Medical Sciences	1-R35-GM139514-01	4/1/21	1/31/26	Probing allostery in methyl-lysine reader domains	\$425,839.00
Retention	Gallagher	Kristalyn	Johns Hopkins University	TBCRC 2020 2004848449	7/1/20	6/30/22	TBCRC 2020 - Infrastructure Support Task Order	\$75,000.00
Retention	Gallagher	Kristalyn	Alliance Foundation Trials, LLC		4/17/18	6/30/23	Comparison Of Operative To Monitoring and Endocrine Therapy (COMET) Trial For Low Risk DCIS: A Phase III Prospective Randomized Trial	\$4,600.00
Recruitment	Gershon	Timothy	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS106227-01-03	9/15/18	6/30/23	Defining the crucial role of MAGOH in cerebellar development and the potential for targeting the EJC in medulloblastoma treatment	\$336,535.00
Recruitment	Gershon	Timothy	SpringWorks Subsidiary 3, Inc	MEK-NF-201	7/30/19	8/31/22	A Phase 2b Trial of the MEK 1/2 Inhibitor (MEKi) PD-0325901 in Adult and Pediatric Patients with Neurofibromatosis Type 1 (NF1)-Associated Inoperable Plexiform Neurofibromas (PNs) that are Progressing or Causing Significant Morbidity	\$87,281.71
Recruitment	Gershon	Timothy	NIH National Institute of Neurological Disorders and Stroke	1-F31-NS120459-01	1/1/21	12/31/23	FELLOW:T DISMUKE Improving CDK 4/6 inhibition in the treatment of medulloblastoma	\$37,027.00
Recruitment	Gilkey	Melissa	NIH National Cancer Institute	5-R21-CA241518-01-02	9/20/19	7/31/22	Evaluating the feasibility of a mobile coaching intervention to improve HPV vaccine delivery.	\$208,144.00
Recruitment	Gilkey	Melissa	Robert Wood Johnson Foundation	77291	3/1/20	2/28/22	Engaging specialty care teams to help families discuss and manage the cost of asthma care	\$200,000.00
Recruitment	Gilkey	Melissa	Harvard Pilgrim Health Care	PH000627B	8/1/20	1/31/22	Comparing Patient-Centered Outcomes for Adults and Children with Asthma who Lose Insurance Coverage during the COVID-19 Pandemic	\$59,850.00
Recruitment	Gilkey	Melissa	University of Alabama at Birmingham	000526841-SC002	9/18/20	8/31/21	Provider-Focused Multi-Component Intervention for Maximizing HPV Vaccine Uptake in Young Cancer Survivors receiving Follow-Up Care in Pediatric Oncology Practices	\$24,404.00
Theme Investment (HTS)	Giusti	Paola	Karolinska Institute	ZZC8ANALMQ C850803103	4/1/20	3/31/22	CNV mouse models and RNA splicing	\$104,643.00
Innovation Award	Goldstein	Bob	National Science Foundation	IOS-2028860	8/15/20	7/31/25	Using Tardigrades and Other Animals to Investigate Adaptations to Extreme Stresses	\$403,688.00
Innovation Award	Goldstein	Bob	NIH National Institute of General Medical Sciences	5-R35-GM134838-01-02	1/1/20	12/31/24	C. elegans gastrulation: A model for understanding apical constriction mechanisms	\$377,380.00
Innovation Award	Goldstein	Bob	NIH National Institute of General Medical Sciences	5-F32-GM131577-03	4/1/19	3/31/22	Identification and analysis of novel tardigrade stress response mechanisms	\$68,562.00
Investment (HTS)	Gordon-Larsen	Penny	NIH National Heart, Lung, and Blood Institute	5-R01-HL143885-02-03	4/1/19	3/31/23	Leveraging multi-omics approaches to examine metabolic challenges of obesity in relation to cardiovascular diseases	\$2,238,646.00
Investment (Proteomics)	Graves	Lee	NIH National Institute of General Medical Sciences	5-R01-GM138520-01-02	9/15/20	6/30/24	Elucidating the mechanism of action of novel ClpP activators in activation of the mitochondrial unfolded protein response	\$314,448.00
Recruitment	Grilley-Olson	Juneko	Iovance Biotherapeutics, Inc.		11/29/18	11/28/28	A Phase 2, Multicenter Study to Evaluate the Efficacy and Safety of Autologous Tumor Infiltrating Lymphocytes (LN-145) for the Treatment of Patients with Recurrent and/or Metastatic Squamous Cell Carcinoma of the Head and Neck	\$217,783.58
Recruitment	Grilley-Olson	Juneko	Seattle Genetics, Inc		4/9/15	4/8/23	SGNS40-001 - A phase 1, open-label, dose-escalation study of SEA-CD40 in adult patients with advanced malignancies	\$65,739.35

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Grilley-Olson	Juneko	NanoCarrier Co., Ltd.		1/15/18	1/30/23	A Phase 1b/2 Dose-Escalation and Expansion Trial of NC-6300 (Nanoparticle Epirubicin) in Patients with Advanced Solid Tumors or Advanced, Metastatic, or Unresectable Soft Tissue Sarcoma	\$34,186.20
Recruitment	Grilley-Olson	Juneko	Astellas Pharma Global Development, Inc.		1/7/20	1/31/30	A Phase 1, Open-Label Study of ASP9801, an Oncolytic Virus, Administered by Intratumoral Injection in Patients with Advanced/Metastatic Solid Tumors	\$30,941.12
Recruitment	Grilley-Olson	Juneko	Astellas Pharma Global Development, Inc.		5/17/19	6/6/29	A Phase 1b Study of ASP8374, an Immune Checkpoint Inhibitor, as a Single Agent and in Combination with Pembrolizumab in Subjects with Advanced Solid Tumors	\$27,941.12
Recruitment	Grilley-Olson	Juneko	Seattle Genetics, Inc		4/18/19	5/14/29	Open Label Phase 2 Study of Tisotumab Vedotin for Locally Advanced or Metastatic Disease in Solid Tumors.	\$5,614.24
Recruitment	Grilley-Olson	Juneko	Bayer HealthCare		11/16/16	10/31/26	A Phase II Basket Study of the Oral TRK Inhibitor LOXO-101 in Subjects with NTRK Fusion-Positive Tumors	\$2,735.73
Recruitment	Grover	Natalie	Lymphoma Research Foundation of America		7/1/20	6/30/23	CD30-Directed CAR-T Cells Co-Expressing CCR4 in Relapsed/Refractory Hodgkin Lymphoma	\$225,000.00
Recruitment	Gupta	Gaorav	NIH National Cancer Institute	5-R37-CA227837-01-03	12/1/18	11/30/23	Mre11-Dependent DNA Damage Responses in Breast Cancer Pathogenesis	\$409,161.00
Recruitment	Gupta	Gaorav	DOD DA Army Medical Research Acquisition Activity	W81XWH-18-1-0047	3/15/18	3/14/21	Elucidating Polymerase Theta Functions and Genetic Determinants of Synthetic Lethality in Breast Cancer	\$374,709.00
Recruitment	Gupta	Gaorav	V Foundation for Cancer Research	T2019-010	11/1/19	11/1/22	Overcoming Immunotherapy Resistance with Radiotherapy and PARP Inhibition in Luminal Subtype Metastatic Breast Cancer	\$200,000.00
Recruitment	Gupta	Gaorav	American Society for Radiation Oncology		9/21/20	9/20/22	Drivers and Vulnerabilities of Genome Instability in Triple Negative Breast Cancer	\$200,000.00
Recruitment	Gupta	Gaorav	Breakpoint Therapeutics	20-6095	2/15/21	1/14/22	ALICE Contract 29019	\$141,765.00
Recruitment	Gupta	Gaorav	Burroughs Wellcome Fund	1012285.01	1/1/15	8/31/21	DNA Damage Responses in Breast Cancer Pathogenesis	\$116,666.67
Recruitment	Gupta	Gaorav	Mayo Clinic in Rochester	PO 66485365	1/9/19	2/28/21	Academic Collaboration Agreement	\$10,885.00
Recruitment	Gupton	Stephanie	NIH National Institute of General Medical Sciences	5-R35-GM135160-01-02	12/1/19	11/30/24	Coordinated Cytoskeletal Dynamics and Membrane Remodeling in Cellular Shape Change	\$520,501.00
Recruitment	Gupton	Stephanie	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS112326-01-03	8/1/19	4/30/24	Exocytosis fuels plasma membrane expansion in developing neurons	\$384,007.00
Recruitment	Gupton	Stephanie	NIH National Institute of Neurological Disorders and Stroke	5-F31-NS113381-02	9/1/19	8/31/22	FELLOW: L.MCCORMICK VASP ubiquitination regulates actin dynamics in dendritic spines	\$36,960.00
Retention	Hahn	Klaus	NIH National Institute of General Medical Sciences	5-R35-GM122596-01-05	4/1/17	3/31/22	Dissecting signaling in vivo via precise control and visualization of protein activity	\$789,940.00
Retention	Hahn	Klaus	University of Texas Southwestern Medical Center	GMO210601 PO 0000002343	5/1/21	4/30/26	Integrated visualization, control, and analysis of GEF - GTPase networks in living cells	\$299,921.00
Recruitment	Han	Zongchao	Edward N. & Della L. Thome Memorial Foundation		5/1/19	7/31/22	Developing novel nano antioxidants for the treatment of age-related macular degeneration	\$166,666.67
Recruitment	Han	Zongchao	BrightFocus Foundation	M2019063	7/1/19	6/30/22	Selective targeting reactive oxygen species for age-related macular degeneration	\$66,666.67
Innovation Award	Hanson	Laura	NIH National Institute on Aging	1-R01-AG065394-01A1	9/10/20	5/31/25	Palliative Care for Persons with Late-stage Alzheimer's and Related Dementias and their Caregivers: a Randomized Clinical Trial	\$893,403.00
Innovation Award	Hanson	Laura	Brown University	00001376	9/1/19	6/30/21	Health Care Systems Research Collaboratory	\$311,508.00
Innovation Award	Hanson	Laura	NCDHHS Division of Health Service Regulation	00037289	1/1/19	6/30/21	Disseminating Comfort Matters: A Web-based Training Toolkit for Comfort-focused Dementia Care	\$249,490.50

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Innovation Award	Hanson	Laura	University of Colorado Denver	FY21.105.005_AMD2	7/1/18	6/30/23	Palliative Care Research Cooperative Group (PCRC): Refinement and Expansion	\$78,830.00
Innovation Award	Hanson	Laura	Massachusetts General Hospital	PLC-1609-35995	1/1/18	12/31/22	Comparative Effectiveness of Early Integrated Telehealth versus In-Person Palliative Care for Patients with Advanced Lung Cancer	\$30,334.00
Recruitment	Hathaway	Nate	NIH National Institute of General Medical Sciences	5-R01-GM118653-01-04	7/1/17	6/30/22	MECHANISM OF HP1-MEDIATED HETEROCHROMATIN ASSEMBLY AND DURABILITY IN LIVE CELLS	\$383,860.00
Recruitment	Hathaway	Nate	Epigenos Bioscience, Inc.	20-0678	4/1/20	3/31/22	STTR: Chemically controlling chromatin to treat Friedreich's Ataxia	\$120,000.00
Recruitment	Hathaway	Nate	Baylor University College of Medicine	20-024-ASPIRE	10/1/20	9/30/21	Expanding bifunctional molecules to restore function after SWI/SNF loss	\$115,000.00
Recruitment	Hathaway	Nate	Georgia Institute of Technology	AWD-002151-G1	3/1/21	2/28/26	Reposition and Optimization of Deferiprone for Breast Cancer Therapy	\$62,212.00
Recruitment	Hathaway	Nate	North Carolina Biotechnology Center	2021-BMG-3001	10/1/20	11/30/20	4th International Conference on Epigenetics and Bioengineering (EpiBio)	\$5,000.00
Investment (HTSF)	Heinzen Cox	Erin	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS094596-05-06	3/15/20	6/30/22	Identification and molecular characterization of somatic	\$636,227.00
Theme Investment (CC)	Heise	Mark	NIH National Institute of Allergy and Infectious Diseases	3-U19-AI100625-09S3	8/5/12	8/31/22	Systems Immunogenetics of Biodefense and Emerging Pathogens in the Collaborative Cross	\$3,503,948.00
Theme Investment (CC)	Heise	Mark	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI157253-01	9/25/20	8/31/25	Genetic Analysis of COVID-19 Susceptibility and Resistance Determinants in the Collaborative Cross	\$748,384.00
Theme Investment (CC)	Heise	Mark	University of Alabama at Birmingham	000520254--SC006	3/7/19	2/28/22	Antiviral Drug Discovery and Development Center	\$258,130.00
Theme Investment (CC)	Heise	Mark	NIH National Institute of Allergy and Infectious Diseases	5-T32-AI007419-29	9/1/93	8/31/23	Molecular Biology of Viral Diseases Predoctoral Training Grant	\$172,154.00
Theme Investment (CC)	Heise	Mark	Griffith University		2/22/21	6/30/21	Testing of live-attenuated vaccine candidates for COVID-19	\$127,559.00
Theme Investment (CC)	Heise	Mark	Howard Hughes Medical Institute	GT11452	9/1/19	8/31/22	FELLOW: B.HAMPTON Role for genetic variation in regulation of immune homeostatic antibody responses	\$50,000.00
Investment (HTS)	Henderson	Gail	NIH National Institute of Mental Health	1-R34-MH123328-01A1	4/1/21	3/31/23	Decision Support for Early-Phase HIV Remission Trials	\$387,417.00
Investment (HTS)	Henderson	Gail	Research Triangle Institute	1-312-0217853-66316L	12/1/20	11/30/22	EPIICAL Social Behavioral Research Study	\$40,000.00
Investment (HTS)	Henderson	Gail	Henry M Jackson Foundation	5514 PO 1006864	9/30/20	9/29/21	Guidance on ethical approaches to mitigate partner risk in trials that include ATI	\$31,100.00
Retention	Henderson	Louise	NIH National Cancer Institute	5-R01-CA212014-01-04	9/20/17	8/31/22	Evaluating Lung Cancer Screening Patterns and Outcomes through a North Carolina Registry	\$611,504.00
Retention	Henderson	Louise	NIH National Cancer Institute	5-R01-CA251686-01-02	7/15/20	6/30/24	Comorbidity and Functional Status in a Population Undergoing Lung Cancer Screening	\$390,841.00
Retention	Henderson	Louise	University of California at Davis	201603696-08 / A18-0177-S008	7/1/17	5/31/22	Risk-based Breast Cancer Screening and Surveillance in Community Practice	\$267,956.00
Retention	Henderson	Louise	University of California at Davis	201600303-08	9/1/16	8/31/21	Comparative Effectiveness of Breast Cancer Screening and Diagnostic Evaluation by Extent of Breast Density	\$73,011.00
Retention	Henderson	Louise	University of Washington	UWSC12808 PO56485	6/1/21	5/31/26	Disparities in Breast Cancer Diagnostic Pathways and Outcomes According to Socioeconomic Characteristics	\$48,549.00
Recruitment	Hingtgen	Shawn	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS099368-01-04	9/26/17	6/30/22	Engineering stem cell therapies to understand and overcome glioblastoma adaption	\$317,149.00
Recruitment	Hingtgen	Shawn	Falcon Therapeutics, Inc.	18-4177	1/18/19	12/31/21	STTR: Personalized Neural Stem Cell Therapy for Cancer	\$224,021.00
Recruitment	Hingtgen	Shawn	Accelerate Brain Cancer Cure, Inc.		6/1/19	5/31/22	Tumor-homing beacons as a novel approach to cellular therapy for glioblastoma.	\$56,430.33

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Hingtgen	Shawn	NIH National Cancer Institute	5-F30-CA243270-02	7/11/19	7/10/23	Therapeutic Engineered Stem Cells as a New Adjuvant Therapy for Non-Small Cell Lung Cancer Brain Metastases	\$37,027.00
Recruitment	Hingtgen	Shawn	University of Birmingham United Kingdom	20-4447	11/1/20	10/31/21	CIC6 In Vivo Testing of Single and Multi-Layered Drug Delivery Implants for Safety and Efficacy Using Glioblastoma Mouse Resection Model Xenotransplanted with Primary Human Glioblastoma Tissue	\$17,447.00
Recruitment	Hingtgen	Shawn	Triangle Community Foundation		6/1/21	6/1/22	Gertrude B Elion Mentored Medical Student Research Award	\$10,000.00
Investment (HTS)	Hoadley	Katherine	NIH National Cancer Institute	5-U24-CA210988-05	9/1/16	8/31/21	RNA sequencing analysis of Cancer	\$415,763.00
Recruitment	Hoadley	Katherine	Johns Hopkins University	AURORA ProCDCC UNC/ 2044261072	1/1/19	6/30/22	AURORA US: Prospective Biospecimen Repository in Metastatic Breast Cancer	\$226,620.67
Recruitment	Hoadley	Katherine	Translational Breast Cancer Research Consortium		3/28/17	2/16/22	TBCRC AURORA Clinical Data Coordinating Center (\$128,870.11
Recruitment	Hoadley	Katherine	Breast Cancer Research Foundation		9/1/20	4/15/21	BCRF Marion R. Wright Award for Scientific Excellence	\$5,000.00
Recruitment	Hucks	George	Department of Defense	W81XWH2010889	9/15/20	9/14/24	Phase I Study of Autologous Activated T-cells Transduced With a 3rd Generation GD2 Chimeric Antigen Receptor, Co-expression of IL-15 and iCaspase9 Safety Switch	\$799,140.00
Recruitment	Hursting	Stephen	NIH National Cancer Institute	5-R35-CA197627-07	8/1/15	7/31/22	Breaking the Obesity-Cancer Link: New Targets and Strategies	\$762,608.00
Recruitment	Hursting	Stephen	Breast Cancer Research Foundation	BCRF-20-073	10/1/18	9/30/21	Combining Intermittent Energy Restriction and Anti-Inflammatory Regimens to Mimic the Anticancer Effects of Bariatric Surgery	\$175,000.00
Recruitment	Hursting	Stephen	Purdue University	11000823-020	2/1/19	1/31/24	Obesity, Metabolism and Breast Cancer Metastasis	\$117,532.00
