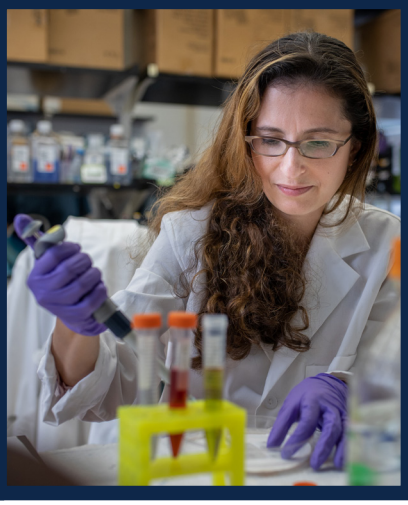



UNC | LINEBERGER COMPREHENSIVE CANCER CENTER





UNIVERSITY CANCER RESEARCH FUND 2019 LEGISLATIVE REPORT

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

Submitted November 1, 2019, in accordance with G.S.116-29.1

www.UNCLineberger.org/ucrf

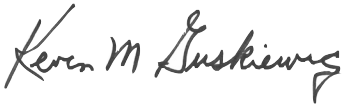



As chair of the University Cancer Research Fund (UCRF) Committee overseeing our state's investment in the UCRF, I am pleased to share our annual legislative report. For the past dozen years, the UCRF has been a vital source of support for innovative, meaningful research that has led to tremendous health and economic benefits for our state and has made a positive impact on the lives of people across North Carolina.

This landmark investment by the North Carolina General Assembly has enabled the UNC Lineberger Comprehensive Cancer Center to recruit and retain hundreds of faculty members who are the top-tier experts in their respective fields. It also has supported collaborations with other campuses in North Carolina and beyond to bring scientists together to solve the most daunting cancer questions. Thanks to the UCRF, UNC Lineberger can invest in large-scale data research, imaging tools, community projects, and shared resources that have benefited our fellow North Carolinians in all 100 counties.

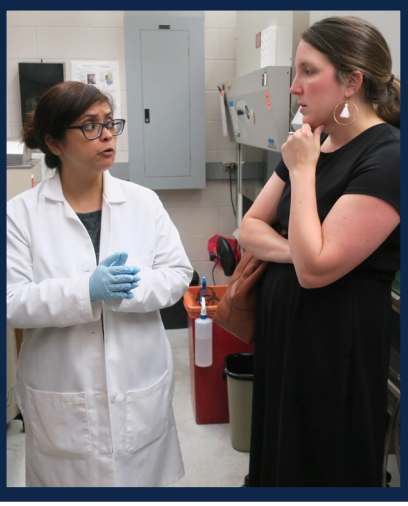
The UCRF also continues to have a profound economic impact on our state – with a return of $10 for every dollar of UCRF investment. Key economic highlights include:

- Producing a total economic impact of more than $519.4 million in North Carolina, including $281.8 million in direct spending in our state;
- Obtaining more than $164.6 million in federal research grants, and more than $197.5 million in overall external research funding;
- Creating and supporting 3,061 high-paying research-related jobs throughout North Carolina. This includes 1,308 positions directly tied to UNC and 1,753 jobs supported by the indirect and induced impact of those direct jobs and UCRF funds; and
- Generating $17.2 million in local and state tax revenue.
- The UCRF continues to spur growth in our state's economy and in our research impacts. On behalf of our scientists and clinicians working together to improve cancer research and care – and on behalf of all we serve – thank you for your ongoing support of this incredible investment in the fight against cancer.



Kevin M. Guskiewicz, PhD
Chair, Cancer Research Fund Committee

INTRODUCTION



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INTRODUCTION

Over the past 12 years, the University Cancer Research Fund (UCRF) has been a remarkable source of support for scientists searching for ways to improve the prevention, treatment and outcomes of cancer – the leading cause of death in our state and a disease that affects approximately 40 percent of North Carolinians.

In 2007, the year cancer overtook heart disease as North Carolina's deadliest disease, the General Assembly created the UCRF to recruit and retain world-class faculty to the Lineberger Comprehensive Cancer Center at the University of North Carolina at Chapel Hill, and to support their groundbreaking research in the fight against cancer. Given UNC's historical mission of education, research and public service, it has been a top priority to ensure that UCRF resources are used for the benefit of patients and communities all across North Carolina.

The UCRF has bolstered UNC's recognition as an international cancer research leader, has generated an economic impact of approximately 10-to-1 return on investment, and has funded cutting-edge equipment, facilities and technology resources that are fueling truly transformative work in the field of cancer research.

From the start, the University Cancer Research Fund has spurred job creation and economic impact in North Carolina. It continues to generate significant economic benefits for our state, such as:

- Directly supporting 1,308 research-related employees in FY 2019.
- Creating the equivalent of 1,753 new induced or indirect jobs, based on an independent economic evaluation.
- Having an overall economic impact that increases each year, reaching $519.4 million in FY 2019.
- Leveraging more than $197.5 million in outside funding in 2019 that is directly linked to faculty who were recruited or retained by UCRF funds, or attributable to innovation grants, technology and infrastructure investments from the UCRF.
- Generating an increased return on investment each year, exceeding a 10-to-1 return in FY 2019.

In addition to these economic impacts, the UCRF has helped patients and providers in North Carolina by supporting research projects, clinical trials, outreach efforts, technology and data resources, and community-based interventions that have touched all 100 counties.

UNC Lineberger has been a National Cancer Institute-designated cancer center for more than four decades. In 2016 the NCI gave Lineberger an "exceptional" rating – the highest that a cancer center can earn – and cited the UCRF as a significant reason for UNC's top ranking.

HISTORY

In 2007, the year cancer overtook heart disease as North Carolina's leading cause of death, the General Assembly created the University Cancer Research Fund. Originally funded by a combination of state appropriations, tobacco settlement funds, and taxes on non-cigarette tobacco products such as snuff, the UCRF received $25 million in 2007 and $40 million in 2008 before reaching $50 million in 2009.

In 2013, the legislature consolidated all earmarked tobacco settlement monies into the General Fund, eliminating that source of UCRF support. The portion of UCRF revenue from non-cigarette tobacco product sales has varied year by year. In FY 2019, the state's total allocation to the UCRF was $51.5 million.

The Cancer Research Fund Committee, created by the General Assembly to provide continued oversight and to ensure that UCRF resources are invested responsibly, adopted a Strategic Plan in 2009 to target UCRF resources in areas where they can have maximum impact:

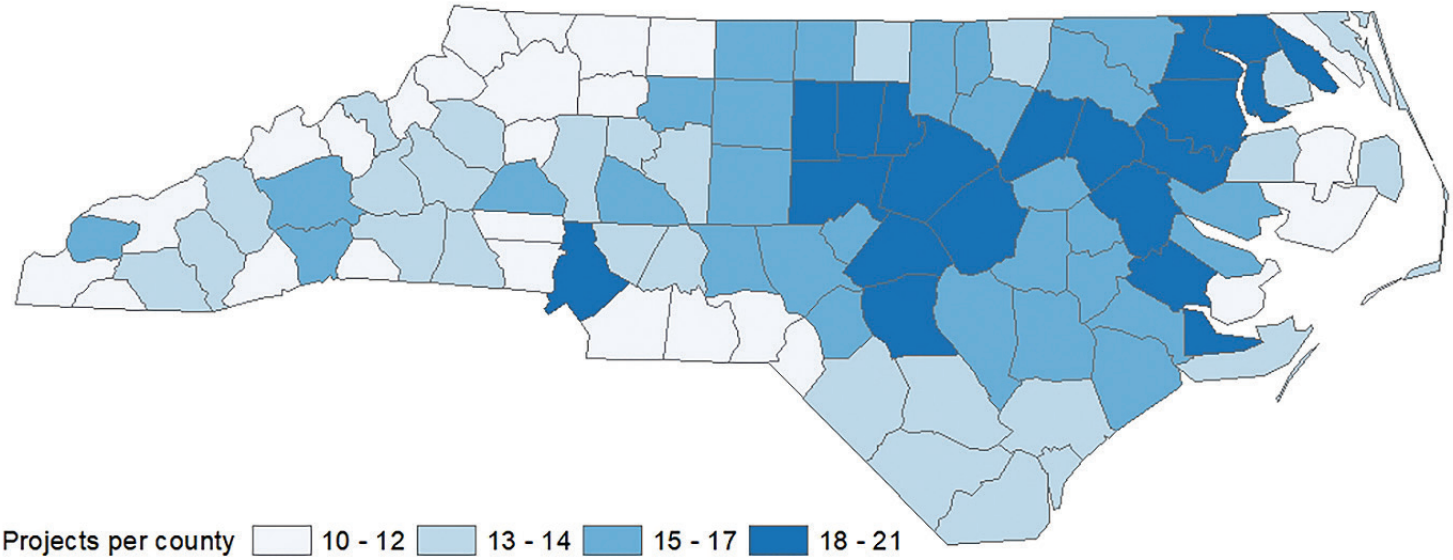
- Strategic research priorities in genetics, novel therapies, and outcomes;
- Clinical excellence through selective opportunities that enable UNC scientists to continue to be a leader in a rapidly changing field of research; and
- Critical infrastructure such as technology, training, outreach and other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

