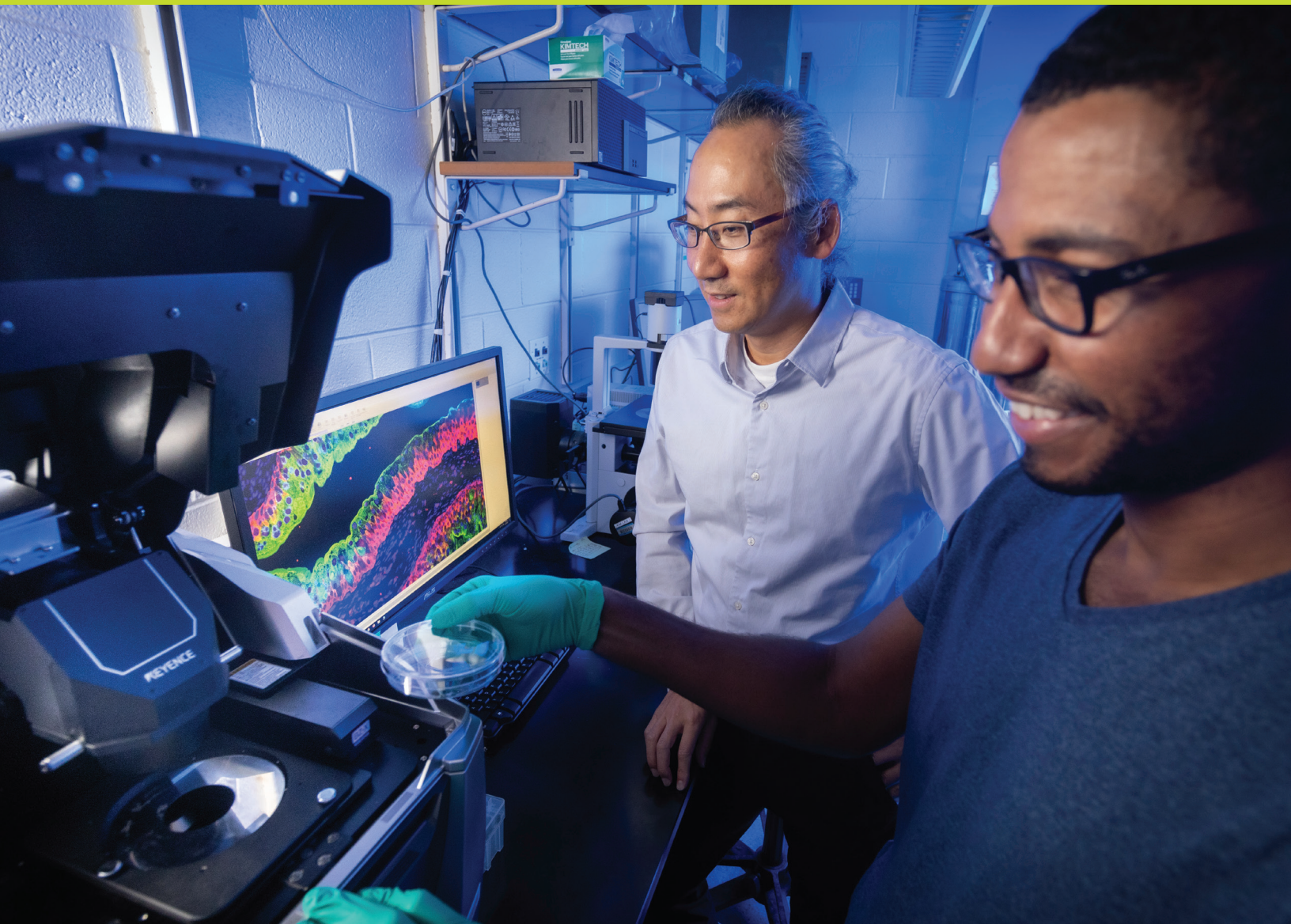


UNIVERSITY CANCER RESEARCH FUND 2022 LEGISLATIVE REPORT



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

Submitted November 1, 2022 in accordance with G.S.116-29.1



**LINEBERGER
COMPREHENSIVE
CANCER CENTER**

LETTER FROM THE CHAIR

As chair of the University Cancer Research Fund Committee, I am pleased to share this year's annual legislative report on the University Cancer Research Fund (UCRF), the State's landmark investment in cancer care and research.

Since its creation by the North Carolina General Assembly in 2007, the UCRF has had an ongoing and growing positive impact on North Carolina, both in fueling innovative research that advances our understanding of a disease that touches far too many patients and families in North Carolina and across the world and in generating significant economic benefits for our state.

Among the benefits highlighted in this year's report are:

- The recruitment and retention of 31 outstanding faculty members who are experts in their fields;
- A direct and indirect economic impact of \$740 million, including external research grants totaling more than \$250 million;
- State and local tax revenues of \$23.4 million generated by UCRF activities;
- And a nearly 12-to-1 return on the state's investment this year alone.

The UCRF allows for strategic focus on our key research priorities – cancer genetics, therapies, and prevention, early detection and outcomes – and enables us to serve patients and communities across our state through community-focused research and engagement projects as well as shared resources such as virtual tumor boards and practitioner training programs. Together, our research, clinical care and outreach aim to improve cancer prevention, diagnosis and treatment for the benefit of patients living in all 100 counties in North Carolina.

None of this would be possible without the General Assembly's foresight in its creation and sustained backing of the UCRF, which has propelled UNC Lineberger and UNC Health's global leadership in cancer care and research. On behalf of cancer patients throughout our entire state – and on behalf the researchers, clinicians and caregivers working toward eliminating this disease entirely – thank you for your ongoing support.

Kevin M. Guskiewicz



Chancellor

Chair, Cancer Research Fund Committee

INTRODUCTION



In 2007, the General Assembly made a landmark investment in cancer care and research: It created the University Cancer Research Fund, using a combination of state appropriations, tobacco settlement funds, and taxes on snuff and other non-cigarette tobacco products to fund it. The legislature consolidated all earmarked tobacco settlement monies into the General Fund in 2013, eliminating that funding stream as a source of UCRF support. UCRF revenue from non-cigarette tobacco product sales varies year by year depending on sales, and the total 2022 allocation to the UCRF was \$59.5 million.

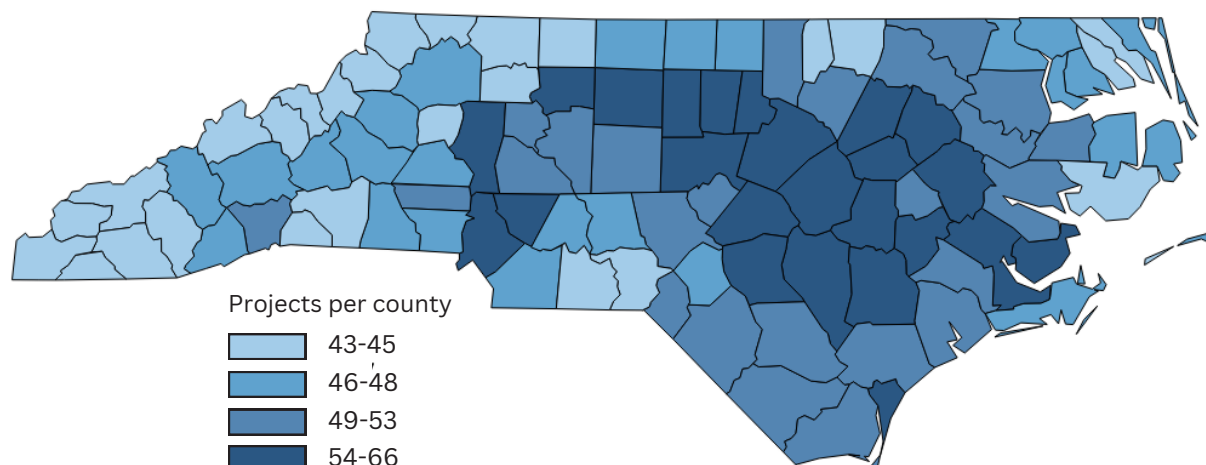
The General Assembly also established the Cancer Research Fund Committee to ensure that UCRF funds are invested responsibly and meaningfully. The Committee (see the Appendix for committee membership) provides ongoing oversight and adheres to a strategic plan that focuses UCRF resources in areas where they can have optimal impact:

- Strategic research priorities in genetics, novel therapies, and prevention, early detection and outcomes;
- Clinical excellence through selective opportunities that enable UNC Lineberger 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.

As complements to the UCRF's ongoing support of research and infrastructure, the General Assembly also made two major capital investments in cancer care. The N.C. Basnight Cancer Hospital was funded by the legislature in 2004 and opened in 2009. (In 2021, more than 250,000 outpatient visits, primarily by residents of all 100 North Carolina counties, were made at the hospital, UNC Lineberger's clinical home, and its affiliated clinics.) Funds to construct the Biomedical Research Imaging Building were approved in 2010; the cutting-edge collaborative research facility, now named Marsico Hall, opened in 2014 to provide advanced equipment and technology that further accelerates cross-disciplinary research capabilities.

The Cancer Research Fund Committee has published regular reports on UCRF-supported activities since 2008. In 2011 the legislature required annual financial reports that include the UCRF's effects on the state's economy, budget and expenditure details, information on external funds leveraged by UCRF support, and other performance measures. As these reports have shown, the University Cancer Research Fund has generated significant economic and health benefits that continue to grow as UNC Lineberger remains a global leader in the fight against cancer.

OUTREACH ACROSS NORTH CAROLINA



Cancer Data Resources

- Cancer Information and Population Health Resource (CIPHR)
- Lung Cancer Screening Registry
- Carolina Senior Registry
- Carolina Breast Cancer Study Drug resistance in ovarian cancer

Understanding Cancer Disparities

- Access to and Value of Treatment Innovation Study
- Well Empowered
- Community-based breast cancer screening and surveillance
- Equity in virtual oncology visits
- Navigation to increase minority enrollment and retention in clinical trials
- Enhancing comparative effectiveness research
- Racial disparities hot-spotting to improve breast cancer outcomes
- Increasing minority recruitment in multiple myeloma clinical trials
- GMAP: Geographic Management of Cancer Health Disparities Program
- CDC colorectal cancer simulation modeling
- Treatment disparities in kidney cancer
- Bladder cancer survivorship
- Cancer disparities among American Indians
- Breast cancer treatment access and outcomes among Black women
- Breast Cancer Mortality Disparities
- Biology of breast cancer in Black women
- Southern Liver Health Cohort

Cancer Screening

- Comparison of multiple FIT tests for detecting colorectal cancer
- Comorbidity in those undergoing lung cancer screening
- Breast cancer sociodemographic disparities study
- SCORE: Scaling Colorectal Cancer Screening Through Outreach, Referral, and Engagement
- Carolina Cancer Screening Initiative
- Digital outreach intervention for lung cancer screening

Cancer Survivorship

- Physical activity intervention with Black colorectal cancer survivors
- Navigator-assisted ecomaps to support rural cancer caregivers
- Cancer Transitions
- Exercise therapy for endometrial cancer
- Efficacy of mHealth intervention for prostate cancer patients and partners
- Couple-focused mHealth Intervention for prostate cancer symptom management
- Interactive Prostate Cancer Information, Communication and Support Program
- mHealth physical activity intervention for Adolescent and Young Adult (AYA) cancer survivors
- Implementing financial navigation in NC
- Intervention to increase endocrine therapy adherence
- Pillsy cap shipping to optimize endocrine therapy adherence
- Addressing financial toxicity in rural oncology

Clinic-based Prevention

- EMR-integrated referrals to community services to promote equity
- Duke-UNC Tobacco Treatment Specialist program
- My Body My Test

Community-based Prevention/Education

- Understanding vaping among the vulnerable
- AFIX and physician-to-physician engagement on HPV vaccination
- UNC Superfund Research Community Engagement Core
- Impact of e-cigarette prevention messages ASPIRE: Advancing Science & Practice in the Retail Environment
- Durham Health Ambassador Program
- Outreach to K-12 science students
- Outreach to underrepresented STEM students
- Pancreatic Cancer Open Houses
- Caregiver & COVID Project
- Fort Bragg Tobacco Control Initiative
- Increasing BIPOC representation in clinical research

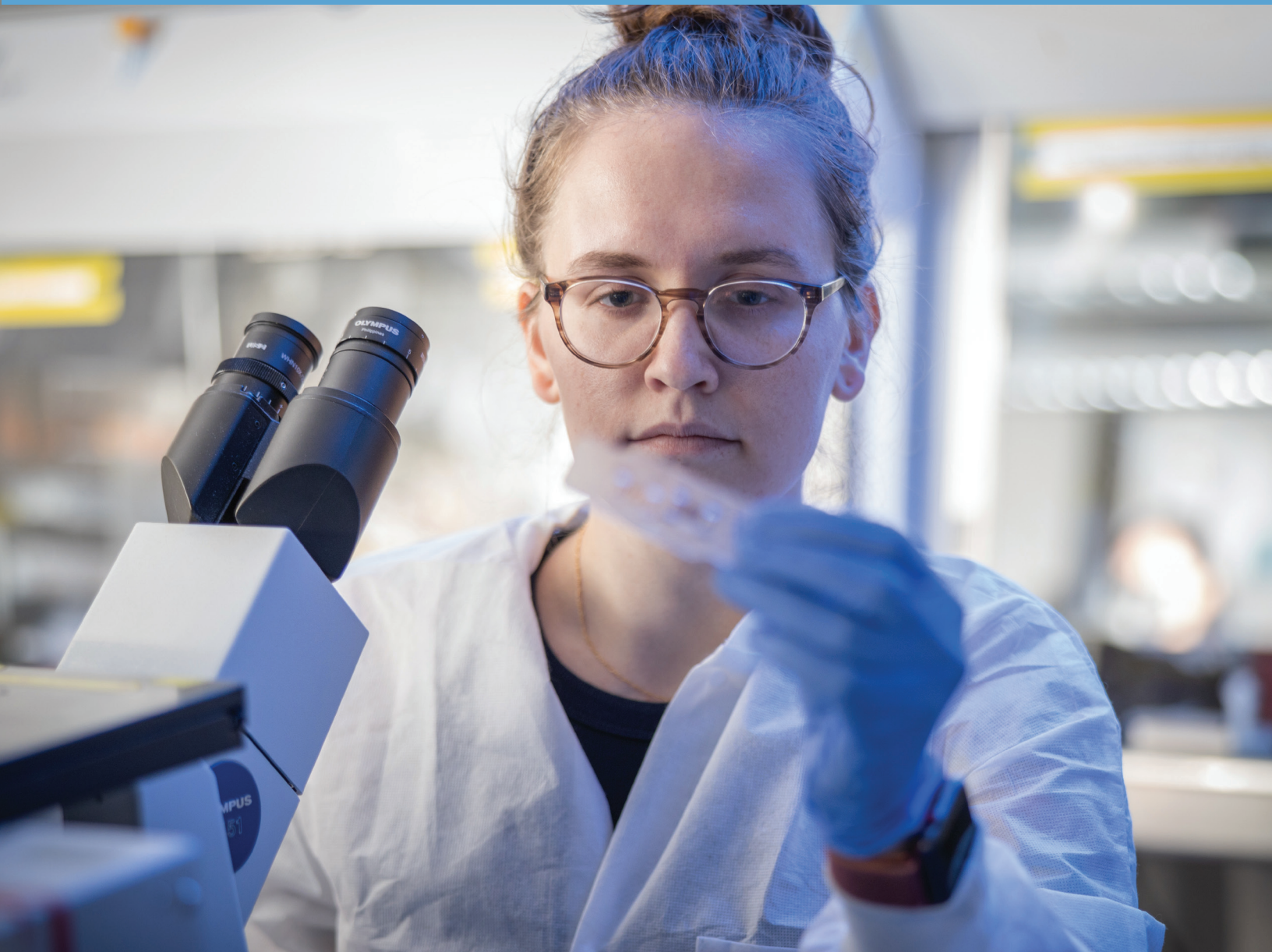
Improving Treatment Outcomes

- Patient-Reported Outcomes-based Performance Measures
- Comparison of operative to medical endocrine therapy for DCIS
- Chemotherapy and cognitive decline in acute leukemia
- Palliative care intervention for new acute myeloid leukemia patients
- Exercise program for acute leukemia patients
- Mobile health app to promote participation of Black women in breast cancer clinical trials
- Patient Priorities after Thoracic Surgery
- Care gaps and needs in adolescent and young adult cancers
- Testing a prognostic calculator in patients with breast cancer
- Improving breast cancer care through navigation and collaborative partnerships
- Preferences for treatment outcomes in older AM leukemia patients
- Reducing breast cancer mortality by removing barriers to care
- Funding patient transportation
- UNC Cancer Network telehealth lectures
- UNC Cancer Network eTumor Boards
- Impact of race and age on breast cancer treatment
- Oncology Navigation to enhance equity
- System for risk differences in patients with lung cancer
- Improving treatment adherence using patient-centered pharmacy
- Improving treatment adherence using patient-centered pharmacy for older adults
- Improving Provider Announcement Communication Training (IMPACT)
- Remote monitoring of leukemia and lung cancer patients

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

As in years past, UNC Lineberger hired the nationally respected consulting firm Tripp Umbach to estimate the UCRF's economic impact for Fiscal Year 2022. The Fund's overall economic impact was estimated as the sum of its direct, 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.

The UCRF's total allocation for FY 2022 was \$59.5 million. Using standard methodologies, Tripp Umbach estimated that in FY 2022 the UCRF:

- Had an overall economic impact of \$740 million, including \$375.7 million in direct spending and \$364.3 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 3,563 jobs, including the direct support of 1,433 jobs and an additional 2,103 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 more than \$23.4 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

At the core of the UCRF's successes are the outstanding faculty who hire staff, train students and fellows, purchase equipment, and earn research funds from other sources both inside and outside North Carolina. Their innovative, groundbreaking research yields important scientific and clinical advancements that lead to earlier detection and diagnosis, more effective treatments, and better prevention programs. More than 350 world-class leaders in their fields have been recruited or retained with UCRF support since the Fund was created.

- **Recruitment:** The UCRF has supported the recruitment of 24 faculty this year and 281 since 2007. These faculty are delivering quality cancer care for patients and developing a wide range of research programs in areas that are critical to improving cancer prevention, diagnosis and treatment in our state.
- **Retention:** UCRF support has enabled the retention of 7 faculty this year and 73 since 2007, allowing top talent to stay at UNC Lineberger where they can continue their research and clinical care.

ECONOMIC IMPACTS

Extramural Funding Growth

A key measure of success in the Cancer Research Fund Committee's strategic plan is extramural research funding, particularly competitive federal funding. The UCRF is keeping UNC Lineberger at the forefront of research nationally and is leveraging significant amounts of extramural research funds. Almost all of these funds come from outside the state, adding significantly to North Carolina's economy.

In FY 2022, funding from outside sources that is directly attributable to the UCRF was \$255 million in annual total cost dollars.

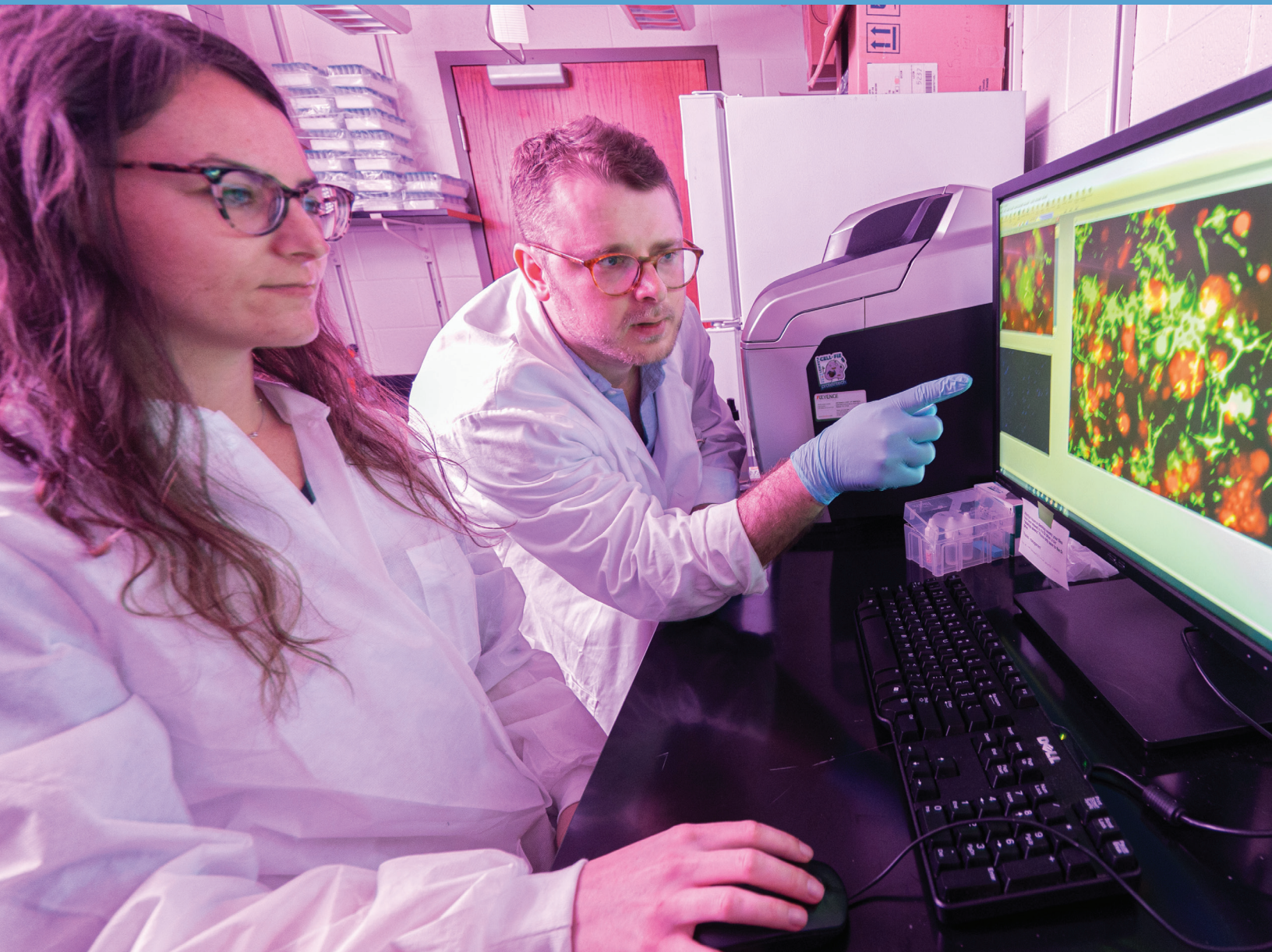
- This amount is based on a snapshot of active attributable extramural funding held by faculty in the first quarter of FY 2022. The dollars represent one year of funding. A complete list of the awards is included in the Appendix.
- The positive effects of faculty recruitment and retention, technology enhancement, and innovative projects continue to grow. UCRF-attributable extramural funding has risen significantly from \$5 million in FY 2008 to \$255 million.

Intellectual Property, Innovation, and Entrepreneurship

The innovations and discoveries fueled by UCRF support have helped to create jobs and launch companies that aim to convert these research findings into clinical advances. In partnership with UNC's North Carolina Translational and Clinical Sciences Institute (NC TraCS), the UCRF promotes an entrepreneurial mindset at UNC and supports specialized staff to maximize the development and licensing of university intellectual property. With the help of the UCRF, grants and other sources, more than 60 startup companies have launched or expanded their reach. Nearly all of these companies are located in North Carolina, and together they employ a workforce of approximately 850 in our state.



RESEARCH IMPACTS



Guiding Principles

With the goal of optimizing the use of UCRF funds, the Cancer Research Fund Committee's strategic plan targets three specific research priorities – focused on areas in which UNC Lineberger can be a world leader and have meaningful impact – and calls for the UCRF to support key clinical and infrastructure resources. The research priorities are:

- **Understanding the Role of Genetics in Cancer Causation and Treatment:** Discovering 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:** Devising new therapies targeting the specific vulnerabilities of treatment-resistant cancers, and developing 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:** Enhancing the quality of oncology and survivor care, and building 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.

In addition to the three research priorities, UCRF-supported investments in clinical infrastructure and excellence allows UNC Lineberger to successfully adapt to a quickly and constantly changing field. Funds have been used to establish and maintain critical infrastructure and to pursue selective opportunities, outside of the three primary research priorities, where UNC Lineberger could strive for clinical excellence and have a major bearing on current and future cancer research.

This approach allows UNC Lineberger 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 of UCRF funding deployed in this manner 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, investments in imaging, informatics and fundamental research techniques give UNC Lineberger's clinician scientists the tools they need to improve patient outcomes, while telemedicine and virtual tumor boards allow oncology experts to connect and collaborate with doctors and hospitals across the state. The UCRF strengthens UNC Lineberger's multidisciplinary excellence in cancer care and supports a statewide infrastructure that helps bring leading-edge clinical research and applications into community practices and research institutions throughout North Carolina.

RESEARCH IMPACTS

ENDOMETRIAL CANCER CENTER OF EXCELLENCE FOCUSED ON ADVANCING RESEARCH AND CARE, ELIMINATING DISPARITIES

With one of the largest racial disparities in cancer outcomes, endometrial cancer (also known as uterine cancer) is also one of the few types of cancer increasing in both frequency and mortality in the United States, with cases rising by 1% each year since the mid-2000s. In light of these concerning trends, UNC Lineberger and the UCRF created the Endometrial Cancer Center of Excellence to empower researchers to work collaboratively and intentionally to better understand the causes and treatment for this type of cancer in all North Carolina women – and to pinpoint why Black women in North Carolina are so much more likely to die from this disease.

This type of cancer “is woefully understudied and its research is underfunded, and that is costing lives,” said the new center’s director, **Victoria Bae-Jump, MD, PhD**, professor of gynecologic oncology in the UNC School of Medicine’s Department of Obstetrics & Gynecology.

A nationally recognized gynecologic oncologist, Bae-Jump was recently elected co-chair of the National Cancer Institute Gynecologic Cancers Steering Committee’s Uterine Task Force, an advisory group of some of the country’s leading experts in uterine cancer. She, along with center co-leaders **Andrew Olshan, PhD**, the Barbara Sorenson Hulka Distinguished Professor of Epidemiology, and **Hazel Nichols, PhD**, associate professor of epidemiology, head the Carolina Endometrial Cancer Study.

This major study, designed to enroll 1,000 endometrial cancer patients in all 100 N.C. counties, will investigate tumor biology, genetics, lifestyle and behaviors, socioeconomic backgrounds, and barriers to care in an effort to identify the factors that contribute to poorer cancer outcomes in all women, but especially for Black women.

Endometrial cancer is the fourth most common cancer in American women. More than 65,000 women will be diagnosed with it this year, according to the American Cancer Society, and more than 12,500 women will die from it. While white women are more likely to be diagnosed with this cancer, Black women have a much lower five-year survival rate from endometrial cancer than white women.

The Endometrial Cancer Center of Excellence is designed to facilitate greater collaboration across a wide array of specialties and between UNC Lineberger’s laboratory, translational, clinical and population scientists and its clinical caregivers. Using clinical observations to help shape laboratory studies and innovative clinical trial development, researchers will conduct large-scale population studies, investigate health disparities, and study the pathology, epigenetics and genetics of endometrial cancer as well as the link between the cancer and the



Bae-Jump



Olshan



Nichols



Brewster



**NORTH CAROLINA
AGRICULTURAL AND TECHNICAL
STATE UNIVERSITY**

UNC LINEBERGER PARTNERS WITH NC A&T TO STUDY EFFECTS OF POLLUTANTS IN UTERINE CANCER

Researchers from UNC Lineberger and NC Agricultural & Technical State University will study how pollution that harms the human endocrine system can affect endometrial cancer, thanks to a first-of-its kind grant from both universities.

*The research team – led by **Russell Broadbuss, MD, PhD**, chair of the UNC School of Medicine’s Department of Pathology and Laboratory Medicine, and **Emmanuel Obeng-Gyasi, PhD, MPH**, assistant professor in the Department of Built Environment at N.C. A&T’s College of Science and Technology – is one of four inaugural winners of a \$200,000 Looking Forward research grant. Looking Forward is a new initiative co-created by the chancellors of the two universities to promote collaborations that leverage each institution’s strengths to help solve complex issues in North Carolina and around the world.*

Launched this year, the Looking Forward program sought proposals in four priority areas: data science and society; environment and environmental justice; health disparities; and cancer and cancer-related research. The program received 34 initial inquiries, and 14 teams were invited to compete as finalists.

Addressing an alarming rise in the prevalence and mortality for endometrial cancer – particularly among Black women – Broadbuss, Obeng-Gyasi and their team will collect and analyze data about exposure to endocrine-disrupting pollutants to determine if there is a relationship between pollution and uterine cancer. Grant funds for the cancer study were made possible by UNC Lineberger and UCRF.

microbiome, or the bacteria and other microorganisms that live in a person. An earlier study by Bae-Jump's lab found a potential critical link between obesity, race, the microbiome and endometrial cancer.

"Our ultimate goal is to find ways that we can potentially manipulate the microbiome to improve our cancer treatments and simultaneously address Black disparities in endometrial cancer," Bae-Jump said.

In addition to Bae-Jump, Olshan and Nichols, the center's leadership includes microbiome researcher **Temitope O. Keku, PhD**, professor of medicine in the division of gastroenterology and hepatology; **Wendy Brewster, MD, PhD**, director of the UNC Center for Women's



Keku



Broaddus



Weissman



Merker

Health Research and professor of gynecologic oncology; molecular pathologist **Russell Broaddus, MD, PhD**, chair of the Department of Pathology and Laboratory Medicine; molecular pathologist **Jason Merker, MD, PhD**, associate professor of pathology and laboratory medicine and genetics; and epigeneticist **Bernard Weissman, PhD**, professor of pathology and laboratory medicine.

NC CENTRAL PARTNERSHIP EXPANDS UNC'S ONCOLOGY NURSING PROGRAM

A fellowship program offered for the past six years exclusively to UNC nursing students wanting advanced training in oncology has now grown to include nursing students from North Carolina Central University.

This year's UNC Lineberger-Sylvia Lauterborn and Warren Trent Piver Oncology Nursing Fellows included five nursing students from UNC-Chapel Hill and three nursing students from NC Central. The expanded program is one of UNC Lineberger's efforts to actively partner with other UNC-system schools to train and develop tomorrow's health care workforce and to provide more opportunities for students from across North Carolina.

"The oncology nursing fellowship program offers a meaningful and impactful opportunity for nursing students to learn, grow and advance as clinicians and leaders in oncology nursing," said **Ashley Leak Bryant, PhD, RN, OCN, FAAN**, associate professor of nursing, director of the oncology nursing fellowship program and assistant director



Leak Bryant



NC Central
UNIVERSITY

Discover what's Central to you.

of cancer research training education coordination at UNC Lineberger. "With an increasing number of cancer survivors in North Carolina, nationally, and globally, it is imperative that our care teams mirror the racial, ethnic and gender composition in our communities. Only then will we truly address the totality of cancer survivors' needs."

Partnering with historically black colleges and universities and native-serving institutions in North Carolina allows the fellowship program to contribute to improving cancer outcomes and cancer survivorship care in urban and rural communities, areas that largely have been underserved.

"Bringing together the nursing programs at UNC and NCCU to grow the professional pathway to oncology nursing is critical to ensuring we can provide outstanding cancer care in the future," said **Yolanda M. Vanriel, PhD, RN, MEDSURG-BC, OCN, CNE, ANEF**, chair of the NCCU department of nursing. "This collaboration is good for our students collectively, and it stands to benefit everyone who lives in North Carolina."

FACULTY PROFILE: HEMATOLOGIST SPECIALIZES IN MULTIPLE MYELOMA, AMYLOIDOSIS

Sascha Tuchman, MD, MHS, associate professor of medicine and director of the multiple myeloma and amyloidosis program, had high-flying career goals when he was young, aspiring to be a fighter pilot when he grew up. Fortunately for his patients, he chose medicine instead, attending medical school at Georgetown University and doing his residency, chief residency and fellowship at Duke Medical Center.

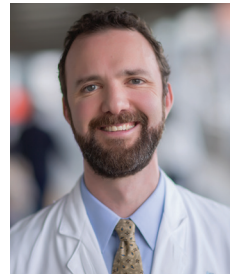
Tuchman became interested in cancer as a specialty while he was an internal medicine intern working on the blood cancer service. “I wanted to do something in academic medicine, both in patient care and research,” he said. “I wanted to specialize, but I really enjoyed general medicine and taking care of the whole body, not just specific organs.”

That holistic mentality led him to infectious diseases and hematology/oncology, and the idea of developing drugs to treat and cure cancer one day. On faculty at Duke in 2016 and already aware of UNC Lineberger’s work in groundbreaking research such as chimeric antigen receptor T-cell (CAR-T) immunotherapy, Tuchman was approached by Jon Serody, MD, the Elizabeth Thomas Professor of Medicine, Microbiology and Immunology and division chief of hematology, about a possible move to UNC.

The fact that he could help build UNC’s myeloma program and be involved in myeloma CAR-T studies and other unique research opportunities led Tuchman to make the move to Chapel Hill. Since then, he has been collaborating with other UNC Lineberger clinicians and scientists to expand research, including myeloma CAR-T projects that he hopes will result in new treatment options and better outcomes overall.

Tuchman also created a one-of-a-kind registry for patients being treated at UNC for myeloma, amyloidosis, or other related conditions. Students and medical trainees who are interested in research and publishing high-impact science study data from the registry, which serves as a vital source of patient information.

“We track over time how they’re doing clinically, how their quality of life is, how they feel, energy patterns, sleep, functional impairments, and so forth. We freeze blood samples for analysis later, and we do geriatric assessments,” he said. “This is the most comprehensive registry in multiple myeloma in the world; to my knowledge there’s no other registry in existence that has the breadth and depth of data we have with the patients we’re following.”



Tuchman

“I wanted to specialize, but I really enjoyed general medicine and taking care of the whole body, not just specific organs.”

- Sascha Tuchman, MD, MHS

UNC INITIATIVE AIMS TO IMPROVE CANCER SCREENING, OUTCOMES

One of the most effective ways to improve outcomes for several of the most common types of cancer is through preventive screening for early detection – yet geographic and demographic inequities often mean that underserved populations have insufficient access to potentially lifesaving tests.

To address these inequities, the UNC Lineberger Comprehensive Cancer Center launched the Carolina Cancer Screening Initiative (CCSI) in 2016. Initially supported by UCRF funding and since bolstered by foundation and federal grant funds, the CCSI leverages UNC Lineberger members' expertise in research-backed interventions – along with a network of community, academic, and government partners – to improve the quality and accessibility of cancer screening programs throughout North Carolina.

One key research partnership has been UNC Lineberger's work with the Roanoke Chowan Community Health Center (RCCHC), which has helped boost cancer screening rates in northeastern North Carolina while providing new insights into how to effectively improve cancer prevention in rural areas.

“What we know about colon cancer screening is that if you do it, it reduces cancer mortality,” said CCSI Co-Director **Dan Reuland, MD, MPH**. “We are taking evidence-based practices that are known to improve screening rates, and we are learning how to adapt those practices in this resource context to improve screening in rural areas.”

In 2015, an American Cancer Society study identified northeastern North Carolina as one of three hotspots in the country for colon cancer, with higher-than-expected death rates for disease even after accounting for known risk factors. As a federally qualified health center that provides clinical services throughout five northeastern counties,



Reuland

RCCHC had already been working to improve screening rates by adjusting their operations and improving patient outreach – doubling their screening rates within a year of the ACS hotspot study.