Recruitment	Hursting	Stephen	NIH National Cancer Institute	5-F30-CA225142-04	7/3/18	7/2/22	FELLOW: S. MCDONNELL Evaluating the impact of obesity-associated inflammation on breast cancer heterogeneity and metastasis using single-cell RNA-seq	\$49,827.00
Retention	Ibrahim	Joseph	Merck & Co., Inc.	8100058892	7/1/09	12/31/22	Methods for Interim Analysis with Incomplete Adjudication of Events	\$300,000.00
Retention	Ibrahim	Joseph	NIH National Institute of Mental Health	7-R01-MH086633-10	3/1/10	6/30/21	Statistical Analysis of Biomedical Imaging Data in Curved Space	\$285,524.04
Retention	Ibrahim	Joseph	Amgen, Inc.	PO#7300230073	7/31/08	12/31/21	Supported Research Agreement	\$249,992.00
Investment (Bios/HTS)	Ibrahim	Joseph	NIH National Cancer Institute	5-T32-CA106209-15	5/1/04	7/31/21	Biostatistics for Research in Genomics and Cancer	\$208,980.00
Recruitment	Innocenti	Federico	Alliance for Clinical Trials in Oncology Foundation		6/1/15	5/31/22	ACTO_Appendix IIB to CALGB/SWOG C80405	\$103,979.17
Recruitment	Innocenti	Federico	Alliance for Clinical Trials in Oncology Foundation		7/1/20	6/30/21	Machine learning methods for biomarker-driven optimal treatment selection in metastatic colorectal cancer	\$97,967.00
Recruitment	Innocenti	Federico	American Heart Association	826128	4/1/21	3/30/22	Genetic modifiers of drug-induced hypertension for the risk assessment of patients treated with VEGF-pathway inhibitors	\$66,926.00
Recruitment	Innocenti	Federico	Alliance for Clinical Trials in Oncology Foundation		2/1/19	1/31/23	A Phase III Randomized Study of Sorafenib plus Doxorubicin versus Sorafenib in Patients with Advanced Hepatocellular Carcinoma (HCC) - CALGB 80802 and Correlative Substudy - CALGB 150902.	\$16,002.00
Recruitment	Jackson	Klarissa	University of Michigan	3005704150/PO#30060 17039	9/1/19	8/31/22	Photochemical Synthesis of Bioactive Molecules	\$25,000.00
Investment (Protocol)	Jamieson	Katarzyna	National Marrow Donor Program	10020-#1506	5/24/18	2/1/23	A Multi-center, Randomized, Double-blind, Placebo-controlled Phase III Trial of the FLT3 Inhibitor Gilteritinib Administered as Maintenance Therapy Following Allogeneic Transplant for Patients with FLT3/ITD AML	\$42,778.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Investment (Protocol)	Jamieson	Katarzyna	Actinium Pharmaceuticals, Inc.		7/27/20	9/3/29	Iomab-01: A Multicenter, Pivotal Phase 3 Study of Iomab-B Prior to Allogeneic Hematopoietic Cell Transplantation versus Conventional Care in Older Subjects with Active, Relapsed or Refractory Acute Myeloid Leukemia	\$28,875.00
Investment (Protocol)	Jamieson	Katarzyna	National Marrow Donor Program		7/6/16	7/5/23	15MMUD: A Multi-Center, Phase II Trial of HLA-Mismatched Unrelated Donor Bone Marrow Transplantation with Post-Transplantation Cyclophosphamide for Patients with Hematologic Malignancies	\$3,839.00
Investment (Protocol)	Jamieson	Katarzyna	Equillum, Inc.		5/7/19	6/25/25	A Phase 1b/2 Study to Evaluate the Safety, Tolerability, Pharmacokinetics, Pharmacodynamics, and Clinical Activity of EQ001 in Subjects with Newly Diagnosed Acute Graft Versus Host Disease	\$2,565.12
Recruitment	Jiang	Yuchao	NIH National Institute of General Medical Sciences	1-R35-GM138342-01	9/5/20	7/31/25	Statistical Methods for Bulk-Tissue and Single-Cell Multi-Omics Integration	\$376,250.00
Investment (Proteomics)	Johnson	Gary	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-U24-DK116204-04	9/1/17	8/31/23	Illuminating Function of the Understudied Druggable Kinome	\$2,259,159.00
Recruitment	Jolly	Trevor	Odonate Therapeutics LLC		10/29/18	11/6/28	A Multinational, Multicenter, Randomized, Phase 3 Study of Tesetaxel plus a Reduced Dose of Capecitabine versusCapecitabine Alone in Patients with HER2 Negative, Hormone Receptor Positive, Locally Advanced or Metastatic Breast Cancer Previously Treated wi	\$24,676.97
Recruitment	Jolly	Trevor	University of Arizona		1/24/20	3/12/30	Palbo T-DM1: A randomized phase II study to evaluate efficacy of T-DM1 with or without Palbociclib in the treatment of patients with metastatic HER2 positive breast cancer	\$21,766.00
Recruitment	Jolly	Trevor	Dana-Farber Cancer Institute		11/16/15	11/15/22	A Phase II Trial of HKI-272 (Neratinib) and Capecitabine for Patients with Human Epidermal Growth Factor Receptor 2 (HER2)-Positive Breast Cancer and Brain Metastases	\$18,780.00
Investment (HTS)	Jones	Alan	National Science Foundation	IOS-2034929	6/15/21	5/31/25	Collaborative Research: Rules for Dynamic-Light Environmental Sculpting of Genomes	\$1,212,609.00
Theme investment (HTS)	Jones	Corbin	NIH National Cancer Institute	75N91019D00033	8/31/19	8/30/24	Genome Characterization Center for RNA-seq Services	\$1,920,220.10
Theme investment (HTS)	Jones	Corbin	Duke University	A03-1446	5/1/19	4/30/22	Epigenetic reprogramming of behaviors with sensory experience	\$63,038.00
Recruitment	Joseph	Sarah	NIH National Institute of Mental Health	5-R01-MH118990-01-03	9/16/19	7/31/24	Development and Use of Novel SHIVs Bearing Clinically Relevant HIV-1 Envs for Examining HIV Persistence and Eradication in the CNS of Nonhuman Primates	\$621,198.00
Recruitment	Kabanov	Alexander	NIH National Cancer Institute	2-T32-CA196589-06	7/1/15	6/30/25	Carolina cancer nanotechnology training program (C-CNTP)	\$467,108.00
Recruitment	Kabanov	Alexander	Dainippon Sumitomo Pharma	20-2319	6/1/20	5/31/22	UNC - Sumitomo Collaboration	\$25,051.00
Investment (CC)	Kelada	Samir	NIH National Institute of Allergy and Infectious Diseases	1-R21-AI162084-01	5/19/21	4/30/23	A new mouse model of severe asthma	\$233,250.00
Investment (CC)	Kelada	Samir	NIH National Heart, Lung, and Blood Institute	5-F31-HL143853-03	8/1/18	7/31/21	FELLOW: L.DONOGHUE Genetic and Longitudinal Analysis of Airway Remodeling	\$33,903.00
Retention	Key	Nigel	NIH National Heart, Lung, and Blood Institute	5-R01-HL146226-01-03	1/1/19	12/31/21	Fibrinolysis Evaluation in A-TREAT ('FEAT' Study)	\$388,749.00
Retention	Key	Nigel	NIH National Heart, Lung, and Blood Institute	5-T32-HL007149-44	7/1/75	6/30/22	Research Training in Hematology at UNC Chapel Hill	\$303,041.00
Retention	Key	Nigel	Hemophilia of Georgia		6/1/21	5/31/22	Regional Hemophilia Network	\$91,192.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Key	Nigel	National Hemophilia Foundation		3/1/20	2/28/22	Evaluating the Mechanism of Emicizumab-related Thrombotic Microangiopathy	\$90,000.00
Retention	Key	Nigel	uniQure Biopharma B.V		9/11/18	10/2/25	Phase III, open-label, single-dose, multi-center multinational trial investigating a serotype 5 adeno-associated viral vector containing the Padua variant of a codon-optimized human factor IX gene (AAV5-hFIXco-Padua, AMT-061) administered to adult subject	\$86,573.38
Retention	Key	Nigel	Grifols Shared Services North America, Inc.		1/23/18	6/25/22	Attenuation of prothrombotic state and vascular pathology in SCD by anti-thrombin III	\$72,910.50
Retention	Key	Nigel	BioMarin Pharmaceutical, Inc.		11/8/17	6/30/24	270-301 A Phase 3 Open-Label, Single-Arm Study To Evaluate The Efficacy and Safety of BMN 270, an Adeno-Associated Virus Vector-Mediated Gene Transfer of Human Factor VIII in Hemophilia A Patients with Residual FVIII Levels \geq 1 IU/dL Re	\$65,316.80
Retention	Key	Nigel	American Thrombosis and Hemostasis Network	ATHN2020-ATHN11-262-1	9/1/20	3/31/24	ATHN 11:An Observational Cohort Study of Long-Term Outcomes of Orthotopic Liver Transplantation in People with HemophiliaAbbreviated name: Liver Transplantation Outcomes Study	\$7,000.00
Recruitment	Khagi	Simon	Inovio Pharmaceuticals, Inc.	GBM-001/8378210	10/5/18	10/30/28	An Open-Label, Multi-Center Trial of INO-5401 and INO-9012 Delivered by Electroporation (EP) in Combination with REGN2810 in Subjects with Newly-Diagnosed Glioblastoma (GBM)	\$20,316.85
Recruitment	Khagi	Simon	Orbus Therapeutics, Inc.		6/6/17	9/22/21	A Phase 3, Randomized, Open-Label Study To Evaluate the Efficacy and Safety of Eflornithine with Lomustine Compared to Lomustine Alone in Patients with Anaplastic Astrocytoma That Progress/Recur After Irradiation and Adjuvant Temozolomide Chemotherapy	\$18,643.21
Recruitment	Khagi	Simon	Novocure Ltd.		10/2/17	10/7/22	METIS: Pivotal, open-label, randomized study of radiosurgery with or without Tumor Treating Fields (TTFields) for 1-10 brain metastases from non-small cell lung cancer (NSCLC)	\$5,197.00
Recruitment	Khagi	Simon	DNAtrix, Inc.		5/9/18	5/18/28	A Phase II, Multi-center, Open-label Study of a Conditionally Replicative Adenovirus (DNX-2401) with Pembrolizumab (KEYTRUDA®) for Recurrent Glioblastoma or Gliosarcoma	\$3,624.09
Recruitment	Kibbe	Melina	NIH National Heart, Lung, and Blood Institute	5-R01-HL129156-01-03	1/1/19	12/31/22	A Novel Endovascular Approach to Remove Atherosclerotic Plaque Lesions In Situ	\$711,711.00
Recruitment	Kibbe	Melina	Department of Veterans Affairs	558-D72052	7/1/17	9/30/21	IPA NICK TSIHLIS Bioengineering Catalytically Active Grafts for Vascular Surgery	\$68,406.00
Recruitment	Kibbe	Melina	Department of Veterans Affairs	558-D72053	7/1/17	9/30/21	IPA FOR LU YU Bioengineering Catalytically Active Grafts for Vascular Surgery	\$54,655.00
Recruitment	Kibbe	Melina	Department of Veterans Affairs	558-D82031	1/1/18	9/30/21	IPA DAVID GILLIS Bioengineering Catalytically Active Grafts for Vascular Surgery	\$51,446.00
Recruitment	Kibbe	Melina	Department of Veterans Affairs	558-D72054	7/1/17	9/30/21	IPA FOR ROBIN SILETZKY Bioengineering Catalytically Active Grafts for Vascular Surgery	\$22,476.00
Retention	Kim	William	NIH National Cancer Institute	5-K12-CA120780-13	9/17/07	6/30/23	UNC Oncology Clinical/Translational Research Training Program (OCT-RTP)	\$712,771.00
Retention	Kim	William	NIH National Cancer Institute	5-R01-CA241810-01-02	8/1/20	4/30/25	Chemotherapy and the Bladder Cancer Immune Microenvironment	\$566,138.00
Retention	Kim	William	NIH National Cancer Institute	5-R01CA202053-01-05	8/1/16	7/31/21	Kinase Inhibition in Kidney Cancer	\$432,423.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Kim	William	Novartis AG		6/14/11	12/31/21	Neoadjuvant Pazopanib: A Phase II Study to Evaluate the Effect on Disease response and Recurrence and to Establish Predictive Biomarkers of Drug Activity in Renal Cell Carcinoma	\$157,587.20
Retention	Kim	William	Thomas Jefferson University	080-04000-U26401	10/8/20	10/7/22	Investigating the Therapeutic Impact of a STING Agonist on PBRM1-Deficient ccRCC Tumors	\$125,000.00
Retention	Kim	William	Merck Sharp and Dohme Corp.		9/19/16	6/30/22	Prediction or Response and Rapid Development of Pembrolizumab-based Combination in Genetically Engineered Mouse Models of Melanoma and Breast	\$83,097.39
Retention	Kim	William	Merck Sharp and Dohme Corp.		9/19/16	6/30/22	Prediction or Response and Rapid Development of Pembrolizumab-based Combination in Genetically Engineered Mouse Models of Melanoma and Breast	\$83,097.39
Retention	Kim	William	University of Texas Southwestern Medical Center	GMO201204/PO 000001914A	9/30/19	9/29/21	TBK1 serves as a novel therapeutic target in kidney cancers with VHL loss	\$71,620.00
Retention	Kim	William	Bladder Cancer Advocacy Network		7/15/20	7/14/21	FELLO YUKI KITA Defining NRF2 Induced Tumor Invasion in Bladder Cancer	\$50,000.00
Retention	Kim	William	NIH National Cancer Institute	5-F31-CA247250-02	2/1/20	1/31/23	FELLOW ANDREW TRUONG Effect of APOBEC3 on Bladder Cancer Biology and Response to Immunotherapy	\$46,036.00
Retention	Kim	William	Acerta Pharma BV	17-0214	6/1/16	11/30/21	Comprehensive tumor immune microenvironment profiling to discover determinants of response to pembrolizumab with or without BTK inhibition	\$39,973.40
Retention	Kim	William	Foundation Medicine, Inc.	PO011576	1/9/19	12/31/20	Precision Medicine Exchange Consortium	\$15,800.00
Recruitment	Kistler	Christine	Duke University	A032814	7/1/20	8/31/26	PRagmatic EVAluation of evENTs And Benefits of Lipid-lowering in oldEr Adults (PREVENTABLE)	\$46,150.00
Investment (HTS)	Knowles	Michael	Cystic Fibrosis Foundation	KNOWLE21XX0	5/1/21	4/30/22	Whole Genome Sequencing to Define Gene Modifiers in CF	\$500,000.00
Investment (HTS)	Knowles	Michael	Cystic Fibrosis Foundation	KNOWLE18XX0	6/1/18	4/30/21	Discovery of CF modifiers using whole genome sequencing-UNC	\$355,616.50
Investment (HTS)	Knowles	Michael	Cystic Fibrosis Foundation Therapeutics, Inc.	KNOWLE00A0	12/15/00	12/14/21	Gene Modifiers in CF	\$81,265.02
Investment (HTS)	Knowles	Michael	Medical University of South Carolina	MUSC18-060-8D353	7/1/18	6/30/21	IGHG and IGKC Genes and Lung Disease Severity in Cystic Fibrosis	\$17,298.00
Investment (HTS)	Knowles	Michael	Chronic Obstructive Pulmonary Disease Foundation		10/15/08	10/14/23	Bronchiectasis Research Registry	\$5,850.00
Investment (Bios/HTS)	Kosorok	Michael	Genentech, Inc.	20-5653	10/1/20	8/31/21	Applying novel statistical approaches to develop a decision framework for hybrid randomized controlled trial designs which combine internal control arms with patients' data from real-world data source	\$156,550.00
Investment (Bios/HTS)	Kosorok	Michael	University of Rochester	417654G/URFAO:GR51 0988	9/30/19	8/31/21	Analyzing Sequential Multiple Assignment Randomized Trials in the Presence of Partial Compliance	\$64,936.00
Investment (Bios/HTS)	Kosorok	Michael	University of California at Berkeley	00010555 BB01460527	1/1/21	12/31/21	Testing a New Policy Model for Justice-Involved People with Mental Illness	\$24,097.00
Investment (Protocol)	Kuzmiak	Cherie	ECOG-ACRIN Cancer Research Group	EA1151	10/20/17	10/19/24	ECOG-ACRIN LAPS: Protocol EA1151, Tomosynthesis Mammographic Imaging Screening Trial (TMIST)	\$224,418.89
Investment (Protocol)	Kuzmiak	Cherie	SimBioSys, Inc.		9/23/19	9/30/21	A Computational Model to Predict Response to Neoadjuvant Therapy in Breast Cancer	\$34,387.81
Investment (Protocol)	Kuzmiak	Cherie	Delphinus Engineering		5/9/17	6/30/21	DMT-2015.001	\$4,057.28
Recruitment	Laederach	Alain	NIH National Heart, Lung, and Blood Institute	5-R01-HL111527-06-08	1/1/12	4/30/23	Non-coding RNA Structure Change in Chronic Obstructive Pulmonary Disease	\$520,208.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Laederach	Alain	NIH National Institute of General Medical Sciences	1-R35-GM140844-01	6/1/21	5/31/26	Variant induced RNA structure change in human genetic disease	\$335,992.00
Recruitment	Laederach	Alain	NIH National Institute of General Medical Sciences	5-R01-GM101237-05-08	5/1/12	8/31/22	Structural and functional consequences of disease SNP's on the transcriptome	\$322,350.00
Recruitment	Laederach	Alain	Georgia Institute of Technology - The Georgia Tech Research Corporation	RJ-193-G1/PO-5007401	8/1/17	7/31/22	Collaborative Research: Multimodal RNA structural motifs in alphavirus genomes: discovery and validations	\$112,850.00
Recruitment	Laederach	Alain	New York University	F0511-01	7/15/20	5/31/21	Bridging Disparate Structural/Functional Scales: Multiscale Modeling of the Chromatin Fiber and RNA Tertiary Structures	\$30,282.00
Recruitment	Lai	Sam	NIH National Heart, Lung, and Blood Institute	5-R01-HL141934-01-04	5/10/18	4/30/22	Overcoming anti-PEG immunity to restore prolonged circulation and efficacy of PEGylated therapeutics	\$674,568.00
Recruitment	Lai	Sam	Oak Crest Institute of Science	UNC20-315	5/5/20	2/28/25	Next Generation Multipurpose Prevention Technology: An Intravaginal Ring for HIV Prevention and Nonhormonal Contraception	\$367,190.00