Complementing the UCRF's significance in ongoing research, infrastructure and public service are the state's two major capital investments in cancer care. The N.C. Cancer Hospital opened in 2009 and serves patients from all 100 counties, with its caregivers overseeing nearly 200,000 patient visits each year at the hospital and its affiliated clinics, and serving as the clinical "home base" for UNC Lineberger research. Marsico Hall opened in 2014 and serves as a cross-disciplinary collaborative research facility, housing cutting-edge equipment and technology that further accelerates research capabilities.

Since 2008, the Cancer Research Fund Committee has published regular reports on the UCRF's supported activities. In 2011, the General Assembly mandated an annual financial report that includes the UCRF's effects on the state's economy, details on expenditures of UCRF monies and outside funds leveraged by UCRF support, and other performance measures. This is the ninth financial report submitted pursuant to the 2011 legislative requirement.

The University Cancer Research Fund has been a vital investment for our state. It has generated significant economic and health benefits that will only continue to grow as UNC remains a global leader in the fight against cancer.

OUTREACH ACROSS NORTH CAROLINA



A. Cancer Data Resources
- Carolina Breast Cancer Study
- Cancer Information and Population Health Resource *
- Lung Cancer Screening Registry
- UNC Health Registry *

B. Understanding Cancer Disparities
- Cancer Health Accountability for Managing Pain and Symptoms (CHAMPS)
- CDC CRC simulation modeling *
- CHANCE
- Comparative Effectiveness and Survivorship health in bladder cancer
- Comparative Effectiveness of breast cancer screening and diagnostic evaluation by breast density
- Effect of the breast density legislation on supplemental screening
- Effect of HPV self-collection on cervical cancer screening in high risk women
- Economic burden of breast cancer
- GMaP: Geographic Management of Cancer Health Disparities Program *
- HCaP
- Health care utilization for patients with brain metastases
- Health system impacts on care and survival of solid tumor brain metastases
- Molecular, Treatment and Behavioral factors in BrCA Race disparities *
- NCCCS
- PCaP
- Patient insurance status and physician chemotherapy choice *
- Patterns and predictors of unplanned emergency department visits and readmissions in patients with newly diagnosed lung cancer *
- Patterns of cancer care and clinical trial enrollment among adolescents and young adults (AYAs) in North Carolina *
- Risk based breast cancer screening and surveillance in community practice *
- Rural financial toxicity burden
- Rural/urban and distance to care disparities in stage of diagnosis and treatment of cervical cancer in North Carolina
- Trends and Quality of Testicular Cancer Care in North Carolina *
- UNC Center for Innovation Award for Financial Navigation
- Well Empowered

C. Cancer Screening
- Carolina Cancer Screening Initiative
- Improving targeted colorectal cancer screening in the elderly *
- Rural Cancer P30 Supplement
- SCORE
- Trial of a culturally-adapted colorectal cancer screening decision aid for American Indians

D. Cancer Survivorship
- Adolescent/Young Adult Horizon Study *
- Efficacy of a couple-focused, tailored, symptom self-management mHealth intervention for prostate cancer patients and partners
- Improving cancer survivorship care across North Carolina: Training group intervention leaders
- mHealth Physical Activity Intervention for survivors of adolescent/young adult cancers

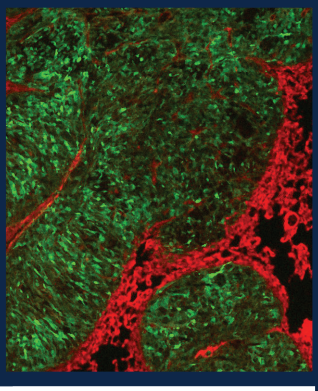
E. Clinic-based Prevention
- Duke – UNC Tobacco Treatment Specialist Credentialing Program
- My Body My Test
- Normalizing preteen HPV vaccination with practice-based communication strategies *

F. Community-based Prevention
- Cancer Conversations
- Communication strategies to Increase HPV vaccine intentions
- FIT Shop: Promoting Physical Activity in Black Barbershops
- Get Real & HEEL: Remote Video Participation
- Outreach with state beauticians for early detection of scalp melanomas

G. Improving Treatment Outcomes
- ACCURE - Accountability for Cancer Care through Undoing Racism and Equity
- Adherence to medications for multiple chronic conditions in cancer survivors *
- Get Real & HEEL
- Impact of geographic region, treating facility, and physician network characteristics on outcomes for patients with acute leukemia and multiple myeloma in North Carolina *
- NC ProCESS *
- Outcomes in treatment for malignant biliary obstruction *
- Surgical Treatment of Early-Stage Breast Cancer and the Impact on Cancer-Related Treatment Costs *
- Tobacco cessation for cancer patients
- UNC Cancer Network Lay Patient Navigation Program
- UNC Cancer Network Telehealth Lectures *
- UNC Cancer Network eTumor Boards *

* All counties

ECONOMIC IMPACTS



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To determine whether the UCRF is achieving its goal of stimulating North Carolina's economy, UNC Lineberger again hired Tripp Umbach, a nationally respected consulting firm, to estimate the UCRF's economic impact for FY 2019. Tripp Umbach examined the UCRF's immediate impact on state income growth and employment. The Fund's overall economic impact was estimated as the sum of its direct and indirect and induced impacts (see the full report in the Appendix). Direct impact resulted from two major sources: expenditures from the UCRF itself, and the expenditure of UCRF-attributable research funds awarded to UNC by federal, foundation and other sources. The indirect and induced impact was calculated by applying standard multipliers to direct expenditures.

For FY 2019, UCRF's total allocation was $51.5 million. Using standard methodologies, Tripp Umbach estimated that in FY 2019 the UCRF:

- Had an overall economic impact of $519.4 million, including $281.8 million in direct spending and $237.6 million in indirect and induced impact attributable to external grant funding and downstream spending by employees, vendors and contractors.
- Generated more than $10 in economic impact for every UCRF dollar expended.
- Supported more than 3,061 jobs, including the direct support of 1,308 jobs and an additional 1,753 jobs through the increased extramural funding and the indirect and induced impacts of those direct jobs and the spending generated within North Carolina.
- Resulted in nearly $17.2 million in state and local tax revenues to North Carolina.

Tripp Umbach has been used for economic analysis since FY 2013. Prior to that, economic impact analyses were performed by SRA International and the UNC Center for Competitive Economies (Frank Hawkins Kenan Institute of Private Enterprise). Though these two entities used slightly different methodologies, the calculations and reports are based on industry standards. Based on their analyses, the cumulative economic impact of the UCRF since its inception is more than $3.46 billion.

FACULTY JOB CREATION AND RETENTION

Outstanding faculty are at the core of the UCRF's successes. They lead the groundbreaking research that makes important advancements in cancer treatment, prevention and early detection. They also hire staff, purchase equipment, train students and fellows, and earn research funding from other sources inside and outside North Carolina.

- Recruitment: The UCRF has supported the recruitment of 18 faculty this year. These faculty are developing a wide range of research programs in cancer genomics, nanomedicine, quantitative biology, health outcomes, multiple cancer types, health communications, and other areas critical to improving cancer prevention, diagnosis and treatment in our state.
- Retention: UCRF support has enabled the retention of six faculty this year, allowing top talent to stay at UNC Lineberger where they can continue their research and clinical care.