“Our aggressive efforts to improve screening rates is what caught Lineberger's attention, especially with the dynamic of those national headlines,” said **Kim Schwartz**, RCCHC's CEO. “They reached out with some conceptual ideas, and we had many meetings and conversations. Their focus has always been, ‘What can we do as a research process that would fit in with what you're doing – how can we add more value?’ From day one, it has felt like we are all in this together. It's been a great team.”



Schwartz

Prior studies had already found mail-in fecal immunochemical tests (FITs) can be an effective preliminary colon cancer screening approach when added to usual (visit-based) screening. Partnering with RCCHC to tailor that approach and to build on the center's existing work and vision, UNC researchers provided technical support to help determine who was due for a screening, mailed screening tests to eligible residents in RCCHC's service area, gathered results for those tests, and embedded a patient navigator in the northeast to help guide patients whose mail-in kits yielded positive results.

“It's so easy to do – you do it in private, in your own home,” said RCCHC Lab Manager **Regina Jacobs**, who championed and implemented the center's operational and outreach initiatives that successfully doubled its screening rates. “You send it in, we get it processed, and we get the results. If it's positive, we get you on the right path to get help – and we potentially save a life.”

UNC also partners with Blue Ridge Health in the western part of the state as a second site for the study, which is now in its fifth and final year. While the last bits of data are still being collected and analyzed, initial results indicate that the FIT tests were an effective screening approach: Of the nearly 2,000 eligible residents who received a FIT kit in the mail, about 25% completed and returned the tests – and more

than 80% of patients whose FIT results were positive also followed up with a colonoscopy.

CCSI Deputy Director **Alison Brenner, PhD, MPH**, said the next step is to determine how to sustain the screening initiative to improve long-term outcomes. “Keeping these screening rates as high as possible will make a measurable difference in long-term outcomes, so the hope is that we can find some way to transition this from a resource-intensive, randomized control trial to a more sustainable program,” she said. “But you need resources to do that. Part of the reason we took this on is because the clinics don’t have the resources to do it all.”



Brenner

In addition to colorectal cancer, the CCSI focuses on breast, cervical, colon, liver, and lung

cancer screening research. UNC Lineberger was recently named as one of three southeastern U.S. cancer centers on Stand Up 2 Cancer’s Lung Cancer Health Equity Research Team, which – thanks to a \$3 million, four-year grant – are working with federal health centers in Virginia and North Carolina to establish a sustainable infrastructure to improve screening, diagnosis and treatment of lung cancer in the Black community. Black Americans are disproportionately impacted by lung cancer and by social determinants of health, which can increase their risk for smoking and limit their access to lung cancer screening and care.

As the colorectal screening study wraps up, **Geniene Jones, MD**, RCCHC’s chief medical officer, hopes to continue the center’s partnership with Lineberger and improve screening for other cancers, like lung cancer. “Cancer is our No. 1 killer so we are always looking for ways to address it, especially in terms of equity and special populations,” she said.

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- Geniene Jones, MD

FACULTY PROFILE: ELMORE TAKES PERSONALIZED APPROACH TO PATIENT CARE

Shekinah Elmore, MD, MPH, has been familiar with medical procedures from an early age. Born with a congenital defect that left a hole in her heart, Elmore had heart surgery as a young child. Later, she was diagnosed with a rare type of cancer, called rhabdomyosarcoma, that forms in soft tissue. It was surgically removed, but it returned in a more aggressive form when she was about 12. Elmore had another surgery, radiation, and chemotherapy – and in the process her oncologist, Brian Greffe, MD, changed the way she thought about the medical profession and would profoundly influence the way she would eventually care for her own cancer patients.

“He was, I think, everything someone would want in a doctor. He really made me feel like an individual. He got to know me as a person,” she said. “It was the first time I saw that doctors could be human beings, which I think is a really important part of the way I think about medicine.”

Years later, while working on her master of public health degree at Columbia University, Elmore met physicians who were engaged in both research and clinical care — while maintaining their interests and enjoying their lives outside of their work. Inspired, she decided to become a doctor herself. It was while interviewing for medical schools in 2010 that Elmore, then 27, discovered a lump in her breast. Her doctors found that she actually had two different kinds of cancer: a locally advanced breast cancer and an early-stage lung cancer.

Elmore moved forward not only with her cancer treatments, but also with medical school. She underwent her final surgery just two weeks before orientation at Harvard University. She attended her remaining chemotherapy appointments in between her classes, and her breast reconstruction surgery was done during her winter break.

That path was not what her doctor recommended, but for Elmore, it was the right decision. Now a radiation oncologist and an assistant professor in the departments of Radiation Oncology and Urology at the UNC School of Medicine, she relies on a similarly personal approach to patient relationships – focusing on helping her patients figure out how best to fit their medical care into their lives.

“The medical part is almost the easier part,” she said. “We have big studies. We have lots of good research. We know exactly what to do. The harder part is tailoring and individualizing care so that it meets the rest of what you need in your life.”

In addition to seeing patients at the North Carolina Basnight Cancer Hospital, UNC Lineberger’s clinical home, Elmore works as a researcher with UNC Project Malawi, a collaboration with the Malawi Ministry of Health focusing on equity in cancer care and young women with breast cancer, and locally at Carolina working with Black prostate cancer patients. Given previous studies suggesting that Black patients experience more treatment-related regret for their decisions and have worse survival rates when compared to white patients, Elmore is trying to better understand patient perspectives on shared decision-making, their doctors, and their perceptions of telemedicine.

“I think my interest in this comes from my experiences as a patient with cancer and my father’s experiences with prostate cancer,” she said. “How do we as physicians — as a medical system — make it easier and more affirming to decide with your doctor what the best thing to do is? How do we take all these treatments we have, these medical advances, and help people make a decision that they will be happy with down the road?”



Elmore

“We have big studies. We have lots of good research. We know exactly what to do. The harder part is tailoring and individualizing care so that it meets the rest of what you need in your life.”

- Shekinah Elmore, MD, MPH

UNC LINEBERGER'S GENITOURINARY CANCER EXPERTS COLLABORATE TO INNOVATE

UNC Lineberger's nation-leading genitourinary cancer program is a uniquely collaborative multidisciplinary environment where researchers and clinicians work together to advance innovative research and improve outcomes for patients with bladder, kidney, prostate and testicular cancers.

Under the leadership of program co-directors **Matt Milowsky, MD, FASCO**, and **Angela B. Smith, MD, MS, FACS**, the team's work is geared toward developing new and more effective treatments for these cancers as well as gaining a better understanding of how to help patients make the right treatment decisions for them based on their personal preferences and genomic characteristics.

For Smith, an internationally recognized expert in bladder cancer, stakeholder engagement, and patient-reported outcomes in urology, patient-centered decision-making and communication are not only important themes throughout the genitourinary cancer program's robust clinical trial portfolio: They are also a central part of her own work.

She is the principal investigator or co-principal investigator of several national studies, including a major study funded by an \$8.5 million Patient-Centered Outcomes Research Institute (PCORI) grant that utilizes feedback by stakeholders, including patients, caregivers, national patient advocacy organizations, and national medical specialty organizations, to evaluate treatments for recurring noninvasive bladder cancer.

With 39 research sites across the country, the Comparison of Intravesical Therapy and Surgery as Treatment Options for Bladder Cancer (CISTO) study compares two treatments for recurring bladder cancer: bladder-removal surgery and Bacillus Calmette-Guerin (BCG), a medicine delivered directly to the

bladder. While removing the bladder can severely impact daily activities and relationships, it does often cure the cancer while medical treatments may not work as well.

"One of the biggest questions facing patients with noninvasive bladder cancer is what happens when our conservative treatments like BCG don't work, and their cancer recurs," said Smith, who recently received the 2022 Gold Cystoscope Award from the American Urological Association to recognize her outstanding leadership and contributions in bladder cancer outcomes research. "We engaged with many patients to design a study that helps answer the questions that most of them have."

Another study of patient decision-making involves small renal masses that could indicate kidney cancer. While these masses could be benign, patients can choose from a variety of treatment options if their masses are found to be malignant. A research team led by **Hung-Jui (Ray) Tan, MD, MSHPM**, assistant professor of urology, is studying whether biopsies can offer useful genomic information that would help guide treatment decisions. The team is also investigating how other factors such as a patient's personal behaviors, communication preferences and risk perceptions can influence their decisions.

Tan, whose research centers on cancer care safety and quality, also is developing dashboards and other visualization tools that can help surgeons better assess the risk of surgery as a treatment option, compared to active surveillance or other options. His work in designing visual technology could be transformative for cancer care and lead to better outcomes for patients. "The implications of this work are beyond urology and Lineberger," Smith said. "It is a national opportunity."

Visual tools are just one of the major areas where UNC is leading the field in using advanced technology to improve cancer care. For instance, UNC Lineberger was the first



Milowsky



Smith



Tan

"One of the biggest questions facing patients with noninvasive bladder cancer is what happens when our conservative treatments like BCG don't work, and their cancer recurs."

- Angela B. Smith, MD, MS, FACS

cancer center in the United States to perform MRI ultrasound-guided focal cryotherapy to better target prostate cancer treatment.

Focal cryotherapy has limited impact on urinary symptoms and erectile function, giving it several advantages over traditional treatment approaches. Using a new sophisticated biopsy platform coupled with tumor localization software, UNC now offers precise focal cryotherapy for men with intermediate risk prostate cancer. **Marc Bjurlin, DO, MSc, FACOS**, associate professor of urology, uses a similar approach to perform MRI ultrasound-guided biopsies, making the biopsy process more precise.

Bjurlin also is a key leader in UNC's robotic surgery program, a form of minimally invasive surgery where surgical instruments are attached to mechanized "arms" that are controlled by a surgeon at a console. While UNC's robotic surgery program pre-dated his arrival in 2018, Bjurlin has taken it to the next level, using a da Vinci single port surgical device to employ precision techniques in patients with bladder cancer. He works with a multidisciplinary team to determine which cancer patients are best suited for this innovative technique, which allows him to make a single incision to access the abdomen.

"The single incision has the potential to improve outcomes and reduce complications," said Bjurlin, who has treated more than 35 patients so far with this approach. "There is a shorter recovery time and improved cosmetic results. Not every patient needs this type of surgery, but choosing the right patient for the right treatment is part of providing complex cancer care."

UNC Lineberger's ongoing clinical trial work is leading to the development and delivery of more personalized patient care. **Tracy Rose, MD, MPH**, an assistant professor of medicine in oncology, oversees several trials, including

a National Cancer Institute study to determine whether adding entinostat to an immune checkpoint inhibitor can fight bladder cancer more effectively in patients awaiting surgery or radiation. It's one of several projects on which Rose works closely with **William (Billy) Kim, MD**, a physician-scientist and the Rush S. Dickson Distinguished Professor of Medicine and professor of genetics. They hope this trial will validate Kim's preclinical findings that adding entinostat to an immune checkpoint inhibitor can augment a patient's immune response against their cancer.

"One of the unique things about our bladder cancer program is that it's true bench-to-bedside," Rose said. "A lot of Billy's focus is trying to predict how patients respond to immunotherapy. I go to his lab meetings and see the compounds they're working on and try to translate that work into the clinic."

The genitourinary cancer team's innovative, collaborative approach to improving treatment and outcomes has helped establish UNC's program as a leader in the field. Milowsky, for example, is spearheading a large-scale national collaboration through the Bladder Cancer Advocacy Network (BCAN) and the Bladder Cancer Genomics Consortium (BCGC) to use next-generation sequencing to genomically profile 200 bladder cancer tumors. Major medical centers that are BCGC members will be able to use this rich data source to enhance doctors' understanding of bladder cancer genetics, to support collaborative translational research and to aid in the development of new treatments.

"We hope this new program will be a game-changer in the field of bladder cancer research, bringing new treatment options to those who need it now, and fostering collaborative translational research that will ultimately save lives," said Milowsky, who is chair of the BCGC Genomics Advisory Board and principal investigator for the sequencing project.

Whether it's through major national research projects or working side-by-side in the lab or the clinic, UNC Lineberger's genitourinary experts continue to lead the field in developing lifesaving treatments and personalized, patient-centered care.

"We cover all aspects of the research continuum and clinical care continuum. Our team has multiple national experts in every single bucket of research – basic, translational, patient-reported outcomes, health services research – all aspects of the continuum," Rose said.



Bjurlin



Rose



Kim

PATIENT ADVOCATE PATTY SPEARS RECOGNIZED FOR WORK ON BEHALF OF CANCER PATIENTS

As a patient advocacy leader at UNC Lineberger, **Patty Spears** is nationally known for her contributions to making clinical trials more accessible to people with cancer. Her work is informed by her more than 30 years of laboratory research experience in microbiology and immunology at NC State University, and her personal experience as a survivor of breast cancer and liver cancer.

This year, the American Society of Clinical Oncology and Conquer Cancer, the ASCO Foundation, recognized her with its Patient Advocate Award, the society's highest such honor.

Spears is the scientific research manager in the Office of Clinical & Translational Research in Oncology and a patient advocate at UNC Lineberger. She oversees the cancer center's Patient Advocates for Research Council, which provides researchers with the perspectives and experiences of patients, survivors and caregivers on issues associated with clinical studies and projects. She also leads the UNC Breast SPORE Advocates and is a member of the UNC Lineberger Office of Community Outreach and Engagement.

An advocate for the National Cancer Institute's National

Clinical Trials Network since 2008, Spears chairs or serves on numerous national committees, including the Alliance for Clinical Trials in Oncology's patient advocate committee, the NCI's Clinical Trials and Translational Research Advisory Committee, and the ASCO Breast Cancer Guideline Advisory Group.

"Patty is an incredible leader and advocate for patients, and for doing thoughtful patient-centered research that will improve the lives of cancer patients both today and tomorrow. She is scientifically rigorous, thoughtful, and adds enormously to clinical trials being designed to answer clinical challenges," said Lisa A. Carey, MD, FASCO, UNC Lineberger deputy director of clinical sciences and the L. Richardson and Marilyn Jacobs Preyer Distinguished Professor in Breast Cancer Research. "She is also tireless in her efforts to teach young investigators how to describe laboratory work in English, and keeping the focus on the way in which even basic research can be translated into the clinic. Everyone listens when Patty speaks up! We are so proud of her recognition with ASCO's Patient Advocate Award ... but not at all surprised."



Spears

RESEARCH PRIORITY 1: GENETICS IN CANCER CAUSATION AND TREATMENT

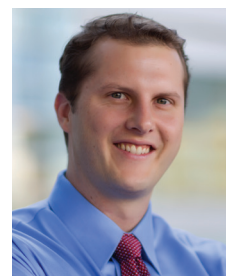
NEW DISCOVERY CENTER WILL FOCUS ON RNA BIOLOGY'S EFFECTS ON DISEASE

Ribonucleic acid (RNA) has been implicated in various ways in cancer and other human diseases, but scientists have yet to unlock all its secrets. At UNC Lineberger's new RNA Discovery Center, a renowned multidisciplinary group of scientists are dedicated to investigating all aspects of RNA biology and advancing RNA-based tools and medicines that can help treat a variety of diseases.

The center's director is **Chad Pecot, MD**, UNC Lineberger member and associate professor of medicine. A renowned lung cancer specialist, Pecot studied to become an engineer but chose medicine as his profession after being diagnosed and treated for cancer as a college student. In addition

to caring for his patients, he runs a research laboratory and often applies his engineering background to his innovative research. Among his priorities is developing RNA-based therapeutics that can slow cancer growth by suppressing protein synthesis in cancer cells.

The RNA Discovery Center will support graduate and postdoctoral fellowships, faculty collaborations and several key staff to support the Center's infrastructure. The rapidly growing center already consists of faculty across the UNC School of Medicine, UNC Lineberger, the UNC College of Arts and Sciences, and the UNC Eshelman School of Pharmacy, including a new recruit this year,



Pecot

Owen Fenton, PhD, assistant professor of pharmacy and a recognized expert in delivering RNA for vaccines and other therapies. Its co-directors include the following UNC Lineberger members and RNA experts:

- **Qi Zhang, PhD**, associate professor of biochemistry & biophysics (RNA structure)
- **Mauro Calabrese, PhD**, associate professor of pharmacology (RNA transcription)
- **Bill Marzluff, PhD**, Kenan Distinguished Professor of Biochemistry & Biophysics (RNA processing)

- **Keriyann Smith, PhD**, assistant professor of genetics (director of training & excellence)

“Our main goals are to recruit and train the world’s top talent in RNA research, to make key discoveries in the basic and translational sciences, to study the various roles of RNA in health and disease, and to commercialize RNA-based tools and medicines to help the people of North Carolina and around the world,” Pecot said. “We’re also creating a strong environment of diversity, equity and inclusion, and we’re planning to be intentional about how we support traditionally disadvantaged trainees.”

OVARIAN AND ENDOMETRIAL TUMORS MAPPED TO THE LEVEL OF A SINGLE CELL

UNC Lineberger researchers have, for the first time ever, determined the cell-by-cell state of ovarian and endometrial tumors by using new genetic sequencing technologies.

The researchers’ findings, published in *Molecular Cell*, are a key step toward gaining a better understanding of gynecologic cancers. Because every tumor is a collection of different cells, knowing how cell-to-cell variations affect the tumor’s biology and functions can help scientists develop more targeted and effective treatments.

UNC Lineberger’s **Hector L. Franco, PhD**, assistant professor of genetics, and his colleagues used single-cell sequencing to measure the genetic and epigenetic states of more than 150,000 individual cells from 11 ovarian and endometrial tumor samples that were surgically removed from patients. Epigenetics relate to a change in the chemical structure of DNA that does not change the DNA coding sequence; epigenetic changes can be as consequential as changes to DNA itself. This dataset represents the largest collection of single-cell sequencing data to date in ovarian and endometrial cancer, the two most common gynecologic cancers in the United States.

“The standard of care for many gynecologic cancers is a combination of surgery, chemotherapy and radiation. Despite these aggressive treatments, the majority of women with ovarian cancer experience a recurrence of their

disease, highlighting the need to better understand the etiology of the disease in order to develop better targeted therapies,” Franco said. “With the improved resolution of the new single-cell sequencing technologies, we can now annotate specific genetic features of tumor cells that had been previously hidden from traditional sequencing technologies.”

The researchers plan to use single-cell sequencing technology to measure the genetics of ovarian and endometrial tumors after they have undergone chemotherapy, allowing them to see which tumor cells are being effectively killed off by the chemotherapy, and which ones persist and become resistant. In addition, using this technology on tumors that have relapsed and metastasized should enhance scientists’ understanding of the molecular basis of what causes some tumors to become resistant and what causes some tumors to become metastatic, potentially leading to new targets for treatment.

“In the near future, I see personalized medicine becoming the standard of care. Each patient would get their tumor sequenced, and then treatment options would be tailored to the specifics of each individual tumor,” Franco said. “While this technology is not widely available in the clinic today, it is transformative in the sense that it increases our understanding of the disease.”



Franco

RESEARCH PRIORITY 2: DEVELOPING NOVEL THERAPEUTICS

NATION-LEADING IMMUNOTHERAPY RESEARCH PROGRAM YIELDS NEW FINDINGS

As one of just a few academic centers in the country with the scientific, technical and clinical capabilities to develop and deliver cellular immunotherapy to patients, UNC Lineberger continues to make key discoveries in how to effectively use a patient's own genetically reprogrammed immune cells to fight cancer cells.

UNC's immunotherapy program is a national leader in this innovative treatment approach, primarily focusing on the use of chimeric antigen receptor (CAR)-modified T-cells, a type of immune cell. This process involves collecting T-cells from a patient, genetically re-engineering them to recognize cancer proteins, and then reinfusing them into the patient so they circulate in the blood and attack the patient's own cancer cells.

In one recent study, published in *Science Advances*, UNC researchers used mouse models to find a more effective way to use CAR-T immunotherapy to treat glioblastoma, a highly malignant and deadly brain cancer, after the tumor is surgically removed.

Glioblastoma is an aggressive tumor that can form quickly in the brain, and only 40% of patients live for one year after diagnosis. Surgery is the first treatment used but presents challenges in removing the tumor while also allowing for wound healing.



Ogunnaïke

Previous studies have shown that administering T-cells alone has limited benefits in fighting glioblastoma post-surgery, so researchers paired the cells with a newly developed gel to improve the treatment's effectiveness, placing both in the part of the mice's brains where the glioblastoma tumor had just been surgically removed. Nine of 14 (64%) mice that received the gel and T-cells were tumor free 94 days after treatment, compared to two of 10 (20%) mice that only received T-cells. The process is now being tested in pilot clinical studies to assess safety and to see if it elicits a greater distribution of CAR-T cells.

"We hope that our gel will provide antitumor activity over an extended period of time after surgery in patients without inducing toxicity, which seems to be the case in mice," said **Edikan Ogunnaïke, PhD**, a biomedical engineer and lead author of the study. "The gel might also allow for local delivery of other biological agents that could sustain T-cell growth and counter suppression of an immunotherapy."

CAR-T cells were also used in a newly developed immunotherapy targeting neuroblastoma, a cancer that occurs primarily in young children. About 500 to 1,000 cases are diagnosed each year in the United States.

In the neuroblastoma study, published in *Nature Cancer*, researchers found that using CAR-T cells engineered to attack two antigens on cancer cells,

UNC RESEARCHERS DISCOVER NEW APPROACH FOR TREATING AGGRESSIVE CANCER

After uncovering a new role that an enzyme called EZH2 plays during cancer development, UNC researchers developed a novel therapeutic approach that slows the enzyme's activity and, as a result, limits cancer growth.

*Certain subtypes of blood cancers, such as acute leukemias, rely on multiple mechanisms for sustaining growth of aggressive cancer cells – including those driven by EZH2 and by a gene called cMyc. In a study published in *Nature Cell Biology*, UNC scientists found that EZH2 and cMyc can directly associate with one another, contributing to cancer growth in more than one way. The researchers teamed with chemical biologists at Icahn School of Medicine at Mount Sinai to design a new therapeutic agent called MS177. Based on a small-molecule technology called proteolysis-targeting chimera (PROTAC), MS177 targets both EZH2 and cMyc to inhibit cancer growth.*

"EZH2 plays a very important role during cancer progression and is a known target suitable for drug development," said UNC Lineberger's Greg Wang, PhD, associate professor of biochemistry and biophysics and pharmacology and co-lead author of the research article. "We are amazed by the efficiency of small-molecule PROTAC in simultaneously targeting EZH2 and cMyc in cancer cells."

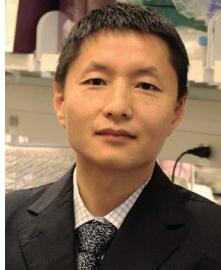
The scientists found that EZH2 has two different binding patterns on chromatin in acute leukemia cells, eliciting two distinct gene-regulatory programs. In one, EZH2 forms a protein complex that represses certain genes, but in the other, EZH2 interacts with cMyc to activate gene expression at other genomic sites. This means current drugs that only target EZH2 cannot block its activity completely. By targeting both EZH2 and cMyc, MS177 kills tumors more effectively.

"Compared to the existing enzymatic inhibitors, MS177 is more likely to behave much better for the treatment of patients with acute leukemias. To our knowledge, an agent for dual targeting of EZH2 and cMyc has not been developed before. cMyc is hard to 'drug,'" Wang said. "MS177 thus represents a promising candidate for treating other cancers."

RESEARCH IMPACTS

instead of one, was highly effective in laboratory studies and in mice implanted with human neuroblastoma tissue. This dual targeting of antigens restricted tumor regrowth and prevented the neuroblastoma cells from evading the attacking immune cells.

“Tumor cells are characterized by a mixed expression of antigens, and we engineered dual immune-system T-cells to maximize their capacity to prevent tumors from evading detection by the immune system,” said **Hongwei Du, PhD**, a postdoctoral fellow at UNC School of Medicine.



Du

In addition to being modified to recognize two separate antigens on cancer cells, the CAR-T cells were engineered with a combination of two co-stimulatory proteins called CD28 and 4-1BB. These proteins have been found to be individually effective in treatment studies of blood-borne cancers, but Du’s study found that it’s the combination of both proteins that appears to be most critical in fighting solid tumors like neuroblastoma. If this approach is found as effective in human patients as it has been in mice, the researchers said targeting three, four or more antigens could be even more promising.

“We are currently implementing clinical studies to look at several potential single targets,” said **Gianpietro Dotti, MD**, professor of microbiology and immunology and co-leader of the Immunology Program at UNC Lineberger. “If these studies prove that the therapies are safe, we’ll then progress to the next logical step, which is looking to see if our therapy is effective against a combination of targets.”



Dotti

Researchers also are working toward better, faster ways to deliver CAR-T cells to their targets. In a joint study with North Carolina State University involving lymphoma in mice, UNC scientists developed an implantable biotechnology that produces and releases CAR-T cells. In a proof-of-concept study published in *Nature Biotechnology*, they found that treatment with the implants was faster and more effective than conventional CAR-T cell cancer treatment.

“A major drawback to CAR-T cell treatment is that it is tremendously expensive – hundreds of thousands of dollars per dose,” said the study’s corresponding author and UNC

Lineberger member **Yevgeny Brudno, PhD**, assistant professor in the joint biomedical engineering department at NC State and UNC. “Due to its cost, many people are shut out from this treatment. One reason for the high cost is that the manufacturing process is complex, time-consuming and has to be tailored to each cancer patient individually. We wanted to address challenges in CAR-T treatment related to both manufacturing time and cost.”



Brudno

The researchers created a biotechnology called Multifunctional Alginate Scaffolds for T-cell Engineering and Release (MASTER), a biocompatible, sponge-like material with the look and feel of a mini marshmallow. They isolated T-cells from the patient (in this case, a mouse) and mixed these non-activated T-cells with an engineered virus, and then poured the mixture on top of MASTER, which absorbs it.

The cell activation process begins almost immediately and continues after MASTER is surgically implanted into the patient. As the T-cells become activated, they begin responding to the modified viruses, which reprogram them into CAR-T cells.

“Reducing the manufacturing time is even more critical for patients with rapidly progressing disease,” said **Pritha Agarwalla, PhD**, lead author of the study and a postdoctoral researcher in the joint UNC-NCSU Joint Biomedical Engineering Department. “Our MASTER technology takes the cumbersome and time-consuming activation, reprogramming and expansion steps and performs them inside the patient. This transforms the multi-week process into a single-day procedure. The end result is that the mice that received CAR-T cell treatment via MASTER were far better at fighting off tumors than mice that received conventional CAR-T cell treatment.”



Agarwalla

The work was done in partnership with Dotti and Frances Ligler, DSc, DPhil, formerly the Ross Lampe Distinguished Professor of Biomedical Engineering at NC State and UNC and currently professor and Eppright Chair in Biomedical Engineering at Texas A&M. The team is also working with an industry partner to commercialize MASTER, but further study to establish the safety and robustness of this technology in animal models must occur before clinical trials involving human patients.

RESEARCH PRIORITY 3: OUTCOMES

CAREGIVER PROGRAM HELPS FAMILY, FRIENDS WHO SUPPORT CANCER PATIENTS

As cancer patients navigate their illness and treatment, they often rely on an informal network of caregivers, including family and friends, who provide rides to appointments, help with managing medications, and offer vital emotional support.

But the stressors and demands associated with caring for a cancer patient can often lead to high rates of depression and anxiety for the caregivers. This is especially the case in rural areas that have higher cancer rates, longer distances to care facilities, and lower use of professional support services.

Previous studies show that caregivers' physical and mental health suffers when their needs are left unmet, and they are less able to attend to their caregiving roles. In addition to harming the caregivers themselves, threats to caregivers' physical, mental and financial well-being can also lead to worse outcomes for the cancer patients they support.

With a \$590,000 grant from The Duke Endowment, **Erin Kent, PhD**, and **Eliza (Leeza) Park, MD**, both UCRF recruits, are co-directing a project at UNC to improve support for rural caregivers by adapting the Electronic Social Network Assessment Program (eSNAP) to help caregivers identify and organize their existing social network and available resources to help with their support needs.

"Having a tool that's specifically for caregivers legitimizes their role in the patient's treatment and recovery," said Kent, associate professor of health policy and management at the Gillings School of Global Public Health and a UNC Lineberger member. "It provides an avenue for them to receive the support they deserve and demonstrates how important their role is for the health care delivery team. They're not invisible; they're fundamentally connected to the well-being of the patient."

During the three-year project, researchers will assess the needs of rural caregivers, identify barriers and facilitators to supporting these needs, and adapt the existing eSNAP tool to the rural context.

"We are incredibly grateful that The Duke Endowment recognizes the importance of family-centered care," said Park, assistant professor of psychiatry and medicine and deputy director of clinical operations for UNC Lineberger's Comprehensive Cancer Support Program. "This grant will allow us to meet a true clinical need in a creative and sustainable way."



Kent



Park

"We are incredibly grateful that The Duke Endowment recognizes the importance of family-centered care. This grant will allow us to meet a true clinical need in a creative and sustainable way."

- Leeza Park, MD

REGULAR TELEHEALTH SYMPTOM REPORTING IMPROVED CANCER PATIENTS' WELL-BEING

About 50% of cancer-related symptoms go undetected and unreported, but electronic patient-reported outcome surveys can help improve cancer outcomes by identifying symptoms earlier and prompting clinicians to intervene before those symptoms become more complicated.

In a study at 52 community cancer clinics in 25 states, people with advanced cancer who communicated their symptoms weekly using an electronic survey had better physical function and better control of their symptoms compared to those who were evaluated less frequently via in-person clinical visits.

The PRO-TECT (Patient Reported Outcomes To Enhance Cancer Treatment) study was led by **Ethan Basch, MD, MSc, FASCO**. A renowned expert in patient-reported outcomes, Basch is the Richard Goldberg Distinguished Professor and chief of oncology, director of UNC Lineberger's Cancer Outcomes Research Program and physician-in-chief of the N.C. Basnight Cancer Hospital. He and his colleagues reported their findings in the *Journal of the American Medical Association*.

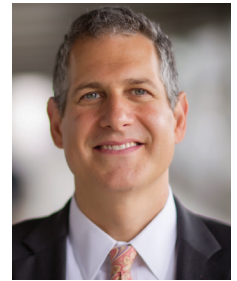
Roughly half of the study's 1,191 participants were randomly assigned to complete a weekly internet-based or automated telephone system survey that included questions about common symptoms, performance status, and falls. The other half were assigned to a usual delivery of care group, which often meant waiting until their next scheduled clinic visit to report symptoms.

"We had very high engagement with patients and their care teams in this study, with patients completing more than 90% of their symptom surveys, and nurses frequently reaching out to patients when severe or worsening symptoms were electronically reported," Basch said. "This likely reflects how accustomed many patients and providers have become to telehealth and electronic communications."

Compared to the control group, patients using the patient-reported outcomes survey had a 35% better ability to function physically, a 16.1% better control of their symptoms and a 41% better overall health-related quality of life – all clinically meaningful improvements over the current standard of care.

The researchers are analyzing the impact of patient-reported outcome surveys on overall survival, and on people's financial ability to afford care either in the clinic or via telehealth. They also hope to determine the best models for widespread implementation of this intervention, and how to make it more efficient for health care practices.

"PRO-TECT is a way to bring patients together with their care team and aids in identifying those who are at greatest risk. And because we had equal success at all 52 practices in 25 states, it shows that there's a wide acceptance for this kind of intervention," said Basch, a UCRF recruit who is using UCRF support to build the nation's leading program in patient-reported outcomes.



Basch

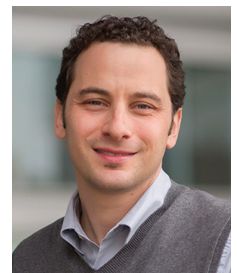
STUDY REVEALS MOST EFFECTIVE ANTI-VAPING MESSAGES FOR TEENS

Anti-vaping advertisements geared toward teenagers are most effective when they emphasize the adverse consequences and harms of vaping e-cigarettes, use negative imagery, and avoid memes, hashtags and other "teen-centric" communication styles, according to a first-of-its-kind study by UNC Lineberger researchers.

Led by UNC Lineberger's **Seth M. Noar, PhD**, professor in the UNC Hussman School of Journalism and Media and director of the Communicating for Health Impact Lab, and **Marcella H. Boynton, PhD**, an assistant professor of medicine in the Division of General Medicine and Clinical Epidemiology and statistician at the North Carolina

Translational and Clinical Sciences (NC TraCS) Institute, the study also found that certain messaging content, especially imagery related to candy and flavor, actually increases vaping's appeal and should be avoided in prevention messages.

"E-cigarettes and vaping have become a major public health concern, with nicotine addiction and other harmful outcomes looming large for youth," Noar said. "The percentage of teens vaping increased from about 5% in 2011 to over 25% in 2019. That is an alarming trend, making an understanding of effective vaping prevention messages especially urgent."



Noar

Since the introduction of e-cigarettes, national health organizations such as the U.S. Food and Drug Administration and Centers for Disease Control and Prevention, as well as numerous state and local health departments, have created anti-vaping messaging geared toward teens. Noar's study investigated teens' responses to various types of messaging and imagery.

The online study asked 1,501 teens to rate seven randomly selected vaping prevention ads from a pool of more than 200 ads. Vaping prevention ads that clearly communicated the harmful health effects of vaping, or compared vaping to cigarette smoking, were most compelling. Neutral or less personally relevant content, such as referencing the environmental impact of vaping or the targeting of youth by

the tobacco industry, was less impactful.

The study used UNC's Vaping Prevention Resource, a website (vapingprevention.org) designed to provide practitioners, researchers and communities with vaping prevention media content from around the world, along with strategies and resources for youth vaping prevention. It is the largest repository of free, downloadable, open-access vaping prevention materials.

In future studies, the researchers hope to investigate the effects of other types of anti-vaping ads on a wide range of audiences. They also are developing a series of messages and a companion website to test the ability of a text message-driven intervention to reduce youth vaping.

ACCURE INTERVENTION LEADS TO TIMELY SURGERY FOR BLACK LUNG CANCER PATIENTS

Historically, Black patients are less likely to be treated with surgery for lung cancer than whites, and if they do have surgery, Black patients are more likely to experience treatment delays that could lead to lower survival rates. To further investigate the racial inequities in timing from diagnosis to surgery for lung cancer, researchers at UNC Lineberger and the Greensboro Health Disparities Collaborative conducted a detailed analysis and found that a multi-faceted intervention called ACCURE resulted in timelier lung cancer surgery for Black patients.

Developed a few years ago, ACCURE (Accountability for Cancer Care through Undoing Racism and Equity) interventions were implemented at cancer treatment centers in an effort to eliminate disparities in treatment for Black patients with early-stage lung and breast cancers. The interventions included real-time notifications showing missed clinical milestones, reporting race-specific treatment rates to clinical teams, and engaging a nurse navigator trained in racial equity to guide patients during their treatment.

The current study, published in the *Journal of Clinical Oncology*, analyzed the benefits of the ACCURE intervention for lung cancer patients. Researchers compared three groups: patients participating in the ACCURE trial from 2013-2016; a historical control group of patients treated for lung cancer from 2007-2012; and a concurrent control group of patients not in the trial who were diagnosed in 2014-2015 and subsequently had lung cancer surgery at two participating study sites.