Recruitment	Lai	Sam	National Science Foundation	DMR-1810168	8/1/18	7/31/21	Dynamic tuning of barrier properties of hydrogels using weakly adhesive third-party crosslinkers	\$170,591.00
Recruitment	Lai	Sam	David and Lucile Packard Foundation	2013-39274	10/15/13	11/30/21	Harnessing antibody-mucin interactions to achieve precise control of microbial communities in the gut	\$109,375.00
Recruitment	Lai	Sam	Mucommune, LLC	20-4903	3/4/21	9/3/22	SBIR: In vivo validation and IND-enabling development of MM004, a bispecific inhaled immunotherapy for RSV and MPV	\$97,063.00
Recruitment	Lai	Sam	Mucommune, LLC	20-2619	7/1/20	6/30/22	SBIR: Aerosol immunotherapy for treatment of human metapneumovirus infection	\$74,250.00
Recruitment	Lazear	Helen	Burroughs Wellcome Fund	1021339	7/1/21	7/1/26	Host Range Determinants of Emerging Flaviviruses	\$500,000.00
Recruitment	Lazear	Helen	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI139512-01-03	1/1/19	12/31/23	The Role of Interferon Lambda signaling in flavivirus transmission and pathogenesis at the maternal-fetal interface	\$388,750.00
Recruitment	Lazear	Helen	NIH National Institute of Allergy and Infectious Diseases	5-F31-AI143237-02	9/1/19	8/31/24	FELLOW: C. LOPEZ The Role of Dengue Virus Antibodies in Vector-independent transmission of Zika Virus	\$37,064.00
Theme Investment (CC)	Lazear	Helen	NIH National Institute of Allergy and Infectious Diseases		6/11/19	5/31/21	Identifying Novel Immune Factors Controlling Flavivirus Pathogenesis	\$194,034.00
Retention	Lee	Carrie	QuintilesIMS		12/9/13	11/30/20	A Phase Ib Study of the Safety and Pharmacology of MPDL3280A Administered with Cobimetinib in Patients with Locally Advanced or Metastatic Solid Tumors	\$42,138.80
Retention	Lee	Carrie	V Foundation for Cancer Research	DM2019-001	1/15/19	1/15/22	The Use of Clinical Trial Navigators to Increase Minority Patient Enrollment and Retention in Cancer Clinical Trials	\$23,666.67
Retention	Lee	Carrie	ECOG-ACRIN Cancer Research Group		5/10/17	11/18/22	Adjuvant Nivolumab in Resected Lung Cancers (ANVIL) -A Randomized Phase III Study of Nivolumab AfterSurgical Resection and Adjuvant Chemotherapy in NonSmallCell Lung Cancers	\$3,325.93
Recruitment	Lee	Michael	Academic and Community Cancer Research United		10/31/19	8/30/29	Combination of MEK Inhibitor Binimetinib and CDK4/6 Inhibitor Palbociclib in KRAS and NRAS Mutant Metastatic Colorectal Cancers	\$129,621.73
Recruitment	Lee	Michael	Pfizer International, LLC		1/8/18	11/1/21	Phase II study of the combination of palbociclib and cetuximab in KRAS/NRAS/BRAF wild-type metastatic colorectal cancer	\$40,000.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Lee	Michael	Genentech, Inc.	4100853BP29889	11/13/18	12/24/28	An Open-Label, Multicenter, Dose Escalation Phase IB Study With Expansion Cohorts To Evaluate The Safety, Pharmacokinetics, Pharmacodynamics And Therapeutic Activity Of RO7009789 (CD40 Agonistic Monoclonal Antibody) In Combination With Vanucizumab (Anti-	\$5,919.00
Recruitment	Lee	Yueh	DOD DA Army Medical Research Acquisition Activity	W81XWH1820043	9/15/18	9/14/21	Development and Evaluation of a Solid State Head CT	\$1,071,165.00
Recruitment	Lee	Yueh	NIH National Institute of Biomedical Imaging and Bioengineering	5-R01-EB028283-01-02	9/15/19	5/31/23	Stationary Digital Tomosynthesis for Transbronchial Biopsy Guidance	\$732,676.00
Recruitment	Lee	Yueh	Kitware, Inc.	K002789-00-S02	9/30/18	8/31/21	STTR: Automated Assessment of Leptomenigeal Collaterals on CT Angiograms, Phase II	\$66,666.67
Recruitment	Lee	Yueh	Radiological Society of North America Research and Education Foundation		6/1/21	5/31/22	Comparison of ventilation maps derived from 1UTE and dynamic 19F imaging in patients with Cystic Fibrosis	\$3,000.00
Retention	Leeman	Jennifer	National Association of Chronic Disease Directors	2152021	11/1/20	2/28/22	Cancer Screening Change Package	\$150,000.00
Recruitment	Legant	Wesley	NIH National Institute of General Medical Sciences	1-DP2-GM136653-01	9/30/19	5/31/24	Connecting the dots between single molecule dynamics and cell differentiation	\$457,902.00
Recruitment	Legant	Wesley	David and Lucile Packard Foundation	2019-69652	10/15/19	10/14/24	AI-enhanced microscopy	\$175,000.00
Recruitment	Legant	Wesley	Arnold and Mabel Beckman Foundation	19-2609	9/1/19	8/31/23	Intelligent Microscopes to Observe and Interact With Dynamic Biological Specimens	\$150,000.00
Recruitment	Legant	Wesley	Searle Scholars Program	SSP-2019-107	7/1/19	6/30/22	Single molecule dynamics of differentiation	\$100,000.00
Recruitment	Lemon	Stanley	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI150095-01-02	12/12/19	11/30/24	Critical Lipid Species in the Hepatovirus Lifecycle	\$514,390.00
Recruitment	Lemon	Stanley	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI131685-01-05	3/6/17	2/28/22	Murine Model of Human Hepatitis A	\$388,750.00
Recruitment	Lemon	Stanley	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI103083-06-09	9/24/12	8/31/22	Membrane Hijacking: Biogenesis and Fate of Quasi-Enveloped Hepatovirus	\$388,750.00
Recruitment	Li	Zibo	NIH National Cancer Institute	1-R01-CA247769-01A1	7/15/20	6/30/25	The development of novel radiation-sensitizer based on ultra-small carbon dots	\$526,148.00
Recruitment	Li	Zibo	NIH National Cancer Institute	5-R01-CA233904-01-03	12/7/18	11/30/23	Development of IDO PET agents for immunotherapy	\$404,087.00
Recruitment	Li	Zibo	NIH National Institute of Biomedical Imaging and Bioengineering	3-R01-EB029451-02S1	5/1/20	1/31/24	Novel Catalytic Methods for Efficient Radiolabeling of Un-activated Arene Compounds	\$386,477.00
Recruitment	Li	Zibo	University of Georgia Board of Regents	SUB00002554	6/1/21	5/31/25	Development of a novel biodegradable inorganic nanoparticle therapeutic for cancer	\$257,267.00
Recruitment	Li	Zibo	University of Georgia	SUB00001509	3/15/17	1/31/22	Nanoscintillator-based X-ray sensitizers to enable efficient non-small cell lung cancer treatment with X-ray irradiation	\$91,000.00
Recruitment	Li	Zibo	Zymeron Corporation	Z117/UNC	3/1/21	7/23/21	SBIR: Prophylactics for Ionizing Radiation-induced Hematopoietic Subsyndrome of ARS	\$30,000.00
Recruitment	Lichtman	Eben	GlaxoSmithKline, Inc.		2/6/20	2/16/30	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	\$29,554.30
Theme Investment (BRIC)	Lin	Weili	Mead Johnson and Company, LLC		12/5/19	1/31/22	Nutritive effects of cows milk-based formulars through 18 months of age	\$993,209.34
Theme Investment (BRIC)	Lin	Weili	Societe des Produits Nestle, S.A.	RDNN201704	2/27/17	4/30/22	Interrelationships of Nutrition, Gut Microbiota, as well as Brain & Cognitive Development in Early Life	\$358,420.86
Theme Investment (BRIC)	Lin	Weili	NIH National Institute on Drug Abuse	3-R34-DA050262-01S2	9/30/19	3/31/22	HBCD	\$154,946.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Liu	Pengda	Department of Defense	W81XWH2110419	7/1/21	6/30/24	Non-canonical function of STING in ccRCC	\$311,000.00
Recruitment	Liu	Pengda	NIH National Cancer Institute	5-R01-CA244825-01-02	7/7/20	6/30/25	Elucidating novel functions of cGAS in breast cancer	\$355,706.00
Recruitment	Liu	Pengda	Gabrielle's Angel Foundation for Cancer Research	124	9/1/20	8/31/23	Targeting the Innate Immunity-Independent Function of STING in treating AML	\$75,000.00
Recruitment	Liu	Pengda	Breast Cancer Alliance	2020BCA	2/1/20	1/31/22	Targeting the deubiquitinase OTUD6B in Basal-Like Breast Cancer	\$62,500.00
Investment (HTSF)	Liu	Jiandong	NIH National Heart, Lung, and Blood Institute	5-R01-HL139880-01-04	2/15/18	1/31/23	Molecular regulation of ventricular chamber maturation	\$397,022.00
Retention	Long	Jason	Covidien		7/24/19	8/31/23	A prospective, two-arm, multicenter, post market clinical study (the	\$17,669.00
Recruitment	Lund	Jennifer	NIH National Institute on Aging	1-R21-AG068965-01A1	5/1/21	4/30/23	Improving the prediction of life expectancy among older adults with advanced cancer using geriatric assessment	\$207,610.00
Recruitment	Lund	Jennifer	Patient-Centered Outcomes Research Institute	ME-2017C3_9337	12/1/18	1/1/23	Enhancing Hybrid Study Designs for Comparative Effectiveness Research	\$124,272.00
Recruitment	Lund	Jennifer	Pharmaceutical Research and Manufacturers of America Foundation		8/1/20	7/31/22	Longitudinal Patterns in Anticholinergic and Sedative Drug Load	\$110,000.00
Recruitment	Lund	Jennifer	F. Hoffmann-La Roche Ltd.	21-2645	3/25/21	9/30/21	WAYFIND-R	\$7,875.00
Investment (CC)	Magnuson	Terry	NIH Office of the Director	5-U42-OD010924-22	9/30/99	2/28/25	A Carolina Center to Characterize and Maintain Mutant Mice	\$1,757,784.00
Investment (CC)	Magnuson	Terry	NIH National Institute of General Medical Sciences	5-R01-GM101974-32-33	12/1/89	3/31/24	Albino Deletion Complex and Early Mouse Development	\$431,645.00
Investment (Bios/HTS)	Marron	James	National Science Foundation	IIS-1633074	9/1/16	8/31/21	BIGDATA: F: Statistical Approaches to Big Data Analytics	\$100,000.00
Innovation Award	Matera	Greg	NIH National Institute of General Medical Sciences	5-R35-GM136435-01-02	4/1/20	3/31/25	Ribonucleoprotein Biogenesis and Epigenetic Gene Regulation	\$652,834.00
Investment (HTSF)	Matute	Daniel	NIH National Institute of General Medical Sciences	5-R01-GM121750-01-05	9/1/17	7/31/22	The prevalence of genetic introgression in speciation	\$380,545.00
Retention	Mayer	Deborah	Memorial Sloan-Kettering Cancer Center		7/1/18	6/30/22	Effectiveness trial of a head and neck cancer survivorship tool	\$6,656.00
Recruitment	McGinty	Robert	NIH National Institute of General Medical Sciences	5-R35-GM133498-01-02	8/1/19	7/31/24	Molecular Mechanisms of Chromatin Recognition	\$382,895.00
Recruitment	McGinty	Robert	American Cancer Society	132609-PF-18-153-01-DMC	4/1/19	3/31/22	FELLOW: A SKRAJNA Deciphering the nucleosome interactome	\$81,750.00
Recruitment	McGinty	Robert	Pew Charitable Trusts	00030551	8/1/17	7/31/22	Deciphering the nucleosome interactome	\$60,000.00
Recruitment	McGinty	Robert	NIH National Cancer Institute	1-F99-CA253730-01	8/1/20	7/31/22	Structure-Guided Mechanistic Studies of Dot1L in Mixed Lineage Leukemia	\$38,344.00
Investment (HTSF)	McClean	Samuel	NIH National Institute of Mental Health	5-U01-MH110925-05	8/1/20	7/31/22	Longitudinal Assessment of Post-traumatic Syndromes (U0	\$1,564,670.00
Theme Investment (CC)	McMillan	Leonard	NIH National Human Genome Research Institute		4/1/21	3/31/22	Genomic Resources for the Collaborative Cross	\$348,247.00
Retention	McRee	Autumn	AstraZeneca Pharmaceuticals LP		8/27/19	9/26/29	A Phase III Randomized, Double-Blind, Placebo-Controlled, Multi-Regional, International Study of Durvalumab in Combination with Gemcitabine plus Cisplatin versus Placebo in Combination with Gemcitabine plus Cisplatin for Patients with First-Line Advanced	\$169,216.08
Retention	McRee	Autumn	BioMed Valley Discoveries, Inc.		1/22/18	12/31/23	A Phase I Trial of Ulixertinib (BVD-523) in Combination with Palbociclib in Patients with Advanced Solid Tumors with Expansion Cohort in Previously Treated Metastatic Pancreatic Cancer	\$34,288.43
Retention	McRee	Autumn	Biocompatibles UK Ltd.		11/21/18	5/31/29	A pilot study of pembrolizumab in combination with Y90 radioembolization in patients with high risk hepatocellular carcinoma with preserved liver function	\$25,747.20
Retention	McRee	Autumn	Academic and Community Cancer Research United		6/7/19	7/9/29	FIGHT: A Phase 3 Randomized, Double-Blind, Controlled Study Evaluating FPA144 and Modified FOLFOX6 in Patients with Previously Untreated Advanced Gastric and Gastroesophageal Cancer: Phase 3 Preceded by Dose-Finding in Phase 1	\$24,561.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	McRee	Autumn	MedImmune, Inc.		2/19/20	2/16/30	A Phase 1b/2, Open-label, Multicenter Study of Novel Oncology Therapies in Combination with Chemotherapy and Bevacizumab as First-line Therapy in Metastatic Microsatellite-stable Colorectal Cancer (COLUMBIA-1)	\$21,736.00
Retention	McRee	Autumn	Rgenix, Inc.		10/25/18	11/20/28	A Phase 1 Study of RGX-202-01, a Small Molecule Inhibitor of the Creatine Transporter, SLC6a8, with or without FOLFIRI in Patients with Advanced Gastrointestinal Malignancies with Select Expansion Cohorts	\$17,120.55
Retention	McRee	Autumn	Hoosier Cancer Research Network		1/7/19	12/18/28	A single arm, multi-center Phase 2 trial of mFOLFOX6 + trastuzumab + avelumab in first-line, metastatic, HER2-amplified gastric and esophageal adenocarcinomas	\$11,649.10
Retention	McRee	Autumn	Apexigen, Inc.		9/9/20	9/30/30	APX005M-006: A Phase 2 Study of APX005M in Combination with Concurrent Chemoradiation as Neoadjuvant Therapy for Resectable Esophageal and Gastroesophageal Junction Cancers	\$11,554.00
Retention	McRee	Autumn	Hoosier Cancer Research Network		4/21/17	6/29/23	A pilot study of pembrolizumab in combination with Y90 radioembolization in patients with high risk hepatocellular carcinoma with preserved liver function	\$9,906.50
Retention	McRee	Autumn	Exelixis, Inc.		4/30/19	5/16/29	A Randomized, Controlled Phase 3 Study of Cabozantinib (XL184) in Combination with Atezolizumab versus Sorafenib in Subjects with Advanced Hepatocellular Carcinoma Who Have Not Received Previous Systemic Anticancer Therapy	\$4,091.81
Retention	McRee	Autumn	Hoosier Cancer Research Network		11/7/17	11/30/23	An Open Label Randomized Phase I/II Trial of MLN0128 Compared to Sorafenib in Patients with Advanced or Metastatic Hepatocellular Carcinoma: Big Ten Cancer Research Consortium BTCRC-GI13-002	\$3,423.00
Theme Investment (HTS, CBCS, MP1U)	Merker	Jason	NIH National Cancer Institute	5-UG1-CA233333-03	3/13/19	2/28/25	UNITS: The UNC / UT National Clinical Trials Network Group Integrated Translational Science Production and Consultation Center	\$728,348.00
Theme Investment (HTS, CBCS, MP1U)	Merker	Jason	University of Texas MD Anderson Cancer Center	3001701050	9/1/20	8/31/21	MD Anderson Gynecologic SPORE for Uterine Cancers: Development of RNA sequencing-based immune signatures to predict response to pembrolizumab in patients with advanced endometrial cancer	\$50,000.00
Theme Investment (HTS)	Mieczkowski	Piotr	UT-Battelle	4000183075	9/22/20	8/31/21	ORNL CBI RNA Sequencing Support	\$49,623.00
Recruitment	Mills	Sarah	NIH National Cancer Institute	5-K01-CA242530-02	8/7/19	7/31/24	Modeling the public health impact of a national menthol cigarette ban.	\$169,370.00
Recruitment	Mills	Sarah	Washington University in Saint Louis	WU-21-361	9/1/20	8/31/21	Advancing Equity in Tobacco Control	\$10,000.00
Recruitment	Milowsky	Matthew	Mirati Therapeutics, Inc		4/1/19	4/16/29	A Phase 2 Study of Sitravatinib in Combination with Nivolumab in Patients with Advanced or Metastatic Urothelial Carcinoma	\$417,885.98
Recruitment	Milowsky	Matthew	Merck Sharp and Dohme Corp.		12/2/15	12/2/25	Phase II Single Arm Study of Gemcitabine and Cisplatin plus Pembrolizumab as Neoadjuvant Therapy Prior to Radical Cystectomy in Patients with Muscle-Invasive Bladder Cancer	\$270,086.90

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Milowsky	Matthew	Seattle Genetics, Inc		4/20/18	4/30/28	A phase 1b dose-escalation and dose-expansion study of enfortumab vedotin (ASG-22CE) in combination with immune checkpoint inhibitor (CPI) therapy for treatment of patients with locally advanced or metastatic urothelial cancer	\$191,571.28