EXTRAMURAL FUNDING GROWTH

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

Faculty members have been able to use UCRF support to underwrite research, with their findings being leveraged to generate additional research funds. Key trends include the following:

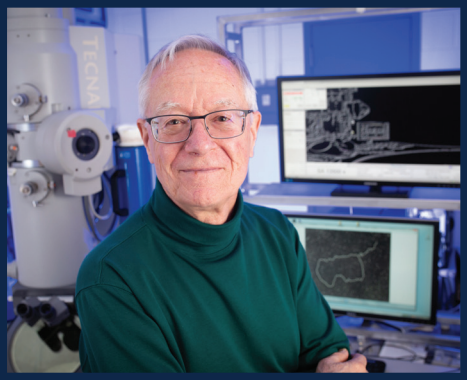
FY 2019 funding from outside sources that is directly attributable to the UCRF totaled $197.5 million in annual total cost dollars.

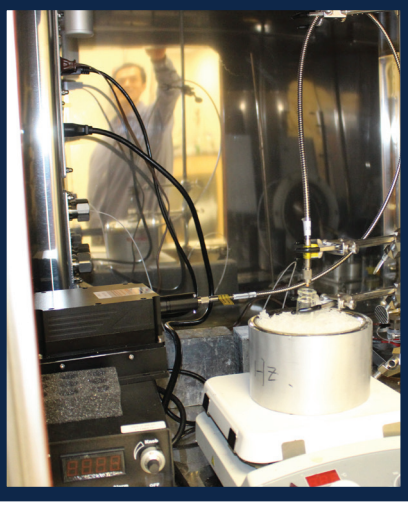
- This amount is based on a snapshot of active attributable extramural funding held by faculty in the first quarter of FY 2019.
  - The dollars represent one year of funding. A complete list of the awards is included in the Appendix.
  - The positive effects of faculty recruitment and retention, technology enhancement, and developmental projects have accumulated. The UCRF-attributable extramural funding has substantially increased from $5 million in FY 2008. By FY 2011, it was $69 million and in FY 2014 was $136.9 million.
  - This year, UNC Lineberger has experienced a more than 7.7 percent increase in extramural funding, to more than $197.5 million, compared to FY 2018. Many of the currently active awards will continue for several more years, and we fully expect new awards to add to the total.

INTELLECTUAL PROPERTY, INNOVATION AND ENTREPRENEURSHIP

UCRF-supported scientists and programs have generated discoveries that have led to the establishment of companies committed to converting the research findings into clinical advances. The UCRF collaborates with UNC's North Carolina Translational and Clinical Sciences Institute to emphasize an entrepreneurial mindset at UNC Lineberger, and supports specialized staff to maximize the development and licensing of university intellectual property. More than 40 startup companies have launched or expanded their reach thanks to the UCRF. Nearly all of these companies are based in North Carolina, and their workforce includes more than 375 employees in five counties in our state.

RESEARCH IMPACTS





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GUIDING PRINCIPLES FOR UCRF INVESTMENT

The Cancer Research Fund Committee that was created to oversee the UCRF developed a strategic plan to guide the best and most effective use of the state's investment. The Committee recommended that UCRF monies target three specific research priorities – genetics, novel treatments, and outcomes – and to leverage the UCRF to support key clinical and infrastructure resources.

Strategic Research Priorities: The use of UCRF resources are primarily guided by three specific research priorities where – with focused investment in major scientific programs, disease-based initiatives, or cutting-edge research platforms – UNC Lineberger could have meaningful impact and become a world leader:

- **Understanding the Role of Genetics in Cancer Causation and Treatment:** to discover the genes that predispose families to cancer and that predispose cancer patients to poor treatment outcomes – especially by looking for the various genetic mutations in specific cancer subtypes that lead to cancer therapy failure.

- **Developing Novel Therapeutics**: to devise new therapies that are targeted to the specific vulnerabilities of treatment-resistant cancers, and to develop new ways of delivering treatments that reduce toxic side effects for patients. This research priority relates closely to the genetics initiative, and makes key observations that will be utilized in clinical applications as quickly as possible.

- **Optimizing NC Cancer Outcomes:** to enhance the quality of oncology and survivor care, and to build population-based datasets that track the occurrence and treatment of cancer across North Carolina in order to support research designed to improve community prevention and early detection. The ultimate goal is to understand North Carolina's cancer problem at a level unprecedented in the nation and to design research interventions aimed at rectifying these problems at the practice, health system and community levels.

Clinical Excellence and Infrastructure: The UCRF is leveraged to enable UNC Lineberger to adapt to a rapidly changing field by establishing critical infrastructure and by pursuing selective opportunities, outside of the three general research priorities, where UNC Lineberger could strive for clinical excellence and have a major impact.

This approach allows the UCRF to seize research or clinical opportunities as they arise and to provide the top minds in the field with the resources they need. Examples include seed funds to recruit top researchers; support of technology and equipment for use by multiple faculty members; competitive, innovative pilot projects; and the development of shared research resources. Thanks to the UCRF, UNC Lineberger has been able to recruit, retain and support nearly 275 outstanding faculty members with expertise and leadership in key clinical areas during the past 12 years.

Investments in imaging, informatics and fundamental research techniques have given our clinician scientists the tools they need to improve patient outcomes, while virtual tumor boards and telemedicine connect doctors and hospitals across the state with UNC Lineberger's oncology experts. The UCRF provides the opportunity to grow our multidisciplinary excellence in cancer care and to develop a statewide infrastructure that helps bring leading-edge clinical research and applications into community practices and research institutions across North Carolina.

This year's report features a few key focus areas where UNC Lineberger is pushing the research envelope: financial toxicity, a new and increasingly important field of cancer research; improving detection and personalizing treatment of HPV-related cancers; and immunotherapy, where patients' own immune cells are engineered and deployed to kill cancer cells. It also includes some of the UNC Lineberger studies that have been published in high-impact research journals.

TOP-LEVEL SCIENTIFIC PUBLICATION HIGHLIGHTS IMPORTANCE OF UNC LINEBERGER WORK

Impact is a key principle that guides our work: Are we focusing on nation-leading research that will truly make a difference in how scientists approach cancer prevention, detection and care? The work of Lineberger researchers is routinely accepted for publication in high-impact scientific journals that are highly influential in their fields.

In the past year, the prestigious journal *Science* – one of the top scientific journals in the world – featured three major UNC Lineberger research studies making new discoveries that could transform our body of knowledge on cancer and genetics.

One study, by **Dale Ramsden, PhD**, professor of biochemistry and biophysics, and his colleagues, revealed surprising findings about the way major breaks in our DNA are repaired. DNA repair is a process cells go through to fix breaks in our genetic code when it's been damaged. When DNA repair is not functioning normally, it can lead to cancer.

For many years, scientists have believed that ribonucleic acid (RNA) is normally used only as a messenger that carries information from the DNA genetic code to make proteins. This DNA-to-RNA-to-protein flow of genetic information was widely referred to as "central dogma." But Ramsden's lab found that in living cells, a protein called a polymerase often uses RNA to accomplish DNA repair. Using RNA is like a "get out of jail free card," Ramsden said, allowing the cell to ignore other problems that would otherwise interfere with successful repair.

Dale Ramsden, PhD

These findings can be used in many ways, such as helping radiation therapy kill cancer cells more effectively. Adding a compound other than RNA into the genetic code break would shut down repair efforts and cause cancerous cells damaged by radiation therapy to die.

Science also published UNC Lineberger researchers' discovery of a new driver for the most common type of kidney cancer. This driver, a protein called ZHX2, could be a potential new therapeutic target for clear cell renal cell carcinoma.

About 90 percent of patients with clear cell renal cell carcinoma have genetic mutations or alterations that cause them to lose an important tumor suppressor gene called VHL. When VHL is gone, cells accumulate signals that trigger blood vessels to grow. UNC Lineberger researchers created a screening technique to discover new molecules that might help drive cancer when VHL is lost. They zeroed in on ZHX2, a protein that over-accumulates in these cells and promotes cancerous growth.

William Kim, MD

UNC Lineberger's **William Kim, MD**, professor of medicine and genetics, said the past decade has seen a number of major treatment advances in kidney cancer, but that most FDA-approved treatments are very similar. "Studies like this are important," said Kim, a professor of medicine and genetics in the UNC School of Medicine, "because they delineate the underlying biology of kidney cancer and identify novel, distinct pathways to develop drugs against."

The third UNC Lineberger study published in *Science* involves the discovery of an advancement for medical imaging: a method for creating radioactive tracers to better track pharmaceuticals in the body and to image diseases and other medical conditions.