In the intervention group, the median time from diagnosis to surgery was 23 days – a notable improvement compared to 33-34 days in the two control groups. Evaluated by race, the median time to surgery in the historical control group was 43 days for Black patients compared to 32 days for white patients. In the intervention group the median time to surgery decreased to 28 days for Black patients and 21 days for white patients. More than 87% of Black patients and 85% of white patients in the intervention group received surgery within eight weeks of diagnosis, while the control groups reflected racial disparities similar to those found in prior studies of time from diagnosis to surgery.

“Our findings demonstrate that racial inequities in care can and should be measured, and providers must be made aware of differential practices,” said UNC Lineberger’s **Marjory Charlot, MD, MPH, MSc**, study leader and assistant professor of medicine in the Division of Oncology. “Monitoring, feedback loops, racial equity training, and patient navigation – essentially an entire system change – appears to be necessary to not only improve treatment rates but also to result in timely care.”

The researchers hope to implement ACCURE in real-world health systems outside of the three states where the trial took place. “There are a few cancer care centers implementing this intervention but if this model can be adopted for other cancers that disproportionately impact Black people, we can finally start moving the needle towards equitable cancer outcomes,” Charlot said.



Charlot

FACULTY IMPACTS: RESEARCH AND SCIENCE



HIRSCHEY RECEIVES NIH GRANT TO IMPROVE COLON CANCER OUTCOMES FOR AFRICAN AMERICANS

UNC Lineberger member **Rachel Hirschev, PhD, RN**, has received a \$795,103 Mentored Patient-Oriented Research Career Development Award from the National Institute on Minority Health and Health Disparities. She will use the five-year grant to further her training in cancer disparities and to fund a feasibility trial designed to increase physical activity and improve outcomes among African Americans colon cancer patients.



Hirschev

“African-American cancer patients and survivors often face a number of health disparities that adversely affect their physical and emotional well-being,” said Hirschev, an assistant professor of nursing. “My research will focus on developing, in partnership with African American colon cancer survivors, a culturally targeted behavioral intervention to increase physical activity among African Americans being treated for colorectal cancer.”

Insights generated from this project will serve as a foundation for developing additional behavioral interventions focused on other historically marginalized cancer survivors, she said

PYLAJEVA-GUPTA WINS EMERGING LEADER AWARD FOR INNOVATIVE IMMUNE CELL RESEARCH

UNC Lineberger’s **Yuliya Pylayeva-Gupta, PhD**, has received a three-year, \$750,000 grant as one of seven recipients of The Mark Foundation for Cancer Research Emerging Leader Award, which funds innovative, high-risk/high-reward projects that have significant potential to improve outcomes for cancer patients.

An associate professor of genetics, Pylayeva-Gupta will use the funding to support her research on B cells, which are certain types of immune cells. Her team will map the factors that inhibit B cell activity in solid tumors, and test new strategies for reprogramming B cells to fight cancer. Exploring how to harness B cell activity against tumors may lead to new advancements in immunotherapy.



Pylayeva-Gupta

BREWER RECEIVES \$11.7M NCI GRANT FOR PROJECT TO BOOST HPV VACCINATION RATES

Led by UNC Lineberger member **Noel Brewer, PhD**, Gillings Distinguished Professor in Public Health at UNC Gillings School of Global Public Health, UNC researchers are launching a new project

to help boost HPV vaccination rates for human papillomavirus by improving the way health care providers communicate with their young patients about the virus.



Brewer

Typically given during adolescence, HPV vaccines could prevent more than 32,000 cases of cancer in the United States each year. Recommendations from health care professionals are crucial to increasing the low vaccination rates among young Americans.

With a \$11.7 million, five-year National Cancer Institute grant, Brewer and about 50 colleagues have launched the Improving Provider Announcement Communication Training (IMPACT) Program Project to learn how a health care provider’s entire team can contribute to vaccine recommendations, what motivates providers to recommend HPV vaccines, who should facilitate training, and what kind of communication interventions are most cost-effective.

The communication interventions will leverage the Announcement Approach Training (AAT) technique developed by Brewer and **Melissa Gilkey, PhD**, associate professor of health behavior at UNC Gillings and UNC Lineberger member, which aims to make discussions about HPV vaccines quick and effective for primary care

providers. The team plans to create an AAT Intervention Package to serve as a guide that health care system leaders can use to improve HPV vaccine communication in their organizations and ultimately protect more patients from cancer.

“The IMPACT program is exciting because it takes a ‘learning health care system’ approach to improving the delivery of HPV vaccines,” Gilkey said. “Each project seeks to help health care systems capitalize on existing resources, like vaccination data and clinical champions, to protect adolescents from future HPV cancers.”

BARIC, TING ELECTED TO AMERICAN ACADEMY OF ARTS & SCIENCES

UNC Lineberger’s **Ralph Baric, PhD**, and **Jenny P. Y. Ting, PhD**, have been elected to the American Academy of Arts and Sciences, which was founded in 1780 to recognize and celebrate artistic and scientific excellence and to convene researchers from various areas, professions and perspectives. They join seven other UNC Lineberger members – and 39 UNC-Chapel Hill faculty overall – with this honor.

Baric, the William R. Kenan Jr. Distinguished Professor of



Baric



Ting

Epidemiology at the UNC Gillings School of Global Public Health and professor of microbiology and immunology, is internationally renowned for his seminal research of norovirus, flavivirus and coronaviruses. His scientific discoveries made a significant impact on the COVID-19 pandemic by identifying antivirals to fight COVID-19 and collaborating with the National Institutes of Health to test vaccine candidates.

Ting, the William Rand Kenan Professor of Genetics in the UNC School of Medicine’s microbiology and immunology department, is widely cited for her high-impact research that has advanced the understanding of nucleotide-binding and leucine-rich repeat (NLR) genes, which are crucial regulators of inflammatory and innate immune response, and their role in a range of diseases, including inflammatory disorders, cancer and infectious diseases.

LIU AWARDED \$150,000 EWING SARCOMA RESEARCH GRANT

The Andrew McDonough B+ Foundation awarded UNC Lineberger’s **Pengda Liu, PhD**, associate professor of biochemistry and biophysics, a two-year grant totaling \$150,000 to support his research targeting ATR/SPOP signaling to overcome chemotherapy resistance in Ewing sarcoma, a bone cancer that occurs mainly in children. Approximately 250 children and young



Liu

adults are diagnosed with Ewing sarcoma each year in the United States, and about half of those diagnosed will ultimately succumb to the disease, pointing to the need for better therapies.

FOUR UNC LINEBERGER MEMBERS ELECTED AAAS FELLOWS

Stephen V. Frye, PhD, **Amy S. Gladfelter, PhD**, **Alexander V. Kabanov, PhD, DSc**, and **David Margolis, MD**, have been elected 2021 fellows of the American Association for the Advancement of Science, one of the most distinct honors in the scientific community. With this new class of fellows, there are 13 current UNC Lineberger members who have received this honor.

Frye, the Fred Eshelman Distinguished Professor at the UNC Eshelman School of Pharmacy and director of the Center for Integrative Chemical Biology and Drug Discovery, was honored for his distinguished contributions to the field of oncology drug discovery, including new treatments for benign prostatic hyperplasia, metastatic breast cancer, renal carcinoma and soft tissue sarcoma.



Frye



Gladfelter

FACULTY IMPACTS

Gladfelter, professor of biology in the UNC College of Arts & Sciences and cell biology and physiology, was honored for her distinguished contributions to the field of cell biology, particularly in the areas of phase-separated condensates and the biophysics of the septin cytoskeleton.

Kabanov, the Mescal S. Ferguson Distinguished Professor and director of the Center for Nanotechnology in Drug Delivery at the UNC Eshelman, was honored for distinguished



Kabanov

contributions to the field of nanomedicine and drug delivery including the use of polymeric micelles, polycation complexes,



Margolis

macrophages and exosomes to treat cancers and diseases of the central nervous system.

Margolis, the Sarah Graham Kenan Professor of Medicine, Microbiology and Immunology, professor of epidemiology at UNC Gillings, and director of the HIV Cure Center, was honored for distinguished contributions to the field of virology, particularly for making key discoveries on the mechanisms of HIV latency and devising new strategies to find a cure for HIV infection.

INFRASTRUCTURE AND SHARED RESOURCES



INFRASTRUCTURE AND SHARED RESOURCES

In addition to enabling the recruitment and retention of UNC's cancer experts and supporting their research and clinical work, the UCRF sustains critical core infrastructure and shared resources. These include imaging, informatics and other research tools that are central to the push to advance cancer research and care. Virtual tumor boards, telemedicine, partnerships with health care providers, and robust community outreach and engagement efforts have helped UNC Lineberger serve patients and clinical practices in all 100 of North Carolina's counties.

UNC LINEBERGER CANCER NETWORK EDUCATES MEDICAL PROFESSIONALS, PATIENTS

A critical part of UNC Lineberger's mission as a comprehensive cancer center is to provide continuing education to health care professionals across the state, who can use the credits they earn toward re-licensure, re-certification, and renewal of hospital privileges.

The UNC Lineberger Cancer Network (UNCLCN) 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:

- 19 American Medical Association Continuing Medical Education credits;
- 661 American Nurses Credentialing Center credits;
- 96 American Society of Radiologic Technologist credits;
- 334 Accreditation Council for Pharmacy Education credits; and
- 55 National Cancer Registrars Association credits

A total of 2,097 telehealth attendance hours were logged by medical professionals in FY 2022.

The UCRF also has enhanced UNC Lineberger's ability to connect and collaborate with oncologists and cancer patients across North Carolina. Using UCRF-supported infrastructure, UNC Lineberger cancer experts regularly hold virtual "tumor boards" – in-depth reviews of a particular patient's case with a team of doctors – and consult in specialties that are not available in rural communities. This year 676 virtual tumor boards, across 17 different disciplines, helped connect community-based medical professionals with UNC oncology experts. Tumor boards are another source for continuing education, providing 3,642 credit hours this year in the following specialty areas:

Bone Marrow Transplant/ Cellular Therapy	721
Gastro-Intestinal	415
Hematology Oncology	580
Breast Radiology Pathology	195
Melanoma	90
Breast	669
Pediatrics	354
Benign Hematology	253
Head and Neck	331
Molecular Tumor Board	34
Total	3,642

INFRASTRUCTURE AND SHARED RESOURCES

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 past year, UNC Lineberger hosted 34 telehealth lectures with 2,097 participants including nurses, doctors, physician assistants, nurse practitioners, pharmacists, social workers, nutritionists and clinic managers in 45 oncology practices across the state.

Working collaboratively, UNC Lineberger, North Carolina A&T State University and North Carolina Central University produced Exploring Cancer, a series of 10 lectures and recordings to 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.

To support care providers and caregivers, the UNCLCN assisted with 39 Palliative Care Grand Rounds lectures, which cover topics that impact the practice of palliative medicine. UNCLCN assisted in hosting 42 Caregiver Conversations sessions with the Office of Community Outreach and Engagement as well as 5 Schwartz Rounds, which focus on issues related to the emotional impacts of patient care.

The UNCLCN video library now houses more than 400 oncology videos, including 100 Patient Centered Care lectures, 85 Research to Practice Lectures, 16 Advanced Practice Provider lectures, 121 Palliative Care Grand Rounds, 127 Didactic Fellows Lectures, and 27 Exploring Cancer Lectures.

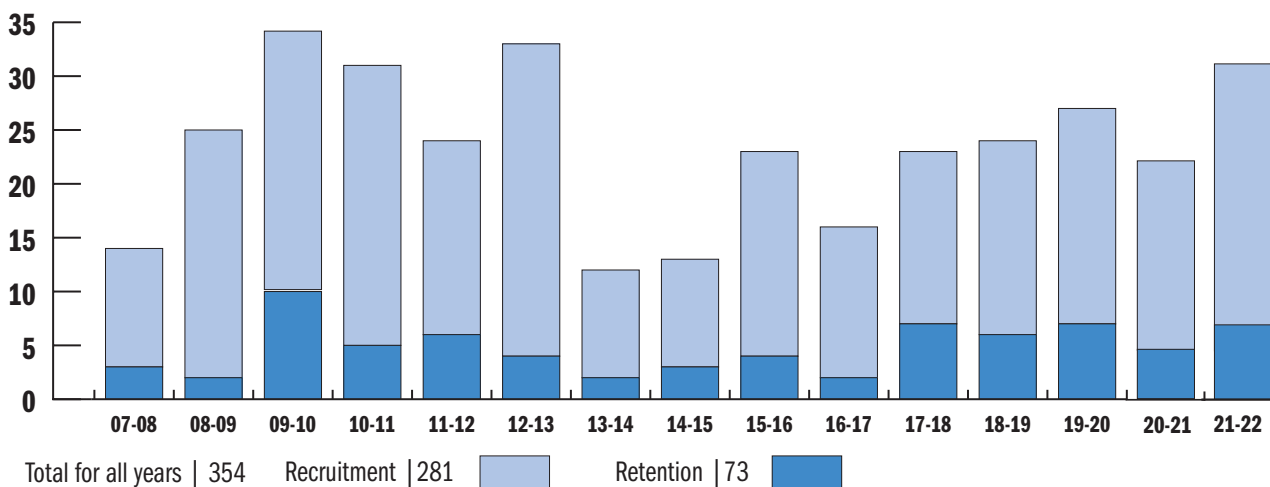
INNOVATIVE CANCER DATA RESOURCE FUELS ONGOING RESEARCH

UCRF funds helped build and maintain a unique research tool to facilitate “big data” population-based cancer research. The Cancer Information & Population Health Resource (CIPHR) is a comprehensive data resource that integrates information from multiple public and private sources, giving researchers and policymakers a deeper understanding of the various and complicated issues tied to North Carolina cancer outcomes.

With information on more than 900,000 cancer patients in the state, CIPHR offers a prospective data linkage between metrics of cancer incidence, mortality, and burden in North Carolina and data sources at an individual and aggregate level that describe health care, economic, social, behavioral, and environmental patterns. It is a rich data resource that allows researchers to examine real-world information about real-world patients, and its data is used in a number of population-based studies aiming to improve scientists’ understanding of cancer burdens across the state and designing interventions that help improve access and quality of cancer care.

INFRASTRUCTURE AND SHARED RESOURCES

Recruitment and Retention



FACULTY RECRUITMENT

*Served as chief resident

Critical Infrastructure

X. Scott Chen, MD, PhD*

Assistant Professor
UNC School of Medicine
Department of Radiation Oncology
Johns Hopkins University

Cristine Klatt-Cromwell, MD

Assistant Professor
UNC School of Medicine
Department of Otolaryngology
Division of Head and Neck Surgical
Oncology
Cancer skull-based surgery
Washington University

Yasmeen Rauf, MD

Assistant Professor
UNC School of Medicine
Department of Neurology
Neuro-oncology, clinical trials
Cleveland Clinic

Ashwin Somasundaram, MD

Assistant Professor
UNC School of Medicine
Department of Medicine
Division of Oncology
Gastrointestinal cancers
*University of Pittsburgh Medical
Center*

Jonathan Sorah, MD

Assistant Professor
UNC School of Medicine
Department of Medicine
Division of Oncology
Gastrointestinal and melanoma
oncology
*University of North Carolina at Chapel
Hill*

Shivani Sud, MD*

Assistant Professor
UNC School of Medicine
Department of Radiation
Oncology
Orphan diseases, treatment of rare
cancers
*University of North Carolina at Chapel
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Ari Wijetunga, MD, PhD, MS*

Assistant Professor
UNC School of Medicine
Department of Radiation Oncology
Lymphoma and molecular
genomics
*Memorial Sloan Kettering Cancer
Center*

Therapeutics

Rebecca Berlow, PhD

Assistant Professor
UNC School of Medicine
Department of Biochemistry and
Biophysics
Nuclear magnetic resonance
spectroscopy of disordered cancer
proteins
Scripps Research

Paul Dayton, PhD

Professor and Chair
UNC/NC State Joint Department of
Biomedical Engineering
Engineering approaches to detection
and treatment
*University of North Carolina at Chapel
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Owen Fenton, PhD

Assistant Professor
UNC Eshelman School of Pharmacy
Division of Pharmacoengineering and
Molecular Pharmaceutics
Delivery of RNA, nanotechnology
MIT/Singapore

Brian Miller, MD, PhD

Assistant Professor
UNC School of Medicine
Department of Medicine
Division of Oncology
Immunotherapy therapeutics,
genitourinary cancers
*Dana-Farber Cancer Institute/
Harvard*

Rani Sellers, DVM, PhD, DACVP

Professor
UNC School of Medicine
Department of Pathology & Laboratory
Medicine
Comparative cancer pathology
Pfizer

INFRASTRUCTURE AND SHARED RESOURCES

Jessica Thaxton, PhD

Associate Professor
UNC School of Medicine
Department of Cell Biology & Physiology
Immunology, immunotherapy
Medical University of South Carolina

Cancer Genetics**David Corcoran, PhD**

Assistant Professor
UNC School of Medicine
Department of Genetics
Bioinformatics
Duke University

Adam Pfefferle, PhD

Assistant Professor
UNC School of Medicine
Department of Genetics
Genomics and development of spatial analysis
University of North Carolina at Chapel Hill

Optimizing NC Outcomes**Ramona Denby-Brinson, PhD**

Professor and Dean
School of Social Work
Cancer support and social work
Ohio State University

Caprice Greenberg, MD, MPH

Professor and Chair
UNC School of Medicine
Department of Surgery
Breast cancer surgical oncology
Medical College of Georgia at Augusta University

Rachel Hirschey, PhD, RN

Assistant Professor
UNC School of Nursing
Minority disparities, survivorship, exercise interventions
University of North Carolina at Chapel Hill

Chemtai Mungo, MD, MPH

Assistant Professor
UNC School of Medicine
Department of Obstetrics & Gynecology
Global oncology, cervical cancer screening
University of California San Francisco

Sasha Knowlton, MD

Associate Professor
UNC School of Medicine
Department of Physical Medicine & Rehabilitation
Symptom management and survivorship
Massachusetts General Hospital

Jacob Stein, MD, MPH

Assistant Professor
UNC School of Medicine
Department of Medicine
Division of Oncology
Sarcoma and cancer outcomes
University of North Carolina at Chapel Hill

Opportunity**Janet Guthmiller, DDS, PhD**

Professor and Dean
UNC Adams School of Dentistry
Oral cancer care and oral cancer
University of Nebraska Medical Center

Janice Hwang, MD, MHS

Associate Professor
UNC School of Medicine
Department of Medicine
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Obesity and metabolism
Yale School of Medicine

Travis Schrank, MD, PhD

Assistant Professor
UNC School of Medicine
Department of Otolaryngology/Head and Neck Surgery
HPV translational research
University of North Carolina at Chapel Hill

FACULTY RETENTION**Developing New Treatments****Chad Pecot, MD**

Associate Professor
UNC School of Medicine
Department of Medicine
Division of Oncology
Lung cancer translational and RNA-based therapeutics

Yuliya Pylayeva-Gupta, PhD

Associate Professor
UNC School of Medicine
Departments of Genetics and Microbiology and Immunology
Immunology of pancreatic cancer

Critical Infrastructure**Joshua Zeidner, MD**

Associate Professor
UNC School of Medicine
Department of Medicine
Division of Hematology
Leukemia, clinical trials, cancer genetics

Gaorav Gupta, MD, PhD

Associate Professor
UNC School of Medicine
Department of Radiation Oncology
DNA repair and triple negative breast cancer

Naim Rashid, PhD

Associate Professor
UNC Gillings School of Global Public Health
Department of Biostatistics
Biostatistics, genomics analysis

Optimizing NC Outcomes**Saif Khairat, PhD, MPH**

Associate Professor
UNC School of Nursing
Health informatics

Deborah Tate, PhD

Professor
UNC Gillings School of Global Public Health
Departments of Health Behavior and Nutrition
Health and mCommunication

BUDGET AND EXPENDITURE INFORMATION



BUDGET AND EXPENDITURE INFORMATION

When it was initially established in 2007, the UCRF had three sources of revenue: 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, eliminating tobacco settlement funds as a source of UCRF support. The UCRF still receives the original \$16 million state appropriation each year, along with OTP tax proceeds which vary in amount year by year based on product sales.

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 2022 Anticipated and Actual Fund Revenue	Amount *
Anticipated	
State Appropriation	\$16,020,000
Projected OTP Tax Receipts	\$38,480,000
Total	\$54,500,000
Actual	
State Appropriation	\$16,020,000
Actual OTP Tax Receipts	\$43,524,272
Total	\$59,544,272

* Rounded to the nearest dollar

Fund Balance

FY 2022 Budget and Expenditures	Amount *
Anticipated Budget	
Revenue	\$54,500,000
Carryover from FY21	(\$51,724)
Total	\$54,448,276
Actual Budget	
Revenue	\$59,544,272
Carryover from FY21	(\$51,724)
Total	\$59,492,548
Expenditures	\$59,536,241
Balance	(\$43,693)

* Rounded to the nearest dollar

BUDGET AND EXPENDITURE INFORMATION

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	Year to Date Actual*
Tier 1: Research Priorities	
Optimizing Outcomes	\$9,175,851
Understanding Genetics in Cancer – Basic Approaches and Clinical Applications	\$10,069,770
Developing New Cancer Treatments	\$9,289,080
Tier 2: Opportunity Fund	\$10,138,852
Tier 3: Critical Infrastructure	
Clinical Excellence – Research & Outreach	\$8,418,153
Research & Tech Development and Training	\$12,444,533
Total	\$59,536,241

* Rounded to nearest dollar

CONCLUSION

CONCLUSION

The University Cancer Research Fund continues to have enormously positive impacts on North Carolina, with steady and growing economic benefits and a statewide reach that serves patients in all 100 counties. In addition to creating jobs, launching spinoff companies and generating revenue, the UCRF supports world-class faculty members and their innovative research and clinical work while also funding critical resources that enable UNC Lineberger to improve its connection and engagement with patients, partners and communities throughout our state. Thank you for your continued support of this vital investment, which is helping UNC remain a global leader at the forefront of advancing cancer care and research to help patients in North Carolina and beyond.

APPENDIX



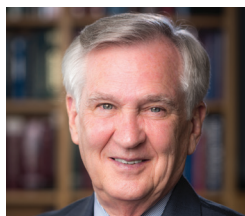
APPENDIX

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 emeritus, Fred Hutchinson Cancer Center).



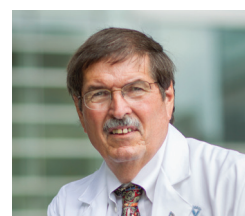
Kevin M. Guskiewicz, PhD,
Chair
Chancellor
The University of North
Carolina at Chapel Hill



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

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.



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

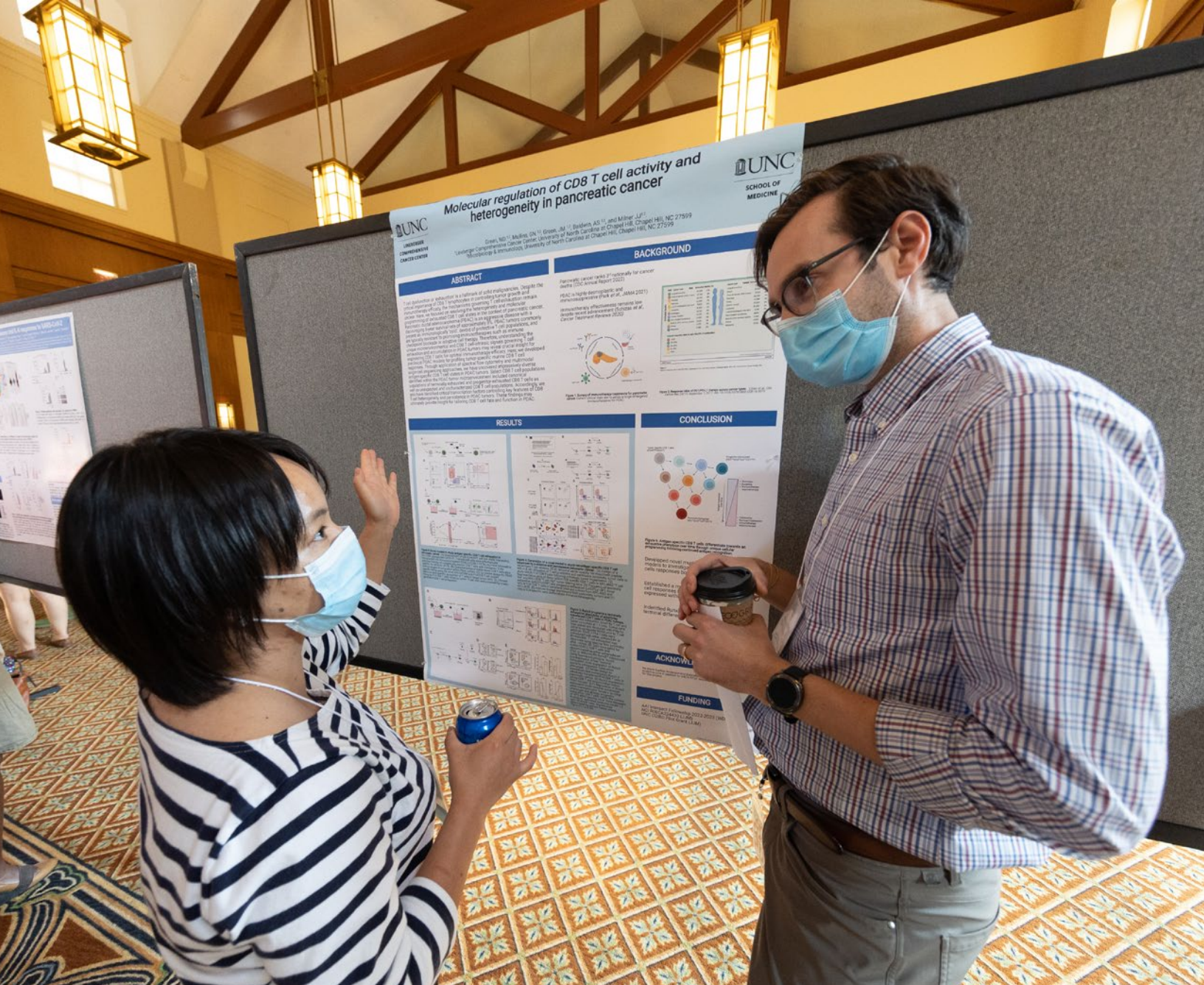
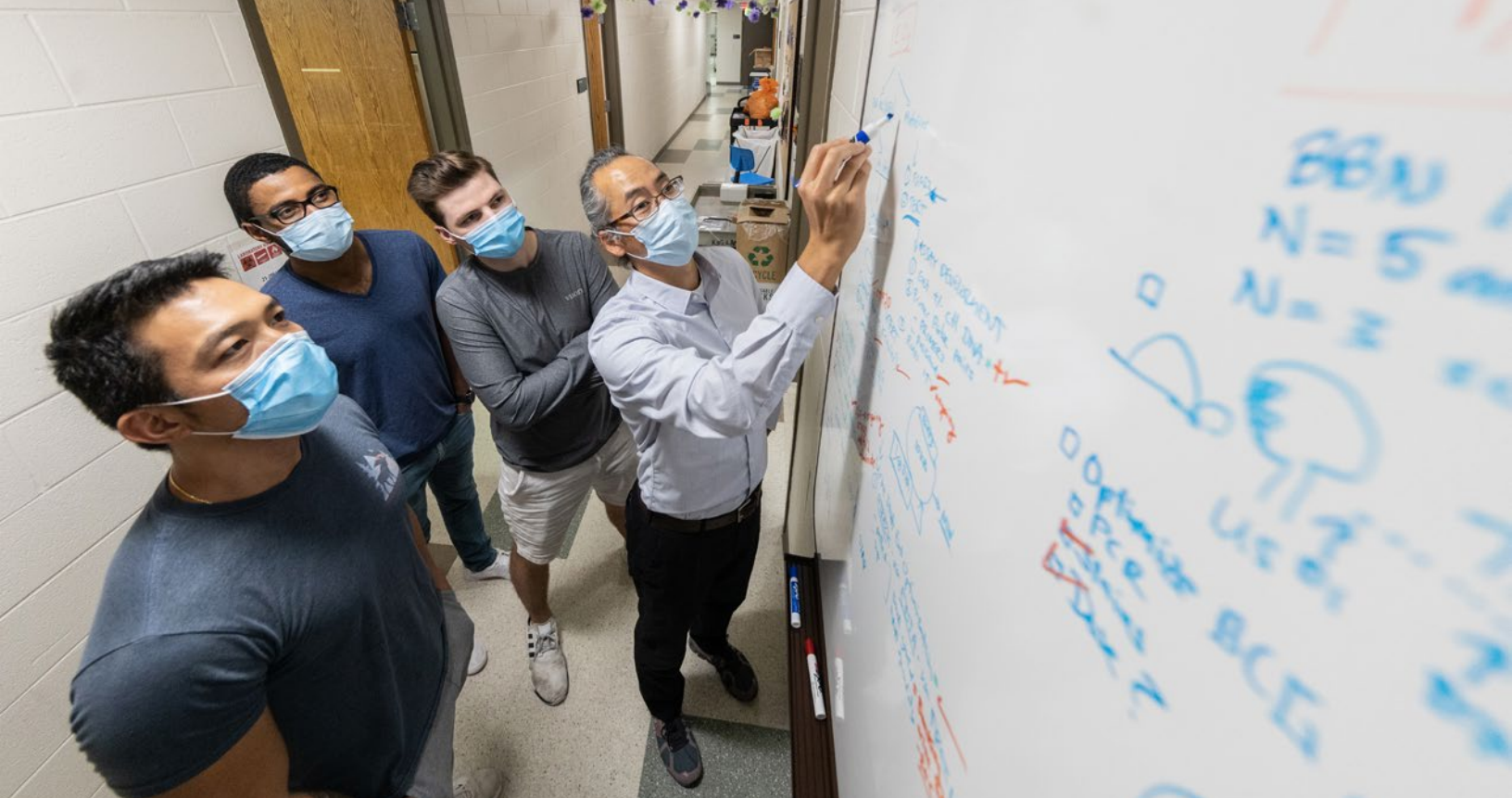


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EXECUTIVE SUMMARY

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 The top three incidences of cancer in North Carolina from 2014-2018 include² female breast (136.5), prostate (119.3), and lung (66.3). Additionally, lung cancer continues to be the leading cancer-causing death in North Carolina by a large margin.³ 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 \$59.5 million for FY 2022. This year alone the \$59.5 million investment produced an economic impact of more than \$740.0 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 53 National Cancer Institute-designated comprehensive cancer centers, and the only NCI-designated facility in North Carolina. 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.

UNC Lineberger researchers have played a critical role in advancing the understanding of the genetics of cancer. Their contributions range from defining intrinsic subtypes of breast cancer based on genetic signatures, a finding that has led to better prevention and treatment strategies to leading key facets of The Cancer Genome Atlas, the decade-long research project that mapped the genetic and molecular changes in 33 cancers, including 10 rare cancers.

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

² Per 100,000 population.

³ American Cancer Society, 2022

The cancer center has made a longstanding investment in breast cancer research, including the study of molecular phenotypes and pathogenesis, particularly in those patients with the worst prognosis. These basic biological investigations are linked to the center's work on population studies, particularly within the African-American community.

Its cancer prevention and control faculty have led a number of seminal studies aimed at improving cancer care and outcomes and reducing the burden and impact of cancer. Specific areas of expertise include cancer communication and decision-making, health promotion and health disparities, cancer survivorship, dissemination, and health outcomes research.

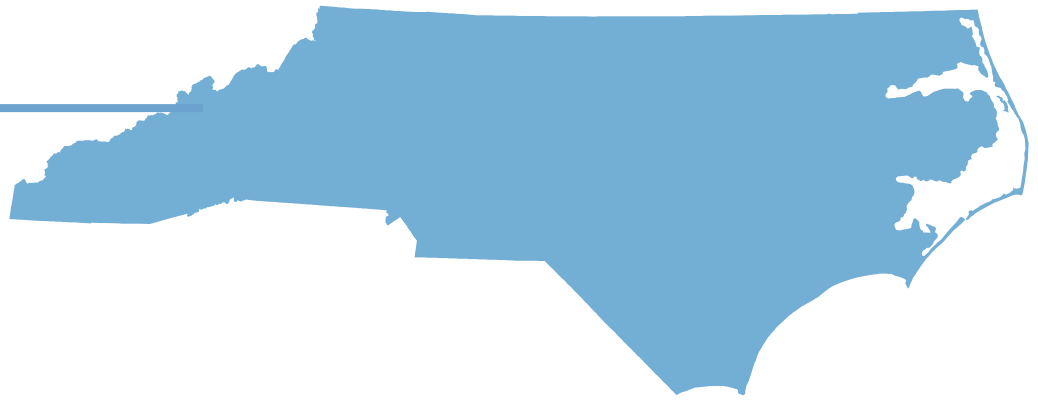
Investment in the UCRF allows the state an even greater ability to continue its tradition of care for all North Carolinians. It is an investment in making the best care in the world available in North Carolina, and it is difficult to think of a better investment than one for the future health of the 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.



KEY FINDINGS



EXPANDING THE STATE'S ECONOMY

UCRF generated more than \$740.0 million in total economic impact in North Carolina in 2022. This includes direct spending of more than \$375.7 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 \$255.0 million in research funding received in 2022 alone. The ripple effect of in-state spending accounts for nearly \$364.3 million in additional funds, representing downstream spending by employees, vendors, and contractors. This is just the impact of the current year (2022). Tripp Umbach estimates that through the commercialization of the discoveries made from this research, the impact by 2032 will be dramatically larger.

CREATING JOBS

UCRF directly supported employment in 2022 of more than 1,433 jobs in North Carolina and an additional 2,130 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 3,563 jobs.

GENERATING TAX REVENUE

Tripp Umbach estimates that UCRF generated more than \$23.4 million in local and state tax revenue in 2022.

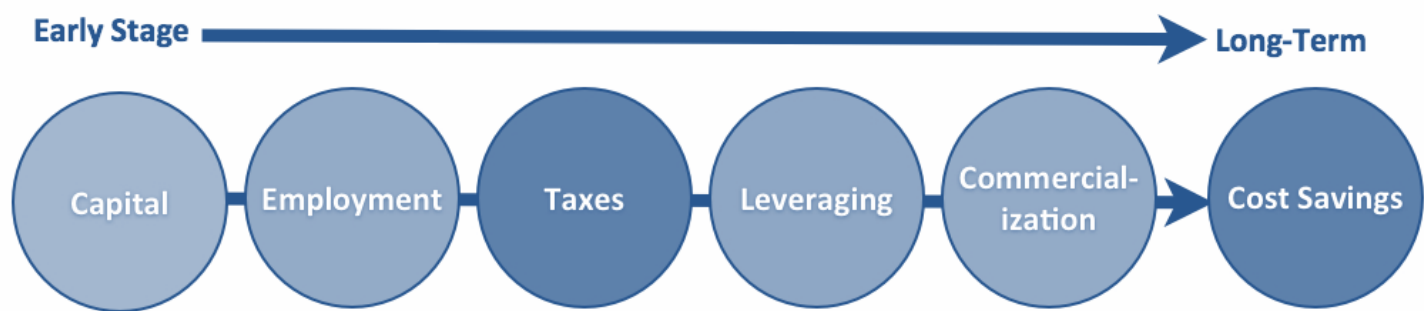
ENCOURAGING SCIENTIFIC COLLABORATION AND LEVERAGING FEDERAL RESEARCH FUNDS

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 \$215.4 million in federal research grants, bringing the total to more than \$255.0 million in external funding in 2022 alone. This would not have been possible without the UCRF funding, which elevated UNC Lineberger to the top rankings.