Recruitment	Milowsky	Matthew	Bristol-Myers Squibb Company		12/22/16	2/28/25	A Phase 3 Randomized, Double-blind, Multi-center Study of Adjuvant Nivolumab versus Placebo in Subjects with High Risk Invasive Urothelial Carcinoma	\$173,163.91
Recruitment	Milowsky	Matthew	Genentech, Inc.		7/12/16	1/31/22	A Phase Iii, Multicenter, Randomized, Placebo-Controlled, Double-Blind Study Of Atezolizumab (Anti?Pd-L1 Antibody) In Combination With Gemcitabine/Carboplatin Versus Gemcitabine/Carboplatin Alone In Patients With Untreated Locally Advanced Or Metastatic U	\$88,868.72
Recruitment	Milowsky	Matthew	Incyte Corporation		1/31/17	11/30/21	INCB 54828-201 Phase 2, Open-Label, Single-Agent, Multicenter Study to Evaluate the Efficacy and Safety of INCB054828 in Subjects With Metastatic or Surgically Unresectable Urothelial Carcinoma Harboring FGF/FGFR Alterations	\$58,103.00
Recruitment	Milowsky	Matthew	The Leo & Anne Albert Institute for Bladder Cancer Care and Research		2/1/20	3/31/22	Understanding anti-tumor immunity with combination chemotherapy and immune checkpoint blockade in patients with muscle-invasive bladder cancer	\$37,500.00
Recruitment	Milowsky	Matthew	Hoosier Cancer Research Network		10/25/16	2/28/23	Randomized, Double-Blinded, Phase II Study of Maintenance Pembrolizumab versus Placebo after First-line Chemotherapy in Patients with Metastatic Urothelial Cancer	\$18,665.38
Recruitment	Milowsky	Matthew	Inovio Pharmaceuticals, Inc.	UCa-001/8375548	9/18/18	10/4/28	An Open-Label, Multi-Center Trial of INO-5401 + INO-9012 in Combination with Atezolizumab in Subjects with Locally Advanced Unresectable or Metastatic/Recurrent Urothelial Carcinoma	\$10,851.60
Recruitment	Milowsky	Matthew	Astellas Pharma Global Development, Inc.		6/22/17	7/2/22	A Phase 1 Study of the Safety and Pharmacokinetics of Escalating Doses ofASG-22CE Given as Monotherapy in Subjects with Metastatic UrothelialCancer and Other Malignant Solid Tumors that Express Nectin-4	\$7,533.00
Recruitment	Milowsky	Matthew	Hoosier Cancer Research Network		12/2/15	12/1/21	UC-GENOME: Urothelial Cancer-GENOmic analysis to iMprove patient outcomes and rEsearch	\$1,935.00
Recruitment	Milowsky	Matthew	Hoosier Cancer Research Network		9/25/18	9/23/28	Phase 2 Trial of Olaparib in Patients with Metastatic Urothelial Cancer Harboring DNA Damage Response Gene Alterations	\$1,761.00
Recruitment	Milowsky	Matthew	Duke University		6/26/15	6/1/21	A Phase II open-label, parallel group study of Abiraterone Acetate plus Prednisone in African American and Caucasian men with metastatic castrate-resistant prostate cancer	\$1,617.94
Recruitment	Mody	Gita	American College of Surgeons		7/1/21	6/30/23	Improving Thoracic Surgical Care Using electronic Patient-Reported Outcomes (ePROs)	\$80,000.00
Recruitment	Mody	Gita	Sivan Innovation, Ltd.		10/23/20	10/22/24	Feasibility and Acceptability of Remote Monitoring of Lung Cancer Patient-Reported Outcomes Using Moovcare	\$52,480.00
Recruitment	Mody	Gita	Thoracic Surgery Foundation for Research and Education		7/1/19	6/30/21	Achieving Patient Priorities after Thoracic Surgery	\$40,000.00
Investment (HTS)	Mohlke	Karen	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	1-UM1-DK126185-01	8/20/20	6/30/25	Bridging the gap between type 2 diabetes GWAS and therapeutic targets	\$2,025,252.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Investment (HTS)	Mohlke	Karen	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK072193-14-15	9/1/05	7/31/25	Targeted Genetic Analysis of T2D and Quantitative Traits	\$643,464.00
Investment (HTS)	Mohlke	Karen	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK093757-06-10	9/5/11	5/31/22	Genetic epidemiology of rare and regulatory variants for metabolic traits	\$627,100.00
Investment (HTS)	Mohlke	Karen	NIH National Heart, Lung, and Blood Institute	1-F31-HL154730-01A1	2/1/21	1/31/24	FELLOW:SARAH BROTMAN Analyzing gene expression in adipose tissue to identify candidate genes at cardiometabolic trait GWAS loci	\$37,034.00
Recruitment	Montgomery	Stephanie	North Carolina State University	2016-0607-01	6/1/20	5/31/21	Targeted bacterial restoration of colonization resistance against C. difficile	\$12,872.00
Recruitment	Mooberry	Micah	Mayo Clinic		9/12/17	12/31/21	A Phase III, Randomized, Controlled, Double-Blind Study Evaluating the Safety of Two Doses of Apixaban for Secondary Prevention of Cancer Related Venous Thrombosis in Subjects Who Have Completed at Least Six Months of Anticoagulation Therapy (EVE TRIAL)	\$30,500.00
Recruitment	Moody	Cary	NIH National Cancer Institute	5-R01-CA226523-01-03	12/6/18	11/30/23	Epigenetic Regulation During the HPV Life Cycle	\$354,527.00
Recruitment	Moody	Cary	NIH National Institute of Allergy and Infectious Diseases	1-R21-AI156158-01	4/15/21	3/31/23	Regulation of DNA Damage and Innate Immunity During the Productive Phase of the HPV Life Cycle	\$233,250.00
Recruitment	Moon	Andrew	American Association for the Study of Liver Diseases		7/1/20	6/30/22	Improving the care of patients receiving locoregional therapy for hepatocellular carcinoma by monitoring of patient reported outcomes	\$4,000.00
Recruitment	Moorman	Nathaniel	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI103311-06-08	12/1/12	6/30/23	The role of host and viral translation factors during HCMV infection	\$384,607.00
Recruitment	Moorman	Nathaniel	University of Arizona	492004	9/24/18	8/31/23	Molecular switch regulating human cytomegalovirus replicative and latent states	\$195,964.00
Recruitment	Moschos	Stergios	Syndax Pharmaceuticals, Inc.		5/11/17	11/30/22	A Phase 1b/2, Open-label, Dose Escalation Study of Entinostat in Combination with Pembrolizumab in Patients with Non-small Cell Lung Cancer, with Expansion Cohorts in Patients with Non-small Cell Lung Cancer and Melanoma	\$177,389.99
Recruitment	Moschos	Stergios	Syndax Pharmaceuticals, Inc.		12/18/18	10/21/28	Breaking Innate PD-1 Inhibitor (PD1i) Resistance Using Epigenetic Modifiers; Antitumor Efficacy and Correlative Analyses of Entinostat plus Pembrolizumab in Non-Inflamed Metastatic Melanoma (MM)	\$84,589.00
Recruitment	Moschos	Stergios	Amgen, Inc.		2/13/18	3/31/28	Phase 2 Study of Denosumab in Combination with Pembrolizumab in Patients with Stage IV Cutaneous Melanoma	\$61,012.74
Recruitment	Moschos	Stergios	University of California Board of Regents	1554-S-WB088	10/5/18	10/6/21	Genomic and Epigenomic Determinants of Pembrolizumab Resistance in Melanoma, Its Microenvironment and Organ-specific Tumor Niche in Deceased Subjects (Warm Autopsy)	\$44,017.00
Recruitment	Moschos	Stergios	Leidos Corporation	17X011	5/24/17	6/30/22	A Phase 2 Study of Ibrutinib (PCI-32765) in Refractory Distant Metastatic Cutaneous Melanoma: Correlation of Biomarkers with Response and Resistance*** Sponsor: Leidos is providing multicenter correlative/support funding is related to the NCI9922 Clinica	\$27,045.32
Recruitment	Moschos	Stergios	University of California at Los Angeles	1554 G XB980	5/1/20	4/30/25	Metastatic Clonal Heterogeneity and its Impact on Melanoma Therapeutic Resistance	\$20,773.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Moschos	Stergios	Bristol-Myers Squibb Company		4/17/15	4/16/28	Multi-Center Phase 2 Open-Label Study to Evaluate Safety and Efficacy in Subjects with Melanoma Metastatic to the Brain treated with Nivolumab in Combination with Ipilimumab followed by Nivolumab Monotherapy	\$18,781.80
Recruitment	Moschos	Stergios	Northwestern University	60046298 UNC	3/1/17	2/28/22	Systemic RNA interference to reactivate p53 tumor suppression	\$2,631.40
Investment (CC)	Mosedale	Merrie	NIH Office of the Director	5-R21-OD028216-01-02	8/15/19	7/31/21	Development of an in vitro mouse genetic reference platform to improve preclinical drug safety assessment	\$178,992.00
Investment (CC)	Mosedale	Merrie	Janssen Research & Development, LLC	1281604 / PO#994042205	4/24/19	10/23/21	Exploring the Utility of Exosomes to Predict and Understand Idiosyncratic Drug-Induced Liver Injury (IDILI)	\$151,463.43
Investment (CC)	Mosedale	Merrie	Burroughs Wellcome Fund	1017602	9/1/17	8/31/22	Developmentn of an in vitro platform for the evaluation of genetic susceptibility factors associated with adverse drug response	\$100,000.00
Recruitment	Muscattell	Keely	NIH National Heart, Lung, and Blood Institute	1-R01-HL157422-01	5/1/21	4/30/26	Neural and Molecular Mechanisms Underlying Stress-Induced Inflammatory Responses	\$621,869.00
Recruitment	Muscattell	Keely	National Science Foundation	BCS-2047344	5/1/21	4/30/26	CAREER: Bidirectional Links Between Social Experiences and the Immune System	\$118,845.40
Recruitment	Muscattell	Keely	Robert Wood Johnson Foundation	77856	9/1/20	8/31/24	Manuel Galvan RWJF Health Policy Research Scholars Award 2020	\$124,000.00
Recruitment	Muscattell	Keely	The Brain and Behavior Research Foundation	29051	7/15/21	7/14/23	Race-Related Stress among Black Americans with Schizophrenia: Neural Predictors and Social Cognitive Consequences	\$69,856.00
Recruitment	Muscattell	Keely	Robert Wood Johnson Foundation	75668	9/1/18	8/31/23	Health Policy Research Scholars Cohort Three 2018 - Gabriella Alvarez	\$24,000.00
Recruitment	Muss	Hy	Breast Cancer Research Foundation	BCRF-20-114	10/1/17	9/30/21	p16INK4a Gene Expression, Chemotherapy Toxicity, and Age in Women with Breast Cancer	\$175,000.00
Recruitment	Muss	Hy	NIH National Cancer Institute	5-T32-CA233419-03	1/1/19	12/31/23	UNC Geriatric Oncology Training Grant (UNC-GO)	\$171,449.00
Recruitment (Chair Package)	Neal-Perry	Genevieve	NIH National Institute of Child Health and Human Development	1-K12-HD103085-01	7/23/20	6/30/25	Advancing women's health through research: the UNC WRHR Career Development Program	\$340,200.00
Recruitment	Nichols	Hazel	NIH National Cancer Institute	5-R01-CA204258-01-04	7/1/17	6/30/22	Clinical Pregnancy Outcomes in Adolescent and Young Adult Female Cancer Survivors	\$887,385.00
Recruitment	Nichols	Hazel	NIH National Cancer Institute	5-R01-CA211093-01-02	8/5/19	7/31/23	In vitro fertilization outcomes after cancer	\$568,312.00
Recruitment	Nichols	Hazel	Kaiser Permanente Division of Research	RNG211061-UNC-01	9/15/20	6/30/25	CORES A & B Clinical Care Gaps and Unmet Needs in Adolescent and Young Adult (AYA) Cancers	\$106,275.00
Recruitment	Nichols	Hazel	Kaiser Permanente Division of Research	RNG211063-UNC-01	9/15/20	6/30/25	PROJECT 1 Clinical Care Gaps and Unmet Needs in Adolescent and Young Adult (AYA) Cancers	\$69,798.00
Recruitment	Nichols	Hazel	Kaiser Permanente Division of Research	RNG211064-UNC-01	9/15/20	6/30/25	Clinical Care Gaps and Unmet Needs in Adolescent and Young Adult (AYA) Cancers	\$42,542.00
Recruitment	Nichols	Hazel	NIH National Cancer Institute	1-F31-CA260787-01	7/1/21	6/30/22	FELLOW:MEERNIK Assisted Reproductive Technology Use After Adolescent and Young Adult Cancer in North Carolina	\$38,062.00
Recruitment	Nichols	Hazel	NIH National Institute of Environmental Health Sciences	1-F31-ES033062-01	8/1/21	7/31/23	FELLOW:M SWEENEY Joint effect of indoor and outdoor light at night on sleep and breast cancer	\$38,062.00
Recruitment	Nichols	Hazel	Kaiser Permanente Division of Research	RNG211062-UNC-01	9/15/20	6/30/25	CORE C Clinical Care Gaps and Unmet Needs in Adolescent and Young Adult (AYA) Cancers	\$15,710.00
Recruitment	Nichols	Hazel	Michigan State University	RC106691D	6/1/17	5/31/21	Assisted Reproductive Technology and Child Health: Risk of Birth Defects, Mortality, and Effect on Grade School Performance	\$12,792.00
Recruitment	Nielsen	Matthew	University of Kansas Medical Center Research Institute, Inc.	Z3C00010 0011340322	11/3/19	7/31/22	Long-Term Outcomes of Localized Prostate Cancer Survivors	\$171,342.00
Recruitment	Nielsen	Matthew	University of Pennsylvania	576656	4/1/19	3/31/22	Ostomy Telehealth Self-management Training for Cancer Survivors	\$137,160.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Nielsen	Matthew	University of Kansas Medical Center Research Institute, Inc.	Q125EP20	11/1/19	10/30/20	North Carolina Prospective Prostate Cancer Cohort Study	\$82,561.00
Recruitment	Nielsen	Matthew	UroGen Pharma Ltd.		11/7/18	12/1/22	A Phase 2b, Single-Arm, Multicenter Trial to Evaluate the Efficacy and Safety of UGN-102 as Primary Chemoablative Therapy in Patients with Low Grade (LG) Non-Muscle-Invasive Bladder Cancer (NMIBC) at Intermediate Risk of Recurrence	\$14,112.32
Recruitment	Nielsen	Matthew	UroGen Pharma Ltd.	BL007	1/13/21	12/1/25	A Rollover Study to Follow the Durability of Response for Patients from Study UT001 (Formerly TC-UT-03, Post-marketing Commitment) and Study TC-BC-12	\$4,000.00
Theme Investment	Niethammer	Marc	Kitware, Inc.	K003285-00-S01	9/17/20	8/31/21	STTR: Enhanced Software Tools for Detecting Anatomical Differences in Image Data Sets	\$140,000.00
Theme Investment	Niethammer	Marc	National Science Foundation	ECCS-1610762	9/1/16	8/31/21	Dynamic Network Analysis: Analyzing the Chronnectome	\$71,284.00
Theme Investment	Niethammer	Marc	National Science Foundation	ECCS-1711776	7/15/17	6/30/22	Fast Predictive Medical Image Analysis	\$66,000.00
Theme Investment	Niethammer	Marc	Brigham and Womens Hospital	122937	3/15/20	2/29/24	Prognostic Markers of Emphysema Progression	\$31,293.25
Recruitment	Noar	Seth	NIH National Institute on Drug Abuse	5-R01-DA049155-02	6/1/20	5/31/25	Impact of e-cigarette prevention messages on adolescents	\$686,660.00
Recruitment	Noar	Seth	NIH National Cancer Institute	5-R01-CA246600-02	9/17/19	8/31/22	Advancing Perceived Message Effectiveness: A New Measure for Youth Prevention Media Campaigns	\$457,383.00
Retention	North	Kari	NIH National Heart, Lung, and Blood Institute	5-R01-HL142302-01-04	5/1/18	2/28/22	Hispanic Latino Lipid Consortium	\$770,456.00
Retention	North	Kari	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	1-R01-DK122503-01A1	9/22/20	7/31/25	Integrative Approaches to Identifying Function and Clinical Significance of Adiposity Susceptibility Genes	\$732,482.00
Retention	North	Kari	Fred Hutchinson Cancer Research Center	0001040439	8/20/20	7/31/21	Polygenic Risk Scores for Diverse Populations - Bridging Research and Clinical Care	\$348,847.00
Retention	North	Kari	NIH National Heart, Lung, and Blood Institute	2-T32-HL129982-06A1	5/1/16	5/31/26	The Genetic Epidemiology of Heart, Lung, and Blood Training Grant (GenHLB)	\$271,352.00
Retention	North	Kari	Rutgers the State University of New Jersey	PO#826012/Sub# 1203	6/15/19	3/31/22	PAGE III: Population Architecture Using Genomics and Epidemiology	\$233,029.00
Retention	North	Kari	Research Triangle Institute	5-312-0217030-65769L	11/15/19	7/31/21	Nutritional Omics of Pulmonary Function Decline	\$44,560.00
Retention	North	Kari	Wake Forest University Health Sciences	637-100100-550024	4/1/19	1/31/24	Genetic and Epidemiological Predictors of Glucose Homeostasis Measures	\$19,476.00
Investment (CBCS)	Nyante	Sarah	NIH National Cancer Institute	5-R01-CA237129-01-02	9/1/19	8/31/24	Understanding the biological basis for the association between parenchymal texture features and breast cancer risk	\$585,676.00
Innovation Award	Oldenburg	Amy	NIH National Heart, Lung, and Blood Institute	1-R01-HL154429-01	9/1/20	7/31/25	Predicting the Need for Surgery in Pediatric Subglottic Stenosis using Airway Elastography derived from Endoscopic OCT and Intraluminal Pressure Measurement	\$437,466.43