Zibo Li, PhD

Positron emission tomography, or PET, imaging makes it possible for researchers to make new tracers by attaching radioactive tags to compounds that previously have been difficult or even impossible to label. UNC Lineberger researchers found a new way of attaching the radioactive molecule Fluorine-18, a widely used isotope in PET imaging, by breaking a specific chemical structure of carbon and hydrogen atoms.

"Positron emission tomography is a powerful and rapidly developing technology that plays key roles in medical imaging as well as in drug discovery and development," said the study's co-corresponding author, UNC Lineberger's **Zibo Li, PhD,** associate professor in the UNC School of Medicine Department of Radiology and director of the Cyclotron and Radiochemistry Program at the UNC Biomedical Research Imaging Center.

Their discovery could be used to widen the targets for medical imaging to screen patients for response to a drug, or to aid in drug development research. The information obtained by the specific new PET tracer could lead to the development of corresponding treatment plans for immune therapy, depending on the imaging result, which would be an important step in providing personalized medicine.

Through impactful studies such as these, Lineberger scientists strive to lead the way in advancing research that will combat one of the world's deadliest diseases, and lead to better outcomes for survivors and their families.

UNC LINEBERGER SPEARHEADS CLOSER LOOK AT FINANCIAL BURDENS OF DISEASE

Studies of cancer typically focus on its physical or emotional effects on patients, but its financial toll on patients and their families is a growing field of research. Little is known about the negative financial effects of cancer, or "financial toxicity," and how financial toxicity affects patients, their families, and even their ability to get treatment – especially those with severely advanced disease who are undergoing expensive treatments.


Stephanie Wheeler, PhD

Stephanie Wheeler, PhD, UNC Lineberger member and professor of public health, is leading several studies that have helped to shed light on the extent and severity of financial toxicity among cancer patients, and that have led to design interventions that could help patients address their financial burdens.

"There are so many patients facing an incurable disease – and spending their savings on care that ultimately won't save their lives," she said. "We wanted to lay out a design of interventions that could help with those challenges."

Wheeler and her colleagues partnered with the Metastatic Breast Cancer Network to do an online national survey of more than 1,000

metastatic breast cancer patients. Questions included sociodemographic information, health insurance status, cost-related communication with providers, post-treatment financial burden, financial coping strategies, and emotional well-being.

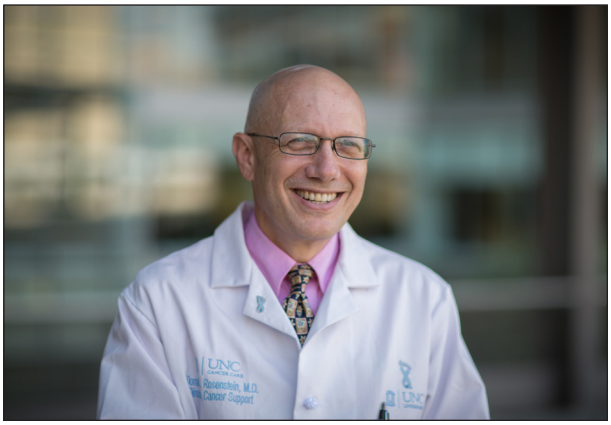
The researchers found that nearly one-third of the women had no insurance, and many felt significant or catastrophic financial effects from cancer. The results suggest that health insurance is an important, but insufficient, protective factor against financial ruin or even bankruptcy and that strategies to proactively identify and monitor multiple aspects of financial risk are needed.

Combining the survey data with CIPHR – a rich data resource funded by the UCRF that includes insurance claims, cancer registry details, and other information – to examine patients' out-of-pocket costs and cancer-related financial distress, Wheeler and her colleagues began looking for solutions to help address the financial strain of costly cancer treatments. They decided to pilot a financial navigation intervention at UNC Lineberger Comprehensive Cancer Center.

In the pilot, trained oncology support staff called financial navigators looked into patients' financial health, financial literacy, employment status, and other economic factors contributing to their financial burden. Navigators then directed patients to support resources based on their eligibility and level of distress. The pilot was successful: By the end of the study, patients reported lower levels of out-of-pocket cost burden as well as less worry about their finances.

Wheeler and her co-investigator **Donald Rosenstein, MD**, UNC Lineberger member and director of the cancer center's Comprehensive Cancer Support Program, recently received a five-year grant from the National Cancer Institute (NCI) for the next phase of this study, which will expand the use of financial navigators and implement them in a different context: Trained financial navigators will be embedded in five rural oncology clinics across the state, to see how this intervention works in a different rural setting.

"We are one of just a few groups in the country doing this," Wheeler said.



Donald Rosenstein, MD

RESEARCHERS MAKE STRIDES AGAINST HPV-RELATED CANCERS

UNC Lineberger researchers are working on several fronts to improve screening for and treatment of cancers associated with human papillomavirus (HPV). HPV is linked to several different types of cancers, which often take years or even decades to develop after a person gets HPV.

For example, HPV infection is linked to nearly all types of cervical cancer. Although cervical cancer is preventable through early detection and treatment, the American Cancer Society estimates that more than 4,100 women will die from this disease in the United States this year.

In a study aiming to improve cancer screening rates, UNC Lineberger researchers mailed at-home, HPV self-collection kits to 193 low-income women in North Carolina who were overdue for screening according to national guidelines. They detected high-risk HPV in all of the cases of women who were found to have high-grade, abnormal cervical precancerous growths.

In 2014, the U.S. Food and Drug Administration signed off on using an HPV test to screen for cervical cancer for women 25 years and older, in conjunction with the Pap test. Earlier this year, the U.S. Preventive Services Task Force gave an "A" rating to HPV primary screening alone for women aged 30 to 65. But HPV tests are mainly done by physicians in clinical practice, which means that women who don't go to a clinic for regular medical care are at risk for being under-screened.

"Women are dying unnecessarily of cervical cancer because they either haven't been vaccinated against HPV in adolescence, or they've not been getting screened according to national guidelines," said UNC Lineberger's **Jennifer S. Smith, PhD**, the study's senior author and a professor of epidemiology in the UNC Gillings School of Global Public Health. "Mailing self-collection kits and returning them to test for high-risk HPV infection has big potential to increase screening access among under-screened women, and to do that successfully."

Certain strains of HPV also can cause cancer of the oropharynx (the back of the throat), including the base of the tongue and tonsils. The CDC estimates that about 70 percent of oropharyngeal cancer cases diagnosed in the United States – about 13,000 cases per year – are probably caused by HPV.

Jennifer Smith, PhD

Studies show that head and neck cancers caused by HPV infection tend to have a better overall outcome than head and neck cancers related to other factors such as smoking and alcohol. Researchers have been exploring whether doctors could give less treatment to patients with HPV-related cancers and still achieve the same level of cure while reducing toxic side effects from the treatment.

UNC Lineberger's **Bhishamjit S. Chera, MD**, associate professor in the UNC School of Medicine Department of Radiation Oncology, and **Gaorav P. Gupta, MD, PhD**, assistant professor in the UNC School of Medicine Department of Radiation Oncology, have developed a blood test to detect levels of DNA in blood from HPV-related oropharyngeal squamous cell carcinoma tumors. They found that this test could be an effective and less costly alternative for monitoring HPV-linked head and neck cancer patients to ensure they remain cancer-free after treatment.

Gaorav Gupta, MD, PhD

"The goal of this study was to evaluate whether this test can be used to track patients who are completely asymptomatic, and thought to have no active cancer," Gupta said. "We knew that our test was very sensitive and specific, but we did not know the degree to which it would be useful in early detection of disease recurrence in patients who are otherwise thought to be disease-free."

Using this new blood test, they examined results from 103 patients who were undergoing chemotherapy and radiation for oropharyngeal squamous cell carcinoma, and were able to identify specific characteristics in patients that could be used to stratify and personalize treatment for patients with oropharyngeal cancer.

"In the future, dynamic, real-time monitoring of circulating tumor HPV DNA in the blood during treatment may help us better personalize and select treatment – especially the ability of radiologists to actually reduce the level of radiation and chemotherapy we give the patient," Chera said.