IMPACTS OF UCRF IN 2022

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):

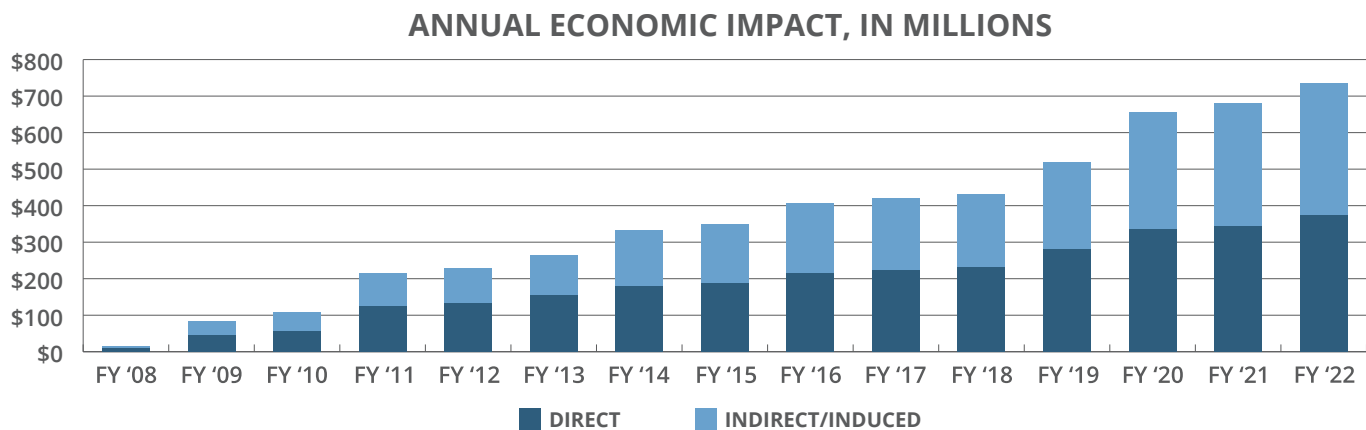
Figure 1: Research Return on Investment Timeline



EARLY-STAGE ECONOMIC IMPACT OF FUNDING

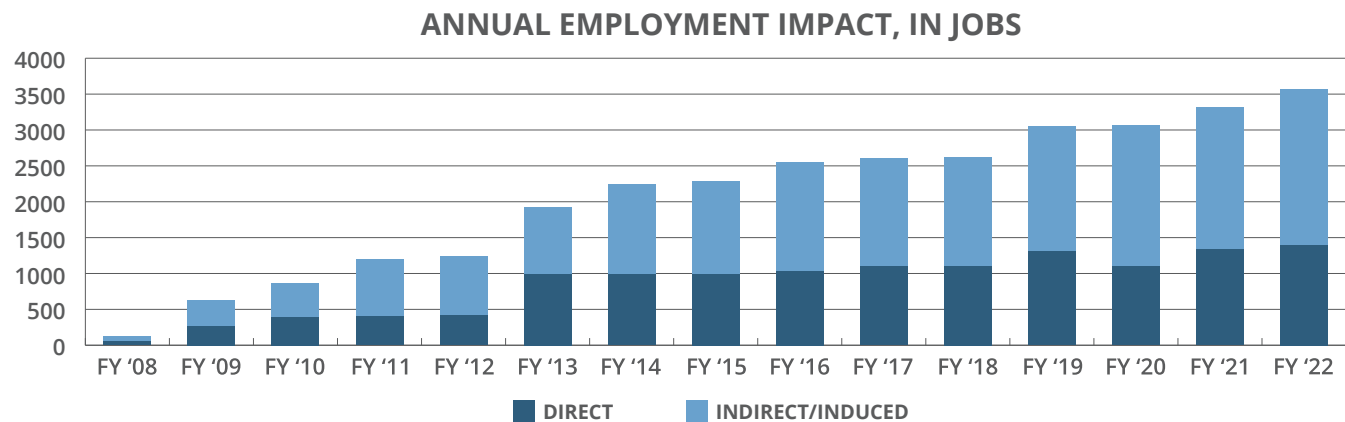
UCRF dollars invested in research in 2022 have resulted in an expansion of the state’s economy by greater than \$740.0 million. Tripp Umbach’s economic impact analysis indicates that even in the early stage (2007-2011), program investments in capital and human resources have returned greater than three dollars to the state’s economy for every one dollar invested. In 2022, 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.



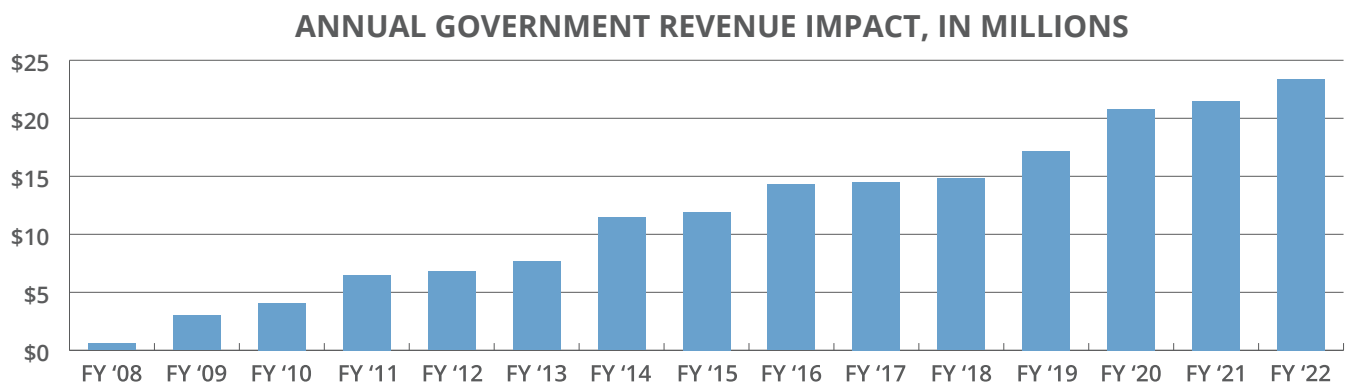
EARLY-STAGE IMPACT OF UCRF DOLLARS ON EMPLOYMENT

Tripp Umbach estimates that in 2022, UCRF dollars for healthcare research have created and sustained 3,563 high-paying research-related jobs throughout the state of North Carolina. This includes both the 1,433 high-paying research-related jobs directly attributed to UNC in addition to the 2,103 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 2022 have resulted in nearly \$23.4 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.⁴ Nationally, that places North Carolina at number 11 in the list of annual economic impact contributions to a state's economy.

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 \$215.4 million, bringing the total to nearly \$255.0 million in external funding in 2022 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.⁵

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 2032, Tripp Umbach estimates this to be from \$782.8 million at a conservative level of growth scenario to \$1.4 billion using the aggressive level of growth in additional economic activity within North Carolina. These activities will also create an additional 4,012 (conservative) to 7,380 jobs (aggressive) high-paying jobs. These additional economic and employment impacts will translate into additional state and local government revenue of \$26.7 million to \$47.9 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 2022 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.

⁴ Economic Impact of AAMC Medical Schools and Teaching Hospitals, 2020.

⁵ 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 2022

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 Lineberger over the last 13 years, Tripp Umbach has also completed economic impact studies for cancer centers such as the CURE Funding for PA Cancer Alliance, The Wistar Institute, North Carolina Basnight 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 visit: www.trippumbach.com.

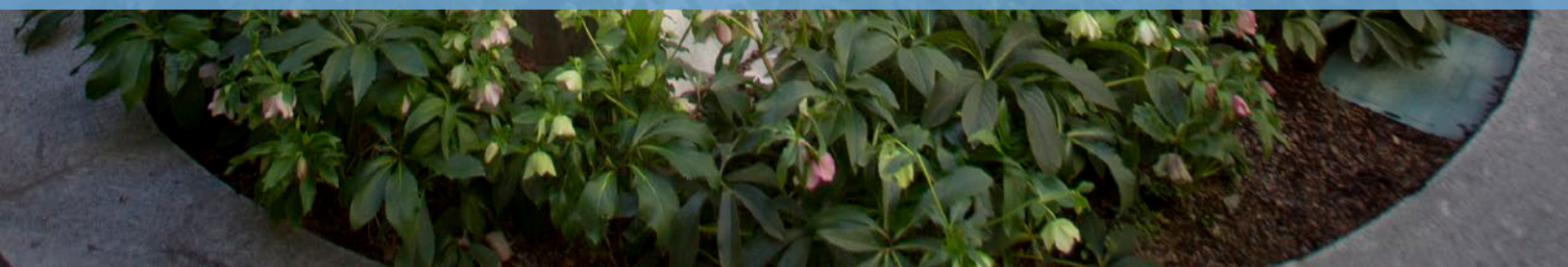


LINEBERGER COMPREHENSIVE
CANCER CENTER



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FY 2022 EXPENDITURES



FY 2022 EXPENDITURES

Fiscal Year Expenditures Summary

Strategy	Annual Budget	Year to Date Actual*	Cash Balance
Theme 1: Optimizing NC Cancer Outcomes	\$9,100,000	\$9,175,851	(\$75,851)
Theme 2: Understanding Genetics in Cancer – Basic Approaches & Clinical Applications	\$9,865,000	\$10,069,770	(\$204,770)
Theme 3: Develop New Cancer Treatments	\$9,460,000	\$9,289,080	\$170,920
Tier 2: Opportunity Fund	\$10,550,000	\$10,138,852	\$411,148
Tier 3: Infrastructure – Clinical Excellence, Research and Outreach	\$8,544,272	\$8,418,153	\$126,119
Infrastructure – Research Tech Development and Training	\$12,025,000	\$12,444,533	(\$419,533)
Grand Total	\$59,544,272	\$59,536,241	\$8,031

* Rounded to nearest dollar

FY 2022 EXPENDITURES

UCRF Funding by Strategy and Expense

Theme 1: Optimizing NC Cancer Outcomes	Year to Date Actual*
Faculty Salaries	\$3,287,107
EPA Student Salaries	\$201,654
Staff Salaries	\$1,866,991
Other Staff	\$217,566
Benefits	\$1,845,297
Phy Benefits	\$5,440
Other Staff Benefits	\$53,122
Transit Tax	\$17,010
Consultants/Contracted Services	\$106,680
Employee Education	\$9,344
Repairs and Maint	\$2,832
Other Current Services	\$453,727
Supplies, Other	\$226,633
Travel	\$41,212
Maintenance Contracts	\$0
Advertising	\$4,315
Printing and Binding	\$23,857
Communication	\$37,273
Computer Services	\$37,602
Rental/Lease Facilities	\$466,637
Equipment	\$16,377
Study Subjects & Exp	\$1,690
Student Support	\$250,027
Legal Fees	\$3,460
Theme 1: Optimizing NC Cancer Outcomes Total	\$9,175,851

*Rounded to nearest dollar

FY 2022 EXPENDITURES

Theme 2: Understanding Genetics in Cancer –

Basic Approaches & Clinical Applications

Year to Date Actual*

Faculty Salaries	\$2,979,681
EPA Student Salaries	\$515,270
Staff Salaries	\$1,303,916
Other Staff	\$10,771
Benefits	\$1,516,365
Phy Benefits	\$7,090
Other Staff Benefits	\$37,068
Transit Tax	\$14,397
Consultants/Contracted Services	\$318,456
Employee Education	(\$1,155)
Repairs and Maint	\$2,219
Other Current Services	\$1,338,523
Supplies, Other	\$780,223
Travel	\$19,161
Maintenance Contracts	\$187,054
Advertising	\$8,292
Printing and Binding	\$17,769
Communication	\$5,796
Computer Services	\$370,697
Equipment	\$164,915
Study Subjects & Exp	\$400,000
Student Support	\$71,382
Legal Fees	\$1,880

Theme 2: Understanding Genetics in Cancer –

Basic Approaches & Clinical Applications Total

\$10,069,770

*Rounded to nearest dollar

FY 2022 EXPENDITURES

Theme 3: Developing New Cancer Treatment	Year to Date Actual*
Faculty Salaries	\$2,039,161
EPA Student Salaries	\$549,830
Staff Salaries	\$1,086,697
Other Staff	\$39,269
Benefits	\$1,124,776
Phy Benefits	\$15,490
Other Staff Benefits	\$25,365
Transit Tax	\$11,090
Consultants/Contracted Services	\$199,761
Employee Education	\$40
Repairs and Maint	\$134,995
Other Current Services	\$1,347,727
Supplies, Other	\$1,484,193
Travel	\$17,778
Maintenance Contracts	\$401,699
Advertising	\$0
Printing and Binding	\$12,602
Communication	\$35,057
Computer Services	\$9,584
Rental/Lease Facilities	\$409,452
Equipment	\$249,363
Study Subjects & Exp	\$0
Insurance	\$2,683
Student Support	\$92,468
Legal Fees	\$0
Theme 3: Developing New Cancer Treatment Total	\$9,289,080

*Rounded to nearest dollar

FY 2022 EXPENDITURES

Tier 2: Opportunity Fund	Year to Date Actual*
Faculty Salaries	\$1,606,043
EPA Student Salaries	\$553,577
Staff Salaries	\$1,084,717
Other Staff	\$74,381
Benefits	\$946,569
Phy Benefits	\$20,448
Other Staff Benefits	\$22,790
Transit Tax	\$10,084
Consultants/Contracted Services	\$11,011
Employee Education	\$68,861
Repairs and Maint	\$1,155,871
Other Current Services	\$1,070,867
Supplies, Other	\$1,180,848
Travel	\$45,278
Maintenance Contracts	\$271,220
Advertising	\$0
Meetings & Amenities	\$0
Printing and Binding	\$14,670
Communication	\$16,966
Computer Services	\$116,645
Rental/Lease Facilities	\$25,940
Equipment	\$1,638,217
Study Subjects & Exp	\$7,238
HCS Residents	\$0
Insurance	\$62
Student Support	\$181,743
Legal Fees	\$14,805
Tier 2: Opportunity Fund Total	\$10,138,852

*Rounded to nearest dollar

FY 2022 EXPENDITURES

Tier 3: Infrastructure - Clinical Excellence, Research and Outreach	Year to Date Actual*
Faculty Salaries	\$5,329,513
EPA Student Salaries	\$103,160
Staff Salaries	\$533,058
Other Staff	\$74,855
Benefits	\$1,420,980
Phy Benefits	\$210,508
Other Staff Benefits	\$12,720
Transit Tax	\$18,120
Consultants/Contracted Services	\$35,373
Employee Education	\$4,872
Repairs and Maint	\$299
Other Current Services	\$5,894
Supplies, Other	\$46,935
Travel	\$555
Maintenance Contracts	\$11,444
Advertising	\$964
Printing and Binding	\$165
Communication	\$4,189
Computer Services	\$13,953
HCS Residents	\$585,927
Study Subjects & Exp	\$0
Student Support	\$4,670
Legal Fees	\$0
Tier 3: Infrastructure - Clinical Excellence, Research and Outreach Total	\$8,418,153

*Rounded to nearest dollar

FY 2022 EXPENDITURES

Infrastructure - Research, Tech Development and Training	Year to Date Actual*
Faculty Salaries	\$2,396,661
EPA Student Salaries	\$1,220,467
Staff Salaries	\$3,178,015
Other Staff	\$27,638
Benefits	\$2,212,081
Phy Benefits	\$3,755
Other Staff Benefits	\$59,123
Transit Tax	\$19,006
Consultants/Contracted Services	\$815,458
Employee Education	\$5,128
Repairs and Maint	\$7,524
Other Current Services	\$414,719
Supplies, Other	\$531,318
Travel	\$73,425
Maintenance Contracts	\$352,497
Advertising	\$5,400
Meetings & Amenities	\$46,648
Printing and Binding	\$1,418
Communication	\$50,067
Computer Services	\$24,430
Equipment	\$216,366
HCS Residents	\$116,081
Study Subjects & Exp	\$83,349
Student Support	\$583,960
Infrastructure - Research, Tech Development and Training Total	\$12,444,533
Grand Total	\$59,536,241

EXTRAMURAL AWARDS



UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Abdou	Yara	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	\$1,926.00
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	\$24,144.46
Recruitment	Akulian	Jason	NanOlogy, LLC	NANOPAC-2020-01	7/8/21	10/8/22	Phase 2 Trial Evaluating the Safety and Tolerability of Intratumoral Injections of NanoPac® with Standard of Care Therapy in Subjects with Lung Cancer	\$31,894.24
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	\$34,946.04
Recruitment	Aleman	Maria	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK124773-01-03	7/1/20	4/30/25	Iron-sensitive RNA regulation during erythropoiesis	\$394,214.00
Recruitment	Alexander	Thomas	AbbVie, Inc.	M16-106 83476/PO#4200 911030	11/7/17	6/30/22	A Phase 1 Dose Escalation, Open-Label Study of Venetoclax in Combination with Navitoclax and Chemotherapy in Subjects with Relapsed Acute Lymphoblastic Leukemia	\$25,930.00
Recruitment	Alexander	Thomas	NIH National Cancer Institute	1-R21-CA259926-01A1	7/1/22	6/30/24	Novel Sequencing Based Diagnostics for Leukemia in Low Resource Settings	\$218,089.00
Recruitment	Amelio	Antonio	NIH National Institute of Dental and Craniofacial Research	5-R01-DE030123-01-02	7/1/21	4/30/26	Role of CRTC1-MAML2 in Salivary Mucoepidermoid Carcinoma Pathobiology	\$495,063.00
Recruitment	Andermann	Tessa	National Marrow Donor Program	32979	8/1/19	12/31/23	Modulation of CAR-T Cell Therapy Efficacy by the Intestinal Microbiome in Patients with Leukemia and Lymphoma	\$100,000.00
Recruitment	Andermann	Tessa	NIH National Institute of Allergy and Infectious Diseases	1-K23-AI163365-01	9/10/21	8/31/26	Precision characterization of antimicrobial resistance gene dynamics in bloodstream infection risk after hematopoietic stem cell transplantation	\$202,619.00
Theme Investment	Anton	Eva	NIH National Institute of Neurological Disorders and Stroke	5-R35-NS116859-01-03	5/1/20	4/30/28	Defining Mechanisms of Progenitor Balance and Neuronal Connectivity	\$544,250.00
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	American Society of Hematology	21-3758	7/1/21	6/30/22	Discovering HLA-E restricted antigens as T cell immunotherapy targets for hematological malignancies.	\$5,000.00
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 Allergy and Infectious Diseases	5-R21-AI159786-01-02	2/13/21	1/31/23	Novel high-throughput in vivo approach to define pathobionts driving colitis	\$194,375.00
Recruitment	Arthur	Janelle	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK124617-01-03	6/1/20	5/31/25	Microbiota-mediated fibrotic remodeling in the inflamed intestine	\$397,459.00
Recruitment	Atkins	Hannah	Pennsylvania State University	UNCCHCA271069	3/1/22	2/29/24	The role of bacterial vaginosis-associated bacteria in papillomavirus persistence and cancers	\$5,214.00
Recruitment	Aubé	Jeff	American Chemical Society	21-4582	8/1/21	7/22/22	MEDI Graduate Fellowship	\$35,000.00
Recruitment	Aubé	Jeff	NIH National Institute of General Medical Sciences	5-T32-GM135122-02	7/1/21	6/30/26	UNC Chemical Biology Interface Training Program	\$325,768.00
Recruitment	Aubé	Jeff	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI155510-01A1	7/13/21	6/30/25	Discovery of Phosphopantetheinyl Transferase Inhibitors Against Mycobacterium tuberculosis	\$807,677.00
Retention	Bae-Jump	Victoria	Oncoceutics, Inc.		5/11/18	8/31/21	Single Agent ONC201 in Recurrent or Metastatic Endometrial Cancer	\$3,775.00
Retention	Bae-Jump	Victoria	Duke University	1801-05252	7/1/19	7/1/23	Endometrial Cancer Molecularly Targeted Therapy Consortium	\$10,000.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Bae-Jump	Victoria	University of Washington	UWSC12682 55965	4/1/21	3/31/25	Social Interventions for Support during Treatment for Endometrial Cancer and Recurrence: SISTER Study	\$14,000.00
Retention	Bae-Jump	Victoria	Merck Sharp and Dohme Corp.	56986	1/2/19	12/31/28	Window of Opportunity Pilot Study of Pembrolizumab in High Grade Obesity-driven Endometrial Cancer	\$23,097.59
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	V Foundation for Cancer Research	T2017-015	11/1/17	1/7/22	Metabolic and Molecular Biomarkers of Metformin Response in Obesity-driven Endometrial Cancer	\$150,000.00
Retention	Bae-Jump	Victoria	NIH National Cancer Institute	5-R37-CA226969-01-05	3/14/18	2/28/23	Obesity-driven Metabolic and Molecular Biomarkers of Metformin Response in Endometrial Cancer	\$355,706.00
Recruitment	Baker	Rick	Cornell University	87367-11331	1/1/20	3/31/24	Molecular Regulation of the AP2 Clathrin Adaptor Complex	\$76,561.00
Recruitment	Baker	Rick	NIH National Institute of Environmental Health Sciences	75N96021P0026 9	8/9/21	2/8/23	Structural characterization of HIV-1 fusion using time-resolved cryo-electron tomography (TR-cryo-ET)	\$150,118.00
Theme Investment (CC)	Baric	Ralph	North Carolina Biotechnology Center	2020-GTF-6905	12/1/19	6/30/22	Structure-guided Evolution of Human Airway tropic AAV vectors to prevent Severe Coronavirus Infections	\$46,150.50
Theme Investment (CC)	Baric	Ralph	EcoHealth Alliance	19-5722	6/17/20	5/31/22	Understanding Risk of Zoonotic Virus Emergence in EID Hotspots of Southeast Asia.	\$194,375.00
Theme Investment (CC)	Baric	Ralph	University of Texas at Austin	UTAUS-SUB00000595A M1	8/4/21	7/30/23	Development of an S2-directed Pan-B-coronavirus Vaccine	\$219,998.00
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	Vanderbilt University Medical Center	VUMC88435	7/1/20	2/28/22	Determinants of Coronavirus Fidelity in Replication and Pathogenesis - Admin Supplement	\$230,794.00
Theme Investment (CC)	Baric	Ralph	Bill and Melinda Gates Foundation	INV-030330	4/6/21	11/30/22	COVIC: Characterization of hmAB Panel against Variant SARS-CoV2 Recombinant Viruses encoding nLUC.	\$239,651.00
Theme Investment (CC)	Baric	Ralph	Vanderbilt University Medical Center	VUMC 41666	3/1/18	2/28/23	Determinants of Coronavirus Fidelity in Replication and Pathogenesis	\$293,121.00
Theme Investment (CC)	Baric	Ralph	Pfizer International, LLC (Corporate Office New York)	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	Washington University in Saint Louis	WU-21-206/PO#ST0000 0215	9/15/20	8/31/22	Human Anti-body based countermeasures against the Wuhan Coronavirus SARS-CoV-2	\$385,357.00
Theme Investment (CC)	Baric	Ralph	University of Alabama at Birmingham	000520254-SC002	3/1/19	2/28/23	Antiviral Drug Discovery and Development Center	\$580,183.00
Theme Investment (CC)	Baric	Ralph	Fred Hutchinson Cancer Research Center	1078168	3/18/21	3/31/22	CoVPN3004: A Phase 3, Randomized, Observer-Blinded, Placebo-Controlled Study to Evaluate the Efficacy, Safety, and Immunogenicity of a SARS-CoV-2 Recombinant Spike Protein Nanoparticle Vaccine (SARS-CoV-2 rS) with Matrix-M1™ Adjuvant in Adult Partic	\$587,618.00
Theme Investment (CC)	Baric	Ralph	Fred Hutchinson Cancer Research Center	1042325	9/17/20	3/31/22	CoVPN 3003 A Phase 3 Study to Assess the Efficacy and Safety of Ad26.COVS 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	Duke University	303000021	9/16/21	8/31/22	Project 2: Design and Testing of Cross-Reactive Pan-Coronavirus Vaccines	\$700,000.00
Theme Investment (CC)	Baric	Ralph	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI148260-01-03	3/5/20	2/28/25	Antibody Landscape following Human Norovirus Infection and Vaccination	\$737,210.00
Theme Investment (CC)	Baric	Ralph	Fred Hutchinson Cancer Research Center	1041684	9/4/20	3/31/22	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	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI110700-06-07	4/20/15	8/31/25	Cell entry, cross-species transmission and pathogenesis of novel coronavirus from Wuhan	\$748,081.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Theme Investment (CC)	Baric	Ralph	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI132178-01-05	8/9/17	7/31/22	Broad-spectrum antiviral GS-5734 to treat MERS-CoV and related emerging CoV	#####
Theme Investment (CC)	Baric	Ralph	SK bioscience	22-3863	1/3/22	5/30/25	Broadening protection against SARS-COV-2 and new broadly protective Sarbecovirus candidate vaccines	#####
Theme Investment (CC)	Baric	Ralph	NIH National Institute of Allergy and Infectious Diseases	HHSN272201700036I 75N93022F00001	7/14/17	7/13/24	Animal Models II Umbrella	#####
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	#####
Theme Investment (CC)	Baric	Ralph	NIH National Institute of Allergy and Infectious Diseases	1-U19-AI171292-01	5/16/22	4/30/25	Rapidly Emerging Antiviral Drug Development Initiative-AViDD Center (READDI-AC)	#####
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	\$137,758.00
Retention	Basch	Ethan	University of Michigan	3006632396 3004700015	8/17/17	3/31/22	Advanced Development and Dissemination of EMERSE for Cancer Phenotyping from Medical Records	\$35,518.00
Retention	Basch	Ethan	Mayo Clinic	CCH-259713/PO66962983	8/14/19	7/31/25	Alliance NCORP Research Base	\$39,237.00
Retention	Basch	Ethan	University of Alabama at Birmingham	000527573-SC001	5/4/21	2/28/26	Evaluating the implementation and impact of navigator-delivered ePRO home symptom monitoring and management	\$105,686.00
Retention	Basch	Ethan	Alliance for Clinical Trials in Oncology Foundation	IHS-1511-33392	11/1/16	4/30/23	Electronic Patient Reporting Of Symptoms During Outpatient Cancer Treatment: A U.S. National Randomized Controlled Trial	\$108,745.00
Retention	Basch	Ethan	NIH National Cancer Institute	5-T32-CA116339-14	7/1/05	7/31/23	Cancer Care Quality Training Program	\$336,552.00
Retention	Basch	Ethan	NIH National Cancer Institute	5-U01-CA233046-04	9/30/18	8/31/23	Analyzing and Interpreting PRO-CTCAE with CTCAE and Other Clinical Data to Characterize Drug Tolerability	\$469,493.00
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	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS112019-01-04	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	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS102412-01-05	3/1/18	11/30/22	Cell-based Platform for Gene Delivery to the Brain	\$338,579.00
Innovation Award	Bautch	Victoria	NIH National Heart, Lung, and Blood Institute	5-F31-HL156527-02	5/1/21	4/30/24	Fellow: N Tanke Endothelial Cell Cycle Responses to Fluid Shear Stress	\$37,819.00
Innovation Award	Bautch	Victoria	Johns Hopkins University	2004080385	8/15/18	7/31/23	New Roles for VEGFR1 in Angiogenesis	\$204,796.00
Theme Investment (CC)	Baxter	Tori	NIH Office of the Director	NIH/OD5K01OD026529-04	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-F31-GM133094-03	8/1/19	7/31/22	Fellow: Z. King Dissecting the mechanistic contributions of Coronin 1B and Coronin 1C to directed cell migration.	\$46,036.00
Retention	Bear	James	North Carolina State University	2014-0702-02	7/1/18	5/31/22	Multiscale modeling of wound healing	\$343,390.00
Retention	Bear	James	NIH National Institute of General Medical Sciences	5-R35-GM130312-01-04	2/1/19	1/31/24	Systematic analysis of the actin cytoskeleton and directed cell migration	\$691,799.00
Recruitment	Bennett	Antonia	Memorial Sloan-Kettering Cancer Center	BD528251	10/1/20	9/30/21	Workplace/Employer Accommodations during Cancer Treatment (WE-ACT) : A Mobile health app to promote job retention in people undergoing treatment for cancer.	\$10,000.00
Recruitment	Bennett	Antonia	Beat AML, LLC		7/19/22	1/31/23	Beat AML PRO Consulting Agreement	\$33,584.00
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	Bennett	Antonia	Boston University Board of Trustees	4500003048	7/1/18	12/31/22	Access to and Value of Treatment Innovation Study	\$64,754.00
Recruitment/The me Investment	Berg	Jonathan	American Society of Hematology		7/1/21	6/30/22	Biocuration Support Services Agreement	\$37,500.00
Recruitment/The me Investment	Berg	Jonathan	NIH National Human Genome Research Institute	3-U01-HG006487-08S1	12/5/11	12/31/22	North Carolina Clinical Genomic Evaluation by Next-gen Exome Sequencing 2	\$304,926.00

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Recruitment/The me Investment	Berg	Jonathan	NIH National Human Genome Research Institute	2-U24-HG009650-05	9/12/17	6/30/26	The Clinical Genome Resource - Advancing genomic medicine through biocuration and expert assessment of genes and variants at scale	#####
Recruitment	Bjurlin	Marc	Medpace, Inc.		7/1/16	4/19/23	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)	\$3,498.85
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)	\$4,332.08
Recruitment	Bjurlin	Marc	MDxHealth Inc,		1/31/17	1/31/23	Prospective Validation of Prostate Bio markers for Repeat Biopsy:The PRIORITY Study	\$5,230.00
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	\$22,804.80
Recruitment	Bjurlin	Marc	Altor 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	\$24,958.08
Recruitment	Bjurlin	Marc	Janssen Research Development, LLC		10/1/20	9/30/24	Exploratory Study to Evaluate the Feasibility of the Use of Real-world Data Collected via the Hugo Platform During the Post-treatment Follow-up Phase of the PROTEUS Clinical Protocol 56021927PCR3011 to Improve Traditional Study Methods for Data Generation	\$30,266.00
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	\$131,717.57
Investment (HTSF)	Booucher Jr,	Richard C	NIH National Heart, Lung, and Blood Inst	1-U01-HL156655-01A1	3/5/22	2/28/23	The molecular and cellular mechanisms of the STAT3 mutat	\$748,549.00
Recruitment	Bowers	Albert	NIH National Institute of General Medical Sciences	5-R35-GM125005-01-05	9/5/17	8/31/22	Chemoenzymatic Synthesis, Mode of Action and Evolution of Natural Product-based Macrocycles	\$420,875.00
Recruitment	Bowers	Albert	National Science Foundation	CHE-2204094	6/1/22	5/31/25	Controlling protein post-translational modification by separating affinity and catalysis in designer enzymes	\$495,000.00
Recruitment	Branca	Rosa	NIH National Institute of Biomedical Imaging and Bioengineering	5-R21-EB031319-01-02	4/1/21	1/31/23	Gas microbubbles as a hyperpolarized-xenon carrier and as a contrast agent for MRI	\$168,181.00
Recruitment	Branca	Rosa	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK123206-01-02	9/1/20	8/31/23	Enabling accurate identification and quantification of brown adipose tissue mass by xenon enhanced computed tomography	\$372,580.00
Recruitment	Branca	Rosa	University of Massachusetts Medical School	SUB00000106-UNC PO WA01180390	8/15/21	8/14/25	Advancement of CRISPR-based Adipose Therapeutics for Type 2 Diabetes to Non-human Primates	\$383,955.00
Recruitment	Brewer	Noel	North Carolina Department of Health and Human Services	30-2021-COVID-053	6/9/21	8/30/21	Rapid Evaluation of North Carolina Covid-19 Vaccine Incentive Program	\$109,000.00
Recruitment	Brewer	Noel	NIH National Institute on Drug Abuse	5-R01-DA048390-01-02	7/1/20	4/30/26	Informing ENDS policies: Studying the impact of e-cigarette warnings on behavior	\$173,971.50
Recruitment	Brewer	Noel	NIH National Cancer Institute	5-R01-CA246606-02	9/10/20	8/31/23	Understanding Uncontrolled Vaping Among Vulnerable Populations	\$459,271.00
Recruitment	Brewer	Noel	NIH National Cancer Institute	1-P01-CA250989-01A1	9/23/21	8/31/26	Program Project - Improving Provider Announcement Communication Training (IMPACT)	#####
Recruitment	Brown	Nicholas	NIH National Institute of General Medical Sciences	5-R35-GM128855-01-04	8/1/18	7/31/23	Spindle Assembly Checkpoint Silencing	\$388,750.00
Recruitment	Brudno	Yevgeny	North Carolina State University	567814	4/16/21	3/31/26	Biomaterial Scaffolds for Ex Vivo and In Situ CAR-T Cell Production	\$26,461.00

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Recruitment	Brudno	Yevgeny	North Carolina State University	572956	2/1/20	1/31/23	Image-guided, ultrasound-enhanced long-term intracranial drug delivery	\$58,003.00
Recruitment	Bryant	Ashley	Carevive Systems, Inc.		11/2/21	12/31/23	Real World Treatment Experience of Patients with Acute Myelogenous Leukemia and Lung Cancer Using Remote Symptom Monitoring	\$6,123.89
Recruitment	Bryant	Ashley	Duke University		3/1/21	2/28/23	Pilot testing a nurse-led exercise program in adults with acute leukemia	\$22,500.00
Recruitment	Bryant	Ashley	University of Utah	10053359-05	9/20/21	7/25/22	Patient Reported Outcomes in Acute Myeloid Leukemia	\$24,258.00
Recruitment	Bryant	Kirsten	Sky Foundation, Inc.		5/1/20	4/30/22	Identification of novel signaling nodes for autophagy inhibition	\$25,000.00
Recruitment	Bryant	Ashley	American Cancer Society	DSCN-20-076-01-SCN	9/1/20	5/27/22	Chemotherapy-related Cognitive Impairment in Adults with Acute Leukemia	\$30,000.00
Recruitment	Bryant	Ashley	NIH National Cancer Institute	4-K00-CA253762-03	5/17/22	4/30/26	Understanding Quality of Life and Physical Activity in Black Breast Cancer Survivors	\$81,026.00
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	\$178,748.00
Recruitment	Bryant	Kirsten	American Association for Cancer Research	15-70-25-BRYA	11/1/19	10/31/22	Exploiting Pancreatic Cancer Metabolism for Therapeutic Gain	\$187,500.00
Recruitment	Bryant	Ashley	NIH National Institute of Nursing Research	5-R34-NR019131-01-02	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	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	Department of Defense (DOD)	W81XWH211069	9/1/21	8/31/24	Targeting KRAS-dysregulated metabolism for novel therapeutic approaches	\$219,289.33
Recruitment	Bryant	Kirsten	Department of Defense	W81XWH2110693	9/1/21	8/31/24	Targeting KRAS-dysregulated metabolism for novel therapeutic approaches	\$219,289.33
Investment (GeriOnc)	Busby-Whitehead	Jan	NIH National Institute on Aging	5-T35-AG038047-13	6/1/20	5/31/25	UNC-CH Summer Research Training in Aging for Medical Students (MSTAR)	\$84,356.00
Investment (GeriOnc)	Busby-whitehead	Jan	American Geriatrics Society		3/15/16	9/30/22	Geriatrics Workforce Enhancement Program (GWEP) Coordinating Center	\$107,926.00
Investment (Informatics)	Buse	John	NIH National Center for Advancing Translational Sciences	5-UL1-TR002489-05	3/30/18	2/28/23	NC TraCS Institute - home of the CTSA award at UNC	#####
Recruitment	Calabrese	Mauro	NIH National Institute of Child Health and Human Development	5-F31-HD103334-02	8/1/20	7/31/23	Regulation of Polycomb by long noncoding RNAs during pre-implantation development	\$37,693.00
Recruitment	Calabrese	Mauro	NIH National Institute of Child Health and Human Development	5-F31-HD103370-02	8/1/20	7/31/23	Fellow: Keenan Bracer Control of gene silencing by long noncoding RNAs in trophoblast stem cells	\$37,924.00
Recruitment	Calabrese	Mauro	NIH National Institute of General Medical Sciences	2-R01-GM121806-06	1/23/17	3/31/26	Mechanisms of gene silencing induced by long noncoding RNAs	\$334,354.00
Recruitment	Calabrese	Mauro	NIH National Institute of General Medical Sciences	5-R01-GM136819-01-03	5/1/20	2/29/24	Cooperative control of Polycomb Repressive Complexes by long noncoding RNAs, CpG island DNA, and RNA-binding proteins	\$348,091.00
Recruitment	Cameron	Craig	NIH National Institute of Allergy and Infectious Diseases	3-R37-AI053531-19S1	9/20/19	1/31/23	Picornavirus Genome Replication	\$449,205.00
Recruitment	Cameron	Craig	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI045818-22-23	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-R01-AI161841-01-02	3/15/21	2/28/26	Coronavirus Genome Replication	\$676,030.00
Recruitment	Cameron	Craig	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI169462-01	4/13/22	3/31/27	Enteroviral 2C protein as a therapeutic target	\$789,556.00
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
Retention	Campbell	Sharon	NIH National Institute of General Medical Sciences	5-R35-GM134962-01-03	2/1/20	1/31/25	Structure and Mechanism of G-proteins and cell adhesion proteins in regulation of cell growth and motility	\$568,834.00
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	\$1,888.89