Innovation Award	Oldenburg	Amy	NIH National Institute of Environmental Health Sciences	1-R01-ES032730-01	9/28/20	6/30/25	Developing an in vitro to in vivo pipeline of mammary gland exposure-response relationships to per- and poly-fluoroalkyl substances (PFAS)	\$559,511.00
Innovation Award	Oldenburg	Amy	National Science Foundation	CBET-1803830	7/1/18	6/30/22	Collaborative Research: Tools for Noninvasive Nano-Optical Imaging of the Role of Extracellular Matrix in Pre-Malignant Breast Cancer	\$91,626.25
Innovation Award	Oldenburg	Amy	Physical Sciences, Inc.	10-07742-8060-46	9/1/20	8/31/22	SBIR: Multimodal Optical Probe for Real-time Assessment of Airway Tissue after Injury	\$60,000.00
Investment (CBCS)	Olshan	Andrew	Centers for Disease Control and Prevention	5-U01DD001231-01-03	9/1/18	8/31/23	Component A: BD-STEPS II Core at North Carolina Center for Birth Defects Research and Prevention (NC BDSTEPS II Core)	\$900,000.00
Investment (CBCS)	Olshan	Andrew	International Agency for Research on Cancer	GEP/17/04	1/10/17	12/31/21	The role of germline and somatic DNA mutations in oral and oropharyngeal cancers	\$17,545.00
Investment (CBCS)	Olshan	Andrew	Vanderbilt University Medical Center	VUMC58928	1/1/16	6/30/21	Breast Cancer Genetic Study in African-Ancestry Populations	\$14,349.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Painschab	Matthew	NIH Fogarty International Center for Advanced Study in the Health Sciences	5-K01-TW011470-01-02	9/16/19	6/30/24	Safety, efficacy, and cost-effectiveness of rituximab for multicentric Castleman disease in Malawi	\$143,933.00
Recruitment	Palmer	Adam	V Foundation for Cancer Research	V2020-010	12/1/20	12/1/22	Understanding and optimizing curative combination therapy for Non-Hodgkin Lymphomas	\$200,000.00
Recruitment	Palmer	Adam	Prelude Therapeutics, Inc.	21-0507	4/15/21	9/30/21	Identifying subsets of Non-Hodgkin Lymphomas with sensitivity to small molecules that promote apoptosis	\$108,378.00
Investment (CC)	Pardo Manuel de Villena	Fernando	NIH National Institute of Environmental Health Sciences	5-R01-ES029925-01-03	2/1/19	1/31/24	Genetic underpinning of diabetes associated with arsenic exposure	\$665,756.00
Investment (CC)	Pardo Manuel de Villena	Fernando	University of Massachusetts Medical School	OSP2018037 WA01015721	8/5/17	7/31/22	Systems Genetics of Tuberculosis	\$339,023.00
Investment (CC)	Pardo Manuel de Villena	Fernando	Neogen Corporation		5/20/20	5/19/23	Service Agreement for miniMUGA inbred mouse Background Analysis Report	\$25,000.00
Recruitment	Park	Eliza	Foundation of Hope for Research and Treatment of Mental Illness		9/28/20	9/27/23	A web-based intervention to improve mental health outcomes among newly diagnosed parents with cancer	\$39,997.00
Recruitment	Park	Leeza	NIH National Cancer Institute	5-K07-CA218167-01-04	8/1/17	7/31/22	A Psychosocial Intervention to Improve Outcomes for Parents with Advanced Cancer	\$176,839.00
Recruitment	Patel	Shetal	Lung Cancer Initiative of North Carolina		1/1/21	12/31/22	Metabolic reprogramming of the tumor microenvironment to enhance immunotherapy in lung cancer	\$175,000.00
Recruitment	Patel	Shetal	Lung Cancer Initiative of North Carolina		7/1/20	6/30/21	Combination strategies targeting myeloid cells in squamous lung cancer	\$25,000.00
Recruitment	Patel	Shetal	AstraZeneca Pharmaceuticals LP	A-42301	6/19/19	9/4/29	A Phase III, Randomized, Double-blind, Placebo-controlled, Multi-center, International Study of Durvalumab or Durvalumab and Tremelimumab as Consolidation Treatment for Patients with Limited Stage Small Cell- Lung Cancer Who Have Not Progressed Following	\$5,974.65
Recruitment	Pecot	Chad	NIH National Cancer Institute	1-R01-CA258451-01	3/1/21	2/28/26	Tumor Endothelial Cell Regulation of Pro-Metastatic Fibrin Matrices	\$609,743.00
Recruitment	Pecot	Chad	NIH National Cancer Institute	5-R01-CA215075-01-04	9/21/17	8/31/22	Immune Regulation of Lung Squamous Metastasis	\$392,837.00
Recruitment	Pecot	Chad	Jazz Pharmaceuticals, Inc.		6/5/21	12/31/23	Evaluation of the Efficacy and Immune Microenvironmental Effects of Lurbinectedin alone and in combination with immune checkpoint inhibitors in Squamous Carcinoma Models	\$281,579.52
Recruitment	Pecot	Chad	Free to Breathe		2/14/17	12/31/20	Targeting Lung Squamous Metastasis with CCR2 Inhibitors	\$133,333.33
Recruitment	Pecot	Chad	Susan G Komen for the Cure	CCR17479814	8/7/17	2/6/21	HDAC11 Promotes Breast Cancer Metastasis via the Lymphatic Route	\$112,500.00
Recruitment	Pecot	Chad	Enfuego Therapeutics		6/1/20	12/31/21	STTR: Development of EFTX-001 to Target KRAS Mutations in Cancer	\$82,087.00
Recruitment	Pecot	Chad	Lung Cancer Initiative of North Carolina		1/1/20	12/31/21	Inhibiting the Mechanisms of Lung Cancer Metastasis	\$75,000.00
Recruitment	Pecot	Chad	North Carolina Biotechnology Center	2019-TRG-6704	8/1/19	1/31/21	Development of EFTX-001 to Target KRAS Mutations in Cancer	\$50,000.00
Recruitment	Pecot	Chad	NIH National Cancer Institute	5-F30-CA250189-02	4/1/20	3/31/25	FELLOW:N SENGOTTUVEL The Role of SPON1 Expressing Inflammatory Monocytes in Promoting Lung Cancer Metastasis.	\$37,543.00
Recruitment	Pecot	Chad	Duke University	A033898	9/14/20	8/31/21	Duke Cancer Health Disparities P20 SPORE	\$30,212.00
Theme Investment (HTS)	Peifer	Mark	NIH National Institute of General Medical Sciences	5-R35-GM118096-01-05	7/1/16	8/31/21	Regulating cell fate and shaping the body plan during morphogenesis and oncogenesis	\$583,645.00
Theme Investment (HTS)	Peifer	Mark	NIH National Institute of General Medical Sciences	5-F31-GM131521-02	8/1/19	7/31/21	FELLOW:KIA ZOLEE PEREZ-VALE Defining the Molecular Mechanisms Underlying Apical-basal Polarity Establishment and Morphogenesis	\$35,666.00
Theme Investment (HTS)	Peifer	Mark	Burroughs Wellcome Fund	1020281.01	11/1/19	3/31/22	Defining the molecular mechanisms underlying apical-basal polarity establishment and morphogenesis.	\$1,000.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	5-P50-CA058223-26	8/5/97	8/31/23	SPORE in Breast Cancer	\$2,293,534.00
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	5-U01-CA238475-03	6/1/19	5/31/24	Predictive Modeling of the EGFR-MAPK pathway for Triple Negative Breast Cancer Patients	\$572,275.00
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	2-R01-CA148761-11	3/17/10	3/31/26	Therapeutic Targeting of Breast Cancer Tumor Initiating Cells	\$413,297.00
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Breast Cancer Research Foundation	DRC-20-004	1/15/21	1/14/24	Disentangling the anti-tumor effects from the immune effects of Abemaciclib using RB- proficient and RB-deficient breast cancer mouse models.	\$400,000.00
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Susan G Komen for the Cure	SAC160074	7/15/16	7/14/22	Identification of the Genetic Drivers of HER2-Enriched Subtype Breast Cancers	\$200,000.00
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Breast Cancer Research Foundation	BCRF-20-127	10/1/20	9/30/21	Molecular Therapeutic for Luminal Tumor Subtypes	\$175,000.00
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Johns Hopkins University	2004285639 AURORA P	7/29/19	12/31/21	AURORA US: Prospective Genomic Characterization Center in Metastatic Breast Cancer RELATED 4101005	\$87,592.20
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Conquer Cancer Foundation		7/1/21	6/30/22	Characterization of gene expression in de novo metastatic breast cancer	\$50,000.00
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	1-F31-CA257166-01	5/1/21	4/30/23	FELLOW:C GLODOWSKIC Intratumoral Heterogeneity and Plasticity in Basal-Like Breast Cancers	\$39,178.00
Recruitment	Pfaff	Emily	Johns Hopkins University	2005095727	3/15/21	6/30/21	Subcontract to John Hopkins University for A National Center for Digital Health Informatics Innovation: Supplement: CD2H - National COVID Cohort Collaborative (N3C) - to June 2021	\$185,509.00
Recruitment	Pfaff	Emily	Johns Hopkins University	1011902-001_JHU PO 2004857572	7/21/20	6/30/21	Subcontract Johns Hopkins N3C National COVID Cohort Collaborative - 3 Month	\$163,081.00
Recruitment	Pfaff	Emily	Johns Hopkins University	1011902-002_JHU 2005016923	9/10/20	6/30/21	Subcontract Johns Hopkins IDeA-CTR Supplement to CD2H	\$147,531.00
Recruitment	Pfaff	Emily	Johns Hopkins University	1011902_JHU 2004676328	2/1/20	6/30/21	Subcontract Johns Hopkins CD2H	\$42,403.00
Recruitment	Pfaff	Emily	New York University	34	6/9/21	7/8/21	Subcontract with NYU Langone PASC Phase 1 Initiative Collaborative Analytics for EHR- and Other Real-World Data in N3C	\$6,208.00
Recruitment	Phanstiel	Douglas	NIH National Institute on Aging	5-R01-AG066871-01-02	4/15/20	3/31/25	Identifying Alzheimer's Disease Causal Variants and Target Genes Using iPSC-derived Microglia	\$751,779.00
Recruitment	Phanstiel	Douglas	NIH National Institute of General Medical Sciences	5-R35-GM128645-01-04	7/19/18	6/30/23	Mechanisms of dynamic chromatin looping during differentiation	\$383,326.00
Recruitment	Phanstiel	Douglas	BrightFocus Foundation	A2020203F	9/1/20	8/31/22	Identifying Alzheimer's Disease Risk Genes using 3D Chromatin Structure and Genome Editing in iPSC-derived Microglia	\$199,041.00
Recruitment	Pinton	Gianmarco	NIH National Institute of Biomedical Imaging and Bioengineering	1-R01-EB029419-01A1	7/1/21	3/31/25	A machine learning ultrasound beamformer based on realistic wave physics for high body mass index imaging	\$521,287.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Purvis	Jeremy	NIH National Institute of General Medical Sciences	1-R01-GM138834-01	9/11/20	7/31/24	Computational Models of the Human Cell Cycle to Reveal Disease Mechanism and Inform Treatment	\$307,051.00
Recruitment	Purvis	Jeremy	National Science Foundation	1845796	1/1/19	12/31/23	CAREER: Predicting cell fate from cell history: Theory, experiment, and outreach	\$266,426.00
Recruitment	Purvis	Jeremy	NIH National Heart, Lung, and Blood Institute	1-F31-HL156433-01	4/2/21	3/31/24	FELLOW:J RANEK Inferring Gene Regulatory Networks Governing Definitive Endoderm Differentiation from Single CellRNA Velocity Measurements	\$37,550.00
Recruitment	Purvis	Jeremy	NIH National Heart, Lung, and Blood Institute	1-F31-HL156464-01	1/1/21	12/31/24	FELLOW:TAREK ZIKRY Deep learning models to predict primitive streak formation in human development	\$37,034.00
Recruitment	Pylayeva-Gupta	Yuliya	NIH National Cancer Institute	5-R37-CA230786-01-03	4/1/19	3/31/24	Function of IL35+ B cells in pancreatic cancer	\$446,826.00
Recruitment	Pylayeva-Gupta	Yuliya	DOD DA Army Medical Research Acquisition Activity	W81XWH1910597/0011 349040	9/1/19	8/31/22	Role of IL-23 in epithelial-to-mesenchymal conversion in pancreatic cancer.	\$186,599.67
Recruitment	Pylayeva-Gupta	Yuliya	NIH National Cancer Institute	5-F31-CA239494-02	1/1/20	12/31/21	FELLOW:DANIEL MICHAUD Mechanisms of B cell specific IL-35 expression in cancer.	\$33,860.00
Recruitment	Raab	Jesse	Department of Defense	W81XWH2010636	8/1/20	7/31/22	Identification of new therapeutic strategies for targeting liver fibrosis	\$311,000.00
Recruitment	Raab	Jesse	Department of Defense	W81XWH1910423	8/15/19	8/14/22	Mechanistic analysis of ARID mutations in hepatocellular carcinoma	\$186,298.33
Retention	Ramsey	J	Medical CBRN Defense Consortium	1909-005	10/23/19	3/10/23	A Highly Multiplexed Point-of-Care Digital Protein Assay Platform with Digital Molecular Capability	\$1,091,798.00
Retention	Ramsey	J	NIH National Institute on Drug Abuse	1-U01-DA053899-01	1/1/21	12/31/22	Improved scalability, sensitivity, and interpretability of pathogen detection, including SARS-CoV-2, in wastewater using high-throughput, highly multiplexed digital array PCR technology	\$997,507.00
Recruitment	Ray	Emily	Conquer Cancer Foundation		7/1/21	6/30/24	Validation and usability testing in an academic comprehensive cancer center of a prognostic calculator for 30-day mortality in patients with metastatic breast cancer	\$200,000.00
Innovation Award	Redinbo	Matthew	NIH National Institute of General Medical Sciences	5-R01-GM135218-01-03	9/20/19	6/30/23	Structural Basis for Hormone and Neurotransmitter Processing by Gut Microbial Enzymes	\$364,583.00
Innovation Award	Redinbo	Matthew	NIH National Institute of General Medical Sciences	5-R01-GM137286-01-02	5/1/20	4/30/24	Understanding and Controlling Drug Metabolism by the Gut Microbiota to Improve Human Health	\$304,654.00
Innovation Award	Redinbo	Matthew	Bay Area Lyme Foundation		3/1/21	8/31/22	Structural Biology Essential to Preclinical Development of Novel Borrelia Targeting Therapeutic and Diagnostic Imaging Agents	\$215,209.00
Innovation Award	Redinbo	Matthew	Eli Lilly and Company		6/25/18	6/25/22	Precision Gut Microbiome-Targeted Inhibitors to Explore the Etiology of Inflammatory Bowel Disease	\$66,249.67
Recruitment	Reeder-Hayes	Katie	Pfizer International, LLC	63633669 21-0928	12/10/20	12/31/22	Racial Disparities Hot-spotting to Improve Breast Cancer Outcomes In North Carolina	\$398,888.45
Recruitment	Reeder-Hayes	Katie	Conquer Cancer Foundation		7/1/21	6/30/22	Implementing a Breast Cancer Early Detection and Ultrasound Intervention for Cervical Cancer Screening Providers in Malawi	\$50,000.00
Recruitment	Reeder-Hayes	Katie	Susan G Komen for the Cure North Carolina Triangle to the Coast Affiliate		5/13/20	5/12/22	From action to impact: Improving breast cancer care in North Carolina through navigation and collaborative partnerships project	\$45,000.00
Recruitment	Reeves	Brandi	Janssen Research & Development, LLC		8/10/16	6/30/22	Phase 2, Randomized, Open-Label Study Comparing Daratumumab, Lenalidomide, Bortezomib, and Dexamethasone (D-RVd) Versus Lenalidomide, Bortezomib, and Dexamethasone (RVd) in Subjects With Newly Diagnosed Multiple Myeloma Eligible for High-Dose Chemotherapy	\$163,366.08

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Reeves	Brandi	Incyte Corporation		9/16/20	10/22/30	A Phase 1, Open-Label, Safety and Tolerability Study of INCB057643 in Participants with Myelofibrosis	\$45,770.35
Recruitment	Reeves	Brandi	Janssen Research & Development, LLC	54767414SMM3001	9/6/18	6/16/26	A Phase 3 Randomized, Multicenter Study of Subcutaneous Daratumumab Versus Active Monitoring in Subjects with High-risk Smoldering Multiple Myeloma	\$14,936.86
Recruitment	Reeves	Brandi	Janssen Research & Development, LLC		8/29/19	2/28/24	A Randomized Study of Daratumumab Plus Lenalidomide Versus Lenalidomide Alone as Maintenance Treatment in Patients with Newly Diagnosed Multiple Myeloma Who Are Minimal Residual Disease Positive After Frontline Autologous Stem Cell Transplant.	\$9,337.00
Recruitment	Reeves	Brandi	Celgene Corporation		6/3/19	6/13/29	A Phase 3b, Multicenter, Single-Arm, Open-Label Efficacy and Safety Study of Fedratinib in Subjects with DIPSS-Intermediate or High-Risk Primary Myelofibrosis, Post-Polycythemia Vera Myelofibrosis, or Post-Essential Thrombocythemia Myelofibrosis and Previ	\$8,480.08
Retention	Reuland	Dan	NIH National Cancer Institute	5-UH3-CA233251-03	9/30/18	8/31/23	Scaling Colorectal Cancer Screening Through Outreach, Referral, and Engagement (SCORE): A State-Level Program to Reduce Colorectal Cancer Burden in Vulnerable Populations	\$1,134,939.00
Retention	Reuland	Dan	Wake Forest University	497-101710-550124	1/1/20	12/31/24	A Personalized Digital Outreach Intervention for Lung Cancer Screening	\$182,377.00