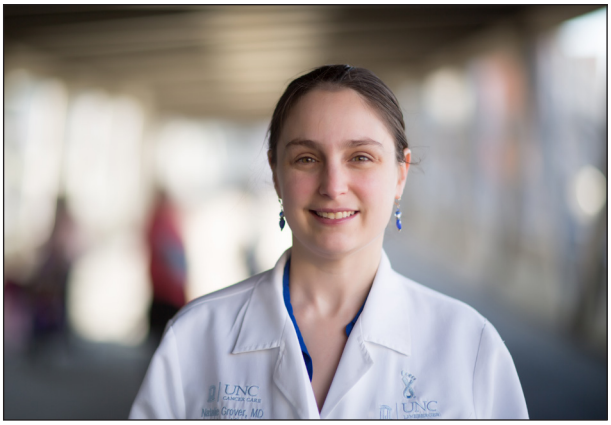
Researchers are planning to open a clinical trial in which oropharyngeal cancer patients are stratified to receive different levels of therapy based on real-time monitoring of circulating tumor HPV DNA. They also believe the blood test could be used for to help patients with other HPV-linked cancers, including cervical cancer.

Bhishamjit S. Chera, MD

STUDIES SHOW PROMISE FOR USING PATIENTS' OWN IMMUNE CELLS TO FIGHT CANCER

UNC Lineberger researchers have reported promising early results from a clinical study of an investigational cellular immunotherapy that used patients' own genetically engineered immune cells to recognize and fight Hodgkin and non-Hodgkin lymphoma.

Data from the trial showed that the treatment was safe, and it generated notable responses in heavily pretreated patients when used after a specific chemotherapy regimen, researchers reported. UCRF resources built the capability to bring this type of treatment to North Carolinians by providing funds to construct an FDA-compliant human cellular manufacturing facility in Chapel Hill.



Natalie Grover, MD

"Our results were definitely promising especially given how many patients in the study had progressed on multiple other treatments," said UNC Lineberger's **Natalie Grover, MD**, assistant professor in the UNC School of Medicine Division of Hematology/Oncology. "Hodgkin lymphoma is a generally curable disease, but there is a small percentage of patients who have bad disease that doesn't respond to therapy. From these early results, this could be superior option for them to extend the quality of their life."

Cellular immunotherapy involves extracting disease-fighting immune cells – called T-cells – from the patient's blood and genetically engineering them to recognize the patient's cancer. The researchers use a modified virus to insert DNA into the T-cells, which spurs the T-cells to express a receptor that allows them to recognize and destroy cancer cells. The hybrid T-cells, called chimeric antigen receptor T-cells, (CAR-T) are then multiplied and infused back into the patient. UNC Lineberger's first clinical trials used T-cells engineered to recognize tumors expressing the CD30 protein marker.

Researchers presented preliminary data for 24 patients. The majority of patients had Hodgkin lymphoma, a disease affecting white blood cells that is considered one of the most curable cancers. In some patients, however, the disease can progress and become resistant to treatment. Prior to enrolling in the study, most patients had received more than seven treatments, including brentuximab vedotin, which can target the CD30 marker.

"The most important findings were that we identified a regimen that can be used with these specific cells, and make a difference in the outcome for these patients without significant toxicities associated with other cellular immunotherapies," said the study's senior author and UCRF-funded recruit **Barbara Savoldo, MD, PhD**, assistant director of the UNC Lineberger Immunotherapy Program and professor of pediatrics in the Division of Hematology/Oncology.

Barbara Savoldo, MD, PhD

Studies are ongoing to try to improve outcomes for the investigational treatment, including another clinical trial designed to evaluate a mechanism for recruiting CAR-T to tumor sites.

In another immunotherapy discovery at UNC Lineberger, **Eben Lichtman, MD,** a clinical instructor in the UNC School of Medicine Division of Hematology/Oncology, has found a way to use CAR-T to target a subtype of acute myeloid leukemia (AML). AML is the most common acute leukemia in adults, with only about 25 percent of patients living more than five years from diagnosis.

"CAR-T therapy has emerged as an important and successful component of therapy for acute lymphoblastic leukemia, or ALL, but CAR-T treatment has been more elusive for AML," Lichtman said. "This is partly because no good targets have been identified on the surface of AML cells that allow us to use CAR-T to target them without also targeting normal components of our immune system."

Lichtman and colleagues found that a protein called B7-H3, which is found on the cell surface of a certain type of AML that is particularly aggressive, could be a good target for immunotherapy. They created T-cells that tracked the B7-H3 marker that proved effective in both controlling tumor cell growth and prolonging survival in mouse models with this disease. While this marker also can be found on certain immune cells called "antigen presenting cells" that act as scouts for the immune system, targeting the cancer with CAR -T therapy did not cause significant toxicity in their preclinical experiments.

"Allogeneic transplant, and the associated graft versus leukemia effect — which is where donor cells attack the leukemia — are already important ways of controlling AML," Lichtman said. "If we are able to engineer our own T-cells to attack the leukemia cells, it could be a much safer, and more effective, way to treat this disease."

RESEARCH PRIORITY 1: GENETICS IN CANCER CAUSATION AND TREATMENT

SCIENTISTS DISCOVER KEY ENZYME IN BREAST CANCER PROLIFERATION, TREATMENT RESISTANCE

Basal-like breast cancer – the most aggressive and difficult-to-treat subtype of breast cancer – largely overlaps with another aggressive subtype, called triple-negative breast cancer. UNC Lineberger researchers have uncovered a possible reason why these cancers are so aggressive.

Michael Emanuele, PhD

In lab experiments, they discovered that an enzyme called USP21, the most frequently amplified enzyme of its class in these types of tumors, promoted proliferation of basal-like breast cancer. This discovery offers scientists a much-needed target for new therapies to battle aggressive breast cancer subtypes.

The researchers demonstrated that USP21 depletion sensitized basal-like cancer cells and tumors to paclitaxel, a front-line therapy in basal treatment. They are further testing these findings in additional animal models of breast cancer to validate USP21 as a potential drug target, and also plan to test compounds to inhibit USP21.

"We think USP21 could not only drive basal-like breast cancer in patients, but could represent a new, future target for therapeutic intervention," said UNC Lineberger's **Michael Emanuele, PhD**, associate professor of pharmacology and the paper's senior author. "Targeting USP21 could sensitize cancer cells to therapies already in clinical use to treat patients with this disease."

NEW STUDY EXPLAINS HOW TUMORS RECRUIT BLOOD VESSELS

Chad Pecot, MD

A study by Lineberger researchers helps explain how tumors recruit blood vessels that provide fuel for their growth as well as an avenue for the tumors to spread – and uncovers a potential treatment strategy to block blood vessel growth.

"We found a potential new way to block tumor angiogenesis, which is development of new blood vessels, and by extension, prevent cancer's spread in the body," said UNC Lineberger's **Chad Pecot, MD**, associate professor in the Division of Hematology/Oncology. "This is important because metastasis is the most common cause of cancer-related deaths."

Pecot's lab previously found that treatment with a certain family of molecules, called the microRNA 200 family, suppressed the development of tumor blood vessels. In their new study, researchers observed low levels of microRNA 200 in tumor endothelial cells, the predominant cells that make up blood vessels. This finding could explain why there is increased blood vessel growth to cancer tumors.

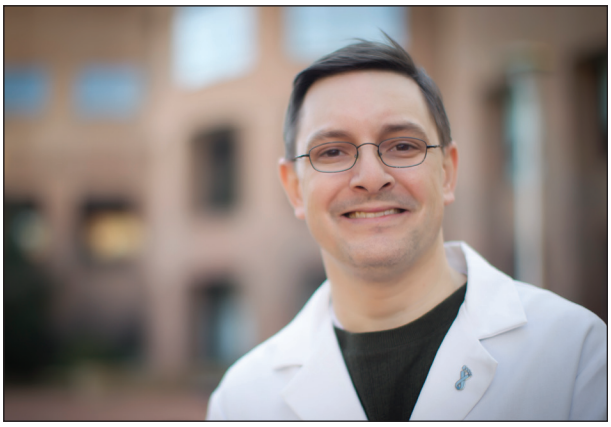
The researchers uncovered that to prevent blood vessel growth in normal conditions, microRNA 200 blocks expression of a gene that codes for a protein named "quaking." This is linked to blood vessel growth because the quaking protein is involved in promoting cell division in endothelial cells. In tumor endothelial cells, because microRNA 200 levels are low, that allows for more quaking production, which in turn spurs cell division.