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Investment (Protocol)	Carey	Lisa	Alliance for Clinical Trials in Oncology Foundation		12/2/14	1/30/23	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 in	\$8,907.52
Investment (Protocol)	Carey	Lisa	Conquer Cancer Foundation		7/1/22	6/30/23	Impact of race and age on intrinsic subtype distribution and treatment decisions in hormone receptor-positive metastatic breast cancer	\$50,000.00
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	Breast Cancer Research Foundation	BCRF-21-023	10/1/21	9/30/22	Clinical implications of metastatic subtype, microenvironment, and organ of involvement	\$190,000.00
Investment (Genomics)	Carey	Lisa	NIH National Cancer Institute	5-R01-CA229409-01-04	6/1/19	5/31/24	Optimizing HER2-targeting using RNA- and DNA-based predictive algorithms	\$485,168.00
Investment (Protocol)	Carey	Lisa	NIH National Cancer Institute	5-UG1-CA233373-04	5/1/19	2/28/25	UNC Lead Academic Participating Site	\$504,963.00
Innovation Award	Caron	Kathleen	American Heart Association	909016	7/1/22	6/30/24	The Meningeal Lymphatic CGRP CLR/Ramp1 Axis in Migraine Pathophysiology	\$64,072.00
Innovation Award	Caron	Kathleen	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK119145-01-04	4/1/19	1/31/24	GPCR-mediated pathways for regulation of intestinal lymphatic function	\$517,480.00
Recruitment	Charlot	Marjory	V Foundation for Cancer Research	DM2020-004	1/15/20	1/15/23	Use of Artificial Intelligence and the Electronic Health Record to Enhance Enrollment of Minority Cancer Patients in Cancer Clinical Trials	\$40,000.00
Recruitment	Charlot	Marjory	Conquer Cancer Foundation	22-1074	7/1/22	6/30/23	Racial Disparities and Barriers in the Delivery of Guideline-Recommended Care for Metastatic Prostate Cancer	\$50,000.00
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	\$75,000.00
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
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	\$58,884.47
Recruitment	Coombs	Catherine	Analysis Group, Inc.		9/25/19	9/30/21	Chronic Lymphocytic Leukemia (CLL) Collaborative Study Of Real-World Evidence (CORE) (the	\$30,720.00
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	\$38,107.55
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	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)	\$804,570.92
Investment (Training)	Cox	Adrienne	NIH National Cancer Institute	5-T32-CA071341-25	9/30/96	8/31/23	Cancer Cell Biology Training Program	\$235,562.00
Investment (Training)	Cox	Adrienne	Archimmune Therapeutics		3/1/20	12/31/21	Identification of Novel Nanoparticle-Based Therapeutics for Immunotherapy of Cancer	\$511,216.00
Investment (HTSF)	Crowley	James	NIH National Institute of Mental Health	5-R01-MH124675-01-02	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	\$90,995.00

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Investment (HTSF)	Crowley	James	NIH National Institute of Mental Health	5-U01-MH125050-02	9/1/21	6/30/26	1/2 Trans-ancestry genomic analysis of obsessive-compulsive disorder	\$327,886.00
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
Retention	Damania	Blossom	Lymphoma Research Foundation of America		3/1/21	2/28/23	Adenosinergic signaling as a novel target for viral lymphomas	\$52,500.00
Retention	Damania	Blossom	NIH National Cancer Institute	3-R01-CA096500-19S1	7/15/02	7/31/23	Role of KSHV Viral Proteins in Signaling and Pathogenesis	\$387,182.00
Retention	Damania	Blossom	NIH National Institute of Dental and Craniofacial Research	5-R01-DE028211-01-05	9/11/18	6/30/23	Modulation of Innate Immunity by KSHV	\$408,752.00
Retention	Damania	Blossom	NIH National Cancer Institute	3-U54-CA254564-02S1	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	#####
Investment (HTS)	Dangl	Jeff	National Science Foundation	IOS-1758400	8/1/18	7/31/23	Structure-Function Analyses of Plant NLR receptors	\$333,000.00
Investment (Genomics)	Davis	Ian	Howard Hughes Medical Institute	GT11504	9/1/19	8/31/22	An Integrative Machine Learning Framework for Analyzing Compositional Omics Data with Application to Gut Microbiome Dysbiosis in Food Allergy	\$50,000.00
Investment (Genomics)	Davis	Ian	Howard Hughes Medical Institute	GT11538	9/1/19	4/25/22	Fellow: S. Marcel Loss of SETD2 alters transcriptional response to hypoxia	\$50,000.00
Investment (Genomics)	Davis	Ian	National Pediatric Cancer Foundation	22-3605	4/1/22	3/31/23	Enhancing immunotherapy for pediatric solid tumors through epigenetic modulation	\$100,000.00
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	3021848	5/1/19	4/30/22	Unified Program for Therapeutics in Children (UPTIC)	\$241,814.00
Investment (HTSF)	Davis	Stephanie D	NIH National Heart, Lung, and Blood Inst	5-U54-HL096458-18	8/1/21	7/31/22	Genetic Disorders of Mucociliary Clearance	#####
Retention	Dayton	Paul	Sunnybrook Health Sciences Centre	410014759	4/1/21	3/31/26	Functional micro-ultrasound imaging of the neurovascular response to focal ischemia	\$24,000.00
Retention	Dayton	Paul	North Carolina State University	572469	8/15/18	6/30/23	Forward viewing catheter-delivered microbubble enhanced sonothrombolysis (FV-CAMUS)	\$47,164.00
Retention	Dayton	Paul	Advanced MicroBubbles Laboratories LLC	22-2661	2/15/22	11/15/22	Evaluation of Immunologic Effects of Size Isolated Microbubbles in Pancreatic Cancer	\$50,000.00
Retention	Dayton	Paul	NIH National Cancer Institute	5-R21-CA246550-01-03	4/1/20	3/31/23	Parametric optimization of ultrasound-mediated immuno-modulation for pancreatic cancer therapy	\$104,640.00
Retention	Dayton	Paul	NIH National Cancer Institute	2-R01-CA189479-05A1	9/4/14	8/31/26	Academic-Industrial Partnership for Translation of Acoustic Angiography	\$516,357.00
Retention	Dayton	Paul	NIH National Cancer Institute	5-R01-CA232148-01-05	6/1/18	5/31/23	Treating Tumoral Hypoxia via Ultrasound-Guided Oxygen Release for Improving Radiation Therapy	\$560,307.00
Retention	Dayton	Paul	NIH National Cancer Institute	5-R01-CA220681-01-05	8/10/17	7/31/22	High Frame Rate 3-D Super Resolution Ultrasound Microvascular Imaging	\$667,090.00
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)	\$2,232.00
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	\$2,348.29
Retention	Dees	Claire	Johns Hopkins University	2003922735	8/9/18	8/3/28	A Phase II trial of Atezolizumab (anti-PDL1) with Carboplatin in Patients with Metastatic Triple Negative Breast Cancer	\$2,785.00
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	\$2,905.62

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
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	\$4,838.26
Retention	Dees	Claire	NRG Oncology		3/1/19	2/28/25	NRG Oncology Prime eIPF	\$16,601.50
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	\$52,845.20
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	\$77,065.00
Retention	Dees	Claire	Ohio State University	60075824 GR123817SPC1 000005256	5/5/20	2/28/23	OSU ETCTN supplement to add UNC	\$100,000.00
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.	\$169,207.85
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 with Letrozole or Fulvestrant in Women with Metastatic or Locally Advanced/Recurrent Breast Cancer (MBC)	\$174,183.56
Investment (HTSF)	Dellon	Evan S	NIH National Institute of Diabetes, Dige	5-R21-DK122297-01-02	4/27/2020	3/31/2023	Molecular and epigenetic predictors and mechanisms of tr	\$116,505.00
Investment (Proteomics)	Der	Channing	Deciphera Pharmaceuticals, Inc.	DDC-1843	4/23/19	4/22/23	Evaluation of the Deciphera Pharmaceuticals ULK 1/2 inhibitor	\$33,923.00
Investment (Proteomics)	Der	Channing	SpringWorks Therapeutics, Inc		8/1/20	7/21/23	Evaluation of PIKFYVE inhibition in combination with MAPK inhibition	\$49,772.64
Investment (Proteomics)	Der	Channing	NIH National Cancer Institute	5-F30-CA243253-03	7/9/19	7/8/23	Fellow: J. Diehl Validation of WEE1 kinase as a clinical target in KRAS-mutant pancreatic cancer	\$51,036.00
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	\$59,750.00
Investment (Proteomics)	Der	Channing	American Association for Cancer Research	15-90-25-DER	7/1/15	6/30/22	Defining novel combination KRAS-targeted therapeutic strategies	\$142,857.00
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	\$164,884.00
Investment (Proteomics)	Der	Channing	American Cancer Society	PF-22-066-01	7/1/22	6/30/25	Targeting mitochondrial function as a therapeutic strategy for pancreatic cancer	\$175,500.00
Investment (Proteomics)	Der	Channing	Revolution Medicines, Inc.	22-4651	6/21/22	6/20/23	Evaluation of KRAS inhibitors in pancreatic cancer	\$222,210.00
Investment (Proteomics)	Der	Channing	Department of Defense	W81XWH211069 2 0011663366	9/1/21	8/31/24	Targeting KRAS-dysregulated metabolism for novel therapeutic approaches	\$110,358.00
Investment (Proteomics)	Der	Channing	NIH National Cancer Institute	5-R35-CA232113-04	9/1/18	8/31/25	Targeting undruggable RAS for cancer treatment	\$921,017.00
Investment (Training)	Deshmukh	Mohanish	NIH National Institute of General Medical Sciences	3-T32-GM008719-23S1	7/1/99	6/30/24	Medical Scientist Training Program	#####
Retention	Dittmer	Dirk	Tulane University	TUL-HSC-558039-20/21	4/1/20	2/28/23	Exploratory Research on HIV Contribution to Heart and Lung Comorbidities	\$71,326.00
Retention	Dittmer	Dirk	EMMES Corporation	13765	9/1/20	8/31/25	AIDS Malignancy Consortium (AMC)	\$135,285.00
Retention	Dittmer	Dirk	NIH National Institute of Dental and Craniofacial Research	5-R01-DE018304-11-14	5/15/07	4/30/24	ART Modulation of Viral Pathogenesis	\$336,074.00
Retention	Dittmer	Dirk	NIH National Cancer Institute	5-R01-CA163217-06-10	9/1/11	6/30/22	Targeted Therapies for HIV-Associated Kaposi Sarcoma and Lymphoma	\$342,759.00
Retention	Dittmer	Dirk	NIH National Cancer Institute	5-R01-CA228172-01-05	6/1/18	5/31/23	Impact of HIV on the tumor microenvironment	\$387,192.00

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Retention	Dittmer	Dirk	NIH National Cancer Institute	2-R01-CA163217-11	9/1/11	6/30/27	Targeted Therapies for HIV-Associated Kaposi Sarcoma and Lymphoma	\$400,137.00
Retention	Dittmer	Dirk	NIH National Cancer Institute	5-R01-CA239583-01-04	5/1/19	4/30/24	Mechanisms of KSHV transmission	\$583,738.00
Recruitment	Dittus	Christopher	Atrium Health (formerly Carolinas HealthCare System)		9/28/20	9/28/30	LCI-HEM-PCNSL-RMPV-001- A Phase 1B Trial of Nivolumab Consolidation Following Completion of High Dose Methotrexate Containing Induction Chemotherapy in Older (Greater Than or Equal to 65 years) Patients with Previously Untreated Primary CNS Lymphoma	\$43,988.95
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	\$70,243.10
Recruitment	Dittus	Christopher	EMMES Corporation	13765	9/1/20	8/31/25	Clinical trials unit (CTU) for the AIDS Malignancy Clinical Trials Consortium (AMC)	\$116,625.00
Recruitment	Dittus	Christopher	Seattle Genetics, Inc		10/18/17	3/31/23	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	\$147,605.64
Investment (Training)	Doerschuk	Claire	NIH National Heart, Lung, and Blood Institute	5-T32-HL007106-45	7/1/75	4/30/23	Multidisciplinary research training in pulmonary diseases	\$254,790.00
Recruitment	Doerschuk	Claire	NIH National Heart, Lung, and Blood Institute	5-R01-HL145396-01-04	1/1/19	12/31/22	Trafficking and function of macrophage subpopulations within the lung microenvironment during pneumonia	\$585,761.00
Investment (Chair Package)	Dohlman	Henrik	NIH National Institute of General Medical Sciences	5-R35-GM118105-06-07	5/1/21	4/30/26	Negative and positive feedback in cell signaling	\$659,119.00
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	\$34,591.00
Recruitment	Dominguez	Daniel	NIH National Institute of General Medical Sciences	1-R35-GM142864-01	8/1/21	7/31/26	Protein Disorder as a Mechanism of RNA Binding and Regulation	\$388,750.00
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	\$15,000.00
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	\$60,319.00
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	NIH National Cancer Institute	5-R01-CA243543-01-03	9/1/19	8/31/24	Cellular Immunotherapy of Ovarian Cancer	\$395,109.00
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).	\$456,504.00
Recruitment	Dotti	Gianpietro	NIH National Cancer Institute	5-R01-CA247436-01-02	1/1/21	12/31/25	Tuning CAR-T Cell Functions.	\$487,050.00
Recruitment	Dotti	Gianpietro	Leukemia and Lymphoma Society	6625-21	7/1/21	6/30/24	Targeting Cathepsin G in Acute Myeloid Leukemia	\$600,000.00
Recruitment	Dotti	Gianpietro	NIH National Cancer Institute	5-R01-CA256898-01-02	2/1/21	1/31/26	Targeting B7-H3 in ovarian cancer.	\$619,664.00
Recruitment	Downen	Jill	NIH National Institute of General Medical Sciences	5-R35-GM124764-01-05	9/1/17	7/31/23	Regulation of chromosome structure and gene expression by architectural proteins	\$386,074.00
Recruitment	Downen	Rob	NIH National Institute of General Medical Sciences	3-R35-GM137985-03S1	7/1/20	5/31/25	Regulation of lipid homeostasis by proliferative signaling pathways	\$518,611.00
Theme Investment	Earp	Shelton	NIH National Cancer Institute	5-P30-CA016086-45-46	6/1/97	11/30/25	Cancer Center Support Grant	#####
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	Virginia Commonwealth University	FP00005212_SA 001	7/1/17	6/30/22	Unveiling the role of physician implicit bias and communication behaviors in dissatisfaction, mistrust, and non-adherence in Black patients with Type 2 diabetes	\$15,950.00

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Recruitment	Elston Lafata	Jennifer	Henry Ford Health System		4/15/18	3/31/23	Center for Research to Optimize Precision Lung Cancer Screening in Diverse Populations	\$38,892.00
Recruitment	Elston Lafata	Jennifer	Memorial Sloan-Kettering Cancer Center	C21900541	9/25/18	8/31/23	Using a Mixed Methods Approach to Understand Shared Decision-Making in Lung Cancer Screening	\$39,242.00
Recruitment	Elston Lafata	Jennifer	American Cancer Society	84266	7/1/22	12/31/24	Implementing Navigation Decision Support to Enhance Oncology Care Equity	\$100,000.00
Recruitment	Elston Lafata	Jennifer	The Genentech Foundation	G-89311	1/1/21	12/31/22	How to Pursue Equity in Oncology Virtual Visits	\$374,997.00
Recruitment	Elston Lafata	Jennifer	Agency for Healthcare Research and Quality	1-R01-HS028455-01	9/1/21	8/31/24	Development of a Shared Decision Making Support (SDM-S) Measure for Use with Team-based Care	\$500,000.00
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 Institute of General Medical Sciences	2-R01-GM120309-06	9/1/16	3/31/26	SCF Ubiquitin Ligases in Cell Cycle Control and Chromosome Stability	\$314,382.00
Investment (Training)	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-GM134231-01-03	5/1/20	2/29/24	Deubiquitinases in Cell Cycle Control	\$500,777.00
Recruitment	Engel	Larry	NIH National Institute of Environmental Health Sciences	1-F31-ES033509-01	12/1/21	11/30/23	Fellow:H Jardel Exposure to volatile organic compounds and glycemic dysregulation among oil spill cleanup workers	\$38,463.00
Recruitment	Engel	Larry	NIH National Institute of Environmental Health Sciences	5-R01-ES031127-02-03	8/1/20	5/31/24	Neurological Effects of Environmental Styrene and BTEX Exposure in a Gulf of Mexico Cohort.	\$438,531.00
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	Canadian Institutes of Health Research	202110MFE-472665-FPP-229993	4/1/22	3/31/24	The protective role of plasminogen deficiency in non-alcoholic fatty liver disease and glucose dysmetabolism	\$100,000.00
Recruitment	Flick	Matthew	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK112778-02-04	12/20/18	11/30/22	Fibrin(ogen) control of metabolic inflammation and obesity	\$371,618.00
Recruitment	Flick	Matthew	NIH National Cancer Institute	5-R01-CA211098-03-06	6/19/17	5/31/23	Thrombin-dependent mechanisms of pancreatic ductal adenocarcinoma disease	\$403,147.00
Recruitment	Flick	Matthew	NIH National Heart, Lung, and Blood Institute	1-R01-HL160046-01	9/1/21	7/31/25	Mechanisms linking the plasminogen/fibrinogen axis to the pathogenesis of COVID-19	\$580,295.00
Recruitment	Flick	Matthew	NIH National Heart, Lung, and Blood Institute	5-U01-HL143403-04	8/1/18	7/31/23	Targeting the Plasminogen Activation System to Limit Pancreatic Cancer Progression and Associated Thrombosis	\$844,766.00
Recruitment	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	\$8,930.32
Recruitment	Foster	Matthew	Lilly USA LLC	LOXO-IDH-20001	8/10/21	8/17/31	A Phase 1 Study of Oral LY3410738 in Patients with Advanced Hematologic Malignancies with IDH1 or IDH2 Mutations.	\$48,899.00
Recruitment	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)	\$69,350.17
Recruitment	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	\$180,968.94
Recruitment	Franco	Hector	Marsha Rivkin Center for Ovarian Cancer Research	935287	4/1/22	3/31/24	Identifying Drivers of Therapeutic Resistance in Ovarian Cancer at Single Cell Resolution	\$75,000.00
Recruitment	Franco	Hector	Susan G Komen for the Cure	CCR19608601	9/5/19	9/4/23	Crosstalk Between Estrogen and Inflammatory Signaling in Metastatic Breast Cancer.	\$150,000.00

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Recruitment	Frerichs	Leah	Duke University	A034101	8/19/20	6/30/22	Parks & Pediatrics Fit Together: Translating knowledge into action for child obesity treatment in partnership with Parks and Recreation	\$37,858.00
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.	\$59,007.00
Recruitment	Frerichs	Leah	NIH National Heart, Lung, and Blood Institute	5-K01-HL138159-01-05	8/1/17	7/31/23	Identifying and disentangling social and physical environmental effects on physical activity in diverse adolescent and young adult populations	\$150,580.00
Recruitment	Frerichs	Leah	Robert Wood Johnson Foundation	79640	4/15/22	4/14/25	Assessing and promoting equity in mental health systems of care for adolescent youth in a rural community in North Carolina	\$361,012.00
Retention	Fry	Rebecca	NIH National Institute of Environmental Health Sciences	1-F31-ES033925-01	2/15/22	2/14/24	Fellow: J Clark Nutritional modulation of fetal susceptibility to lower birth weight in relation to inorganic arsenic (iAs) exposure	\$39,580.00
Retention	Fry	Rebecca	Burroughs Wellcome Fund	1022226	11/1/21	10/31/22	Linking climate change and preterm birth in North Carolina	\$45,000.00
Retention	Fry	Rebecca	Burroughs Wellcome Fund	1022081	9/1/21	8/31/22	Promoting Environmental Justice and Health Equity in Perinatal Health Research	\$117,000.00
Investment (Training)	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	#####
Retention	Fry	Rebecca	NIH National Institute of Environmental Health Sciences	5-P42-ES031007-03	2/20/20	1/31/25	The UNC Chapel Hill Superfund Research Program (UNC-SRP)	#####
Recruitment	Frye	Stephen	NIH National Institute of General Medical Sciences	5-R35-GM139514-01-02	4/1/21	1/31/26	Probing Allostery in Methyl-Lysine Reader Domains	\$383,255.00
Recruitment	Frye	Stephen	Emory University	A548199	9/30/19	8/31/24	Open Drug Discovery Center for Alzheimer's Disease	#####
Retention	Gallagher	Kristalyn	Duke University	Pro 00103750	2/1/21	9/30/22	Multi-Gene Panel Testing for Germline Mutations in a Contemporary Cohort of Patients with Phyllodes Tumors of the Breast	\$1,800.00
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	\$2,300.00
Retention	Gallagher	Kristalyn	Johns Hopkins University	TBCRC 2020 2004848449	7/1/20	6/30/22	TBCRC 2020 - Infrastructure Support Task Order	\$37,500.00
Retention	Gallagher	Kristalyn	Johns Hopkins University	TBCRC 2021	7/1/21	6/30/22	TBCRC 2021 - Infrastructure Support Task Order	\$75,000.00
Recruitment	Gershon	Timothy	Curtana Pharmaceuticals		10/11/21	10/11/23	CT-179 scRNA-seq study	\$30,000.00
Recruitment	Gershon	Timothy	NIH National Institute of Neurological Disorders and Stroke	5-F31-NS120459-02	1/1/21	12/31/23	Fellow: T Dismuke Improving CDK 4/6 inhibition in the treatment of medulloblastoma	\$38,260.00
Recruitment	Gershon	Timothy	SpringWorks Subsidiary 3, Inc	MEK-NF-201	7/30/19	5/31/27	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	\$182,793.14
Recruitment	Gershon	Timothy	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS106227-01-04	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	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS102627-01-05	6/1/18	4/30/23	Bcl-xL-regulated apoptosis in cerebellar development and medulloblastoma treatment	\$338,617.00
Recruitment	Gilkey	Melissa	Kaiser Foundation Research Institute	RNG211477-UNC-01	7/15/21	6/30/26	Effectiveness and mechanisms of multilevel implementation strategies to improve provider recommendation and advance HPV vaccination: a cluster randomized trial	\$10,843.00
Recruitment	Gilkey	Melissa	University of Alabama at Birmingham	000526841-SC002	9/18/20	8/31/22	Provider-Focused Multi-Component Intervention for Maximizing HPV Vaccine Uptake in Young Cancer Survivors receiving Follow-Up Care in Pediatric Oncology Practices	\$26,660.00
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	\$39,900.00

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Recruitment	Gilkey	Melissa	Robert Wood Johnson Foundation	77291	3/1/20	9/30/22	Engaging specialty care teams to help families discuss and manage the cost of asthma care	\$200,000.00
Investment (HTSF)	Giudice	Jimena	NIH National Heart, Lung, and Blood Inst	5-F32-HL149147-03	8/1/21	7/31/22	Alternative splicing regulation and glucose metabolism i	\$68,562.00
Theme Investment (HTS)	Giusti	Paola	Karolinska Institute	ZZC8ANALMQ C850803103	4/1/20	3/31/24	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	\$205,245.00
Innovation Award	Goldstein	Bob	NIH National Institute of General Medical Sciences	5-R35-GM134838-01-03	1/1/20	12/31/24	C. elegans gastrulation: A model for understanding apical constriction mechanisms	\$339,642.00
Investment (HTS)	Gordon-Larsen	Penny	NIH National Heart, Lung, and Blood Institute	5-R01-HL143885-02-04	4/1/19	3/31/23	Leveraging multi-omics approaches to examine metabolic challenges of obesity in relation to cardiovascular diseases	#####
Recruitment	Grant	Shakira	NIH National Institute on Aging	5-R03-AG074030-01-02	8/15/21	4/30/23	Functional trajectories and illness experiences of older adults with multiple myeloma.	\$155,500.00
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	Grover	Natalie	Celgene Corporation	JCAR017-EAP-001	1/15/21	12/22/30	Expanded Access Protocol (EAP) for Patients Receiving Lisocabtagene maraleucel that is Nonconforming for Commercial Release	\$9,024.00
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	\$75,000.00
Retention	Gupta	Gaorav	Fox Chase Cancer Center	1515100 YEAR 03	2/1/22	1/31/23	The Role of Microhomomology-mediated End Joining in Fanconi Anemia Pathogenesis	\$60,301.00
Retention	Gupta	Gaorav	American Society for Radiation Oncology		9/21/20	9/20/22	Drivers and Vulnerabilities of Genome Instability in Triple Negative Breast Cancer	\$100,000.00
Retention	Gupta	Gaorav	Burroughs Wellcome Fund	1012285.01	1/1/15	8/31/21	DNA Damage Responses in Breast Cancer Pathogenesis	\$116,666.66
Retention	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
Retention	Gupta	Gaorav	NIH National Cancer Institute	5-R37-CA227837-01-04	12/1/18	11/30/23	Mre11-Dependent DNA Damage Responses in Breast Cancer Pathogenesis	\$422,092.00
Retention	Gupta	Gaorav	Merck Sharp Dohme LLC	60963	7/6/22	7/5/24	Correlative Biomarker Analysis of P-RAD: A Randomized Study of Preoperative Pembrolizumab and No, Low or High Dose Radiation in Node-Positive, Triple Negative Breast Cancer	\$999,711.06
Recruitment	Gupton	Stephanie	NIH National Institute of Neurological Disorders and Stroke	5-F31-NS113381-03	9/1/19	8/31/22	Fellow: L.McCormick VASP ubiquitination regulates actin dynamics in dendritic spines	\$37,476.00
Recruitment	Gupton	Stephanie	Research Corporation for Science Advancement	28384	1/1/22	12/31/22	Collaborative Scialog Project	\$55,000.00
Recruitment	Gupton	Stephanie	American Heart Association	906429	1/1/22	12/31/23	Coronin 1A role in TRIM-regulated neuronal morphogenesis	\$64,072.00
Recruitment	Gupton	Stephanie	NIH National Institute on Aging	1-R21-AG077827-01	5/15/22	4/30/24	Exploring The Brain Enriched E3 Ubiquitin Ligase TRIM9 in Alzheimer's Disease	\$233,250.00
Recruitment	Gupton	Stephanie	NIH National Institute of General Medical Sciences	5-R35-GM135160-01-03	12/1/19	11/30/24	Coordinated Cytoskeletal Dynamics and Membrane Remodeling in Cellular Shape Change	\$479,767.00
Recruitment	Gupton	Stephanie	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS112326-01-04	8/1/19	4/30/24	Exocytosis fuels plasma membrane expansion in developing neurons	\$598,092.00
Retention	Hahn	Klaus	American Cancer Society	PF-22-059-01-MM	7/1/22	6/30/24	Investigating how focal adhesions sense extracellular stiffness to guide metastatic cell migration	\$59,750.00
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	\$256,575.00
Retention	Hahn	Klaus	NIH National Institute of General Medical Sciences	2-R35-GM122596-06	4/1/17	3/31/27	Dissecting signaling in vivo via precise control and visualization of protein activity	\$810,270.00
Recruitment	Hall	Marissa	NIH National Institute of Child Health and Human Development	1-F31-HD108962-01	4/1/22	3/31/25	FELLOW:A RICHTER Examining Marketing and Parents' Perceptions of Toddler Milk	\$37,492.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Theme Investment (CC)	Hampton	Brea	NIH National Institute on Aging	NIH/NIA 1F99AG073570-01	9/5/21	8/31/22	Evaluating the role of cytomegalovirus and age on lung immune homeostasis and responses to respiratory infections	\$38,871.00
Recruitment	Han	Zongchao	BrightFocus Foundation	M2019063	7/1/19	6/30/22	Selective targeting reactive oxygen species for age-related macular degeneration	\$66,666.66
Recruitment	Han	Zongchao	Edward N. & Della L. Thome Memorial Foundation		5/1/19	4/30/23	Developing novel nano antioxidants for the treatment of age-related macular degeneration	\$166,666.66
Innovation Award	Hanson	Laura	Massachusetts General Hospital	PLC-1609-35995	1/1/18	12/31/24	Comparative Effectiveness of Early Integrated Telehealth versus In-Person Palliative Care for Patients with Advanced Lung Cancer	\$71,960.00
Innovation Award	Hanson	Laura	University of Colorado Denver	FY22.105.002_A MD4	7/1/18	6/30/23	Palliative Care Research Cooperative Group (PCRC): Refinement and Expansion	\$75,206.00
Innovation Award	Hanson	Laura	NCDHHS Division of Health Service Regulation	37289	1/1/19	6/30/22	Disseminating Comfort Matters: A Web-based Training Toolkit for Comfort-focused Dementia Care	\$249,490.00
Innovation Award	Hanson	Laura	NIH National Institute on Aging	5-R01-AG065394-01-02	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	\$861,573.00
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	\$55,990.00
Recruitment	Hathaway	Nate	Epigenos Bioscience, Inc.	21-0831	9/16/21	9/15/22	STTR: Site-specific epigenetic activation of TP53 to improve cancer therapy	\$210,035.00
Recruitment	Hathaway	Nate	NIH National Institute of General Medical Sciences	3-R01-GM118653-05S1	7/1/17	6/30/22	Mechanism of HP1-Mediated Heterochromatin Assembly and Durability in Living Cells	\$339,978.00
Theme Investment (CC)	Heise	Mark	NIH National Institute on Aging	1-F99-AG073570-01	9/5/21	8/31/22	Evaluating the role of cytomegalovirus and age on lung immune homeostasis and responses to respiratory infections	\$38,871.00
Investment (Training)	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	University of Alabama at Birmingham	000520254-SC006	3/7/19	2/28/23	Antiviral Drug Discovery and Development Center	\$258,130.00
Theme Investment (CC)	Heise	Mark	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI157253-01-02	9/25/20	8/31/25	Genetic Analysis of COVID-19 Susceptibility and Resistance Determinants in the Collaborative Cross	\$766,144.00
Theme Investment (CC)	Heise	Mark	NIH National Institute of Allergy and Infectious Diseases	3-U19-AI100625-10S2	4/16/20	8/31/22	New Mouse Models for Studying 2019 SARS-CoV2 Pathogenesis and Immunity	#####
Theme Investment (CC)	Heise	Mark	NIH National Institute of Allergy and Infectious Diseases	5-U19-AI100625-10	8/5/12	8/31/23	Systems Immunogenetics of Biodefense and Emerging Pathogens in the Collaborative Cross	#####
Investment (HTS)	Henderson	Gail	Henry M Jackson Foundation	5514 PO 1006864	9/30/20	3/28/22	Guidance on ethical approaches to mitigate partner risk in trials that include ATI	\$15,550.00
Investment (HTS)	Henderson	Gail	Research Triangle Institute (RTI International)	1-312-0217853-66316L	12/1/20	11/30/22	EPIICAL Social Behavioral Research Study	\$20,000.00
Investment (HTS)	Henderson	Gail	NIH National Institute of Mental Health	5-R34-MH123328-01-02	4/1/21	3/31/23	Decision Support for Early-Phase HIV Remission Trials	\$372,583.00
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	\$9,709.00
Retention	Henderson	Louise	University of California at Davis	201603696-08 / A18-0177-S008	7/1/17	11/30/22	Risk-based Breast Cancer Screening and Surveillance in Community Practice	\$264,602.00
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	NIH National Cancer Institute	5-R01-CA212014-01-05	9/20/17	8/31/23	Evaluating Lung Cancer Screening Patterns and Outcomes through a North Carolina Registry	\$610,662.00
Recruitment	Hingtgen	Shawn	NIH National Cancer Institute	5-F30-CA243270-03	7/11/19	7/10/23	Therapeutic Engineered Stem Cells as a New Adjuvant Therapy for Non-Small Cell Lung Cancer Brain Metastases	\$51,036.00
Recruitment	Hingtgen	Shawn	Extruded Pharmaceuticals, Ltd	21.4038	5/1/21	4/20/22	Toxicity Studies: Extruded Pharmaceuticals	\$76,291.41
Recruitment	Hingtgen	Shawn	Accelerate Brain Cancer Cure, Inc.		6/1/19	5/31/23	Tumor-homing beacons as a novel approach to cellular therapy for glioblastoma.	\$84,654.00
Recruitment	Hingtgen	Shawn	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS099368-01-05	9/26/17	6/30/23	Engineering stem cell therapies to understand and overcome glioblastoma adaption	\$318,366.00