Retention	Reuland	Dan	NC DHHS Division of Public Health	00041499	11/1/20	6/29/21	Response to Public Health and Health Systems Partnerships to Increase Colorectal Cancer Screening in Clinical Settings	\$167,025.00
Retention	Ribisl	Kurt	NIH National Cancer Institute	5-P01-CA225597-01-03	9/1/18	8/31/23	ASPiRE: Advancing Science & Practice in the Retail Environment	\$1,242,249.00
Retention	Ribisl	Kurt	City of Durham	21-1099	8/15/20	8/14/21	Durham Community Health Ambassador Program	\$636,488.00
Retention	Ribisl	Kurt	NIH National Cancer Institute	5-T32-CA057726-29	7/1/17	6/30/22	Cancer Control Education Program	\$423,719.00
Retention	Ribisl	Kurt	Cumberland County Department of Health	2021274/ 21001034	9/1/20	6/30/21	Fort Bragg Tobacco Control: Military Health and Readiness Initiative	\$31,077.00
Retention	Ribisl	Kurt	University of Virginia	GB10546.PO #2126807	5/1/18	2/28/23	The Determinants of Tobacco Relapse and Initiation Following a Period of Forced Abstinence in the U.S. Military: A Social Ecological Approach	\$22,609.00
Recruitment	Richardson	Daniel	Conquer Cancer Foundation		7/1/20	12/31/21	Patient Preferences for Treatment Outcomes in Older Patients with Acute Myeloid Lukemia	\$50,000.00
Investment (Protocol)	Riches	Marcie	National Marrow Donor Program		5/24/19	5/31/22	BMT CTN 1703/ 1801 - A Randomized, Multicenter, Phase III Trial of Tacrolimus/Methotrexate versus Post-Transplant Cyclophosphamide/ Tacrolimus/ Mycophenolate Mofetil in Non-Myeloablative/Reduced Intensity Conditioning Allogeneic Peripheral Blood Stem Cell	\$27,344.02
Investment (Protocol)	Riches	Marcie	Atara Biotherapeutics, Inc.		3/1/19	7/28/27	Multicenter, Open Label, Phase 3 Study of Tabelecleucel for Solid Organ or Allogeneic Hematopoietic Cell Transplant Subjects with Epstein-Barr Virus-Associated Post-Transplant Lymphoproliferative Disease after Failure of Rituximab or Rituximab and Chemoth	\$25,581.60
Investment (Protocol)	Riches	Marcie	National Marrow Donor Program		6/18/19	5/31/22	BMT CTN 1702 - Clinical Transplant-Related Long-term Outcomes of Alternative Donor Allogeneic Transplantation	\$22,492.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Investment (Protocol)	Riches	Marcie	Jazz Pharmaceuticals plc		7/3/18	5/17/21	A Phase 2, Prospective, Randomized, Open-label Study on the Efficacy of Defibrotide Added to Standard of Care Immunoprophylaxis for the Prevention of Acute Graft-versus-Host-Disease in Adult and Pediatric Patients After Allogeneic Hematopoietic Stem Cell	\$21,207.72
Investment (Protocol)	Riches	Marcie	Atara Biotherapeutics, Inc.		3/20/19	12/31/27	ATA129-EAP-901 Expanded Access Protocol for Providing Tabelecleucel to Patients with Epstein-Barr Virus-Associated Viremia or Malignancies for whom There are No Appropriate Alternative Therapies	\$4,295.00
Recruitment	Robinson	Whitney	NIH National Institute on Minority Health and Health Disparities	5-R01-MD011680-01-05	9/26/17	6/30/22	Racial Differences in Treatment with Hysterectomy: a Multilevel Investigation	\$692,626.00
Recruitment	Rose	Tracy	NIH National Cancer Institute	5-K08-CA248967-01-02	4/1/20	3/31/23	Selective histone deacetylase inhibition with entinostat to enhance the anti-tumor immune response to immune checkpoint inhibition in urothelial cancer	\$262,296.00
Recruitment	Rose	Tracy	Merck Sharp and Dohme Corp.		4/2/20	4/16/30	:An Open-label, Randomized Phase 3 Study of MK-6482 Versus Everolimus in Participants with Advanced Renal Cell Carcinoma That Has Progressed After Prior PD1/L1 and VEGF-Targeted Therapies	\$115,224.36
Recruitment	Rose	Tracy	Dana-Farber Cancer Institute		2/21/18	2/28/23	Phase II study of Optimized Management of NIVolumab based on REsponse in patients with advanced renal cell carcinoma (OMNIVORE study)	\$110,500.00
Recruitment	Rose	Tracy	Genentech, Inc.		6/9/17	6/30/22	A phase III, multicenter, randomized, placebo-controlled, double-blind study of atezolizumab (ANTI?PD-L1 ANTIBODY) as adjuvant therapy in patient with renal cell carcinoma at high risk metastatis following nephrectomy	\$20,644.48
Recruitment	Rose	Tracy	Hoosier Cancer Research Network		2/28/19	3/10/29	Phase 2 Trial of Tremelimumab in Patients with Metastatic Urothelial Cancer Previously Treated with PD-1/PD-L1 Blockade	\$8,795.00
Recruitment	Rosenstein	Donald	Susan G Komen for the Cure North Carolina Triangle to the Coast Affiliate		8/4/20	11/27/21	Reducing breast cancer mortality by removing barriers to care	\$21,000.00
Recruitment	Rosenstein	Donald	Rising Tide Foundation for Clinical Cancer Research	CCR-17-300/513305	7/1/17	11/30/20	Thiamine for the Prevention of Delirium in Hematopoietic Stem Cell Transplantation	\$13,156.50
Investment (HTS)	Sancar	Aziz	NIH National Institute of Environmental Health Sciences	5-R01-ES027255-01-05	8/1/16	7/31/22	Single Nucleotide Resolution Map of Formation and Repair of Bulky Adducts in the Human Genome	\$468,393.00
Investment (HTS)	Sancar	Aziz	NIH National Cancer Institute	5-F30-CA225060-02	7/10/19	7/9/24	FELLOW:C VAUGHN Genome-wide Patterns of DNA Damage and Repair in Resistance to Platinum-Based Chemotherapy	\$37,027.00
Recruitment	Savoldo	Barbara	Department of Defense	W81XWH2010890 0011479913	9/15/20	9/14/24	Phase I Study of Autologous Activated T-cells Transduced With a 3rd Generation GD2 Chimeric Antigen Receptor, Co-expression of IL-15 and iCaspase9 Safety Switch.	\$809,260.00
Recruitment	Savoldo	Barbara	NIH National Cancer Institute	5-R01-CA247497-01-02	7/1/20	6/30/25	Tailoring CAR T cell therapy for Hodgkin Lymphoma	\$634,693.00
Recruitment	Savoldo	Barbara	Childrens Research Institute	30004929-01	9/30/18	8/31/23	Enhancing Cell Therapy for Brain Tumors	\$219,420.00
Recruitment	Savoldo	Barbara	V Foundation for Cancer Research	T2017-006	11/1/17	11/1/21	Exploiting the inducible Caspase9 safety switch to pharmacologically modulate CD19.CAR-T cell function in vivo	\$120,000.00
Recruitment	Savoldo	Barbara	Tessa Therapeutics Ltd.		2/1/20	10/31/20	Comparison of CD30 CAR constructs	\$41,985.00
Retention	Schoenfisch	Mark	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK108318-05-06	12/1/15	6/30/24	Role of diabetes and nitric oxide release duration on analytical performance of in vivo glucose biosensors	\$606,542.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Schoenfisch	Mark	KNOW Bio, LLC		1/1/18	12/31/22	Synthesis and Characterization of Next Generation Nitric Oxide-Releasing Biopolymers	\$215,457.75
Innovation Award	Sekelsky	Jeff	NIH National Institute of General Medical Sciences	5-T32-GM135128-02	7/1/20	6/30/25	NRSA in Genetics	\$682,680.00
Innovation Award	Sekelsky	Jeff	NIH National Institute of General Medical Sciences	2-R35-GM118127-06	6/1/16	3/31/26	Mechanisms of meiotic and mitotic recombination	\$544,786.00
Retention	Serody	Jonathan	NIH National Cancer Institute	5-T32-CA211056-04	8/1/17	7/31/22	Duke UNC-Chapel Hill Immunotherapy Training Grant	\$311,363.00
Retention	Serody	Jonathan	Merck Sharp and Dohme Corp.	54830	12/15/16	12/15/21	Immune Biomarker Analysis of Pembrolizumab in Triple Negative Breast Cancer	\$180,662.43
Retention	Serody	Jonathan	Merck Sharp and Dohme Corp.	54823	12/15/16	12/15/21	Immune Biomarker Analysis of Pembrolizumab in AML	\$168,785.82
Retention	Serody	Jonathan	Merck Sharp and Dohme Corp.	54829	12/15/16	12/15/21	Correlative study of the activity of pembrolizumab in combination with gemcitabine and cisplatin as neoadjuvant therapy prior to radical cystectomy in patients with muscle-invasive urothelial carcinoma of the bladder	\$158,611.25
Retention	Serody	Jonathan	Carisma Therapeutics, Inc		1/14/21	1/13/23	Single Cell & Correlative Evaluations After Monocyte-derived Macrophage CAR Therapy Targeting HER-2/neu	\$125,133.00
Retention	Serody	Jonathan	American Association for Cancer Research	20-40-12-VOOR	7/1/20	6/30/22	Pilot Study of Anti-PD-1 Therapy Following CD30 Directed CAR-T Cell Therapy	\$120,000.00
Retention	Serody	Jonathan	Merck Sharp and Dohme Corp.	58116	1/30/19	1/30/23	OTSP: Evaluating the Function of B cells in the Activity of Anti-PD-1 mAb Therapy in Patients with Metastatic Breast Cancer.	\$80,211.65
Retention	Serody	Jonathan	Conquer Cancer Foundation		9/1/20	2/28/22	Prospective Pilot Study of PD-1 Inhibition Following CD30 Directed Chimeric Antigen Receptor T-cell Therapy in Relapsed/Refractory Hodgkin Lymphoma.	\$50,000.00
Retention	Serody	Jonathan	NIH National Cancer Institute	5-F30-CA225136-04	2/13/18	2/12/23	FELLOW:CHRISTOF SMITH Design and Delivery of Neoantigen-based Tumor Vaccines	\$47,673.00
Retention	Serody	Jonathan	GlaxoSmithKline Biologicals S.A.	AAA41597687	5/15/19	8/30/21	GSK Task Order 8 Weekend Fee Inclusion	\$31,869.45
Retention	Shaheen	Nicholas	Duke University	A03-0637	12/13/16	11/30/21	Imaging and Biomarkers for Early Cancer Detection (R01)	\$308,428.00
Retention	Shaheen	Nicholas	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	2-T35-DK007386-41	5/1/80	2/28/26	Short Term Research Training	\$86,662.00
Retention	Shaheen	Nicholas	CDx Diagnostics		8/8/16	8/7/26	CDX 707 WATS Registry Services Agreement	\$60,800.00
Retention	Shaheen	Nicholas	Lucid Diagnostics		5/5/20	7/31/25	A Multicenter Case-Control Study of the Efficacy of EsoGuard on Samples Collected Using EsoCheck, versus Esophagogastroduodenoscopy, for the Diagnosis of Barrett's Esophagus with and without Dysplasia, and for Esophageal Adenocarcinoma (EG-CL-102)	\$45,010.95
Retention	Shaheen	Nicholas	United States Endoscopy Group, Inc		11/2/17	10/31/22	A Prospective Single Arm Multicenter Study Evaluating the Effects of Spray Cryotherapy in Patients with Persistent Local Esophageal Cancer	\$35,596.80
Retention	Shaheen	Nicholas	Lucid Diagnostics		3/30/20	7/31/25	A Multicenter, Single-Arm Study of the Efficacy of EsoGuard on Samples Collected Using EsoCheck versus Esophagogastroduodenoscopy for the Diagnosis of Barrett's Esophagus in an At-Risk Screening Population (EG-CL-101)	\$27,112.90
Retention	Shaheen	Nicholas	Ironwood Pharmaceuticals, Inc.	C3718-302	3/28/19	3/31/24	A Phase 3, Randomized, Double-blind, Placebo-controlled, Parallel-group, Multicenter Trial of Oral IW-3718 Administered to Patients with Gastroesophageal Reflux Disease while receiving Proton Pump Inhibitors	\$15,687.06

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Shaheen	Nicholas	Case Western Reserve University	RES515271	5/17/17	4/30/21	Genetic Determinants of Barrett's Esophagus and Esophageal Adenocarcinoma	\$13,218.00
Retention	Shaheen	Nicholas	CDx Diagnostics, Inc.		10/14/16	10/13/30	The WATS3D (Wide Area Transepithelial Sample Biopsy with 3-Dimensional Computer-Assisted Analysis) U.S. Registry	\$8,960.00
Retention	Shaheen	Nicholas	Fred Hutchinson Cancer Research Center	0001030983	9/4/20	9/3/21	Esophageal Adenocarcinoma Prevention and Control (JEDI Study)	\$6,000.00
Retention	Shaheen	Nicholas	C2 Therapeutics		1/27/16	1/26/25	Coldplay 3: : Multi-Center Clinical Study to Evaluate the Coldplay CryoBalloon Focal Ablation System for the Treatment of Patients with with Previously-Untreated Dysplastic Barrett's Epithelium	\$4,992.00
Retention	Shaheen	Nicholas	United States Endoscopy Group, Inc		3/21/13	3/31/24	CSA 003 truFreeze Spray Cryotherapy Patient Registry	\$3,054.00
Investment (Protocol)	Shea	Thomas	Alliance for Clinical Trials in Oncology		9/11/13	3/5/30	Alliance Prime eIPF	\$46,490.72
Investment (Protocol)	Shea	Thomas	ECOG-ACRIN Cancer Research Group		3/30/15	4/30/25	ECOG - ACRIN Master (LAPS Clinical Trials)	\$18,300.00
Recruitment	Sheeran	Paschal	NIH National Cancer Institute	1-R01-CA242746-01A1	7/1/21	6/30/24	State-of-the-Art Synthesis of Interventions to Promote Quit Intentions and Smoking Cessation	\$320,136.00
Recruitment	Shen	Colette	Nanobiotix S.A.		3/14/19	3/20/29	A Phase I/II Study Of NBTXR3 Activated By Radiation Therapy (SABR) For Patients With Advanced HNSCC or NSCLC Treated with an Anti-PD1 Antibody	\$178,256.72
Recruitment	Sheth	Sid	Merck Sharp and Dohme Corp.		4/15/20	4/26/30	A Phase 3, randomized, placebo-controlled, double-blind clinical study of pembrolizumab (MK-3475) with or without lenvatinib (E7080/MK-7902) to evaluate the safety and efficacy of pembrolizumab and lenvatinib as 1L intervention in a PD-L1 selected populations	\$88,731.25
Recruitment	Sheth	Sid	Inovio Pharmaceuticals, Inc.	RRP-001	1/21/21	1/31/31	An open-label multi-center study of INO-3107 with electroporation (EP) in subjects with HPV-6- and/or HPV-11-associated recurrent respiratory papillomatosis (RRP)	\$32,145.00
Recruitment	Smith	Angie	Bladder Cancer Advocacy Network		10/1/20	9/30/21	Health-Related Quality of Life (HRQOL) outcomes in study TC-BC-12 in patients with LG IR NMIBC.	\$117,422.00
Recruitment	Smith	Angie	University of Washington	PO#BPO38451	2/1/19	1/31/22	Comparison of Intravesical Therapy and Surgery as Treatment Options (CISTO) for Recurrent Bladder Cancer	\$89,270.00
Recruitment	Smitherman	Andrew	Hyundai Hope on Wheels	19-3385	12/31/19	6/30/22	Expression of aging biomarkers and frailty among adolescent and young adult (AYA) cancer survivors	\$66,666.67
Recruitment	Smitherman	Andrew	The Board of Trustees of the University of Alabama	000527577-SC008	3/24/21	2/28/22	Predictors of Systemic Exposure to Oral 6MP During Maintenance in Adolescents and Young Adults with Acute Lymphoblastic Leukemia	\$24,627.00
Innovation Award	Sondek	John	NIH National Institute of General Medical Sciences	5-R01-GM057391-18-21	5/1/98	5/31/22	Regulation of phospholipase C	\$425,572.00
Innovation Award	Sondek	John	Leukemia and Lymphoma Society	8018-20	7/1/19	6/30/21	PLC-? isozymes: unexploited drug targets for the treatment of leukemia and lymphomas	\$323,253.00
Recruitment	Song	Lixin (Lee)	NIH National Institute of Nursing Research	5-R01-NR016990-01-05	9/25/17	6/30/22	Testing the Efficacy of a Couple-focused, Tailored mHealth Intervention for Symptom Self-Management among Men with Prostate Cancer and Their Partners	\$471,163.00
Recruitment	Song	Lixin (Lee)	Mayo Clinic	NCC-259713/PO#67040568	10/18/19	7/31/25	Feasibility Testing of Patient Reported Outcomes-informed Caregiving Education and Symptom management System (PROCESS)	\$15,018.00
Recruitment	Song	Paula	Agency for Healthcare Research and Quality	1-R36-HS027709-01	9/1/20	8/31/21	Skilled nursing facility market dynamics in the era of health reform	\$42,632.00
Recruitment	Spanheimer	Philip	Society of University Surgeons		7/1/20	6/30/21	TFAP2C Regulates Estrogen Responsive Transcriptomic States in Luminal Breast Cancer	\$30,000.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Investment (CYPHR)	Stitzenberg	Karyn	University of Texas Health Science Center at San Antonio	167901/167892	12/1/19	6/30/21	Harnessing the Power of CTSA-CDRN Data Networks: Using Social Determinants of Health, Frailty and Functional Status to Identify At-Risk Patients and Improve Risk Adjustment	\$122,002.00
Innovation Award	Strahl	Brian	NIH National Institute of General Medical Sciences	5-R35-GM126900-01-04	5/1/18	4/30/23	Mechanisms of chromatin and transcriptional regulation	\$584,921.00
Innovation Award	Stürmer	Til	CERobs Consulting, LLC	18-0881-002 21-1847	11/1/20	7/12/21	An Alternative Matching Approach for the Prevalent New User Study Design	\$48,100.00
Investment (HTS)	Sullivan	Patrick	NIH National Institute of Mental Health	5-R01-MH123724-01-02	6/10/20	3/31/25	A Trans-Nordic Study of Extreme Major Depression	\$795,198.00
Investment (HTS)	Sullivan	Patrick	NIH National Institute of Mental Health	1-R01-MH124871-01	4/14/21	2/28/26	1/7 PGC: Advancing Discovery and Impact	\$730,941.00