Pecot and his team studied the effect of inhibiting this pathway in mouse models of metastatic lung cancer using a variety of methods – including the use of nanoparticles to deliver small interfering RNA molecules, microRNA 200, and palbociclib, an existing drug approved in the United States for certain types of advanced breast cancer.

"We tried a lot of different ways of inhibiting different stages of this pathway, and they all had the end result of inhibiting metastasis in our cancer model, and changing the tumor vasculature," said **Salma Azam**, a graduate student in the Department of Genetics who is working in Pecot's lab.

RESEARCHERS CLARIFY ROLE OF MUTATIONS IN DEADLY BRAIN CANCER

Researchers from UNC have discovered how different mutations in a specific gene help drive glioblastoma, the most lethal form of brain cancer.



C. Ryan Miller, MD, PhD

Studies have found that the PIK3CA gene is mutated in about 10 percent of glioblastoma cases. Unlike some cancers in which mutations typically occur in a specific location of a gene, mutations in PIK3CA can occur in multiple different parts of the gene in glioblastoma. In the preclinical study, researchers investigated whether the location of the mutation within the sequence of the PIK3CA gene affected the mutation's ability to drive cancer growth.

"One approach to personalized medicine has been to sequence the tumor to find any type of mutation in genes for which there are drugs that target them, and then treat all patients the same," said UNC Lineberger's **C. Ryan Miller, MD, PhD**, an associate professor in the UNC School of Medicine Departments of Pathology and Laboratory Medicine, Neurology, and Pharmacology. "We think it's going to need to be more nuanced than that."

Their findings call for a more refined approach to precision medicine for glioblastoma. They say more information about tumor mutations is needed – such as whether there are mutations in genes like PIK3CA, where the mutation is located in the gene, what its biochemical mechanism is, and what other genes are mutated in that tumor.

Glioblastoma is the most common primary malignant brain tumor in adults. Current treatments, which can include surgery, radiation and chemotherapy, have had limited effectiveness. Clinical trial results have been disappointing for drugs targeting certain molecular pathways driven by mutations commonly found in the disease.

Miller and colleagues found that specific mutations in the PIK3CA gene help to drive the cancer. And while the presence of mutations was not linked to a greater response to treatment with a single drug targeting the PIK3CA pathway, they did see improved response with two different therapies: buparlisib and selumetinib.

The researchers' next step will be to evaluate drugs targeting the particular downstream effects of the different pathways. They hope future studies could help identify additional potential therapeutic targets in glioblastoma, while helping to guide clinical trials using existing drugs.

RESEARCH PRIORITY 2: DEVELOPING NOVEL THERAPEUTICS

RESEARCHERS LAY THE FOUNDATION FOR PERSONALIZED IMMUNE TREATMENTS FOR LEUKEMIA

In one of several UCRF studies focusing on developing novel treatments for cancer, UNC researchers have confirmed a way of using genetic sequencing and computer predictions to aid in the development of highly personalized immune-based treatments for individual leukemia patients undergoing stem cell transplantation.

Benjamin Vincent, MD

A patient's cells can have unique genetic signatures that produce proteins that are distinct from any proteins found in the stem cell donor. These proteins can serve as markers for the cancer cells' destruction by the donor's natural defense system, which occurs during stem cell transplants. UNC Lineberger members **Benjamin Vincent, MD,** associate professor of microbiology and immunology, **and Paul Armistead, MD, PhD,** associate professor of medicine, have validated the use of genetic sequencing and computer software to predict which of those patient sequences resulted in unique surface markers, called minor histocompatibility antigens.

Paul Armistead, MD, PhD

Vincent and Armistead tested whether their software could predict antigenic targets in a group of 101 leukemia patients who had undergone stem cell transplants. Using the software, they correctly identified 16 of 18 unique surface markers that are known to occur in acute myeloid leukemia (AML), and verified a new antigen that is common in AML cells that could serve as a new target for immunotherapy.

The researchers could potentially use their predictions on patient-specific therapies where donor immune cells are engineered to specifically target the cancer cell antigens while preventing graft-versus-host disease, in which the donor's immune cells attack healthy tissues.

"If you could identify and activate the immune cells from the stem cell donor that only target leukemia cells, and not normal, healthy cells, that would be a big win," Vincent said.

RESEARCHERS FIND POTENTIAL KEY TO UNLOCKING THE IMMUNE SYSTEM IN PANCREATIC CANCER

UNC Lineberger scientists have discovered that a molecule called interleukin-35 (IL35) suppresses cancer-fighting immune cells in pancreatic cancer – and that removing this molecule would help shrink tumors when paired with drugs that unleash the immune system against cancer.

Yuliya Pylayeva-Gupta, PhD

"In pancreatic cancer, the immune cells that are present in the tumor are not the ones that respond to immunotherapy," said UNC Lineberger's **Yuliya Pylayeva-Gupta, PhD**, assistant professor in the UNC School of Medicine Department of Genetics. "We now better understand how these cells are suppressing the anti-tumor response."

Immune-based treatments known as checkpoint inhibitors have been effective in treating some cancers, including advanced melanoma, but have not worked in pancreatic cancer. Pylayeva-Gupta and colleagues found that laboratory pancreatic cancer models lacking IL35 had reduced tumor growth, and showed improved response by cancer-killing cells. They discovered a synergism when they added in checkpoint inhibitors to their models lacking IL35.

"We need some sort of agent that can shrink the patient's tumors to the point where we can remove the entire cancer during surgery, or shrink them and obliterate them altogether," she said.

Pancreatic cancer is the third most deadly cancer in the United States, with just 8.5 percent of patients living five years following diagnosis. Pancreatic cancer is often diagnosed at late stages after it has spread to surrounding organs, which makes surgical removal difficult. Pylayeva-Gupta believes linking these checkpoint inhibitors that work in melanoma but not pancreatic cancer to targets that also remove IL35 could help shrink tumors enough so that surgery becomes an option.

The National Cancer Institute has awarded Pylayeva-Gupta a grant for more than $2.2 million across five years to support her research into the immune response in pancreatic cancer.

"Understanding the role of immune regulation in pancreatic cancer represents a crucial stepping stone on our way to advancing care for these patients," she said.

NEXT-GENERATION SEQUENCING OF COLORECTAL CANCER COULD HELP TAILOR TREATMENTS

Using next-generation sequencing of tumor DNA from colorectal cancer patients, UNC researchers have discovered genetic alterations that are linked to different survival and treatment outcomes – findings that could help guide more effective treatments for colorectal cancer, the second leading cause of cancer death in the United States.

UNC Lineberger's **Federico Innocenti, MD, PhD**, associate professor in the UNC Eshelman School of Pharmacy, and colleagues categorized tumor types that were once believed to be homogeneous, and identified new patient subgroups that might benefit from tailored therapies. They analyzed mutations in tumors of 843 patients who participated in a Phase III

clinical trial to compare treatment with chemotherapy plus either bevacizumab or cetuximab – two regimens that are now the standard of care for advanced colorectal cancer.

Federico Innocenti, MD, PhD

The researchers used tumor samples to analyze genetic mutations in the DNA, and then examined associations between the mutations and data on patients' responses to the treatments and survival. Among the key findings:

- Patients with a lot of genetic repeats in their tumor DNA – called microsatellite instability – had longer survival when treated with bevacizumab compared to patients treated with cetuximab.
- Patients with tumors that had more genetic variation lived longer than patients who had tumors with less variation. This discovery helped define a new subgroup of patients with better prognosis.

Next, researchers want to know how the body's immune system interacts with these mutations, and whether patients with higher genetic variation will be more responsive to immunotherapy treatments. Further research will study additional ways of stratifying patients based on their genetic features to improve outcomes.

"It is crucial to define which patients could be responsive to immunotherapy in this setting, and this study shows the first promising evidence to do so," Innocenti said.

RESEARCH PRIORITY 3: OUTCOMES

UNC LINEBERGER LEADERS EXAMINE THYROID CANCER TRENDS IN IREDELL COUNTY

In response to community concerns about thyroid cancer trends in Iredell County, UNC Lineberger leaders brought together a team of doctors, epidemiologists and environmental scientists to examine patterns and causes of thyroid cancer in North Carolina.