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Recruitment	Hingtgen	Shawn	NIH National Cancer Institute	1-R01-CA269974-01	2/1/22	1/31/27	Harnessing Continuous Liquid Interface 3D Printing to Improve Tumor-homing Stem Cell Therapy for Post-surgical Brain Cancer	\$467,151.00
Recruitment	Hingtgen	Shawn	NIH National Center for Advancing Translational Sciences	1-U01-TR003715-01	7/1/21	4/30/25	A consortium effort to translate therapies for neurological diseases via an ex vivo organotypic platform	#####
Recruitment	Hirschey	Rachel	Oncology Nursing Foundation		1/15/20	1/15/22	African American Cancer Survivor Engagement to Develop a Physical Activity Intervention	\$12,426.00
Recruitment	Hirschey	Rachel	NIH National Institute on Minority Health and Health Disparities	5-K23-MD015719-01-02	5/3/21	1/31/26	Physical activity intervention co-created and pilot tested with African American Colorectal Cancer Survivors	\$159,155.00
Recruitment	Hoadley	Katherine	Translational Breast Cancer Research Consortium		3/28/17	2/16/22	TBCRC AURORA Clinical Data Coordinating Center	\$128,870.00
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	\$226,620.00
Recruitment	Hoadley	Katherine	NIH National Cancer Institute	1-U24-CA264021-01	9/1/21	8/31/26	Specialized RNA analysis center for integrative genomic analyses	\$376,349.00
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	\$199,785.00
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
Recruitment	Hursting	Stephen	University of Utah	10058539-01 U000346880	9/23/21	8/30/26	Adipose tissue-colorectal tumor cross-talk: new targets for breaking the obesity-cancer link	\$125,482.00
Recruitment	Hursting	Stephen	Breast Cancer Research Foundation	BCRF-21-073	10/1/21	9/30/22	Combining Intermittent Energy Restriction and Anti-Inflammatory Regimens to Mimic the Anticancer Effects of Bariatric Surgery	\$190,000.00
Recruitment	Hursting	Stephen	Purdue University	11000823-020	2/1/19	1/31/24	Obesity, Metabolism and Breast Cancer Metastasis	\$558,457.00
Recruitment	Hursting	Stephen	NIH National Cancer Institute	5-R35-CA197627-07	8/1/15	7/31/23	Breaking the Obesity-Cancer Link: New Targets and Strategies	\$762,608.00
Investment (Training)	Ibrahim	Joseph	NIH National Cancer Institute	2-T32-CA106209-16	5/1/04	7/31/26	Biostatistics for Research in Genomics and Cancer	\$217,093.00
Retention	Ibrahim	Joseph	Amgen, Inc.	PO#7300407863	7/31/08	12/31/22	Supported Research Agreement	\$249,944.00
Theme Investment (CC)	Ideraabdullah	Folami	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	NIH/NIDDK 5R21DK122242-02	7/1/20	6/30/23	Ivestigating the role of metabolic programming in vitamin D deficiency induced adiposity	\$186,098.00
Recruitment	Jackson	Klarissa	NIH National Institute of General Medical Sciences	1-R35-GM143044-01	7/1/21	6/30/26	Interindividual Variability in Drug Metabolism in Ethnically Diverse Populations	\$382,018.00
Theme Investment	James	Lindsey	NIH National Cancer Institute	5-R01-CA242305-01-03	8/23/19	7/31/24	Discovery of First-in-Class NSD2 Degraders for Cancer Therapy	\$188,310.00
Theme Investment	James	Lindsey	Pinnacle Hill, LLC	WORKPLAN 1 20-2353	12/5/19	12/4/24	Development of NSD2-targeted therapeutics	\$424,465.00
Investment (Protocol)	Jamieson	Katarzyna	Astellas Pharma Global Development, Inc.		9/30/13	9/29/22	A Randomized, Double-Blind, Placebo-Controlled, Phase III Trial to Evaluate the Protective Efficacy and Safety of a Therapeutic Vaccine, ASP0113, in Cytomegalovirus (CMV)-Seropositive Recipients Undergoing Allogeneic, Hematopoietic Cell Transplant (HCT)	\$1,885.00
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	\$2,142.00
Investment (Protocol)	Jamieson	Katarzyna	National Marrow Donor Program	ACCESS	8/17/21	12/31/27	ACCESS: A Multi-Center, Phase II Trial of HLA-Mismatched Unrelated Donor Hematopoietic Cell Transplantation with Post-Transplantation Cyclophosphamide for Patients with Hematologic Malignancies	\$2,500.00

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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	\$4,472.00
Investment (Protocol)	Jamieson	Katarzyna	National Marrow Donor Program		6/18/19	5/31/24	BMT CTN 1702 - Clinical Transplant-Related Long-term Outcomes of Alternative Donor Allogeneic Transplantation	\$9,146.00
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	\$132,470.80
Recruitment	Jiang	Yuchao	NIH National Institute of General Medical Sciences	5-R35-GM138342-01-02	9/5/20	7/31/25	Statistical Methods for Bulk-Tissue and Single-Cell Multi-Omics Integration	\$375,209.00
Investment (Proteomics)	Johnson	Gary	University of Alabama at Birmingham	000531784-SC002	1/12/22	12/31/26	Credentialing next-generation human glioma models for precision therapeutics	\$18,781.00
Investment (Proteomics)	Johnson	Gary	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-U24-DK116204-05	9/1/17	8/31/23	Illuminating Function of the Understudied Druggable Kinome	#####
Recruitment	Jolly	Trevor	Odonate Therapeutics LLC		10/29/18	11/6/28	A Multinational, Multicenter, Randomized, Phase 3 Study of Teseaxel plus a Reduced Dose of Capecitabine versus Capecitabine Alone in Patients with HER2 Negative, Hormone Receptor Positive, Locally Advanced or Metastatic Breast Cancer Previously Treated wi	\$1,312.08
Recruitment	Jolly	Trevor	Dana-Farber Partners Cancer Care, Inc		12/28/18	11/18/28	DF-HCC 17-101: Palbociclib After CDK and Endocrine Therapy (PACE): A Randomized Phase II Study of Fulvestrant, Palbociclib, and Avelumab for Endocrine Pre-treated ER+/HER2- Metastatic Breast Cancer (Protocol #: 17-101)	\$16,176.60
Recruitment	Jolly	Trevor	Dana-Farber Cancer Institute		5/24/19	1/31/29	Adjuvant Ado-Trastuzumab Emtansine (T-DM1) for Older Patients with Human Epidermal Growth Factor Receptor 2 (HER2)-Positive Breast Cancer	\$18,000.00
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	\$303,152.00
Theme investment (HTS)	Jones	Corbin	Duke University	303-000857	6/15/22	4/30/23	Social experience dependent modification of gene regulation and circuit function	\$22,210.00
Theme investment (HTS)	Jones	Corbin	Duke University	A03-1446	5/1/19	4/30/23	Epigenetic reprogramming of behaviors with sensory experience	\$75,151.00
Theme investment (HTS)	Jones	Corbin	NIH National Cancer Institute	75N91019D00033	8/31/19	8/30/24	Genome Characterization Center for RNA-seq Services	\$801,497.18
Theme investment (HTS)	Jones	Corbin	NIH National Cancer Institute	75N91019D00033/ 75N91021F00001	9/8/21	9/7/26	Comprehensive total RNA, mRNA, and miRNA sequencing for OCCPR	\$920,458.00
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	Dainippon Sumitomo Pharma	20-2319	6/1/20	5/31/23	UNC - Sumitomo Collaboration	\$2,612.00
Investment (Training)	Kabanov	Alexander	NIH National Cancer Institute	5-T32-CA196589-07	7/1/15	6/30/25	Carolina Cancer Nanotechnology Training Program (C-CNTP)	\$424,725.00
Recruitment	Kabanov	Alexander	NIH National Cancer Institute	1-R01-CA264488-01	8/1/21	7/31/25	Toward Translation of Nanoformulated Paclitaxel-Platinum Combination	\$613,059.00
Investment (CC)	Kelada	Samir	NIH National Institute of Allergy and Infectious Diseases	5-R21-AI162084-01-02	5/19/21	4/30/23	A new mouse model of severe asthma	\$194,375.00
Investment (CC)	Kelada	Samir	NIH National Institute of Environmental Health Sciences	1-R21-ES032089-01A1	8/1/21	7/31/23	Gene-Environment Interactions with Ozone and Non-atopic Asthma	\$244,175.00
Investment (CC)	Kelada	Samir	NIH National Institute of Environmental Health Sciences	1-R01-ES034260-01	4/18/22	2/28/27	Regulatory Genomics of Ozone Air Pollution Response in Vitro and In Vivo	\$645,526.00

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Recruitment	Kent	Erin	New America	BLL105-2022	6/1/22	9/30/22	Rural access to health care and the need for paid family and medical leave in rural communities	\$6,953.00
Recruitment	Kent	Erin	North Carolina Institute of Medicine		3/1/22	9/30/22	Caregiver & Covid Project	\$13,005.00
Recruitment	Kent	Erin	Duke Endowment	6997-SP	7/1/21	6/30/24	Rural eSNAP: navigator-assisted ecomaps to support cancer caregivers	\$196,666.67
Retention	Key	Nigel	American Thrombosis and Hemostasis Network	HTC 262-ATHN 112	9/1/21	8/31/22	ATHN Data Quality Counts (DQC) Program - Round 13	\$2,550.00
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	\$21,267.28
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 ? 1 IU/dL Re	\$30,008.94
Retention	Key	Nigel	Shire US Inc.		10/27/17	12/1/22	An Observational Study of the Natural History of Outcomes in Hemophiliacs Undergoing Major Orthopedic Surgery	\$42,118.75
Retention	Key	Nigel	Hemophilia of Georgia		6/1/21	5/31/22	Regional Hemophilia Network	\$45,596.00
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	\$72,910.00
Investment (Training)	Key	Nigel	NIH National Heart, Lung, and Blood Institute	5-T32-HL007149-45	7/1/75	6/30/22	Research Training in Hematology at UNC Chapel Hill	\$235,883.00
Investment (Training)	Key	Nigel	NIH National Heart, Lung, and Blood Institute	2-T32-HL007149-46	7/1/22	6/30/27	Research Training in Hematology at UNC Chapel Hill, Reissue of PA-18-403 for due dates on or after May 25, 2020	\$439,912.00
Recruitment	Khagi	Simon	Head for the Cure Foundation		5/31/19	2/12/24	A randomized, double blind phase II trial of Radiation Therapy plus Temozolomide and Pembrolizumab with and without HSPPC-96 in newly diagnosed Glioblastoma (GBM)	\$2,600.00
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	\$19,229.51
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)	\$67,322.00
Retention	Khairat	Saif	MedStar Health Research Institute		9/30/21	3/31/23	Predictive Modeling to Support Safe Discharges of COVID-19 Patients in the Emergency Department	\$45,000.00
Retention	Khairat	Saif	Cornell University Weill Medical College	221177-4	11/1/20	10/30/22	Evaluating the Comparative Effectiveness of Telemedicine in Primary Care: Learning from the COVID-19 Pandemic	\$73,765.00
Retention	Khairat	Saif	NIH National Library of Medicine	5-R01-LM013606-01-02	5/3/21	1/31/25	Improving Providers' Decision-Making and Reducing Information Overload Using Information Visualization in Electronic Health Records	\$338,482.00
Retention	Kim	William	Bladder Cancer Advocacy Network	22-4011	8/3/22	8/5/22	Therapeutic implications of the tumor microenvironment in non-muscle invasive bladder cancer	\$2,000.00
Retention	Kim	William	NIH National Cancer Institute	5-F31-CA247250-03	2/1/20	1/31/23	Fellow: Anderew Truong Effect of APOBEC3 on Bladder Cancer Biology and Response to Immunotherapy	\$46,753.00
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	\$83,097.00
Retention	Kim	William	Thomas Jefferson University	080-04000-X18601	9/30/21	9/29/24	Analyzing the therapeutic impact of di-ABZI on PBRM1-deficient ccRCC tumors di-ABZI on PBRM1-deficient tumors	\$99,927.00
Retention	Kim	William	NIH National Cancer Institute	5-R01-CA241810-01-03	8/1/20	4/30/25	Chemotherapy and the Bladder Cancer Immune Microenvironment	\$554,812.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Kim	William	NIH National Cancer Institute	5-K12-CA120780-14	9/17/07	6/30/23	UNC Oncology Clinical/Translational Research Training Program (OCT-RTP)	\$718,905.00
Recruitment	Kistler	Christine	Duke University	245360 7912	9/30/19	8/31/26	Preventable Study Clinical Research Steering Committee Agreement	\$35,000.00
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)	\$79,880.00
Investment (HTS)	Knowles	Michael	Chronic Obstructive Pulmonary Disease Foundation		10/15/08	10/14/23	Bronchiectasis Research Registry	\$48,870.00
Investment (HTS)	Knowles	Michael	Cystic Fibrosis Foundation	KNOWLE21XX0	5/1/21	4/30/23	Whole Genome Sequencing to Define Gene Modifiers in CF	\$250,000.00
Investment (HTS)	Knowles	Michael	NIH National Heart, Lung, and Blood Institute	5-R01-HL071798-13-16	8/17/18	4/30/23	Pathogenesis of PCD Lung Disease	\$619,179.00
Investment (Bios/HTS)	Kosorok	Michael	Genentech, Inc.	20-5653	10/1/20	8/31/23	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	\$161,248.00
Investment (Protocol)	Kuzmiak	Cherie	American College of Radiology		1/1/21	6/30/22	The ACR Breast Imaging Registry	\$14,989.00
Investment (Protocol)	Kuzmiak	Cherie	NIH National Institute of Environmental Health Sciences	75N96021P0020 6 6120605	8/25/21	8/24/22	Fenton Breast Scan Analysis Study	\$33,718.00
Investment (Protocol)	Kuzmiak	Cherie	Ravel Biotechnology, Inc.	RB_AG_PLT_01	11/15/21	11/30/23	Evaluation of Novel Blood-Based Biomarkers for Detection of Breast Cancer (EMBRACE)	\$118,350.40
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)	\$262,540.01
Retention	Laederach	Alain	National Science Foundation	DMS-2151859	5/1/22	4/30/26	Collaborative Research: Unraveling structural and mechanistic aspects of RNA viral frameshifting elements by graph theory and molecular modeling	\$88,491.00
Retention	Laederach	Alain	Brigham and Womens Hospital	125948	8/20/21	5/31/25	Using Integrative Genomics To Identify and Characterize Emphysema-Associated eQTL	\$90,000.00
Retention	Laederach	Alain	NIH National Institute of General Medical Sciences	5-R35-GM140844-01-02	6/1/21	5/31/26	Variant induced RNA structure change in human genetic disease	\$416,440.00
Recruitment	Lai	Sam	National Science Foundation	DMR-1810168	8/1/18	7/31/22	Dynamic tuning of barrier properties of hydrogels using weakly adhesive third-party crosslinkers	\$56,863.00
Recruitment	Lai	Sam	Mucommune, LLC	5121889	5/7/21	4/30/23	SBIR: Development of RespiraClear for targeted mucosal treatment of RSV infections	\$100,532.00
Recruitment	Lai	Sam	Mucommune, LLC	5122763	4/1/21	3/31/23	SBIR: Capsule-intravaginal ring providing sustained release of antibodies for non-hormonal contraception and prevention of vaginal HIV transmission	\$160,950.00
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	\$259,059.00
Recruitment	Lai	Sam	NIH National Institute of Child Health and Human Development	5-R01-HD101562-01-02	4/1/20	3/31/24	Engineering bispecific antibodies for non-hormonal contraception	\$520,731.00
Innovation Award	Lawrence	David	NIH National Institute of Neurological Disorders and Stroke		6/14/18	3/30/23	Spatiotemporal Control of Migratory Cellular Behavior	\$340,156.00
Innovation Award	Lawrence	David	NIH National Heart, Lung, and Blood Institute		4/30/21	4/29/25	Design and Application of Photoresponsive Modules in Circulating Erythrocytes	\$777,053.00
Recruitment	Lazear	Helen	NIH National Institute of Allergy and Infectious Diseases	5-F31-AI143237-03	9/1/19	8/31/24	Fellow: C. Lopez The Role of Dengue Virus Antibodies in Vector-independent transmission of Zika Virus	\$44,713.00
Recruitment	Lazear	Helen	NIH National Institute of Allergy and Infectious Diseases	1-F32-AI161786-01A1	3/1/22	2/28/25	Fellow: B Jasperse Host genetic determinants of neuroinvasive flavivirus pathogenesis	\$67,582.00
Recruitment	Lazear	Helen	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI139512-01-04	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	Burroughs Wellcome Fund	1021339	7/1/21	7/1/26	Host Range Determinants of Emerging Flaviviruses	\$500,000.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Investment (Protocol)/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	\$1,550.00
Investment (Protocol)/Retention	Lee	Carrie	V Foundation for Cancer Research	DM2019-001	1/15/19	1/15/23	The Use of Clinical Trial Navigators to Increase Minority Patient Enrollment and Retention in Cancer Clinical Trials	\$35,500.00
Investment (Protocol)/Retention	Lee	Carrie	V Foundation for Cancer Research	DM2022-011	4/15/22	4/15/23	Mechanisms to Enhance Our Workforce and Accrual of BIPOC Individuals into Clinical Research	\$50,000.00
Recruitment	Lee	Yueh	NIH National Institute of Neurological Disorders and Stroke	1-R21-NS125369-01	9/30/21	8/31/23	Arterial input function Independent Measures of Perfusion with Physics Driven Models	\$187,512.00
Recruitment	Lee	Yueh	NIH National Institute of Biomedical Imaging and Bioengineering	5-R01-EB028283-01-03	9/15/19	2/29/24	Stationary Digital Tomosynthesis for Transbronchial Biopsy Guidance	\$706,479.00
Retention	Leeman	Jennifer	National Association of Chronic Disease Directors	267-1400-4220206	12/1/21	4/30/22	Cancer Screening Change Package	\$56,401.00
Recruitment	Legant	Wesley	Searle Scholars Program	SSP-2019-107	7/1/19	6/30/23	Single molecule dynamics of differentiation	\$100,000.00
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	David and Lucile Packard Foundation	2019-69652	10/15/19	10/14/24	AI-enhanced microscopy	\$175,000.00
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	Lemon	Stanley	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI103083-06-10	9/24/12	8/31/23	Membrane Hijacking: Biogenesis and Fate of Quasi-Enveloped Hepatovirus	\$388,750.00
Recruitment	Lemon	Stanley	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI150095-01-03	12/12/19	11/30/24	Critical Lipid Species in the Hepatovirus Lifecycle	\$515,618.00
Recruitment	Li	Zibo	Athna Biotech, Inc.	21-0698	6/14/21	5/31/22	STTR: Development of a radiation-activatable nanoparticle for lung cancer therapy	\$38,554.00
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	\$64,316.00
Recruitment	Li	Zibo	Oncurie, LLC		2/1/22	1/31/23	SBIR: Self-assembling molecular brachytherapy for treatment of metastatic cancer	\$82,000.00
Recruitment	Li	Zibo	Zymeron Corporation	Z110	12/1/19	9/15/21	SBIR: Combinatory Treatment Modalities Utilizing Radiation to Locally Activate Systemically Delivered Therapeutics	\$93,500.00
Recruitment	Li	Zibo	NIH National Cancer Institute	5-R01-CA233904-01-04	12/7/18	11/30/23	Development of IDO PET agents for immunotherapy	\$396,007.00
Recruitment	Li	Zibo	NIH National Institute of Biomedical Imaging and Bioengineering	5-R01-EB029451-01-03	5/1/20	1/31/24	Novel Catalytic Methods for Efficient Radiolabeling of Un-activated Arene Compounds	\$412,467.00
Recruitment	Li	Zibo	NIH National Cancer Institute	5-R01-CA247769-01-02	7/15/20	6/30/25	The development of novel radiation-sensitizer based on ultra-small carbon dots	\$507,058.00
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	\$22,606.70
Recruitment	Lichtman	Eben	GlaxoSmithKline, Inc.	GSK-207503	5/4/21	6/2/31	(DREAMM 7) A Multicenter, Open-Label, Randomized Phase III Study to Evaluate the Efficacy and Safety of the Combination of Belantamab Mafodotin,Bortezomib, and Dexamethasone (B-Vd) Compared with the Combination ofDaratumumab, Bortezomib and Dexamethasone	\$26,707.00

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Recruitment	Lichtman	Eben	Sanofi US Services, Inc. (formerly Sanofi-Aventis)	TED16132	1/15/21	2/14/31	An Open-Label, First-in-Human, Single Agent, Dose Escalation and Expansion Study for the Evaluation of Safety, Pharmacokinetics, Pharmacodynamics and Antitumor Activity of SAR442085 in Patients with Relapsed or Refractory Multiple Myeloma (RRMM).	\$42,351.81
Recruitment	Lichtman	Eben	GlaxoSmithKline, Inc.	GSK 209626	2/19/21	2/7/31	GSK-209626-DREAMM12: A Phase I Study to Evaluate the Pharmacokinetics and Safety of Belantamab Mafodotin Monotherapy in Participants with Relapsed or Refractory Multiple Myeloma Who Have Normal and Varying Degrees of Impaired Renal Function (DREAMM 12)	\$64,649.00
Theme Investment (BRIC)	Lin	Weili	University of California at San Diego	KR 705059	10/1/21	6/30/22	The Healthy Brain and Child Development National Consortium Administrative Core	\$86,200.00
Theme Investment (BRIC)	Lin	Weili	Societe des Produits Nestle, S.A.	RDNN201704	2/27/17	3/21/23	Interrelationships of Nutrition, Gut Microbiota, as well as Brain & Cognitive Development in Early Life	\$170,000.00
Theme Investment (BRIC)	Lin	Weili	Mead Johnson and Company, LLC		12/5/19	1/31/22	Nutritive Effects of Cows Milk-Based Formulas Through 18 Months of Age	\$278,098.61
Theme Investment (BRIC)	Lin	Weili	NIH National Institute on Drug Abuse	1-U01-DA055344-01	9/30/21	6/30/26	5/6 HBCD Prenatal Experiences and Longitudinal Development (PRELUDE) Consortium	\$865,180.00
Retention	Linnan	Laura	Centers for Disease Control and Prevention	1-U19-OH012303-01	9/1/21	8/31/26	Carolina Center for Total Worker Health and Well-Being	#####
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
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	\$150,000.00
Recruitment	Liu	Pengda	The Andrew McDonough B Foundation	73893	1/1/22	12/31/23	Targeting ATR/SPOP Signaling to Overcome Chemotherapy Resistance in Ewing Sarcoma	\$150,000.00
Recruitment	Liu	Pengda	NIH National Cancer Institute	1-R21-CA270967-01	5/1/22	4/30/24	Cancer Hijacks Enzyme Substrate Mutations to Facilitate Tumorigenesis	\$181,741.00
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	Department of Defense	W81XWH211041 9	7/1/21	6/30/24	Non-canonical function of STING in ccRCC	\$311,000.00
Recruitment	Lund	Jennifer	F. Hoffmann-La Roche Ltd.		3/25/21	9/30/22	WAYFIND-R	\$5,250.00
Recruitment	Lund	Jennifer	F. Hoffmann-La Roche Ltd.	21-2645	10/1/21	3/31/22	SEE 5120551 WAYFIND-R	\$5,250.00
Recruitment	Lund	Jennifer	Westat, Inc.	6473-S07	6/1/19	8/15/22	Constructing Real World Evidence in Cancer Surveillance through Data Linkage and Advanced Methods	\$27,037.00
Recruitment	Lund	Jennifer	Pharmaceutical Research and Manufacturers of America Foundation		8/1/20	4/15/22	Longitudinal Patterns in Anticholinergic and Sedative Drug Load	\$55,000.00
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	NIH National Institute on Aging	5-R21-AG068965-01-02	5/1/21	4/30/23	Improving the prediction of life expectancy among older adults with advanced cancer using geriatric assessment	\$225,222.00
Investment (CC)	Magnuson	Terry	NIH National Institute of General Medical Sciences	5-R01-GM101974-32-34	12/1/89	3/31/24	Albino Deletion Complex and Early Mouse Development	\$430,374.00
Investment (CC)	Magnuson	Terry	NIH Office of the Director	5-U42-OD010924-23	9/30/99	2/28/25	A Carolina Center to Characterize and Maintain Mutant Mice	#####
Investment (Bios/HTS)	Marron	James	National Science Foundation	DMS-2113404	9/1/21	8/31/24	Data Integration Via Analysis of Subspaces (DIVAS)	\$500,000.00
Innovation Award	Matera	Greg	NIH National Institute of General Medical Sciences	5-R35-GM136435-01-03	4/1/20	3/31/25	Ribonucleoprotein Biogenesis and Epigenetic Gene Regulation	\$587,089.00
Theme Investment (CC)	Mayer-Davis	Elizabeth	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	NIH/NIDDK 5P30DK056350-22 9737	4/1/21	3/31/26	UNC Nutrition Obesity Research Center Animal Metabolism Phenotyping Core	\$74,180.00
Recruitment	McGinty	Robert	NIH National Cancer Institute	5-F99-CA253730-02	8/1/20	2/28/22	Structure-Guided Mechanistic Studies of Dot1L in Mixed Lineage Leukemia	\$37,360.00

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Recruitment	McGinty	Robert	Pew Charitable Trusts	30551	8/1/17	7/31/22	Deciphering the nucleosome interactome	\$60,000.00
Recruitment	McGinty	Robert	American Cancer Society	132609-PF-18-153-01-DMC	4/1/19	3/31/22	Fellow: A Skranjna Deciphering the nucleosome interactome	\$81,750.00
Recruitment	McGinty	Robert	NIH National Institute of General Medical Sciences	5-R35-GM133498-01-03	8/1/19	7/31/24	Molecular Mechanisms of Chromatin Recognition	\$382,895.00
Theme Investment (CC)	McMillan	Leonard	National Institutes of Health	NIH/NHGRI U24HG010100-05	4/1/22	3/31/23	Genomic Resources for the Collaborative Cross	\$340,526.00
Theme Investment (HTS, CBCS, MP1U)	Merker	Jason	NIH National Cancer Institute	5-UG1-CA233333-04	3/13/19	2/28/25	UNITS: The UNC / UT National Clinical Trials Network Group Integrated Translational Science Production and Consultation Center	\$663,338.00
Recruitment	Miller	Brian	NIH National Cancer Institute	7-K08-CA248960-03	7/1/20	6/30/25	Targeting Unique Meyloid Populations to Overcome Anti-PD-1 Resistance Conferred by Specific Cancer Mutations	\$194,589.00
Recruitment	Miller	Brian	Burroughs Wellcome Fund	1021544.01	1/1/22	8/31/26	Targeting Myeloid Cells as a Personalized Immunotherapy Approach to Cancer	\$140,000.00
Recruitment	Mills	Sarah	NIH National Cancer Institute	5-K01-CA242530-03	8/7/19	7/31/24	Modeling the public health impact of a national menthol cigarette ban.	\$157,944.00
Recruitment	Milner	Justin	American Association of Immunologists		1/16/22	1/15/23	Driving T cell Residency and Functionality in Pancreatic Ductal Adenocarcinoma	\$54,144.00
Recruitment	Milner	Justin	NIH National Cancer Institute	5-R00-CA234430-03-04	8/31/20	8/30/23	Molecular Programming of CD8+ T Cell Accumulation and Activity in Tumors	\$248,997.00
Recruitment	Milowsky	Matthew	Genentech, Inc.		7/12/16	1/31/23	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	\$6,160.34
Recruitment	Milowsky	Matthew	New York University School of Medicine	NYU S15-00220	12/4/17	11/30/22	A Phase II Trial of MK3475 in Combination with Gemcitabine and Concurrent Hypofractionated Radiation Therapy as Bladder Sparing Treatment for Muscle-Invasive Urothelial Cancer of the Bladder	\$10,000.00
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	\$12,732.90
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	\$24,523.00
Recruitment	Milowsky	Matthew	Incyte Corporation		1/31/17	7/31/22	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	\$34,091.30
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	\$75,436.00
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	\$135,719.45
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	\$295,852.06
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	\$305,338.20

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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	\$31,675.94
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	NIH National Heart, Lung, and Blood Institute	1-K23-HL157765-01A1	1/1/22	12/31/26	Improving Thoracic Surgical Care using electronic Patient-Reported Outcomes (ePROs)	\$202,157.00
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-UM1-DK126185-02	8/20/20	6/30/25	Bridging the gap between type 2 diabetes GWAS and therapeutic targets	\$974,466.50
Recruitment	Mooberry	Micah	Affinergy, Inc.		3/29/21	4/5/22	SBIR: Development of a multiplex point-of-care assay to identify patients with venous thromboembolism	\$18,000.00
Recruitment	Mooberry	Micah	Mayo Clinic		9/12/17	12/31/22	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)	\$107,000.00
Recruitment	Moody	Cary	NIH National Institute of Allergy and Infectious Diseases	5-R21-AI156158-01-02	4/15/21	3/31/23	Regulation of DNA Damage and Innate Immunity During the Productive Phase of the HPV Life Cycle	\$194,375.00
Recruitment	Moody	Cary	NIH National Cancer Institute	5-R01-CA226523-01-04	12/6/18	11/30/23	Epigenetic Regulation During the HPV Life Cycle	\$348,592.00
Recruitment	Moon	Andrew	American Association for the Study of Liver Diseases		7/1/21	6/30/22	Improving the care of patients receiving locoregional therapy for hepatocellular carcinoma by monitoring of patient reported outcomes	\$26,000.00
Recruitment	Moon	Andrew	American Association for the Study of Liver Diseases	CTORA22-158537	7/1/22	6/30/24	Incorporating the Patient Voice into Hepatocellular Carcinoma Treatment Models	\$200,000.00
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	Moorman	Nathaniel	Chimerix, Inc.	WP101995	12/20/21	12/31/22	Chimerix Research Agreement for CHX-521 Testing	\$300,000.00
Recruitment	Moorman	Nathaniel	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI103311-06-09	12/1/12	6/30/23	The role of host and viral translation factors during HCMV infection	\$384,607.00
Recruitment	Moorman	Nathaniel	Research Triangle Institute (RTI International)	66818L	4/1/22	3/31/27	Rapidly Emerging Antiviral Drug Development Initiative	\$700,000.00
Recruitment	Morris	John	National Pancreas Foundation	22.2952	6/1/22	5/31/23	Leveraging Evolutionary Lineage Tracing To Dissect Heterogeneity In Pancreatic Ductal Adenocarcinoma Initiation And Therapeutic Response	\$50,000.00
Recruitment	Morris	John	Pancreatic Cancer Action Network	21-20-MORR	7/1/21	6/30/23	Dissecting Malignant Evolution Unleashed by p53 Loss in Pancreatic Cancer	\$200,000.00
Recruitment	Moschos	Stergios	Northwestern University	60046298 UNC	3/1/17	2/28/22	Systemic RNA interference to reactivate p53 tumor suppression	\$2,631.00
Recruitment	Moschos	Stergios	University of Washington	UWSC11108	10/1/19	5/31/22	A Multicenter, Randomized, Double-Blinded, Placebo-Controlled, Phase 3 Trial of Adjuvant Avelumab (anti-PDL-1 antibody) in Merkel Cell Carcinoma Patients with Clinically Detected Lymph Node Metastases.	\$3,000.00
Recruitment	Moschos	Stergios	University of California Board of Regents	1554-S-WB088	10/5/18	4/30/23	Genomic and Epigenomic Determinants of Pembrolizumab Resistance in Melanoma, Its Microenvironment and Organ-specific Tumor Niche in Deceased Subjects (Warm Autopsy)	\$17,606.00
Recruitment	Moschos	Stergios	Merck Sharp and Dohme Corp.		6/3/16	6/13/23	Pembrolizumab in Systemic Treatment-Naïve Distant Metastatic Melanoma and Exploration of use of ¹¹ Cmethyl-L-tryptophan (AMT) PET at Baseline as a Predictive Imaging Biomarker of Response	\$20,213.79

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Recruitment	Moschos	Stergios	Pfizer Inc. (Connecticut)	C4471001	7/1/21	6/30/31	A Two-Part, Phase 1A/B, Open-Label, Multicenter Trial Evaluating Pharmacokinetics, Safety and Efficacy of PF-07284890 (ARRY-461) in Participants With BRAF V600-Mutant Solid Tumors With and Without Brain Involvement	\$51,199.00
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	\$59,910.51
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)	\$90,686.00
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	\$100,811.00
Recruitment	Moschos	Stergios	Bristol-Myers Squibb Company		4/17/15	5/31/22	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	\$171,717.21
Recruitment	Moschos	Stergios	Leidos Corporation	17X011	5/24/17	8/30/24	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	\$957,532.63
Recruitment	Muscatell	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	Muscatell	Keely	Robert Wood Johnson Foundation	77856	9/1/20	8/31/24	Manuel Galvan RWJF Health Policy Research Scholars Award 2020	\$31,000.00
Recruitment	Muscatell	Keely	The Brain and Behavior Research Foundation (National Alliance for Research on Schizophrenia and Depression)	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	Muscatell	Keely	National Science Foundation	BCS-2047344	5/1/21	4/30/26	CAREER: Bidirectional Links Between Social Experiences and the Immune System	\$118,845.00
Recruitment	Muscatell	Keely	NIH National Heart, Lung, and Blood Institute	5-R01-HL157422-02	5/1/21	4/30/26	Neural and Molecular Mechanisms Underlying Stress-Induced Inflammatory Responses	\$533,044.00
Recruitment	Muss	Hy	Sapere Bio, Inc	2101	3/1/22	8/31/24	SBIR: Measuring cellular senescence to predict and prevent peripheral neuropathy	\$82,150.00
Recruitment	Muss	Hy	Georgia Institute of Technology	PO 519285 AWD-002617-G1	8/1/21	4/30/23	Patterns of Aging and the Role of Biomarkers of Senescence	\$137,723.00
Investment (Training)	Muss	Hy	NIH National Cancer Institute	5-T32-CA233419-04	1/1/19	12/31/23	UNC Geriatric Oncology Training Grant (UNC-GO)	\$180,436.00
Recruitment	Muss	Hy	Breast Cancer Research Foundation	BCRF-21-114	10/1/21	9/30/22	p16INK4a Expression, Chemotherapy Toxicity, and Aging in Women with Breast Cancer	\$190,000.00
Investment (Chair Package)	Neal-Perry	Genevieve	Albert Einstein College of Medicine	33222A PO 857935	9/30/20	8/31/22	The Study of Women's Health Across the Nation (SWAN): The Impact of Midlife and the Menopause Transition on Health and Functioning in Early Old Age	\$7,545.00
Investment (Chair Package)	Neal-Perry	Genevieve	NIH National Institute of Child Health and Human Development	5-K12-HD103085-02	7/23/20	6/30/25	Advancing women's health through research: the UNC WRHR Career Development Program	\$340,200.00
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	The Institute of Cancer Research	22-0715	9/1/21	8/31/22	Harmonization and validation of exposure data and assay measurements for collaborative pooling analyses.	\$24,100.00
Recruitment	Nichols	Hazel	NIH National Cancer Institute	1-F31-CA260787-01	7/1/21	5/31/22	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