Investment (HTS)	Sullivan	Patrick	Duke University	A034582	4/1/21	1/31/22	Beyond GWAS: High Throughput Functional Genomics & Epigenome Editing to Elucidate the Effects of Genetic Associations for Schizophrenia	\$392,906.00
Investment (HTS)	Sullivan	Patrick	NIH National Institute of Mental Health	5-R01-MH121545-01-02	9/23/19	7/31/24	2/2-Genetics at an extreme: an efficient genomic study of individuals with clinically severe major depression receiving ECT	\$374,613.00
Investment (HTS)	Sullivan	Patrick	Duke University	283-2497	9/1/18	8/31/21	To support research on the development CRISPR-based epigenome editing tools to refine genome wide association studies	\$192,179.00
Investment (HTS)	Sullivan	Patrick	Karolinska Institute	ZZC8ANALMQ	11/1/15	12/31/24	An International Effort to Advance Knowledge of Schizophrenia	\$137,801.56
Investment (HTS)	Sullivan	Patrick	Duke University	A034195	10/19/20	6/30/21	Duke FUNCTION Center: Pioneering the comprehensive identification of combinational noncoding causes of disease	\$70,924.00
Investment (HTS)	Swanstrom	Ronald	NIH National Institute of Allergy and Infectious Diseases	5-P30-AI050410-19-23	8/20/01	7/31/21	The University of North Carolina Center for AIDS Research	\$5,987,333.00
Investment (HTS)	Swanstrom	Ronald	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI140970-01-04	6/25/18	5/31/23	HIV Evolution Defines Virus-Host/Drug Interactions In Viremic and Aviremic People	\$658,797.00
Investment (HTS)	Swanstrom	Ronald	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI147849-01-02	2/13/20	1/31/25	Formation of the HIV-1 Latent Reservoir	\$592,807.00
Investment (HTS)	Swanstrom	Ronald	NIH National Institute on Drug Abuse	5-R01-DA051890-01-02	7/1/20	3/31/25	Intersection of HIV, Opioids, and Amyloid Fibrils in a CNS Organoid Model	\$325,549.00
Investment (HTS)	Swanstrom	Ronald	University of Michigan	3004653332\PO300615 8186	9/15/17	8/31/21	The Center for HIV RNA Studies (CRNA)	\$219,255.00
Investment (HTS)	Swanstrom	Ronald	University of Massachusetts Medical School	OSP32239-02 WA01036197	9/10/20	6/30/24	Integration of Evolution to Avoid Resistance in Structure Based Drug Design	\$42,763.00
Recruitment	Tan	Ray	American Cancer Society	MRSRG-18-193-01	1/1/19	12/31/23	Designing visual tools to enhance cancer surgeon decision-making	\$184,250.00
Recruitment	Tan	Ray	Altior BioScience		12/18/18	12/31/22	QUILT-3.032: A Multicenter Clinical Trial of Intravesical Bacillus Calmette-Guerin (BCG) in Combination with ALT-803 in Patients with BCG Unresponsive High Grade Non-Muscle Invasive Bladder Cancer	\$37,962.43
Recruitment	Tan	Ray	The Fund for Advancing Cancer Treatment		5/5/21	9/24/21	Multilevel Determinants of Active Surveillance for Low-risk Prostate Cancer.	\$28,000.00
Investment (CC)	Tarantino	Lisa	NIH National Institute on Drug Abuse	5-R21-DA052171-01-02	7/1/20	6/30/22	Rapid identification of cocaine sensitivity genes using a novel reduced complexity cross	\$202,911.00
Investment (CHAI Core)	Tate	Deborah	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK125779-01-02	7/10/20	6/30/25	Optimization of a mHealth Behavioral Weight Loss Intervention	\$658,925.00
Investment (CHAI Core)	Tate	Deborah	NIH National Cancer Institute	5-T32-CA128582-12	9/1/09	8/31/24	Cancer Health Disparities Training Program	\$429,948.00
Investment (CHAI Core)	Tate	Deborah	University of Connecticut	378777 5656810	9/23/19	6/30/24	Using Behavioral Economics Strategies to Address Obesity in Economically Disadvantaged Adults	\$45,000.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Investment (CHAI Core)	Tate	Deborah	University of Virginia	GB10826 PO 2265647	4/22/20	12/31/24	iSIPsmarter: An RCT to evaluate the efficacy, reach, and engagement of a technology-based behavioral and health literacy intervention to reduce sugary beverages among rural Appalachian adults	\$16,230.00
Retention	Thomas	Nancy	NIH National Cancer Institute	5-R01-CA233524-01-02	4/1/20	3/31/25	Identification of Lethal Melanomas at the Time of Diagnosis	\$918,430.00
Retention	Thomas	Nancy	University of New Mexico at Albuquerque	3RCQ4	6/1/17	5/31/22	Primary Melanoma DNA Methylation Profiling for Evaluating Subtypes and Survival (UNC)Integration of Clinical and Molecular Biomarkers for Melanoma Survival (UNM)	\$451,317.00
Recruitment	Thompson	Patrick	National Pediatric Cancer Foundation		7/1/20	6/30/21	The Sunshine Project Protected Effort	\$26,671.00
Recruitment	Thompson	Patrick	H Lee Moffitt Cancer and Research Institute		3/13/20	1/12/22	A Phase Ib/II Study to Evaluate the Safety, Feasibility and Efficacy of Nivolumab or Nivolumab in Combination with Azacitidine in Patients with Recurrent, Resectable Osteosarcoma	\$16,611.00
Recruitment	Thompson	Patrick	H Lee Moffitt Cancer and Research Institute		3/14/18	2/28/22	Phase II Study of nab-Paclitaxel in Combination with Gemcitabine for Treatment of Recurrent/Refractory Sarcoma in Teenagers and Young Adults	\$2,619.00
Recruitment	Thompson	Patrick	H Lee Moffitt Cancer and Research Institute		1/7/16	1/31/24	A Phase I Trial of Dose Escalation of Metformin in Combination with Vincristine, Irinotecan, and Temozolomide in Children with Relapsed or Refractory Solid Tumors	\$1,451.00
Retention	Ting	Jenny	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI141333-01-03	12/14/18	11/30/23	Micro-Particle Delivery of a Potent Intracellular Adjuvant for a Universal Flu Vaccine	\$1,123,350.00
Retention	Ting	Jenny	NIH National Cancer Institute	5-R35-CA232109-02	9/17/19	8/31/26	Intracellular Innate Immune Receptors in Cancer Suppression and Immunotherapy	\$925,890.00
Retention	Ting	Jenny	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI029564-26-29	7/1/91	5/31/23	Molecular and Functional Analysis of NLR Family Members	\$502,378.00
Retention	Ting	Jenny	Duke University	A033420	8/1/20	7/31/21	Innate Immune Receptor Ligand and the Microbiota as Countermeasures for Radiation	\$386,437.00
Retention	Troester	Melissa	NIH National Institute of Environmental Health Sciences	2-P30-ES-010126-20	4/1/21	2/28/26	UNC Center for Environmental Health and Susceptibility	\$1,548,545.00
Retention	Troester	Melissa	NIH National Cancer Institute	1-R01-CA253450-01A1	4/6/21	3/31/26	P53, DNA Repair, and Immune Response in Breast Cancer Mortality Disparities	\$597,226.00
Retention	Troester	Melissa	ECOG-ACRIN Medical Research Foundation	2UG1CA189828-06-UNC1	8/1/18	7/31/21	ECOG-ACRIN NCORP Research Base	\$299,830.00
Retention	Troester	Melissa	Memorial Sloan-Kettering Cancer Center	BD525563	8/1/19	7/31/24	Body Composition and the Obesity Paradox in Clear Cell Renal Cell Carcinoma	\$228,600.00
Retention	Troester	Melissa	American Cancer Society	48195	8/23/17	12/31/22	Gene Expression Profiling of Breast Tumors from Cancer Prevention Study 3	\$136,382.81
Retention	Troester	Melissa	Leidos Biomedical Research, Inc.	X20102M	8/17/17	9/24/21	Blanket Purchase Agreement for Testing Services and Nucleic Acid Extraction	\$70,000.00
Retention	Troester	Melissa	NIH National Cancer Institute	5-F30-CA236199-03	12/13/18	10/12/21	FELLOW:HALEI BENEFIELD The role of estrogen receptor in breast cancer outcomes and the effect of exposure history	\$45,128.00
Retention	Troester	Melissa	NIH National Cancer Institute	1-F31-CA257388-01	3/1/21	2/28/23	FELLOW:A HAMILTON Impact of the Breast Cancer Immune Microenvironment on Racial Disparities and Survivorship	\$37,102.00
Recruitment	Trogdon	Justin	Agency for Healthcare Research and Quality	5-R01-HS025723-01-04	8/1/18	5/31/22	Affordability and Efficiency of the COMprehensive Post-Acute Stroke Services (COMPASS)	\$397,185.00
Recruitment	Trogdon	Justin	NIH National Cancer Institute	1-F30-CA254064-01	7/9/20	7/8/24	FELLOW:NUL L OH Cancer detection and care for dual-eligible beneficiaries in Medicare Shared Savings Program	\$37,546.00
Recruitment	Tsagaratou	Ageliki	NIH National Institute of General Medical Sciences	5-R35-GM138289-01-02	7/1/20	6/30/25	Epigenetic Regulation of Lineage Specification	\$378,288.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Tuchman	Sascha	Roche TCRC, Inc.		6/8/17	6/30/22	Open-label, multicenter, dose-escalation/expansion phase IB study to evaluate safety, pharmacogenetics, and activity of BET inhibitor RO6870810, given as mono- and combination therapy to patients with advanced multiple myeloma	\$100,262.58
Recruitment	Tuchman	Sascha	V Foundation for Cancer Research	DM2021-013	2/15/21	2/15/22	Enhancing underrepresented minority recruitment to clinical trials in multiple myeloma through augmentation of research personnel and infrastructure	\$75,000.00
Recruitment	Tuchman	Sascha	Caelum Biosciences, Inc.	CAEL 101-302	1/11/21	1/19/31	A Phase 3, Double-Blind, Multicenter Study to Evaluate the Efficacy and Safety of CAEL-101 and Plasma Cell Dyscrasia Treatment Versus Placebo and Plasma Cell Dyscrasia Treatment in Plasma Cell Dyscrasia Treatment-Naïve Patients with Mayo Stage IIIa AL Amy	\$49,027.00
Recruitment	Tuchman	Sascha	Sanofi US Services, Inc.		8/24/18	9/9/28	SAR650984 TCD14079 isatuximab A Phase 1b Study of SAR650984 (isatuximab) in Combination with Pomalidomide and Dexamethasone for the Treatment of Relapsed/Refractory Multiple Myeloma	\$32,145.97
Recruitment	Tuchman	Sascha	Karyopharm Therapeutics Inc		10/12/17	9/23/22	A Phase 2b, Open-Label, Single-Arm Study of Selinexor (KPT-330) Plus Low-Dose Dexamethasone (Sd) in Patients with Multiple Myeloma Previously Treated with Lenalidomide, Pomalidomide, Bortezomib, Carfilzomib, and Daratumumab, and Refractory to Prior Treatm	\$13,485.13
Recruitment	Tuchman	Sascha	Incyte Corporation	INCB 01158-206	4/17/19	12/31/21	A Randomized Open-Label Phase 1/2 Study of INCB001158 Combined With Subcutaneous (SC) Daratumumab, Compared to Daratumumab SC, in Participants With Relapsed or Refractory Multiple Myeloma	\$9,506.85
Recruitment	Tuchman	Sascha	Tufts-New England Medical Center	5019026-SERV	9/30/20	5/31/22	Screening to Improve Survival in AL Amyloidosis	\$4,113.00
Recruitment	Valdar	William	NIH National Institute of General Medical Sciences	5-R35-GM127000-01-04	4/1/18	3/31/23	Statistical Modeling of Multiparental and Genetic Reference Populations	\$336,445.00
Recruitment	Valdar	William	NIH National Institute of General Medical Sciences	1-T32-GM135123-01A1	7/1/21	6/30/26	Predocctoral Training Program in Bioinformatics and Computational Biology	\$243,814.00
Recruitment	Valdar	William	Wake Forest University School of Medicine	500-101810-113519	8/1/17	6/30/21	Systems genetics of adiposity traits in outbred rats	\$19,800.00
Recruitment	Van Duin	David	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI143910-01-03	2/13/19	1/31/24	Bacterial Characteristics of Community-associated Carbapenem-Resistant Enterobacteriaceae	\$381,209.00
Recruitment	Van Duin	David	Duke University	A03-4301	12/1/20	11/30/21	ARLG MDRO US	\$164,699.00
Recruitment	Van Duin	David	Duke University	A032999	12/2/19	11/30/20	Antibacterial Resistance Leadership Group	\$135,254.00
Recruitment	Van Duin	David	Duke University	A03-4303	12/1/20	11/30/21	Antibacterial Resistance Leadership Group COC	\$109,586.00
Recruitment	Van Duin	David	The University of Texas Health Science Center at Houston	SA0000976	6/17/20	5/31/25	VENOUS: A translational study of enterococcal bacteremia	\$70,188.00
Recruitment	Van Duin	David	Hackensack Meridian Health	G10063-19030 0000237127	3/1/19	11/30/21	The molecular basis of the carbapenem resistance epidemic	\$56,314.00
Recruitment	Van Duin	David	Duke University	7922 (Site 0091)	10/15/20	11/30/26	MDRO: Study of Highly Resistant Escherichia coli (SHREC)	\$8,300.00
Recruitment	Vaziri	Cyrus	NIH National Cancer Institute	5-R01-CA215347-01-04	2/1/18	1/31/23	Defining Mechanisms of Pathological Trans-Lesion Synthesis during Carcinogenesis	\$518,457.00
Recruitment	Vaziri	Cyrus	NIH National Institute of Environmental Health Sciences	5-R01-ES029079-01-03	2/1/19	11/30/23	Pathological Reprogramming of DNA Damage Signaling in Neoplastic Cells	\$463,301.00
Recruitment	Vaziri	Cyrus	NIH National Cancer Institute	5-R01-CA229530-01-03	4/2/19	3/31/24	Establishing MAGE-A4/RAD18 as a novel cancer-specific chemotherapeutic target	\$402,605.00
Recruitment	Vincent	Benjamin	GeneCentric Therapeutics, Inc.		8/1/20	6/30/23	GeneCentric Development of LENS.	\$650,000.00

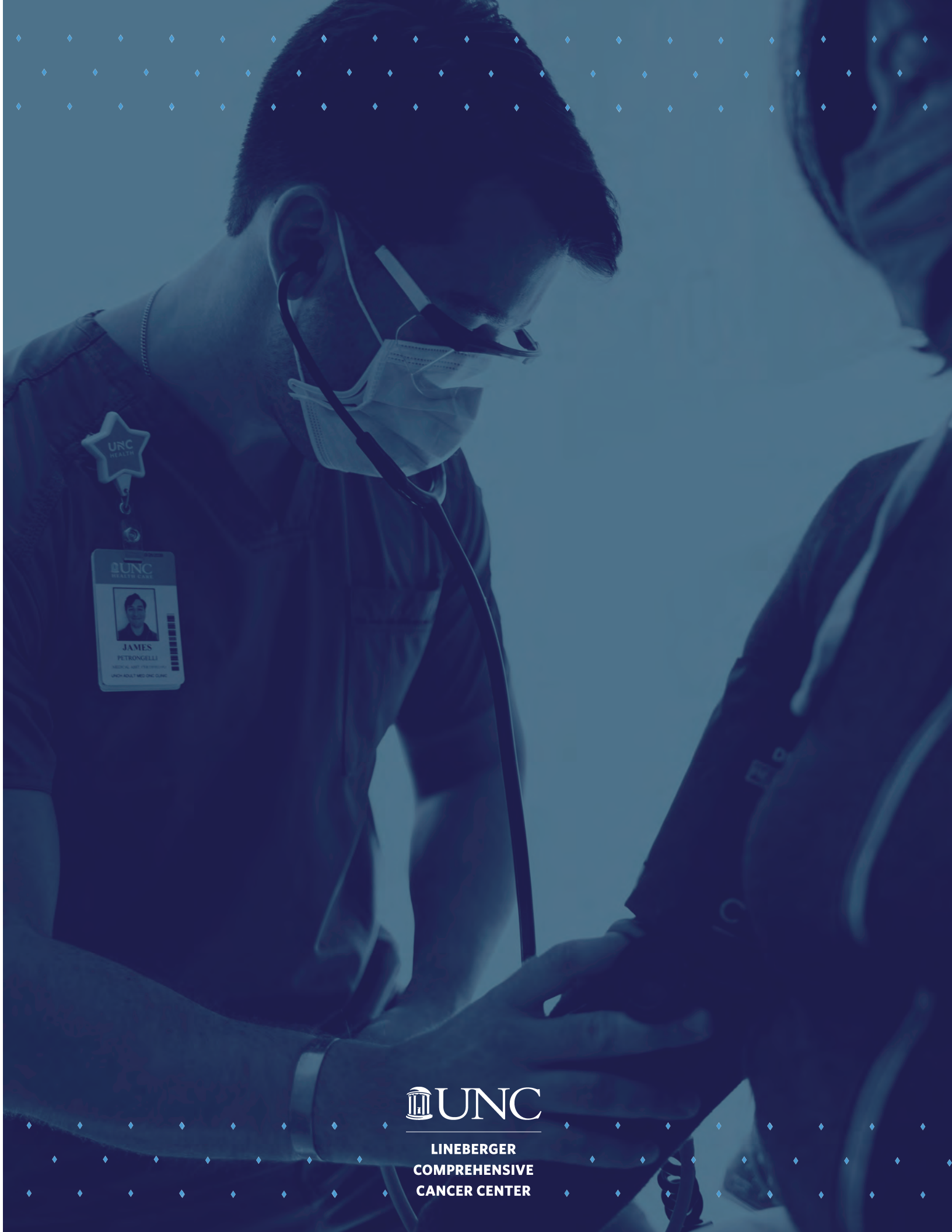
UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Vincent	Benjamin	NIH National Cancer Institute	5-R37-CA247676-01-02	7/1/20	6/30/25	Gvl mHA Specific T Cell Responses Prevent AML Relapse Following Allogeneic Stem Cell Transplantation.	\$525,246.00
Recruitment	Vincent	Benjamin	Sage Bionetworks		9/1/20	2/28/22	CRI Immune Atlas: Platform for immuno-oncology research and data sharing	\$250,000.00
Recruitment	Vincent	Benjamin	V Foundation for Cancer Research	T2018-009	11/1/18	11/1/21	Immunotherapy to treat Triple Negative Breast Cancer Brain Metastases	\$200,000.00
Recruitment	Vincent	Benjamin	American Association for Cancer Research	20-40-12-TSCH	8/1/20	7/31/21	Nicholas Tschernia - 2020 AACR-AstraZeneca Clinical Immuno-oncology Research Training Fellowship	\$100,000.00
Recruitment	Vincent	Benjamin	American Society of Hematology		7/1/20	6/30/21	Computational modeling of class II minor histocompatibility antigen presentation in leukemia relapse and graft-versus-host disease	\$5,000.00
Recruitment	Wan	Yisong	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI160774-01	1/16/21	12/31/25	TGF-b superfamily signaling in controlling Th17 cell function in autoimmune neuroinflammation	\$383,339.00
Recruitment	Wan	Yisong	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI123193-01-05	12/12/16	11/30/21	Functional protein networks underlying T cell growth, proliferation and differentiation	\$377,975.00
Recruitment	Wan	Yisong	National Multiple Sclerosis Society	RG-1802-30483	10/1/18	9/30/22	Targeting T Cell Function to Halt MS/EAE Development	\$155,337.88
Recruitment	Wang	Andrew	Archimmune Therapeutics		3/1/20	2/28/22	Identification of Novel Nanoparticle-Based Therapeutics for Immunotherapy of Cancer	\$511,216.00
Recruitment	Wang	Andrew	NIH National Institute of General Medical Sciences	5-R01-GM130590-01-03	2/1/19	11/30/22	Basement Membrane Targeted Nanoparticles for Post-Surgical Adhesion Prevention	\$373,205.00
Recruitment	Wang	Andrew	University of Illinois Board of Trustees	092585-17169	8/15/18	4/30/22	Targeting through Selective Cell Labeling	\$182,174.00
Recruitment	Wang	Andrew	Varian Medical Systems, Inc.		8/15/20	8/15/22	Radiation Guided Innate Immunotherapy with Dual-Immunotherapy Nanoparticles	\$152,670.00
Retention	Wang	Greg	NIH National Cancer Institute	5-R01-CA211336-01-05	2/1/17	1/31/22	Cancer Epigenetics: A Novel PRC2 Dysregulation Mechanism in Multiple Myeloma	\$390,643.00
Retention	Wang	Greg	NIH National Cancer Institute	5-R01-CA215284-01-05	4/1/17	3/31/22	Determining the Role of DNA Methylation Dereglulation in Oncogenesis	\$348,584.00
Retention	Wang	Greg	Icahn School of Medicine at Mount Sinai	0255-3281-4609	6/8/17	5/31/22	Targeting Lysine Methyltransferases EZH2 and EZH1 for Treating MLL-rearranged Leukemias	\$249,644.00
Retention	Wang	Greg	Leukemia and Lymphoma Society	1363-19	7/1/18	6/30/23	Decipher and Target AML Cell Dependency on Epigenetic Mutations	\$24,355.70
Innovation Award	Waters	Marcey	National Science Foundation	CHE-2107685	7/1/21	6/30/24	Cooperativity Driven Communication through Noncovalent Networks in Biomimetic Systems	\$480,000.00