The NC Thyroid Panel – made up of experts from the National Cancer Institute, the N.C. Department of Health and Human Services, Duke University, UNC Lineberger and other agencies and institutions – shared existing thyroid cancer research for the state and nation at a community meeting in Statesville, and in July released a report with the following recommendations:

- Develop new data resources including a population-based thyroid cancer patient study to gather new information on factors that may influence thyroid cancer in North Carolina; an analysis of health care claims data to better understand clinical practice patterns, detection patterns, and other thyroid disease patterns; and examining current cohort studies on potential risk factors for thyroid cancer to test NC-specific hypotheses.
- Investigate potential associations between exposure to coal ash, coal-burning emissions, and papillary thyroid cancer; conduct a geospatial analysis of thyroid cancer in states neighboring North Carolina and a comparative analysis of other cancers in counties with elevated rates of thyroid cancer; examine risk factors and access to health care in Iredell County and other communities with elevated cancer rates.

- Consult with local and national experts on cancer rates and study methods, tools and approaches that could be useful when applied to NC cancer data; enhance the NC Central Cancer Registry's classification of thyroid cancer; and consult with researchers in other states who have found elevated cancer rates.


Andrew F. Olshan, PhD

Andrew F. Olshan, PhD, public health professor of epidemiology and associate director for population sciences at UNC Lineberger, said the group's goal is to recommend what it would take to investigate the cancer patterns in the state, and parse through the possible multiple competing explanations for these patterns in rates.

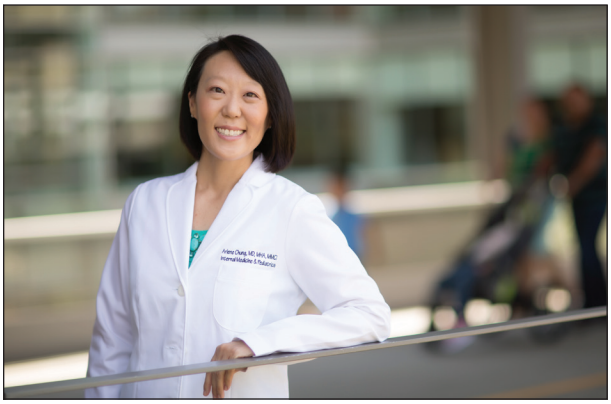
"We're trying to coalesce expertise to really say for the county and the state, what are the next logical, well-considered steps? What would constitute a cost-effective research strategy? And can we leverage existing data?" he said.

PATIENT-REPORTED SYMPTOMS OFFER INSIGHT FOR CLINICAL TRIALS

In a first-of-its-kind study, UNC Lineberger researchers and collaborators have found that allowing patients to write, in their own words, about treatment-related symptoms they experienced while participating in clinical trials can provide valuable information.

Usually, patients answer questions about pre-selected symptoms when they report treatment-related effects during clinical trials. But when allowed to write or choose their own symptoms in the study, patients revealed a wide range of additional issues, ranging from pain to insomnia, issues with concentration, to muscle spasms and mouth sores.

The researchers used software developed by the National Cancer Institute to study the impact and feasibility of having patients report additional symptoms beyond those assessed in trial-specific questionnaires. The software allowed patients to enter additional symptoms either by typing into a text box and choosing from selections offered from a drop-down menu, or by typing their own words entirely.


Arlene Chung, MD, MHA, MMCi

More than 1,700 patients participated in the study – and about 58 percent of them provided supplemental symptom information. The most common patient-reported symptoms were problems with tasting food and drink, muscle spasms, headache, nosebleeds, problems with concentration, dry mouth, fatigue, insomnia, and numbness and tingling in hands or feet.

The researchers believe that allowing patients to submit their own symptom reports is important. Many patients experienced diverse types of symptoms, and some revealed symptoms that were not assessed in trial-specific questionnaires.

"Trial-specific adverse event questionnaires are usually based on what is anticipated in terms of the symptoms patients may experience during a given treatment regimen," said the study's lead

author, UNC Lineberger's **Arlene Chung, MD, MHA, MMCi**, assistant professor of medicine and pediatrics, and associate director of health and clinical informatics in the UNC School of Medicine.

"Giving patients the opportunity to author their own symptomatic adverse event reports provides a more patient-centered way for them to let us know about any additional symptoms experienced beyond what is elicited from trial-specific questionnaires."

Their findings helped illuminate which types of symptoms researchers might expect for a given treatment under study – which would be especially useful during early-stage clinical trials when less is known about possible symptomatic adverse events. Chung and colleagues also plan to design and develop additional software to mine patients' free-text narratives using natural language processing and machine learning.

MEETING CARE NEEDS WITH FEWER CANCER SPECIALISTS, MORE CANCER SURVIVORS

UNC Lineberger Director of Cancer Survivorship **Deborah K. Mayer, PhD, RN, AOCN, FAAN**, outlined an approach to make the U.S. health care system better able to meet the expanding need for cancer survivorship care in a commentary she co-authored in the Journal of the National Cancer Institute.

A nationally recognized leader in cancer survivorship, Mayer also serves as the interim director of the National Cancer Institute's Office of Cancer Survivorship and is an advanced practice oncology nurse with more than 40 years of experience in cancer nursing, education and research.

Deborah K. Mayer, PhD, RN, AOCN, FAAN

An aging population, a growing number of cancer survivors, and a projected shortage of cancer care providers will lead to challenges in delivering the care for U.S. cancer survivors if systemic changes are not made, wrote Mayer and Catherine M. Alfano, PhD, vice president of survivorship at the American Cancer Society. Compounding the problem, they said, is the growing number of cancer survivors age 65 years or older, who are more likely to have multiple health issues in addition to cancer-related medical needs.

"The number of new patients diagnosed with cancer is relatively flat, which is good news, and the number of survivors is growing exponentially which is also good news," said Mayer, who is also the Frances Hill Fox Distinguished Professor of Nursing at the UNC School of Nursing. "However, we are now faced with the challenge of how to create 'right-sized' follow-up care in oncology. How do we transition survivors in a rational way that ensures they receive the proper follow-up care in the most appropriate setting by the most appropriate providers?"

People are waiting longer to receive cancer care in the United States, and studies suggest it will continue to be an issue in the years ahead if changes are not made. It's estimated that there will be a shortage of 2,200 oncologists, or approximately a 10 percent gap in providers, by 2025.

To address this gap, Mayer and Alfano recommend that the U.S. health care system develop risk-stratified cancer follow-up care, an approach that has been effective in Australia, Canada and the United Kingdom. Risk stratification involves assigning

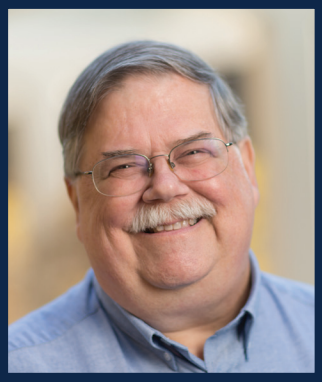
a person to a level of care management based on a health assessment of current and projected complexity of their medical needs and the type of health care provider their care requires.

The health assessment covers a range of issues, including overall prognosis, likelihood of cancer recurrence and new secondary cancers, the potential risk and impact of cancer treatment side-effects (both chronic and late-stage), psychosocial and socio-economic challenges, and the person's ability to navigate the health care system and manage their own health needs.

Patients deemed to have a low risk of immediate or late-stage complications would receive follow-up care from their primary care provider. Patients experiencing moderate and ongoing problems would be followed by advanced practice providers focusing on survivors or "shared care" with both primary care and oncology expertise. Patients with complex care issues, or who were expected to experience significant cancer-related issues in the future, would receive their follow-up care from a multidisciplinary team of care givers, including an oncologist.

"The goal of the risk-stratification model is to provide the best possible follow-up care for cancer survivors in the most appropriate setting," Mayer said. "For this to be successful, it needs to be shaped by the perspectives of patients and their families, clinicians, insurers, advocates and health policy experts."

FACULTY IMPACTS



UNC | LINEBERGER COMPREHENSIVE CANCER CENTER

UNIVERSITY CANCER RESEARCH FUND 2019 LEGISLATIVE REPORT

FACULTY IMPACT: RESEARCH AND SERVICE


Dotti

Gianpietro Dotti, MD, professor of microbiology and immunology, was named a co-leader of a multi-institutional Stand Up to Cancer "Dream Team," which will use an $8 million grant to focus on developing chimeric antigen receptor T-cell (CAR-T) therapies to recognize and attack T-cell lymphoma, a group of rare cancers of the blood and immune system. The team, in addition to Dotti, includes five researchers from UNC Lineberger: Anne Beaven, MD; Paul Eldridge, PhD; Natalie Grover, MD; Joel Parker, PhD; Barbara Savoldo, MD, PhD. Patty Spears, who chairs the UNC Lineberger Patient Research Advocacy Group, was appointed as advocate.