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
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	\$53,229.00
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	\$97,626.00
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	NIH National Cancer Institute	5-R01-CA211093-01-03	8/5/19	7/31/24	In vitro fertilization outcomes after cancer	\$124,621.00
Recruitment	Nichols	Hazel	NIH National Cancer Institute	5-R01-CA204258-01-05	7/1/17	6/30/23	Clinical Pregnancy Outcomes in Adolescent and Young Adult Female Cancer Survivors	\$626,637.00
Recruitment	Nielsen	Matthew	University of Kansas Medical Center Research Institute, Inc.	Q125EP20	11/1/19	10/30/22	North Carolina Prospective Prostate Cancer Cohort Study	\$87,238.00
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	\$97,584.00
Recruitment	Nielsen	Matthew	University of Pennsylvania	576656	4/1/19	3/31/23	Ostomy Telehealth Self-management Training for Cancer Survivors	\$135,537.00
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	Kitware, Inc.	K003082-00-S01	7/15/21	6/30/24	A Computational Framework for Distributed Registration of Massive Neuroscience Images	\$169,433.00
Theme Investment	Niethammer	Marc	Brigham and Womens Hospital	122937	3/15/20	2/29/24	Prognostic Markers of Emphysema Progression	\$257,891.00
Theme Investment	Niethammer	Marc	Kitware, Inc.	K003285-00-S01	9/17/20	8/31/23	STTR: Enhanced Software Tools for Detecting Anatomical Differences in Image Data Sets	\$306,916.00
Theme Investment	Niethammer	Marc	NIH National Institute of Arthritis and Musculoskeletal and Skin Diseases	5-R01-AR072013-01-04	8/15/17	4/30/23	Large-scale automatic analysis of the OAI magnetic resonance image dataset	\$464,809.00
Recruitment	Noar	Seth	NIH National Cancer Institute	5-R01-CA246600-03	9/17/19	8/31/23	Advancing Perceived Message Effectiveness: A New Measure for Youth Prevention Media Campaigns	\$441,384.00
Recruitment	Noar	Seth	NIH National Institute on Drug Abuse	5-R01-DA049155-03	6/1/20	5/31/25	Impact of e-cigarette prevention messages on adolescents	\$684,800.00
Retention	North	Kari	Wake Forest University Health Sciences	637-45102-10000550024	4/1/19	1/31/24	Genetic and Epidemiological Predictors of Glucose Homeostasis Measures	\$17,488.00
Retention	North	Kari	NIH National Heart, Lung, and Blood Institute	1-F31-HL159910-01	8/18/21	8/17/23	Fellow: L Glover Methylome-wide association study of socioeconomic status, incident type 2 diabetes, and cardiovascular disease events among African Americans	\$38,062.00
Retention	North	Kari	Research Triangle Institute (RTI International)	5-312-0217030-65769L	11/15/19	7/31/22	Nutritional Omics of Pulmonary Function Decline	\$43,811.00
Retention	North	Kari	Washington University in Saint Louis	WU-23-0011/ST00008555	4/27/21	3/31/25	A Multi-Ancestry Study of Gene-Lifestyle Interactions and Multi-Omics in Cardiometabolic Traits	\$61,578.00
Retention	North	Kari	American Heart Association	903805	1/1/22	12/31/23	Developing and evaluating globally relevant and metabolic risk accounted polygenic risk scores for obesity	\$64,072.00
Retention	North	Kari	The University of Texas Health Science Center at Houston	AGT008103	1/1/22	12/31/22	Sharma Service Agreement	\$81,472.00
Retention	North	Kari	Rutgers the State University of New Jersey	PO# 826012/ Sub# 1203	6/15/19	3/31/23	PAGE III: Population Architecture Using Genomics and Epidemiology	\$232,877.00
Retention	North	Kari	Fred Hutchinson Cancer Research Center	1081551	8/20/20	3/31/22	Polygenic Risk Scores for Diverse Populations - Bridging Research and Clinical Care	\$402,125.00
Investment (Training)	North	Kari	NIH National Heart, Lung, and Blood Institute	5-T32-HL129982-07	6/1/16	5/31/26	The Genetic Epidemiology of Heart, Lung, and Blood Traits Training Grant (GenHLB)	\$417,507.00
Retention	North	Kari	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	3-R01-DK122503-02S1	9/22/20	7/31/25	Integrative Approaches to Identifying Function and Clinical Significance of Adiposity Susceptibility Genes	\$738,191.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Investment (CBCS)	Nyante	Sarah	NIH National Cancer Institute	1-R03-CA267469-01	1/1/22	12/31/23	Impact of the COVID-19 pandemic on newly-diagnosed breast cancer	\$77,750.00
Investment (CBCS)	Nyante	Sarah	NIH National Cancer Institute	1-R21-CA270625-01	3/10/22	2/29/24	Breast cancer neoadjuvant endocrine therapy during the Covid-19 pandemic: Opportunity for a new treatment paradigm?	\$181,741.00
Investment (CBCS)	Nyante	Sarah	NIH National Cancer Institute	5-R01-CA237129-03	9/1/19	8/31/24	Understanding the biological basis for the association between parenchymal texture features and breast cancer risk	\$604,724.00
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	\$30,000.00
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	\$91,626.00
Innovation Award	Oldenburg	Amy	NIH National Institute of Environmental Health Sciences	5-R01-ES032730-01-02	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)	\$499,609.00
Innovation Award	Oldenburg	Amy	NIH National Heart, Lung, and Blood Institute	5-R01-HL154429-01-02	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	\$797,092.00
Investment (CBCS)	Olshan	Andrew	Baylor College of Medicine	PO 7000001303	8/15/20	8/14/23	Identifying Novel Cancer Predisposition Syndromes: An Integrative Epidemiologic and Genomic Approach	\$26,073.00
Investment (CBCS)	Olshan	Andrew	Centers for Disease Control and Prevention	5-U01DD001231-01-04	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
Recruitment	Painschab	Matthew	NIH Fogarty International Center for Advanced Study in the Health Sciences	5-K01-TW011470-01-03	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	\$100,000.00
Investment (CC)	Pardo Manuel de Villena	Fernando	Neogen Corporation		5/20/20	5/19/23	Service Agreement for miniMUGA inbred mouse Background Analysis Report	\$8,333.00
Investment (CC)	Pardo Manuel de Villena	Fernando	University of Massachusetts Medical School	OSP2018037 WA01149643	8/5/17	7/31/22	Systems Genetics of Tuberculosis	\$342,932.00
Investment (CC)	Pardo Manuel de Villena	Fernando	NIH National Institute of Environmental Health Sciences	5-R01-ES029925-01-04	2/1/19	1/31/24	Genetic underpinning of diabetes associated with arsenic exposure	\$655,960.00
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	\$19,998.00
Recruitment	Park	Eliza	NIH National Cancer Institute	5-K07-CA218167-01-05	8/1/17	7/31/23	A Psychosocial Intervention to Improve Outcomes for Parents with Advanced Cancer	\$176,839.00
Recruitment	Patel	Shetal	American Society of Clinical Oncology		2/22/22	4/30/31	Testing the Use of Food and Drug Administration (FDA) Approved Drugs That Target a Specific Abnormality in a Tumor Gene in People With Advanced Stage Cancer (TAPUR)	\$2,000.00
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	\$23,599.63
Recruitment	Patel	Shetal	MacroGenics, Inc.	CP-MGA271-06	9/14/21	8/29/31	MGA271-06: A Phase 2 Open-Label Trial to Evaluate Enoblituzumab in Combination with Retifanlimab or Tebotelimab in the First-Line Treatment of Patients with Recurrent or Metastatic Squamous Cell Carcinoma of the Head and Neck	\$56,836.15
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	\$87,500.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Patel	Shetal	Shattuck Labs, Inc.		12/18/20	12/21/30	Phase 1 Dose Escalation Study of the Agonist Redirected Checkpoint, SL-172154, Administered Intratumorally in Subjects with Cutaneous Squamous Cell Carcinoma or Squamous Cell Carcinoma of the Head and Neck	\$102,878.56
Investment (HTSF)	Pattenden	Samantha	Leidos Biomedical Research	21X222	3/1/22	8/30/22	Development of a High Throughput Assay Based on Chromati	\$122,355.00
Retention	Pecot	Chad	H Lee Moffitt Cancer and Research Institute	11-18754-99-01-G1	4/1/21	3/31/24	Investigating the Prognostic Role of Intrinsic Immune Evasion Mechanisms in HNSCC	\$24,674.00
Retention	Pecot	Chad	Duke University	A035074	9/14/20	8/31/22	Duke Cancer Health Disparities P20 SPORE	\$29,501.00
Retention	Pecot	Chad	NIH National Cancer Institute	5-F30-CA250189-03	4/1/20	3/31/25	Fellow: N Sengottuvel The Role of SPON1 Expressing Inflammatory Monocytes in Promoting Lung Cancer Metastasis.	\$45,110.00
Retention	Pecot	Chad	Lung Cancer Initiative of North Carolina		1/1/20	6/30/22	Inhibiting the Mechanisms of Lung Cancer Metastasis	\$75,000.00
Retention	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	\$140,789.00
Retention	Pecot	Chad	NIH National Cancer Institute	5-R01-CA215075-01-05	9/21/17	8/31/23	Immune Regulation of Lung Squamous Metastasis	\$387,674.00
Retention	Pecot	Chad	NIH National Cancer Institute	5-R01-CA258451-01-02	3/1/21	2/28/26	Tumor Endothelial Cell Regulation of Pro-Metastatic Fibrin Matrices	\$568,496.00
Theme Investment (HTS)	Peifer	Mark	Burroughs Wellcome Fund	1020281	11/1/19	3/31/22	Defining the molecular mechanisms underlying apical-basal polarity establishment and morphogenesis.	\$1,666.00
Theme Investment (HTS)	Peifer	Mark	NIH National Institute of General Medical Sciences	2-R35-GM118096-06	7/16/16	8/31/26	Regulating cell fate and shaping the body plan during morphogenesis and their alteration during oncogenesis	\$595,169.00
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Baylor College of Medicine Childrens Foundation-Malawi	7000000410	6/7/17	5/31/22	Microscaled Protogenomics for Cancer Clinical Trials	\$33,469.00
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	5-F31-CA257166-02	5/1/21	4/30/23	Fellow: C Glodowskic Intratumoral Heterogeneity and Plasticity in Basal-Like Breast Cancers	\$40,410.00
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	Duke University	3130817	6/15/18	6/14/23	Cancer cell intrinsic and extrinsic actions of steroid hormones in breast tumors	\$111,257.00
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Johns Hopkins University	2003125644	8/23/16	12/31/21	TBCRC: AURORA Genome Characterization Center	\$132,889.46
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Breast Cancer Research Foundation	BCRF-21-127	10/1/21	9/30/22	Molecular Therapeutic for Luminal Tumor Subtypes	\$190,000.00
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	NIH National Cancer Institute	5-R01-CA148761-11-12	3/17/10	3/31/26	Therapeutic Targeting of Breast Cancer Tumor Initiating Cells	\$405,031.00
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	5-U01-CA238475-04	6/1/19	5/31/24	Predictive Modeling of the EGFR-MAPK pathway for Triple Negative Breast Cancer Patients	\$559,954.00
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	5-P50-CA058223-27	8/5/97	8/31/23	SPORE in Breast Cancer	#####

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Recruitment	Pfaff	Emily	American College of Radiology		1/1/21	6/30/22	American College of Radiology (ACR)/UNC ANCIRR Registry Program	\$156,432.00
Recruitment	Pfaff	Emily	Mayo Clinic	THE-282677 PO 68564775	7/12/21	1/31/25	Subcontract with Mayo Clinic School of Medicine Jiang R01 - FHIRCat: Enabling the Semantics of FHIR and Terminologies for Clinical and Translational Research	\$312,124.00
Recruitment	Pfaff	Emily	University of Colorado Denver	FY22.1126.001	8/15/21	6/30/22	Subcontract with University of Denver Colorado Year 5 CD2H N3C Data Harmonization	\$405,000.00
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	\$99,520.50
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	NIH National Institute on Aging	5-R01-AG066871-01-03	4/15/20	3/31/25	Identifying Alzheimer's Disease Causal Variants and Target Genes Using iPSC-derived Microglia	\$738,776.00
Recruitment	Pinton	Gianmarco	NIH National Institute of Biomedical Imaging and Bioengineering	5-R01-EB029419-01-02	7/1/21	3/31/25	A machine learning ultrasound beamformer based on realistic wave physics for high body mass index imaging	\$994,896.00
Recruitment	Pinton	Gianmarco	NIH National Institute of Neurological Disorders and Stroke	1-RF1-NS113285-01	9/1/19	5/31/23	A Fully Ultrasonic Approach for Combined Functional Imaging and Neuromodulation in Behaving Animals	#####
Retention	Poteat	Tonia	Drexel University	900141-2	5/6/21	1/31/23	Advancing intersectional discrimination measures for health disparities research	\$23,408.00
Retention	Poteat	Tonia	Northwestern University	60060439 UNC	10/1/21	8/31/22	Project Recognize: Improving Measurement of Alcohol Use and Other Disparities by Sex, Sexual Orientation, and Gender Identity through Community Engagement	\$43,666.00
Retention	Poteat	Tonia	Johns Hopkins University	2004970830	9/23/20	7/31/22	LITE CONNECT: Addressing testing gaps and epidemiologic disparities of COVID-19 among transgender people in the United States	\$69,750.00
Retention	Poteat	Tonia	Johns Hopkins University	2005487027	9/23/20	7/31/22	Enhanced COhort methods for HIV Research and Epidemiology (ENCORE) among transgender women in the United States.	\$69,750.00
Retention	Poteat	Tonia	Family Health International	PO19000834	12/1/18	11/30/22	HPTN 091 Leadership	\$86,864.00
Retention	Poteat	Tonia	NIH National Institute of Mental Health	1-R01-MH130277-01	4/15/22	2/28/27	Transgender-Specific Differentiated HIV Care: An Implementation Science Study	\$598,840.00
Retention	Poteat	Tonia	NIH National Heart, Lung, and Blood Institute	5-R01-HL149778-01-03	3/4/20	2/28/25	Cardiovascular Health of Sexual and Gender Minorities in the Hispanic Community Health Study/Study of Latinos (SGM HCHS/SOL)	\$725,063.00
Retention	Poteat	Tonia	NIH National Institute on Minority Health and Health Disparities	5-R01-MD013498-02-06	9/1/18	3/31/23	Biopsychosocial Mechanisms Linking Gender Minority Stress to HIV Comorbidities	#####
Recruitment	Purvis	Jeremy	Burroughs Wellcome Fund	1022073	11/1/21	9/1/23	Cell cycle remodeling during human stem cell differentiation	\$5,000.00
Recruitment	Purvis	Jeremy	NIH National Heart, Lung, and Blood Institute	5-F31-HL156464-02	1/1/21	12/31/24	Fellow: Tarek Zikry Deep learning models to predict primitive streak formation in human development	\$38,266.00
Recruitment	Purvis	Jeremy	NIH National Heart, Lung, and Blood Institute	5-F31-HL156433-02	4/2/21	3/31/24	Fellow: J Ranek Inferring Gene Regulatory Networks Governing Definitive Endoderm Differentiation from Single CellRNA Velocity Measurements	\$38,267.00
Recruitment	Purvis	Jeremy	National Science Foundation	1845796	1/1/19	12/31/23	CAREER: Predicting cell fate from cell history: Theory, experiment, and outreach	\$222,943.00
Recruitment	Purvis	Jeremy	NIH National Institute of General Medical Sciences	5-R01-GM138834-01-02	9/11/20	7/31/24	Computational Models of the Human Cell Cycle to Reveal Disease Mechanism and Inform Treatment	\$355,036.00
Retention	Pylayeva-Gupta	Yuliya	DOD DA Army Medical Research Acquisition Activity	W81XWH191059 7/0011349040	9/1/19	8/31/22	Role of IL-23 in epithelial-to-mesenchymal conversion in pancreatic cancer.	\$186,599.66
Retention	Pylayeva-Gupta	Yuliya	NIH National Cancer Institute	5-R37-CA230786-01-04	4/1/19	3/31/24	Function of IL35+ B cells in pancreatic cancer	\$443,047.00
Retention	Pylayeva-Gupta	Yuliya	The Mark Foundation for Cancer Research		1/1/22	12/31/24	Reprogramming B cell fate and function in cancer	\$250,000.00
Retention	Pylayeva-Gupta	Yuliya	American Cancer Society	RSG-21-103-01 IBCD	1/1/22	12/31/25	B cells as mediators of tumor eradication in pancreatic cancer	\$198,000.00
Recruitment	Raab	Jesse	Department of Defense	W81XWH201063 6	8/1/20	7/31/22	Identification of new therapeutic strategies for targeting liver fibrosis	\$155,550.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Raab	Jesse	Department of Defense	W81XWH1910423	8/15/19	8/14/22	Mechanistic analysis of ARID mutations in hepatocellular carcinoma	\$186,298.00
Retention	Rashid	Naim	Alliance for Clinical Trials in Oncology Foundation		7/1/20	6/30/22	Machine learning methods for biomarker-driven optimal treatment selection in metastatic colorectal cancer	\$100,684.00
Recruitment	Rauf	Yasmeen	Orbus Therapeutics, Inc.		6/6/17	9/30/22	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	\$5,220.10
Recruitment	Ray	Emily	Lung Cancer Initiative of North Carolina	22-1942	1/1/22	12/31/23	Development of an enhanced risk stratification system for patients with hospital-diagnosed advanced lung cancer	\$150,000.00
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	Albert Einstein College of Medicine	311392 / PO744148	8/14/18	7/31/23	Microbial Metabolite Mimics, PXR and Colitis-Induced Colorectal Cancer	\$23,478.00
Innovation Award	Redinbo	Matthew	Eli Lilly and Company		6/25/18	6/25/23	Precision Gut Microbiome-Targeted Inhibitors to Explore the Etiology of Inflammatory Bowel Disease	\$39,749.80
Innovation Award	Redinbo	Matthew	University of Pennsylvania Board of Trustees	581896 PO# 4678788	5/1/21	4/30/22	The Ultra Processed Western Diet, the Gut Microbiome	\$77,702.50
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	\$107,604.00
Innovation Award	Redinbo	Matthew	NIH National Institute of General Medical Sciences	5-R01-GM137286-01-03	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	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
Recruitment	Reeder-Hayes	Katie	Susan G Komen for the Cure North Carolina Triangle to the Coast Affiliate		5/13/20	11/12/22	From Action to Impact: Improving Breast Cancer Care in North Carolina Through Navigation and Collaborative Partnerships Project	\$45,000.00
Recruitment	Reeder-Hayes	Katie	Conquer Cancer Foundation		7/1/21	12/31/22	Implementing a Breast Cancer Early Detection and Ultrasound Intervention for Cervical Cancer Screening Providers in Malawi	\$50,000.00
Recruitment	Reeder-Hayes	Katie	Pfizer International, LLC (Corporate Office New York)	69375471	1/4/22	12/31/22	Impact of Social Determinants on Treatment Access and Outcomes of Metastatic Breast Cancer Among Black Women	\$149,999.63
Recruitment	Reeder-Hayes	Katie	Pfizer International, LLC (Corporate Office New York)	63633669 21-0928	12/10/20	12/31/22	Racial Disparities Hot-spotting to Improve Breast Cancer Outcomes In North Carolina	\$199,444.00
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	\$2,565.00
Recruitment	Reeves	Brandi	Dana-Farber Cancer Institute		2/16/11	2/15/23	DFCI 10-106 A Randomized Phase III Study Comparing Conventional Dose Treatment Using a Combination of Lenalidomide, Bortezomib and Dexamethasone (RVD) to High-Dose Treatment with Peripheral Stem Cell Transplant in the Initial Management of Myeloma in P	\$3,983.86
Recruitment	Reeves	Brandi	Janssen Research & Development, LLC		10/23/15	4/22/23	A Randomized Phase 2 Trial to Evaluate Three Daratumumab Dose Schedules in Smoldering Multiple Myeloma	\$17,056.60
Recruitment	Reeves	Brandi	Janssen Research & Development, LLC	54767414SMM3 001	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	\$37,490.01
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	\$40,034.63

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
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.	\$46,144.16
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	\$67,569.08
Recruitment	Reeves	Brandi	Hemostasis and Thrombosis Research Society	HTRS MRA 2022 REEVES 02	7/1/22	6/30/24	Hypoxia Inducible Factors in Myeloproliferative Neoplasm Associated Thrombosis	\$82,500.00
Retention	Reuland	Dan	Wake Forest University	497-5581108503275 1-10000550124	1/1/20	12/31/24	A Personalized Digital Outreach Intervention for Lung Cancer Screening	\$172,778.00
Retention	Reuland	Dan	NIH National Cancer Institute	5-UH3-CA233251-04	9/30/18	8/31/24	Scaling Colorectal Cancer Screening Through Outreach, Referral, and Engagement (SCORE): A State-Level Program to Reduce Colorectal Cancer Burden in Vulnerable Populations	\$850,903.00
Retention	Ribisl	Kurt	Cumberland County Department of Health	2022150	7/1/21	6/30/22	Fort Bragg Tobacco Control: Military Health and Readiness Initiative	\$31,077.00
Investment (Training)	Ribisl	Kurt	NIH National Cancer Institute	5-T32-CA057726-30	7/1/17	6/30/22	Cancer Control Education Program	\$419,133.00
Retention	Ribisl	Kurt	NIH National Cancer Institute	5-P01-CA225597-01-04	9/1/18	8/31/23	ASPiRE: Advancing Science & Practice in the Retail Environment	#####
Recruitment	Richardson	Daniel	Glioblastoma Foundation		12/1/21	11/30/22	Eliciting Patient Treatment Preferences Through Best-Worst Scaling to Inform Treatment Decisions In A Cohort Of Glioblastoma Patients	\$5,000.00
Recruitment	Richardson	Daniel	Conquer Cancer Foundation		7/1/20	6/30/22	Patient Preferences for Treatment Outcomes in Older Patients with Acute Myeloid Lukemia	\$25,000.00
Recruitment	Richardson	Daniel	University of Colorado Denver	FY22.105.010	7/1/21	6/30/22	Establishing the Validity of a Best-Worst Scaling Survey to Quantify the Preferences of Older Patients with Advanced Cancer	\$66,231.00
Recruitment	Roberts	Megan	NIH National Cancer Institute	1-R13-CA261073-01	7/16/21	6/30/22	Transdisciplinary Conference for Future Leaders in Precision Public Health	\$21,479.00
Recruitment	Roberts	Megan	Duke University	303000044	9/22/21	8/31/22	Implementing Pharmacogenomics In Diverse Health Care Systems	\$40,837.00
Recruitment	Robinson	Whitney	Robert Wood Johnson Foundation	74819	9/1/17	8/31/22	2017 Health Policy Research Scholars	\$24,000.00
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	Genentech, Inc.		6/9/17	2/28/23	A Phase III, Multicenter, Randomized, Placebo-Controlled, Double-Blind Study of Atezolizumab (Anti-PD-L1 Antibody) as Adjuvant Therapy in Patients with Renal Cell Carcinoma at Risk of Developing Metastasis Following Nephrectomy	\$2,988.90
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)	\$30,940.00
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	\$73,171.27
Recruitment	Rose	Tracy	NIH National Cancer Institute	5-K08-CA248967-01-03	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	Rosenstein	Donald	American Cancer Society	77705	8/24/21	2/28/22	2021 Patient Transportation Grant	\$15,000.00
Recruitment	Rosenstein	Donald	Susan G Komen for the Cure North Carolina Triangle to the Coast Affiliate		8/4/20	5/26/22	Reducing breast cancer mortality by removing barriers to care	\$21,000.00

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Recruitment	Rosenstein	Donald	American Cancer Society	81777	4/1/22	3/31/23	2022 Patient Transportation Grant	\$30,000.00
Recruitment	Rosenstein	Donald	American Cancer Society		12/1/21	9/30/22	2021 Patient Lodging Grant	\$75,000.00
Recruitment	Rubinsteyn	Alexander	American Association for Cancer Research		5/31/20	5/30/23	Impact of Tumor Treating Fields on Neoantigen Burden and T cell function	\$75,000.00
Investment (HTS)	Sancar	Aziz	NIH National Cancer Institute	5-F30-CA225060-03	7/10/19	7/9/24	FELLOW:C VAUGHN Genome-wide Patterns of DNA Damage and Repair in Resistance to Platinum-Based Chemotherapy	\$44,394.00
Investment (HTS)	Sancar	Aziz	NIH National Institute of Environmental Health Sciences	1-R01-ES033414-01	9/17/21	6/30/26	DNA Adduct Detection and Repair in Mammalian Cells	\$556,623.00
Investment (HTS)	Sancar	Aziz	NIH National Institute of General Medical Sciences	2-R35-GM118102-06	4/1/16	8/31/26	Molecular Mechanism of Mammalian DNA Excision Repair and the Circadian Clock	#####
Investment (Protocol)	Sanoff	Hanna	University of Iowa	S02645-01	7/1/21	7/31/25	Comparative Effectiveness Research for Neuroendocrine Tumors	\$29,313.00
Investment (Protocol)	Sanoff	Hanna	H Lee Moffitt Cancer and Research Institute		4/28/15	4/27/22	Multi institutional phase II trial of single agent regorafenib in refractory advanced biliary cancers.	\$34,234.00
Investment (HTSF)	Sartor	Ryan B	Leona M and Harry B Helmsley Charitable	2105-04679	12/1/2020	1/30/2023	Genomic and Microbial Signatures Predict Post-Operative	\$778,251.00
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.	\$202,315.00
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	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
Retention	Schoenfisch	Mark	KNOW Bio, LLC		1/1/18	12/31/22	Synthesis and Characterization of Next Generation Nitric Oxide-Releasing Biopolymers	\$215,457.00
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
Recruitment	Schrank	Travis	Yale University	CON-80002953(GR11 2526)	4/1/21	6/30/22	Investigating Double-Strand Break Repair Deficiency as a Driver of Genomic Copy Number Heterogeneity in HPV Associated Head and Neck Squamous Cell Carcinoma	\$77,750.00
Recruitment	Schrank	Travis	NIH National Institute of Dental and Craniofacial Research	5-K08-DE029241-01-02	9/1/20	8/31/25	Mechanisms Determining Dysregulation of the NRF2 Oxidative Stress Response in Head and Neck Squamous Cell Carcinoma	\$173,993.00
Innovation Award	Sekelsky	Jeff	NIH National Institute on Aging	1-F31-AG074637-01	9/1/21	8/31/24	Fellow: C Turcotte Mechanisms and regulation of meiotic recombination	\$37,102.00
Innovation Award	Sekelsky	Jeff	NIH National Institute of General Medical Sciences	3-R35-GM118127-07S1	6/1/16	3/31/26	Mechanisms of meiotic and mitotic recombination	\$530,312.00
Investment (Training)	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
Investment (HTSF)	Sena-Soberano	Arlene C	Bill and Melinda Gates Foundation	INV-036560	11/2/21	10/31/23	Genomic epidemiology of Treponema pallidum strains infe	\$779,677.50
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.	\$25,000.00
Retention	Serody	Jonathan	American College of Surgeons		7/1/20	6/30/22	Identification of tumor-specific antibodies in triple negative breast cancer	\$30,000.00
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	\$62,566.00
Retention	Serody	Jonathan	GlaxoSmithKline Biologicals S.A.	456005	12/1/15	12/31/22	GSK Task Order 8	\$64,996.00
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.	\$80,211.00
Retention	Serody	Jonathan	Merck Sharp and Dohme Corp.	54829	12/15/16	6/15/23	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	\$198,264.00

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Retention	Serody	Jonathan	Merck Sharp and Dohme Corp.	54823	12/15/16	6/15/23	Immune Biomarker Analysis of Pembrolizumab in AML	\$210,982.00
Investment (Training)	Serody	Jonathan	NIH National Cancer Institute	5-T32-CA211056-05	8/1/17	7/31/22	Duke UNC-Chapel Hill Immunotherapy Training Grant	\$459,827.00
Retention	Serody	Jonathan	NIH National Heart, Lung, and Blood Institute	1-R01-HL155098-01A1	9/1/21	6/30/25	Enhancing Innate Immune Reconstitution Post Allogeneic HSCT.	\$655,949.00
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	\$1,792.00
Retention	Shaheen	Nicholas	United States Endoscopy Group, Inc		3/21/13	3/31/24	CSA 003 truFreeze Spray Cryotherapy Patient Registry	\$2,768.00
Retention	Shaheen	Nicholas	Interpace Diagnostics Corporation		6/18/20	6/30/26	Risk Stratification of BE Patients for Risk of Progression to Esophageal Adenocarcinoma using Mutational Load (ML) (i.e. BarreGEN®) (Interpace Diagnostics Study # BE27)	\$12,069.75
Retention	Shaheen	Nicholas	Duke University	A03-0637	12/13/16	11/30/22	Imaging and Biomarkers for Early Cancer Detection (R01)	\$12,577.00
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	\$13,663.09
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	\$18,880.00
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)	\$20,561.80
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)	\$30,922.50
Retention	Shaheen	Nicholas	Case Western Reserve University	RES516233	5/17/17	4/30/22	Genetic Determinants of Barrett's Esophagus and Esophageal Adenocarcinoma	\$42,560.00
Retention	Shaheen	Nicholas	United States Endoscopy Group, Inc		11/2/17	10/31/23	A Prospective Single Arm Multicenter Study Evaluating the Effects of Spray Cryotherapy in Patients with Persistent Local Esophageal Cancer	\$47,936.00
Retention	Shaheen	Nicholas	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-T35-DK007386-42	5/1/80	2/28/26	Short Term Research Training	\$106,212.00
Investment (Protocol)	Shea	Thomas	Alliance for Clinical Trials in Oncology		9/11/13	3/5/30	Alliance Prime eIPF	\$94,731.03
Investment (Protocol)	Shea	Thomas	ECOG-ACRIN Cancer Research Group		3/30/15	4/30/25	ECOG - ACRIN Master (LAPS Clinical Trials)	\$94,838.01
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	University of Michigan	SUBK00014248	8/1/21	7/31/26	A clinical tool for automated detection and delineation of intracranial metastases from MRI	\$71,931.00
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	\$329,356.04
Recruitment	Sheth	Sid	Monopar Therapeutics Inc.	MNPR-301-001	8/18/21	8/17/23	A Phase 2b/3, multicenter, randomized, double-blind, placebo-controlled study comparing the efficacy and safety of clonidine mucoadhesive buccal tablet to placebo to prevent chemoradiotherapy-induced severe oral mucositis in patients with oropharyngeal ca	\$11,420.00

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Recruitment	Sheth	Sid	Seagen, 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	\$13,184.85
Recruitment	Sheth	Sid	Beigene, Ltd.	BGB-900-102	6/22/21	7/21/31	Phase 1-2 Study Investigating Safety, Tolerability, Pharmacokinetics and Preliminary Antitumor Activity of Anti-TIM-3 MonoclonalAntibody BGB-A425 in Combination with Anti-PD-1 Monoclonal Antibody Tislelizumab in Patients with Advanced Solid Tumors	\$49,621.00
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 populat	\$69,227.32
Recruitment	Sheth	Sid	Inovio Pharmaceuticals, Inc.	0002106-1	8/10/21	8/9/22	cfHPVDNA as a Biomarker of Treatment Response in RRP-001	\$114,613.00
Recruitment	Sheth	Sid	MedImmune, Inc.		3/31/20	3/18/30	An Open-label Phase 1 Study to Assess the Safety, Tolerability, Pharmacokinetics, Pharmacodynamics and Preliminary Efficacy of MEDI5395 in Combination with Durvalumab in Subjects with Select Advanced Solid Tumors	\$215,728.85
Retention	Shih	Yen-Yu	Leland Stanford Junior University	62680095-115866	8/15/21	7/31/24	Methods for Dynamic Causal Interactions in Human Brain Aging and AD/ADRD	\$97,637.00
Retention	Shih	Yen-Yu	NIH National Institute of Mental Health	1-S10-MH124745-01	9/11/20	9/10/22	AVANCE NEO upgrade for the BioSpec 9.4T/30cm MRI system at UNC	\$300,000.00
Retention	Shih	Yen-Yu	NIH National Institute of Mental Health	5-R01-MH126518-01-02	4/1/21	3/31/26	Neural circuit mechanisms governing default mode network dynamics	\$659,603.00
Retention	Shih	Yen-Yu	NIH Office of the Director	1-S10-OD026796-01A1	5/1/20	4/30/23	9 4T Small Animal MRI scanner at UNC	\$666,666.67
Recruitment	Smith	Jennifer	DL Analytics, LLC		4/30/22	8/30/22	SBIR: Validation of a low-cost lab-free screening test for prevention of cervical cancer: automatic visual evaluation	\$35,418.00
Recruitment	Smith	Jennifer	NIH National Cancer Institute		1/31/21	6/29/25	Fellow: A Bukowski The effect of epigenetic DNA methylation on the progression of HPV-associated precancerous cervical lesions	\$38,778.00
Recruitment	Smith	Angie	University of Washington	PO#BPO38451	2/1/19	1/31/23	Comparison of Intravesical Therapy and Surgery as Treatment Options (CISTO) for Recurrent Bladder Cancer	\$100,786.00
Recruitment	Smith	Angie	RTI Health Solutions	PO 5147 1-415-0206106.000	4/16/21	12/31/22	Patient Preferences for Treatments in Non-Muscle Invasive and Muscle Invasive Bladder Cancer	\$102,430.00
Recruitment	Smitherman	Andrew	The Board of Trustees of the University of Alabama	000527577-SC008	3/24/21	2/28/23	Predictors of Systemic Exposure to Oral 6MP During Maintenance in Adolescents and Young Adults with Acute Lymphoblastic Leukemia	\$24,081.00
Recruitment	Smitherman	Andrew	Hyundai Hope on Wheels	19-3385	12/31/19	12/31/22	Expression of aging biomarkers and frailty among adolescent and young adult (AYA) cancer survivors	\$66,666.67
Recruitment	Smitherman	Andrew	Georgetown University	425038_GR4249 01-UNC	9/21/21	8/31/22	Randomized Trial of a Multilevel Intervention to Improve Adherence to Childhood Cancer Survivorship Guidelines	\$88,436.00
Recruitment	Song	Lixin (Lee)	Mayo Clinic	NCC-259713/PO#670 40568	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	Lixin (Lee)	Alliance NCTN Foundation	202010119	8/1/20	7/31/21	Feasibility Testing of Patient Reported Outcomes-Informed Symptom management System (PRISMS)	\$24,102.00
Recruitment	Song	Lixin (Lee)	NIH National Institute of Nursing Research	5-R01-NR016990-01-05	9/25/17	6/30/23	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)	DOD DA Army Medical Research Acquisition Activity	W81XWH211026 3	8/1/21	7/31/24	Development and pilot testing of the interactive Prostate Cancer Information, Communication and Support program (iPICS)	\$384,026.00
Recruitment	Stein	Jake	Lung Cancer Initiative of North Carolina		7/1/21	12/31/22	Evaluating Barriers to Equitable Access to Precision Medicine in Advanced Lung Cancer	\$25,000.00