Innovation Award	Waters	Marcey	NIH National Institute of General Medical Sciences	5-R01-GM118499-01-04	9/1/17	8/31/21	Origins of Ligand Binding and Selectivity in Methyllysine Reader and Writer Proteins	\$286,878.00
Innovation Award	Weiner	Ashley	H Lee Moffitt Cancer and Research Institute		5/17/19	7/10/29	Radiation and Chemotherapy with Ipilimumab followed by Nivolumab for Patients with Stage III Unresectable NSCLC	\$34,061.51
Retention	Weiss	Jared	Loxo Oncology, Inc.		5/29/18	6/14/28	A Phase 1 Study of Oral LOXO-292 in Patients with Advanced Solid Tumors, Including RET-Fusion Non-Small Cell Lung Cancer, Medullary Thyroid Cancer and Other Tumors with Increased RET Activity	\$516,924.10
Retention	Weiss	Jared	Mirati Therapeutics, Inc		7/12/19	8/31/29	A Phase 1/2 Multiple Expansion Cohort Trial of MRTX849 in Patients with Advanced Solid Tumors with KRAS G12C Mutation	\$401,277.17
Retention	Weiss	Jared	Bluebird bio, Inc.	BBB47141US MAGE-A4-TCR	12/1/19	11/30/29	Phase 1 Study of the Administration of Autologous MAGE-A4 TCR T-cells for Relapsed/Refractory Solid Tumors	\$123,812.70

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Weiss	Jared	Merck Sharp and Dohme Corp.		5/26/16	6/6/25	A Randomized, Non-comparative Three Arm Phase II Trial of Sequential Consolidation with Pembrolizumab followed by Nab-paclitaxel, Sequential Consolidation with Nab-paclitaxel followed by Pembrolizumab and Concurrent Consolidation with Nab-paclitaxel and P	\$101,868.24
Retention	Weiss	Jared	V Foundation for Cancer Research	D2018-034	9/15/18	9/15/21	Targeting GD2 Ganglioside in Small Cell Lung Cancer	\$100,000.00
Retention	Weiss	Jared	Boston Biomedical, Inc.		2/6/19	2/10/29	A First-in-Human Phase I Trial to Determine the Safety and the Pharmacokinetic Profile of DSP-0509, a Synthetic Toll-Like Receptor 7 (TLR-7) Agonist, in Adult Patients with Advanced Solid Tumors	\$96,528.10
Retention	Weiss	Jared	Immunicum AB.		2/28/19	3/5/29	A randomized, open-label, multicenter, phase 1b/2 trial evaluating the safety and efficacy of intratumorally-administered ilixadencel in combination with checkpoint inhibitor (CPI) in advanced cancer subjects who are candidates for CPI therapy	\$73,626.56
Retention	Weiss	Jared	Astellas Pharma Global Development, Inc.		5/15/12	12/31/20	Phase II Study Of Stereotactic Radiosurgery or Other Local Ablation Followed by Erlotinib for Patients with EGFR Mutation Who Have Previously Progressed on an EGFR-TKI	\$65,213.47
Retention	Weiss	Jared	AstraZeneca Pharmaceuticals LP		4/28/17	8/31/22	Multimodality Therapy with Induction Carboplatin/nab-Paclitaxel/Durvalumab (MEDI4736) Followed by Surgical Resection and Risk-adapted Adjuvant Therapy for the Treatment of Locally-Advanced and Surgically Resectable Squamous Cell Carcinoma of the Head and	\$57,468.00
Retention	Weiss	Jared	Merck Sharp and Dohme Corp.		12/7/15	12/2/21	Pembrolizumab and Radiation for Locally Advanced Squamous Cell Carcinoma of the Head and Neck (SCCHN) not Eligible for Cisplatin Therapy	\$43,486.15
Retention	Weiss	Jared	Boehringer Ingelheim Pharmaceuticals, Inc.	1426-0001	12/14/20	12/20/30	Phase I, first in human trial evaluating BI 1387446 alone and incombination with BI 754091 in solid tumors	\$43,275.00
Retention	Weiss	Jared	Pfizer International, LLC		8/27/13	8/26/21	Phase 1 Safety, Pharmacokinetic and Pharmacodynamic Study of PF-02341066, A C-Met/HGRF Selective Tyrosine Kinase Inhibitor, Administered Orally to Patients with Advanced Cancer	\$27,756.33
Retention	Weiss	Jared	PDS Biotechnology Corporation	VERSATILE-002	1/19/21	1/19/31	Versatile-002: A Phase II, Open-Label, Multi-Center Study of PDS0101 (ImmunoMAPK - RDOTAP/HPV-16 E6 & E7 Peptides) and Pembrolizumab (KEYTRUDA®) Combination Immunotherapy as a First Line Treatment in Subjects with Recurrent and/or Metastatic Head and Neck	\$6,754.56
Retention	Weiss	Jared	Criterium Inc.		9/9/19	8/31/20	Treatment Patterns, Mechanisms of Resistance and Outcomes among patients with EGFR, ALK and ROS1 Translocated Non-Small Cell Lung Cancer: An ATOMIC Consortium Analysis	\$5,040.00
Retention	Weiss	Jared	G1 Therapeutics		1/29/16	1/30/26	Phase 1b/2a Safety and Pharmacokinetic Study of G1T28 in Patients with Extensive-Stage Small Cell Lung Cancer (SCLC) Receiving Etoposide and Carboplatin Chemotherapy	\$3,937.64

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Weiss	Jared	AstraZeneca Pharmaceuticals LP		1/14/16	1/13/21	A Phase III Randomized, Open-label, Multi-center, Global Study of MEDI4736 in Combination with Tremelimumab versus Standard of Care in the Treatment of First-line Recurrent or Metastatic Squamous Cell Head and Neck Cancer Patients	\$3,750.00
Retention	Weiss	Jared	AstraZeneca Pharmaceuticals LP		1/13/20	3/22/30	An Open-Label, Multi-Center, Global Study to Evaluate Long Term Safety and Efficacy in Patients Who are Receiving or Who Previously Received Durvalumab in Other Protocols (WAVE)	\$1,097.61
Recruitment	Wheeler	Stephanie	NIH National Cancer Institute	5-R01-CA237357-01-02	9/1/19	8/31/24	Optimizing Endocrine Therapy Adherence through Motivational Interviewing and Text Interventions	\$627,407.00
Recruitment	Wheeler	Stephanie	NIH National Cancer Institute	5-R01-CA240092-01-02	8/15/19	7/31/23	Addressing Cancer-Related Financial Toxicity In Rural Oncology Care Settings	\$488,485.00
Recruitment	Wheeler	Stephanie	Duke University		6/3/21	6/3/23	Population-level incidence, treatment, and outcomes of patients with HER2 indeterminate breast cancer	\$138,132.00
Recruitment	Wheeler	Stephanie	Yale University	CON-80002965 (GR112429)	1/1/21	12/31/23	Disparities in the Use of Oral Anticancer Agents in Kidney Cancer	\$117,936.00
Recruitment	Wheeler	Stephanie	Alliance for Clinical Trials in Oncology	202010116	9/1/20	8/31/23	Optimizing Endocrine Therapy Adherence - Pillsy Cap Shipping	\$82,348.00
Recruitment	Wheeler	Stephanie	Duke University	A031031	1/1/19	12/31/23	Disparities in the Use of Oral Anticancer Agents in Kidney Cancer	\$39,305.33
Investment (HTSF)	Whitmire	Jason	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI143894-01-03	2/1/19	1/31/24	Regulation of CD8+ T cell responses to chronic virus infection	\$500,892.00
Investment (HTSF)	Whitmire	Jason	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI138337-01-03	9/1/18	8/31/23	Obesity associated viral pathogenesis	\$388,750.00
Investment (HTSF)	Whitmire	Jason	Duke University	A033980	9/1/20	2/28/22	Natural killer cell cytotoxicity against intracellular bacteria	\$76,023.00
Investment (HTSF)	Whitmire	Jason	University of California at Los Angeles	2301 G XG379	2/15/20	1/31/24	Epigenetic Mechanisms in Type 1 Diabetes	\$40,467.00
Recruitment	Williams	David	Virginia Commonwealth University	FP00007299_SA001	8/1/18	6/30/23	The role of the MBD2-NuRD complex in globin gene silencing	\$328,069.00
Recruitment	Williams	Scott	NIH National Institute of Arthritis and Musculoskeletal and Skin Diseases	1-R01AR077591-01A1	3/1/21	2/28/26	Intrinsic and extrinsic spindle orientation mechanisms in mammalian epidermis	\$337,338.00
Recruitment	Williams	Scott	US-Israel Binational Science Foundation	2019230	10/1/20	9/30/24	Exploring the involvement of the actin cytoskeleton and its associated adhesion structures in spindle orientation	\$153,600.00
Recruitment	Willson	Tim	Millennium Pharmaceuticals, Inc.	20-4838 8000260829	5/1/20	4/30/22	Identification of kinase inhibitors as therapies for SARS-CoV-2 and future pandemic viruses	\$500,000.00
Recruitment	Willson	Tim	Duke University	3130816	6/15/18	1/31/22	Cancer cell intrinsic and extrinsic actions of steroid hormones in breast tumors	\$357,000.00
Recruitment	Willson	Tim	Structural Genomics Consortium		9/30/18	9/30/22	Structural Genomics Consortium Grant Funding	\$262,500.00
Recruitment	Willson	Tim	Seattle Children's Hospital Research Institute	12492SUB	9/22/20	8/31/21	Dual targeting of Mtb resistance mechanisms	\$155,500.00
Recruitment	Willson	Tim	University of Cape Town	UCT31220	4/3/20	3/31/25	Repurposing kinase inhibitor chemotypes as antimalarials	\$76,859.00
Recruitment	Willson	Tim	Agora Open Science Foundation	AOST-M4ND-002A	7/1/20	6/30/21	Chemical Probes of the WDR41-C9ORF72-SMARC8 complex to enable discovery of therapies for Frontotemporal Dementia	\$51,137.00
Theme Investment	Wiltshire	Tim	North Carolina State University	2011-2427-05	4/1/17	3/31/21	Genetic Etiology of Cancer Drug Response	\$307,804.00
Recruitment	Wood	William	University of Vermont	AWD288SUB00000136	9/1/20	7/31/21	Understanding risk factors and burden of COVID-19 related thrombosis and/or bleeding complications	\$99,361.00
Recruitment	Wood	William	Pfizer International, LLC	CP206145 / WI244321	12/18/18	8/31/21	LCCC 1851: Digital Assessment of Functional Endpoints in Adults with Cancer: an Observational Study	\$73,372.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Wood	William	National Marrow Donor Program		8/6/19	7/31/22	BMT CTN 1704 - Composite Health Assessment Model for Older Adults: Applying Pre-transplant Comorbidity, Geriatric Assessment, and Biomarkers to Predict Non-Relapse Mortality after Allogeneic Transplantation (CHARM)	\$12,642.00
Recruitment	Wood	William	Vanderbilt University Medical Center	VUMC 71409	1/15/19	8/31/21	Identifying Cost and Coverage to Medicare Beneficiary Access to Specialty Drugs	\$5,000.00
Recruitment	Yarbrough	Wendell	NIH National Institute of Dental and Craniofacial Research	1-U01-DE029754-01	7/1/20	4/30/25	Observational study to validate HPV DNA genotyping and prognostic genomic biomarkers for diagnosis and treatment of HPV-associated HNSCC	\$811,123.00
Recruitment	Yarbrough	Wendell	NIH National Institute of Dental and Craniofacial Research	5-R01-DE027942-01-03	6/1/19	7/31/24	Exploring mechanisms of therapeutic demethylation effects in HPV-associated head and neck cancer	\$404,678.00
Recruitment	Yarbrough	Wendell	Yale University	GR111356 (CON-80002795)	7/1/20	6/30/25	Yale SPORE in HN Cancer	\$165,090.00
Retention	Yeh	Jen Jen	NIH National Cancer Institute	5-R01-CA199064-01-05	8/1/16	7/31/21	Tumor subtypes and therapy response in pancreatic cancer	\$824,656.00
Retention	Yeh	Jen Jen	NIH National Cancer Institute	5-T32-CA244125-02	9/20/19	8/31/24	UNC Integrated Translational Oncology Program (UNC-iTOP)	\$579,408.00
Retention	Yeh	Jen Jen	Princeton University	SUB0000166	9/15/16	8/31/21	Pathway and Network Integration of Cancer Genomics and Clinical Data	\$83,000.00
Retention	Yeh	Jen Jen	NIH National Cancer Institute	1-F31-CA257224-01	2/1/21	1/31/24	FELLOW:S ZARMER Identifying targets for combination therapy with FOLFIRINOX and investigating cell polarity loss as a potential driver of invasion in basal-like PDAC	\$34,454.00
Retention	Yeh	Jen Jen	University of Rochester	SUB00000039/ UR FAO GR530287	1/1/21	12/31/23	Modulating innate immune cells in the tumor microenvironment of pancreas cancer to enhance anti-tumor immunity	\$32,411.00
Recruitment	Zamboni	William	NIH National Cancer Institute	1-R01-CA247652-01A1	4/1/21	3/31/26	Minibeam Radiation Therapy Enhanced Delivery of Nanoparticle Anticancer Agents to Pancreatic Cancer Tumors	\$569,509.00
Recruitment	Zamboni	William	Glytlys, LLC		1/10/17	1/9/21	Glytlys Exploratory Analysis to Address Whether the Mononuclear Phagocyte System (MPS)	\$96,659.00
Recruitment	Zamboni	William	Meryx, Inc.		2/1/18	2/1/22	Quantitation of MRX-2843 and metabolite M40 in plasma in a phase I dose-escalation study of the safety, pharmacokinetics, and pharmacodynamics of MRX-2843 in adult subjects with relapsed/refractory advanced and/or metastatic solid tumors	\$30,132.50
Recruitment	Zeidner	Joshua	Forty Seven Inc.		2/28/20	3/3/30	A Phase 1b Trial of Hu5F9-G4 Monotherapy or Hu5F9-G4 in Combination with Azacitidine in Patients with Hematological Malignancies	\$380,055.09
Recruitment	Zeidner	Joshua	Millennium Pharmaceuticals, Inc.		10/1/19	10/31/31	A Phase 1 Study of Pevonedistat in Combination With Azacitidine in Patients With Higher-Risk Myelodysplastic Syndromes, Chronic Myelomonocytic Leukemia, or Relapsed/Refractory Acute Myelogenous Leukemia With Severe Renal Impairment or Mild Hepatic Impairment	\$288,845.17
Recruitment	Zeidner	Joshua	Tolero Pharmaceuticals, Inc.		12/11/19	11/20/29	A Phase 2, Open-label, Randomized, Two-stage Clinical Study of Alvocidib in Patients with Relapsed/Refractory Acute Myeloid Leukemia Following Treatment with Venetoclax Combination Therapy.	\$263,735.60

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Zeidner	Joshua	Millennium Pharmaceuticals, Inc.		8/22/18	9/11/28	Pevonedistat-3001 A Phase 3, Randomized, Controlled, Open-label, Clinical Study of Pevonedistat Plus Azacitidine versus Single-Agent Azacitidine as First-Line Treatment for Patients With Higher-Risk Myelodysplastic Syndromes, Chronic Myelomonocytic Leukem	\$180,351.57
Recruitment	Zeidner	Joshua	Tolero Pharmaceuticals, Inc.		12/20/18	1/20/29	TPI-ALV-102: A Phase 1b/2, Open-label Clinical Study to Determine Preliminary Safety and Efficacy of Alvocidib When Administered in Sequence After Decitabine in Patients with MDS	\$157,587.20
Recruitment	Zeidner	Joshua	Merck Sharp and Dohme Corp.		12/18/15	1/13/22	Phase 2 Study of High Dose Cytarabine Followed by Pembrolizumab in Relapsed and Refractory Acute Myeloid Leukemia	\$70,662.73
Recruitment	Zeidner	Joshua	Astex Pharmaceuticals	ASTX660-02	8/18/20	8/31/30	A Phase 1, Parallel, Open-Label Study of the Safety and Tolerability, Pharmacokinetics, and Antileukemic Activity of ASTX660 as a Single Agent and in Combination with ASTX727 in Subjects with Acute Myeloid Leukemia.	\$44,808.00
Recruitment	Zeidner	Joshua	Analysis Group, Inc.		3/10/20	7/6/30	A center-based chart review study to assess treatment outcomes of venetoclax for the treatment of acute myeloid leukemia	\$7,168.00
Recruitment	Zeidner	Joshua	Sumitomo Dainippon Pharma Oncology, Inc.		1/9/18	1/31/23	Phase 1, Open-label, Dose-escalation, Safety and Biomarker Prediction of Alvocidib and Cytarabine/Daunorubicin (7+3) in Patients with Newly Diagnosed Acute Myeloid Leukemia (AML)	\$5,462.00
Recruitment	Zeidner	Joshua	Tolero Pharmaceuticals, Inc.		11/30/15	1/31/22	A Phase 2, Randomized, Biomarker-driven, Clinical Study in Patients with Relapsed or Refractory Acute Myeloid Leukemia (AML)	\$5,236.00
Recruitment	Zeidner	Joshua	Millennium Pharmaceuticals, Inc.	218558	8/22/16	8/21/29	A Ph 2, Random, Control Opn-Lbl, Clinical Sdy of the Efficacy & Safety of Pevonedistat Plus Azacitidine Versus Single-Agent Azacitidine in Patients With Higher-Risk Myelodysplastic Syndromes, Chronic Myelomonocytic Leukemia, and Low-Blast Acute Myelogeno	\$2,404.80
Recruitment	Zhang	Qi	NIH National Institute of General Medical Sciences	2-R01-GM114432-06	5/1/15	1/31/25	Riboswitch Dynamics at Atomic Resolution	\$353,232.00
Recruitment	Zhang	Qi	National Science Foundation	MCB-1652676	2/15/17	1/31/22	CAREER: RNA conformational dynamics in the regulation of microRNA biogenesis	\$197,487.00
Theme Investment	Zhou	Otto	NIH National Cancer Institute	5-F30-CA235892-03	1/1/19	12/31/22	FELLOW:A PUETT Improved cancer screening with synthetic and stationary 3D mammography	\$49,576.00
Theme Investment (Biostatistics)	Zou	Fei	Fred Hutchinson Cancer Research Center	0001017395	1/17/19	12/31/21	Statistical Methods for RNA-seq Data Analysis.	\$85,204.00



LINEBERGER
COMPREHENSIVE
CANCER CENTER