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Investment (HTSF)	Stein	Jason Louis	NIH National Institute of Mental Health	1-U01-MH122509-01	8/1/21	4/30/22	Discovery and validation of genetic variation impacting	\$577,381.00
Investment (CYPHR)	Stitzenberg	Karyn	University of Texas Health Science Center at San Antonio	169780/169776	12/1/19	6/30/23	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
Recruitment	Stover	Angela	Hematology Oncology Pharmacy Association		1/1/22	12/31/22	Developing and pilot testing the Patient-centered Pharmacy Pathway for Oral Chemotherapy (P3OC)	\$44,920.00
Recruitment	Stover	Angela	UroGen Pharma Ltd.	22.2019	12/1/21	11/30/23	A mixed methods study of side effects and adverse events in a phase 3 trial of a medication gel for bladder cancer	\$534,004.00
Innovation Award	Strahl	Brian	Ultraloop Technologies, Inc.	210043	9/23/21	9/22/23	Effectiveness of UVC light to reduce microorganism growth	\$7,397.00
Innovation Award	Strahl	Brian	NIH National Cancer Institute	1-F32-CA261015-01A1	3/1/22	2/28/23	Fellow: N Burkholder Deciphering the histone interactions and reader functions of ASH1L in biology and leukemia	\$66,390.00
Innovation Award	Strahl	Brian	EpiCypher, Inc.		1/20/22	12/31/23	SBIR: Engineered super-affinity reagents for detection of histone post-translational modifications	\$120,000.00
Innovation Award	Strahl	Brian	American Cancer Society	PF-20-149-01-DMC	8/1/21	7/31/24	The role of PHD readers and PHRF1 in chromatin and cancer biology	\$175,500.00
Innovation Award	Strahl	Brian	American Cancer Society	PF-22-008-01-DMC	9/1/22	8/31/25	FELLOW: N BURKHOLDER Deciphering the histone interactions and reader functions of ASH1L in biology and leukemia	\$175,500.00
Innovation Award	Strahl	Brian	NIH National Institute of General Medical Sciences	5-R35-GM126900-01-05	5/1/18	4/30/23	Mechanisms of chromatin and transcriptional regulation	\$561,780.00
Investment (Chair Package)	Stürmer	Til	CERobs Consulting, LLC	18-0881-002 21-1847	11/1/20	12/31/22	An Alternative Matching Approach for the Prevalent New User Study Design	\$24,050.00
Investment (Chair Package)	Stürmer	Til	Duke University	4551085548	8/16/21	8/15/22	Outside Service Agreement for Graduate Research Assistant - Whitney Robinson	\$43,270.00
Investment (Chair Package)	Stürmer	Til	American Diabetes Association	4-22-PDFPM-06	4/1/22	3/31/25	Precision medicine analysis for subgroups identification and optimal treatment selection in older adults with type 2 diabetes initiating SGLT2 inhibitors or GLP-1 receptor agonists	\$63,760.00
Investment (HTS)	Sullivan	Patrick	Duke University	A034195	10/19/20	6/30/22	Duke FUNCTION Center: Pioneering the comprehensive identification of combinational noncoding causes of disease	\$70,924.00
Investment (HTS)	Sullivan	Patrick	Duke University	283-2497	9/1/18	8/31/24	To support research on the development CRISPR-based epigenome editing tools to refine genome wide association studies	\$96,089.00
Investment (HTS)	Sullivan	Patrick	Karolinska Institute	ZZC8ANALMQ	11/1/15	12/31/24	An International Effort to Advance Knowledge of Schizophrenia	\$137,801.00
Investment (HTS)	Sullivan	Patrick	Duke University	A034582	4/1/21	1/31/23	Beyond GWAS: High Throughput Functional Genomics & Epigenome Editing to Elucidate the Effects of Genetic Associations for Schizophrenia	\$326,887.00
Investment (HTS)	Sullivan	Patrick	NIH National Institute of Mental Health	5-R01-MH121545-01-03	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	\$355,883.00
Investment (HTS)	Sullivan	Patrick	NIH National Institute of Mental Health	5-R01-MH124871-01-02	4/14/21	2/28/26	1/7 PGC: Advancing Discovery and Impact	\$683,162.00
Investment (HTS)	Sullivan	Patrick	NIH National Institute of Mental Health	5-R01-MH123724-01-03	6/10/20	3/31/25	A Trans-Nordic Study of Extreme Major Depression	\$795,198.00
Investment (HTS)	Swanstrom	Ronald	George Washington University	21-M112	12/1/21	5/31/22	UNC and NCCU Diversity and Inclusion Pipeline Program (UN-DIPP)	\$10,005.00
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
Investment (HTS)	Swanstrom	Ronald	NIH National Institute of Allergy and Infectious Diseases	1-R13-AI165010-01	9/14/21	8/31/22	25th Annual United States Conference on HIV/AIDS (USCHA)	\$74,500.00
Investment (HTS)	Swanstrom	Ronald	University of Michigan	3004653332\PO 3006661157	9/15/17	8/31/22	The Center for HIV RNA Studies (CRNA)	\$184,268.00
Investment (HTS)	Swanstrom	Ronald	NIH National Institute on Drug Abuse	5-R01-DA051890-01-03	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	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI147849-01-03	2/13/20	1/31/25	Formation of the HIV-1 Latent Reservoir	\$591,415.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Investment (HTS)	Swanstrom	Ronald	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI140970-01-05	6/25/18	5/31/23	HIV Evolution Defines Virus-Host/Drug Interactions In Viremic and Aviremic People	\$647,912.00
Investment (HTS)	Swanstrom	Ronald	NIH National Institute of Allergy and Infectious Diseases	5-P30-AI050410-24-25	8/20/01	5/31/26	The University of North Carolina Center for AIDS Research	#####
Recruitment	Tan	Ray	American Cancer Society	MRS-18-193-01	1/1/19	12/31/23	Designing visual tools to enhance cancer surgeon decision-making	\$184,250.00
Recruitment	Tan	Ray	Department of Defense	W81XWH2110775 0011654672	9/1/21	8/31/24	Personalizing kidney cancer communication to support patient-centered decision-making	\$309,872.67
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	\$188,519.00
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	\$14,605.00
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	\$39,777.00
Investment (Training)	Tate	Deborah	NIH National Cancer Institute	5-T32-CA128582-13	9/1/09	8/31/24	Cancer Health Disparities Training Program	\$402,764.00
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
Recruitment	Thaxton	Jessica	NIH National Cancer Institute	5-R01-CA244361-03-04	7/1/20	6/30/25	Targeting Chronic ER Stress in T Cells to Improve Cancer Immunotherapy	\$349,947.00
Recruitment	Thaxton	Jessica	NIH National Cancer Institute	7-R01-CA248359-03	4/1/20	3/31/25	Exploitation of ER Stress Induced Immune Dysfunction to Improve Immunotherapy	\$355,706.00
Retention	Thomas	Nancy	Triangle Community Foundation		6/1/22	6/1/23	Gertrude B. Elion Award: Melanoma Research Project	\$10,000.00
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)	\$710,459.00
Retention	Thomas	Nancy	NIH National Cancer Institute	5-R01-CA233524-01-03	4/1/20	3/31/25	Identification of Lethal Melanomas at the Time of Diagnosis	\$897,329.00
Recruitment	Thompson	Patrick	Children's Hospital Los Angeles	J10-MC-JZHD	9/21/20	9/21/25	J10-MC-JZHD: A Phase 1 Study of Aurora Kinase A Inhibitor LY3295668 erbumine as a Single Agent and in Combination in Patients with Relapsed/Refractory Neuroblastoma	\$3,378.00
Recruitment	Thompson	Patrick	H Lee Moffitt Cancer and Research Institute	MCC 20339	12/3/20	10/31/28	Evolutionary inspired therapy for newly diagnosed, metastatic, Fusion Positive Rhabdomyosarcoma	\$7,454.00
Recruitment	Thompson	Patrick	H Lee Moffitt Cancer and Research Institute	MCC20320	4/8/21	4/7/25	Blood based biomarkers for minimal residual disease detection in pediatric sarcomas	\$8,585.00
Recruitment	Thompson	Patrick	National Pediatric Cancer Foundation		7/1/20	6/30/23	The Sunshine Project Protected Effort	\$29,898.00
Recruitment	Thompson	Caroline	University of California at San Francisco	13498SC	8/1/21	7/31/24	Understanding the Multilevel Drivers of Liver Cancer Disparities	\$60,923.00
Recruitment	Thompson	Caroline	NIH National Cancer Institute	7-R01-CA264176-02	7/1/21	6/30/26	Diagnosis of Cancer in the Emergency Room - Explaining Persistent Disparities (Grant Transfer)	\$352,620.00
Retention	Ting	Jenny	Duke University	A034953	8/1/20	7/31/22	Innate Immune Receptor Ligand and the Microbiota as Countermeasures for Radiation	\$347,468.00
Retention	Ting	Jenny	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI029564-26-30	7/1/91	5/31/23	Molecular and Functional Analysis of NLR Family Members	\$502,378.00
Retention	Ting	Jenny	NIH National Institute of Allergy and Infectious Diseases	1-R56-AI158314-01	9/1/21	6/30/22	Role and Mitigation of Inflammasomes and Inflammation During COVID-19	\$768,215.00
Retention	Ting	Jenny	NIH National Cancer Institute	5-R35-CA232109-03	9/17/19	8/31/26	Intracellular Innate Immune Receptors in Cancer Suppression and Immunotherapy	\$924,309.00
Retention	Ting	Jenny	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI141333-01-04	12/14/18	11/30/23	Micro-Particle Delivery of a Potent Intracellular Adjuvant for a Universal Flu Vaccine	#####
Retention	Troester	Melissa	Leidos Corporation	X20102	8/17/17	9/30/22	Blanket Purchase Agreement for Testing Services and Nucleic Acid Extraction	\$25,000.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Troester	Melissa	NIH National Cancer Institute	5-F31-CA257388-02	3/1/21	2/28/23	Fellow: A Hamilton Impact of the Breast Cancer Immune Microenvironment on Racial Disparities and Survivorship	\$40,318.00
Retention	Troester	Melissa	Mayo Clinic in Jacksonville	THE-242677-02/68332210	7/5/19	6/30/23	Predicting Breast Cancer Risk after Benign Percutaneous Biopsy	\$105,000.00
Retention	Troester	Melissa	Memorial Sloan-Kettering Cancer Center	C21881527	8/1/19	7/31/24	Body Composition and the Obesity Paradox in Clear Cell Renal Cell Carcinoma	\$105,432.00
Retention	Troester	Melissa	American Cancer Society	48195	8/23/17	12/31/22	Gene Expression Profiling of Breast Tumors from Cancer Prevention Study 3	\$109,106.00
Retention	Troester	Melissa	Susan G Komen for the Cure	TREND21686258	12/3/21	12/2/24	Breast Cancer Mortality Disparities: Integrating Biology and Access	\$135,000.00
Retention	Troester	Melissa	ECOG-ACRIN Medical Research Foundation	2UG1CA189828-06-UNC1	8/1/18	7/31/22	ECOG-ACRIN NCORP Research Base	\$150,000.00
Retention	Troester	Melissa	North Carolina State University	2021-2154-03	9/21/21	8/31/23	Southern Liver Health Cohort	\$162,831.00
Retention	Troester	Melissa	Susan G Komen for the Cure	SAC210102	12/23/21	12/22/23	Impact of spatial heterogeneity in tumor and microenvironment on recurrence	\$200,000.00
Retention	Troester	Melissa	Susan G Komen for the Cure	OG22873776	5/18/22	5/17/25	Integrating Biology and Access to Understand Metastatic Breast Cancer Disparities	\$166,666.67
Retention	Troester	Melissa	NIH National Cancer Institute	5-R01-CA253450-01-02	4/6/21	3/31/26	P53, DNA Repair, and Immune Response in Breast Cancer Mortality Disparities	\$600,459.00
Retention	Troester	Melissa	NIH National Institute of Environmental Health Sciences	5-P30-ES-010126-20-21	4/1/21	2/28/26	UNC Center for Environmental Health and Susceptibility	#####
Recruitment	Trogdon	Justin	Agency for Healthcare Research and Quality	1-R36-HS028536-01	7/1/21	6/30/23	Cancer detection and care for dual-eligible beneficiaries in Medicare Shared Savings Program	\$20,893.00
Recruitment	Trogdon	Justin	NIH National Cancer Institute	5-F30-CA254064-02	7/9/20	7/8/24	Fellow: Nul L Oh Cancer detection and care for dual-eligible beneficiaries in Medicare Shared Savings Program	\$38,062.00
Recruitment	Tsagaratou	Ageliki	NIH National Institute of General Medical Sciences	3-R35-GM138289-02S1	7/1/20	6/30/25	Epigenetic Regulation of Lineage Specification	\$484,853.00
Recruitment	Tuchman	Sascha	Alliance Foundation Trials, LLC	AFT-41	1/22/21	11/30/30	A Phase II Study of Lenalidomide, Ixazomib, Dexamethasone, and Daratumumab in Transplant-Ineligible Patients with Newly Diagnosed Multiple Myeloma.	\$2,041.00
Recruitment	Tuchman	Sascha	Tufts-New England Medical Center	5020267_SERV	9/30/20	5/31/23	Screening to Improve Survival in AL Amyloidosis	\$2,807.00
Recruitment	Tuchman	Sascha	Celgene Corporation	bb2121-EAP-001	4/30/21	6/30/31	Expanded Access Protocol (EAP) for Subjects Receiving Idecabtagene Vicleucel that is Nonconforming for Commercial Release	\$9,024.00
Recruitment	Tuchman	Sascha	V Foundation for Cancer Research	DM2021-013	2/15/21	2/15/23	Enhancing underrepresented minority recruitment to clinical trials in multiple myeloma through augmentation of research personnel and infrastructure	\$37,500.00
Recruitment	Tuchman	Sascha	TeneoBio, Inc	TNB383B-0001	6/1/21	6/30/31	A Multicenter, Phase 1, Open-label, Dose-escalation and Expansion Study of TNB-383B, a Bispecific Antibody Targeting BCMA in Subjects with Relapsed or Refractory Multiple Myeloma	\$45,195.00
Recruitment	Tuchman	Sascha	Caelum Biosciences, Inc.	CAEL101-301	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-Naïve Patients with Mayo Stage IIIb AL Amy	\$48,751.00
Recruitment	Tuchman	Sascha	Sanofi US Services, Inc. (formerly Sanofi-Aventis)		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	\$71,408.00
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	\$102,093.11

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Recruitment	Tuchman	Sascha	Karyopharm Therapeutics Inc		7/25/18	8/17/28	A Phase 1b/2 Study of Selinexor (KPT-330) in Combination with Backbone Treatments for Relapsed/Refractory Multiple Myeloma	\$213,453.02
Recruitment	Tuchman	Sascha	Genzyme Corporation	LCCC1944	6/4/21	11/14/31	Phase 2 study of isatuximab plus lenalidomide and dexamethasone in highly toxicity-vulnerable subjects with newly diagnosed multiple myeloma	\$356,012.85
Investment (Training)	Valdar	William	NIH National Institute of General Medical Sciences	1-T32-GM135123-01A1	7/1/21	6/30/26	Predoctoral Training Program in Bioinformatics and Computational Biology	\$243,814.00
Recruitment	Valdar	William	Texas A and M AgriLife	M2102712	7/1/21	3/31/25	Foundational studies for precision nutrition	\$265,307.00
Recruitment	Valdar	William	NIH National Institute of General Medical Sciences	5-R35-GM127000-01-05	4/1/18	3/31/23	Statistical Modeling of Multiparental and Genetic Reference Populations	\$302,798.00
Recruitment	Valle	Carmina	NIH National Heart, Lung, and Blood Institute	1-R01-HL161373-01	1/15/22	12/31/25	A micro-randomized trial of JITAI messaging to improve adherence to multiple weight loss behaviors in young adults	\$769,818.00
Recruitment	Van Duin	David	Duke University	7922 (Site 0091)	10/15/20	11/30/26	MDRO: Study of Highly Resistant Escherichia coli (SHREC)	\$3,100.00
Recruitment	Van Duin	David	Duke University	A032960	9/1/20	11/30/26	Screening for Colonization with Resistant Enterobacterales in Neutropenic Patients with Hemtologic Malignancies (SCENE)	\$14,000.00
Recruitment	Van Duin	David	Merck Sharp and Dohme Corp.	MISP #60823	11/24/21	6/30/22	Susceptibility to ceftolozane-tazobactam and imipenem-relebactam in clinical E. coli isolates and genetic determinants of outcome	\$58,552.95
Recruitment	Van Duin	David	University of Queensland		11/1/21	10/31/22	Risks of bacterial and fungal superinfection in patients with COVID-19 stratified by new and pre-existing immunosuppression: a retrospective, observational, multisite, multinational cohort study	\$75,000.00
Recruitment	Van Duin	David	Duke University	303000152	12/1/20	11/30/22	Antibacterial Resistance Leadership Group COC	\$104,701.00
Recruitment	Van Duin	David	Duke University	303000155	12/1/21	3/31/22	ARLG MDRO US	\$153,928.00
Recruitment	Van Duin	David	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI143910-01-04	2/13/19	1/31/24	Bacterial Characteristics of Community-associated Carbapenem-Resistant Enterobacteriaceae	\$381,209.00
Recruitment	Vaziri	Cyrus	NIH National Cancer Institute	5-R01-CA229530-01-04	4/2/19	3/31/24	Establishing MAGE-A4/RAD18 as a novel cancer-specific chemotherapeutic target	\$362,343.00
Recruitment	Vaziri	Cyrus	NIH National Institute of Environmental Health Sciences	5-R01-ES029079-01-04	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-CA215347-01-05	2/1/18	1/31/23	Defining Mechanisms of Pathological Trans-Lesion Synthesis during Carcinogenesis	\$508,083.00
Recruitment	Vincent	Benjamin	Vanderbilt University Medical Center	VUMC65676	4/1/18	3/31/23	Metabolic Barriers to T Cell Activation in Clear Cell Renal Cell Carcinoma	\$31,403.00
Recruitment	Vincent	Benjamin	American Society of Hematology	22-3314	7/1/22	6/30/23	Improving predictions of minor histocompatibility antigens in Acute Myeloid Leukemia and characterizing their role in clinical outcomes	\$42,000.00
Recruitment	Vincent	Benjamin	Sage Bionetworks		9/1/20	6/30/22	CRI Immune Atlas: Platform for immunology research and data sharing	\$125,000.00
Recruitment	Vincent	Benjamin	Memorial Sloan-Kettering Cancer Center	C21950089	1/5/21	12/31/24	Machine learning with immunogenetics for the prediction of hematopoietic cell transplant outcomes	\$183,200.00
Recruitment	Vincent	Benjamin	GeneCentric Therapeutics, Inc.		8/1/20	6/30/23	GeneCentric Development of LENS.	\$216,666.00
Recruitment	Vincent	Benjamin	Duke University	383000603	5/16/22	5/15/25	Personalized T-cell immunity against metastatic TNBC using MAVS immunostimulation.	\$248,124.00
Recruitment	Vincent	Benjamin	NIH National Cancer Institute	5-R37-CA247676-01-02	7/1/20	6/30/25	GvI mHA Specific T Cell Responses Prevent AML Relapse Following Allogeneic Stem Cell Transplantation.	\$525,246.00
Recruitment	Virkud	Yamini	NIH National Institute of Allergy and Infectious Diseases	7-K23-AI130408-05	9/1/18	8/31/23	Endophenotypes of food allergy in response to oral immunotherapy.	\$200,880.00
Investment (HTSF)	Vora	Neeta L.	Columbia University	3(GG014633-01)	9/1/2018	3/31/2022	Prenatal Genetic Diagnosis by Genomic Sequencing: A Pro	\$139,498.00
Investment (HTSF)	Vora	Neeta L.	NIH National Institute of Child Health a	5-R01-HD105868-01-02	8/12/21	6/30/26	Genomics and functional dissection of fetal brain abnorm	\$680,066.00
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	\$163,069.50

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Recruitment	Wan	Yisong	NIH National Institute on Aging	1-R56-AG071256-01A1	9/30/21	8/31/23	Treg aging and its implication in viral infection	\$314,756.00
Recruitment	Wan	Yisong	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI160774-01-02	1/16/21	12/31/25	TGF-b superfamily signaling in controlling Th17 cell function in autoimmune neuroinflammation	\$383,176.00
Recruitment	Wan	Yisong	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI123193-06	12/12/16	6/30/27	Functional protein networks underlying T cell growth, proliferation and differentiation	\$385,482.00
Retention	Wang	Greg	NIH National Cancer Institute	1-F32-CA261118-01A1	3/1/22	2/28/25	Fellow: Kim A-Rum Targeting histone methyltransferase EZH2 for the treatment of hematological cancer	\$70,458.00
Retention	Wang	Greg	NIH National Cancer Institute	1-R01-CA271603-01A1	7/1/22	6/30/27	The role for phase separation in oncogenesis and aberrant chromatin looping formation	\$577,786.00
Retention	Wang	Greg	NIH National Cancer Institute	1-R01-CA268519-01	1/1/22	12/31/26	Dissecting and targeting canonical and non-canonical oncogenic functions of EZH2 in cancer	\$643,960.00
Innovation Award	Waters	Marcey	NIH National Institute of General Medical Sciences	2-R01-GM118499-05	9/1/21	8/31/25	Mechanistic Studies and Engineering of Histone PTM Reader Proteins	\$390,963.00
Innovation Award	Waters	Marcey	National Science Foundation	CHE-2107685	7/1/21	6/30/24	Cooperativity Driven Communication through Noncovalent Networks in Biomimetic Systems	\$160,000.00
Retention	Weiss	Jared	Celgene Corporation		8/29/12	5/15/22	LCCC 1210 Second line treatment with nab-paclitaxel for the elderly patient with advanced lung cancer which has progressed on at least 1 prior regimenA	\$1,624.00
Retention	Weiss	Jared	MedImmune, Inc.		5/14/20	6/3/30	A Phase 1, Open-label, Dose-escalation and Dose-expansion Study to Evaluate the Safety, Tolerability Pharmacokinetics Immunogenicity, and Antitumor Activity of MEDI5752 in Subjects with Advanced Solid Tumors	\$7,480.00
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	\$13,451.73
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)	\$17,987.81
Retention	Weiss	Jared	Amgen, Inc.		7/21/17	4/30/22	A Phase 1b/3 Multicenter, Randomized Trial of Talimogene Laherpaprevac in Combination With Pembrolizumab for the Treatment of Subjects With Recurrent or Metastatic Squamous Cell Carcinoma of the Head and Neck	\$27,543.00
Retention	Weiss	Jared	AstraZeneca Pharmaceuticals LP		4/28/17	8/31/23	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	\$28,048.00
Retention	Weiss	Jared	Genmab	GCT1046-01	1/13/21	11/30/30	GCT1046-01: First-in-Human, Open-Label, Dose-Escalation Trial with Expansion Cohorts to Evaluate Safety of GEN1046 in Subjects with Malignant Solid Tumors	\$40,395.00
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	PDS Biotechnology Corporation	VERSATILE-002	1/19/21	1/19/31	Versatile-002: A Phase II, Open-Label, Multi-Center Study of PDS0101 (ImmuoMAPK - 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	\$47,135.42

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Retention	Weiss	Jared	Novartis Pharmaceuticals Corporation		6/26/12	6/25/22	LCCC 1125 Multimodality Risk Adapted Therapy including Carboplatin/Paclitaxel/Lapatinib as Induction for Squamous Cell Carcinoma of the Head and Neck Amenable to Transoral Surgical Approaches	\$50,632.00
Retention	Weiss	Jared	Iovance Biotherapeutics, Inc.	IOV-LUN-202	9/1/21	8/29/31	A Phase 2 Multicenter Study of Autologous Tumor Infiltrating Lymphocytes (LN-145) in Patients with Metastatic Non-Small-Cell Lung Cancer.	\$52,399.00
Retention	Weiss	Jared	AstraZeneca Pharmaceuticals LP		2/8/18	4/30/28	A Phase I Study of Durvalumab with Radiotherapy and Durvalumab Plus Tremilumumab Together with Radiotherapy for the Adjuvant Treatment of High Risk Head and Neck Squamous Cell Carcinoma	\$90,784.56
Retention	Weiss	Jared	V Foundation for Cancer Research	D2018-034	9/15/18	9/15/22	Targeting GD2 Ganglioside in Small Cell Lung Cancer	\$100,000.00
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
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	\$161,886.18
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	\$324,764.43
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	\$336,850.44
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	\$355,696.90
Recruitment	Wheeler	Stephanie	Duke University	A031031	1/1/19	12/31/23	Disparities in the Use of Oral Anticancer Agents in Kidney Cancer	\$31,980.00
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	\$34,085.00
Recruitment	Wheeler	Stephanie	Duke University		6/3/21	6/3/23	Population-level incidence, treatment, and outcomes of patients with HER2 indeterminate breast cancer	\$69,066.00
Recruitment	Wheeler	Stephanie	Alliance for Clinical Trials in Oncology	202010116	9/1/20	7/31/23	Optimizing Endocrine Therapy Adherence - Pillsy Cap Shipping	\$105,815.00
Recruitment	Wheeler	Stephanie	V Foundation for Cancer Research	D2022-012	5/1/22	5/1/23	Understanding Cancer Health Disparities Among American Indians in North Carolina	\$225,000.00
Recruitment	Wheeler	Stephanie	NIH National Cancer Institute	5-R01-CA237357-01-03	9/1/19	8/31/24	Optimizing Endocrine Therapy Adherence through Motivational Interviewing and Text Interventions	\$621,496.00
Recruitment	Wheeler	Stephanie	NIH National Cancer Institute	5-R01-CA240092-01-03	8/15/19	7/31/23	Addressing Cancer-Related Financial Toxicity In Rural Oncology Care Settings	\$647,183.00
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	\$20,124.00
Investment (HTSF)	Whitmire	Jason	Duke University	A033980	9/1/20	2/28/23	Natural killer cell cytotoxicity against intracellular bacteria	\$36,223.00
Investment (HTSF)	Whitmire	Jason	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI138337-01-04	9/1/18	8/31/23	Obesity associated viral pathogenesis	\$388,750.00
Investment (HTSF)	Whitmire	Jason	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI143894-01-04	2/1/19	1/31/24	Regulation of CD8+ T cell responses to chronic virus infection	\$500,892.00
Investment (HTSF)	Whitmire	Jason	Department of Defense	W81XWH2110919	9/30/21	9/29/25	Pathogenic T cells in Guillain Barre Syndrome	\$300,117.50
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	\$76,800.00
Recruitment	Williams	Scott	NIH National Institute of Arthritis and Musculoskeletal and Skin Diseases	5-R01-AR077591-01-02	3/1/21	1/31/26	Intrinsic and extrinsic spindle orientation mechanisms in mammalian epidermis	\$305,508.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Williams	David	Virginia Commonwealth University	FP00007299_SA 001	8/1/18	6/30/23	The role of the MBD2-NuRD complex in globin gene silencing	\$328,069.00
Recruitment	Willson	Tim	Agora Open Science Foundation	AOST-M4ND-002A	7/1/20	6/30/22	Chemical Probes of the WDR41-C9ORF72-SMARC8 complex to enable discovery of therapies for Frontotemporal Dementia	\$25,568.50
Recruitment	Willson	Tim	Chordoma Foundation	22-0450	7/1/21	3/17/22	Chordoma Foundation Service Agreement: Cell Maintenance Work Order #3	\$35,595.00
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	Seattle Children's Hospital Research Institute	12492SUB	9/22/20	8/31/22	Dual targeting of Mtb resistance mechanisms	\$155,500.00
Recruitment	Willson	Tim	Millennium Pharmaceuticals, Inc.	20-4838 8000260829	5/1/20	5/1/23	Identification of kinase inhibitors as therapies for SARS-CoV-2 and future pandemic viruses	\$250,000.00
Recruitment	Willson	Tim	Structural Genomics Consortium	2021-UNC-2-BMGF	9/28/21	8/31/24	Non-Hormonal Contraceptive Target-Enabling Packages (TEPs) for Drug Discovery	\$250,000.00
Recruitment	Willson	Tim	Structural Genomics Consortium		9/30/18	9/30/25	Structural Genomics Consortium Grant Funding	\$262,500.00
Recruitment	Willson	Tim	University of Toronto	513954 SUBGRANT 1	3/22/22	2/28/27	Targeting the casein kinase 1 (CK1)-like kinase Yck2 in fungal pathogenesis	\$310,737.00
Recruitment	Willson	Tim	Structural Genomics Consortium		7/1/21	6/30/25	Structural Genomics Consortium (\$300,000.00
Theme Investment	Wiltshire	Tim	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
Theme Investment	Wiltshire	Tim	Alliance for Clinical Trials in Oncology Foundation		6/1/15	5/31/22	ACTO_Appendix IIB to CALGB/SWOG C80405	\$100,921.00
Theme Investment	Wiltshire	Tim	North Carolina State University	2011-2427-05	4/1/17	3/31/23	Genetic Etiology of Cancer Drug Response	\$240,320.00
Investment (HTSF)	Won	Hyejung	NIH National Human Genome Research Insti	1-UM1-HG012003-01	9/1/21	5/31/22	Systematic in vivo characterization of disease-associate	\$924,412.00
Recruitment	Wood	William	Fred Hutchinson Cancer Research Center		8/12/16	5/31/22	Protocol number: X16032 Ixazomib for Treatment of Chronic Graft vs. Host Disease	\$1,980.00
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)	\$2,964.00
Recruitment	Wood	William	Vanderbilt University Medical Center	VUMC 71409	1/15/19	9/7/22	Identifying Cost and Coverage to Medicare Beneficiary Access to Specialty Drugs	\$5,000.00
Recruitment	Wood	William	Incyte Corporation		9/18/17	5/31/22	A phase III randomized open-label multi-center study of ruxolitinib vs. best available therapy in patients with corticosteroid-refractory chronic graft vs host disease after allogeneic stem cell transplantation (REACH 3)	\$7,258.00
Recruitment	Wood	William	Ohio State University	SPC-1000005814/GR 123988	7/26/17	6/30/22	The Ohio State Blood and Marrow Transplant Research Consortium	\$18,050.00
Recruitment	Wood	William	University of Vermont	AWD288SUB000 00136	9/1/20	7/31/22	Understanding risk factors and burden of COVID-19 related thrombosis and/or bleeding complications	\$49,680.00
Recruitment	Wood	William	University of Vermont	PO 202738 AWD00000738S UB00000311	8/1/21	7/31/22	Understanding risk factors and burden of COVID-19 related thrombosis and/or bleeding complications	\$99,361.00
Recruitment	Yarbrough	Wendell	Yale University	CON-80003117 (GR113410)	7/1/20	6/30/25	Yale SPORE in HN Cancer	\$165,091.00
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	NIH National Institute of Dental and Craniofacial Research	5-U01-DE029754-02	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	\$761,468.00
Retention	Yeh	Jen Jen	University of Cincinnati		11/30/21	11/29/23	Preclinical development of a first-in-class humanized antibody targeting alternatively spliced tissue factor	\$14,148.00

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Yeh	Jen Jen	University of Birmingham United Kingdom	1701757	7/1/21	1/31/22	In vivo toxicity and biocompatibility testing of ChemoPatch: A patch for the localized treatment of pancreatic cancer	\$28,839.31
Retention	Yeh	Jen Jen	University of Rochester	SUB00000039A M1/ 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	\$31,000.00
Retention	Yeh	Jen Jen	NIH National Cancer Institute	5-F31-CA257224-02	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	\$35,170.00
Retention	Yeh	Jen Jen	Princeton University	SUB0000542	9/22/21	8/31/26	Pathway, Network and Spatiotemporal Integration of Cancer Genomics Data	\$97,000.00
Retention	Yeh	Jen Jen	NIH National Cancer Institute	1-K99-CA267561-01	7/1/22	6/30/24	Characterization of regulatory landscape of pancreatic cancer subtypes.	\$104,603.00
Investment (Training)	Yeh	Jen Jen	NIH National Cancer Institute	5-T32-CA244125-03	9/20/19	8/31/24	UNC Integrated Translational Oncology Program (UNC-iTOP)	\$572,470.00
Retention	Yeh	Jen Jen	NIH National Cancer Institute	2-R01-CA199064-06A1	9/1/16	7/31/26	Tumor Subtypes and Therapy Response in Pancreatic Cancer	\$806,124.00
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	Zamboni	William	Deep Creek Pharma, LLC		8/17/21	8/16/22	STTR_Phase I: Advanced pre-clinical development of CF10 to improve treatment of metastatic colorectal cancer	\$45,124.00
Recruitment	Zamboni	William	North Carolina Biotechnology Center	2022-IIG-6501	5/31/22	5/30/23	A Triple Quadrupole LC-MS/MS System for Bioanalytical Studies Supporting the Translational Development of Complex and Small Molecule Agents	\$150,000.00
Recruitment	Zamboni	William	NIH National Cancer Institute	5-R01-CA247652-01-02	4/1/21	3/31/26	Minibeam Radiation Therapy Enhanced Delivery of Nanoparticle Anticancer Agents to Pancreatic Cancer Tumors	\$500,262.00
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	\$2,764.80
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	\$18,319.89
Recruitment	Zeidner	Joshua	Millennium Pharmaceuticals, Inc.	218558	8/22/16	8/21/29	A Ph 2, Random, Control Opn-Lbl, Clinical Stdy 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	\$22,370.92
Recruitment	Zeidner	Joshua	Arog Pharmaceuticals, Inc.		2/27/19	1/31/29	ARO-021- Phase III Randomized Study of Crenolanib versus Midostaurin Administered Following Induction Chemotherapy and Consolidation Therapy in Newly Diagnosed Subjects with FLT3 Mutated Acute Myeloid Leukemia	\$26,808.00
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.	\$40,088.00
Recruitment	Zeidner	Joshua	Forty Seven Inc.	5F9009	10/27/20	10/31/25	A Randomized, Double-blind, Multicenter Study Comparing Magrolimab in Combination With Azacitidine Versus Azacitidine Plus Placebo in Treatment-naïve Patients With Higher Risk Myelodysplastic Syndrome	\$40,137.20
Recruitment	Zeidner	Joshua	Merck Sharp and Dohme Corp.		12/18/15	1/13/23	Phase 2 Study of High Dose Cytarabine Followed by Pembrolizumab in Relapsed and Refractory Acute Myeloid Leukemia	\$42,290.34

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Recruitment	Zeidner	Joshua	Gilead Sciences, Inc.	GS-US-546-5857	11/2/21	7/31/31	A Phase 3, Randomized, -Open-Label Study Evaluating the Safety and Efficacy of Magrolimab in Combination With Azacitidine versus Physician s Choice of Venetoclax plus Azacitidine or Intensive Chemotherapy in Previously Untreated Patients with TP53 MutantA	\$50,069.00
Recruitment	Zeidner	Joshua	Takeda Development Center Americas, Inc.	Pevonedistat-2002	1/26/21	1/31/31	A Randomized, Open-label, Controlled, Phase 2 Study of Pevonedistat, Venetoclax, and Azacitidine Versus Venetoclax Plus Azacitidine in Adults With Newly Diagnosed Acute Myeloid Leukemia Who Are Unfit for Intensive Chemotherapy.	\$78,910.48
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	\$98,559.16
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.	\$108,915.00
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 Impairm	\$131,324.54
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	\$407,000.36
Theme Investment (CC)	Zhang	Hua	NIH National Institute of Neurological Disorders and Stroke	NIH/NINDS R01NS083633-08	4/1/19	3/31/24	Targeting the Pial Collateral Circulation for Mitigation of Cerebral Ischemia	\$462,314.00
Recruitment	Zhang	Qi	NIH National Institute of General Medical Sciences	5-R01-GM114432-06-07	5/1/15	1/31/25	Riboswitch Dynamics at Atomic Resolution	\$305,423.00
Theme Investment	Zhou	Otto	NIH National Cancer Institute	5-F30-CA235892-04	1/1/19	5/31/22	Fellow: A Puett Improved cancer screening with synthetic and stationary 3D mammography	\$50,293.00
Theme Investment	Zhou	Otto	North Carolina Biotechnology Center	2021-TRG-6725	8/15/21	2/14/23	A dental CT with enhanced performance, reduced radiation exposure, and expanded clinical utility	\$84,362.00
Theme Investment	Zhou	Otto	NIH National Institute of Biomedical Imaging and Bioengineering	1-R21-EB032919-01	5/1/22	2/29/24	Developing a dual energy x-ray source for low-cost spectral CT	\$226,518.00
Theme Investment	Zhou	Otto	NIH National Heart, Lung, and Blood Institute	1-R61-HL161819-01	2/16/22	1/31/24	Bedside 3D diagnostic imaging in ICU	\$364,376.00
Theme Investment	Zhou	Otto	NIH National Institute of Dental and Craniofacial Research	1-R56-DE030962-01	7/2/21	6/30/23	Improve the diagnostic accuracy of CBCT for oral lesions	\$512,301.00
Theme Investment (Biostatistics)	Zou	Fei	University of California at San Diego	117381028 / PO# S9002317	3/15/19	1/31/24	Neurocognitive aging, MCI and Alzheimer's disease DNA methylation among diverse Latinos	\$108,393.00



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