Reuland

Daniel S. Reuland, MD, MPH, professor of medicine, received a $5.5 million grant from the National Cancer Institute to boost colorectal cancer screening, follow-up and care referrals in community health centers in North Carolina. Reuland and his Carolina Cancer Screening Initiative colleagues will work with community health center networks that serve two regions in North Carolina, including an 11-county region in northeastern North Carolina with higher than average colorectal cancer mortality, to test screening approaches aimed at creating a long-term state-level strategy to reduce colorectal cancer burden and disparities through improved screening in community health center populations.


Pylayeva-Gupta

The National Cancer Institute has awarded a five-year, more than $2.2 million grant to **Yuliya Pylayeva-Gupta, PhD**, assistant professor of genetics, to support her research into the immune response in pancreatic cancer, one of the deadliest cancers. The researchers will use the grant to investigate the mechanism behind the effect of IL-35 on the immune system in pancreatic cancer, and to identify treatment targets at which to direct a combination of current and novel immunotherapies.


Dayton

Paul A. Dayton, PhD, associate chair, Joint Department of Biomedical Engineering at UNC and N.C. State University, and his colleagues were awarded a five-year, $3.2 million grant from the National Cancer Institute to investigate how to improve radiation treatment for pet dogs undergoing treatment for sarcoma. They will study whether non-toxic, oxygen-filled bubbles can help overcome problems of low oxygen, or "tumor hypoxia," which can make a tumor less responsive to radiation therapy. They hope their findings could ultimately shine light on whether their strategy could also improve radiation treatment for people.


Carey

Susan G. Komen has allocated $1.125 million to support breast cancer research at UNC Lineberger. **Lisa Carey, MD**, the Richardson and Marilyn Jacobs Preyer Distinguished Professor in Breast Cancer Research, received a $400,000 grant to evaluate how HER2-positive tumors respond to targeted therapies. Komen also awarded $725,000 to support the Carolina Breast Cancer Study Phase III, which will focus on identifying determinants of disparities in breast cancer clinical outcomes, including biologic, racial, socioeconomic, behavioral factors and identify modifiable factors in clinical care that address the causes of disparities.

Kurt Ribisl, PhD, the Jo Anne Earp Distinguished Professor in Health Behavior, was cited in a study as one of the most prolific authors of scientific publications about electronic cigarettes, and among academic institutions, UNC has published the third largest number of journal studies on the topic. Ribisl said UNC has prioritized conducting studies about e-cigarette studies and are focused on many areas of interest to the public and to policy makers, including consumer perceptions of product risk; impact of flavors, sales and marketing practices of vape shops; youth access; and development and testing of product warning labels.


Ribisl

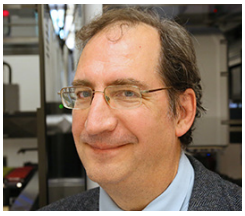
Jennifer Lund, PhD, assistant professor of epidemiology, was awarded a $732,000 grant from the Patient-Centered Outcomes Research Institute to improve the design of clinical trial to evaluate population-level benefits and harms of treatments. Lund will be focused on developing research tools to visualize differences between colon cancer patients enrolled in randomized clinical trials and those treated in clinical practice, with respect to their demographics as well as how their treatment is administered. While randomized controlled trials have been considered the gold standard, they often underrepresent certain subgroups of patients (e.g., adults age 65+ years, women, racial and ethnic minorities.)


Lund

Channing Der, PhD, the Sarah Graham Kenan Distinguished Professor, was presented with a National Cancer Institute Outstanding Investigator Award, which provides up to $4.2 million in research support over seven years. The grant was created to recognize and fund accomplished leaders in cancer research who are working on science with breakthrough potential. Der's research is focused on pancreatic ductal adenocarcinoma, a deadly form of cancer, with a specific goal to create scientific insights that can inform the development of new and more effective therapies for this highly deadly cancer.


Der

Bryan L. Roth, MD, PhD, the Michael Hooker Distinguished Professor of Pharmacology, has been elected to the American Academy of Arts and Sciences, one of the oldest academic societies in the United States and is dedicated to honoring excellence and leadership, working across disciplines and divides, and advancing the common good. Roth's scientific achievements are many, including solving the crystal structure of the activated kappa opioid receptor bound to a derivative of morphine. This discovery led to the development of a new drug-like compound that activates only that receptor, a key step in the development of better pain medications.


Roth

M. Patricia Rivera, MD, professor of medicine, received the American Thoracic Society's Thoracic Oncology Assembly Lifetime Achievement Award for her outstanding scientific contributions in the field of thoracic oncology and her longstanding service to the organization, including serving as chair of the Thoracic Oncology Assembly.


Rivera

Charles M. Perou, PhD, the May Goldman Shaw Distinguished Professor of Molecular Oncology, was honored by OncLive as a 2019 Giant of Cancer Care for his scientific achievements that have advanced the field of cancer diagnostics. Perou is internationally renowned for his research that demonstrated how breast cancer can be classified into different subtypes based on biological differences, a finding that continues to improve clinical treatments and inform research. These insights into genetic and genomic characteristics have contributed to the development of precision medicine in cancer.


Perou

DEVELOPING RESEARCH PARTNERSHIPS ACROSS THE UNIVERSITY OF NORTH CAROLINA SYSTEM

UNC Lineberger's leadership understands the value of developing research partnerships with investigators at other University of North Carolina System institutions. In 2018, the cancer center funded five research projects at NC State and East Carolina, which are in addition to UNC Lineberger's decade-long collaboration with faculty at North Carolina Central University. These partnerships make it possible to bring together a wider array of insights and resources to bear on the causes of cancer, the development of novel therapies and approaches to prevent the disease.

2018 NORTH CAROLINA STATE UNIVERSITY AWARDS

Principal Investigator	Other Investigator	Project Title	Category
Jason Haugh, PhD Professor, Biomolecular Engineering		Systems Biology of Signaling Networks in Melanoma	Basic Science
Christopher Mariani, DVM, PhD, Associate Professor, Clinical Sciences	Matthew Breen, PhD	Cerebrospinal Fluid as a Liquid Biopsy for Glioma Diagnosis in Dogs	Clinical/ Translational
Matthew Breen, PhD, Distinguished Professor, Molecular Biomedical Sciences		Epigenetic investigation of canine prostate cancer as a model for castration-resistant prostate cancer in men	Basic Science

2018 EAST CAROLINA UNIVERSITY AWARDS

Principal Investigator	Other Investigator	Project Title	Category
Heather Wright, PhD Professor, Communications	Darla Liles, MD, Medicine	Tamoxifen Effects on Cognition and Language in Breast Cancer	Clinical/ Translational

2018 UNC/NCCU COLLABORATIVE AWARD

Principal Investigator	Other Investigator	Project Title	Category
Scott William PhD Professor, Pathology & Laboratory Medicine	Xiaoxin "Luke" Chen, MD, PhD (NCCU)	Role of hotspot p53 mutations and "reverse" sexual dimorphism in oral and esophageal squamous cell carcinoma	Basic Science

FY 2019 RECRUITMENT AND RETENTION

FY 19 RECRUITMENT

CRITICAL INFRASTRUCTURE

Marjory Charlot, MD, MPH, MSc
Assistant Professor
UNC School of Medicine
Division of Hematology/Oncology
Cancer outcomes disparities; lung cancer
Boston Medical Center

Gita Mody, MD, MPH
Assistant Professor
UNC School of Medicine
Department of Surgery
Thoracic oncology; surgical outcomes
Harvard Medical School

Zev Nakamura, MD
Assistant Professor
UNC School of Medicine
Department of Psychiatry
Psycho-oncology; cognitive impairment
University of North Carolina

Shetal Patel, MD, PhD
Assistant Professor
UNC School of Medicine
Department of Medicine
Lung cancer; targeted therapies
University of Pennsylvania

Siddharth Sheth, DO, MPH
Assistant Professor
UNC School of Medicine
Department of Medicine
Head and neck cancer; immunotherapy
University of North Carolina

Kyle Wang, MD
Assistant Professor
UNC School of Medicine
Department of Radiation Oncology
GI and head and neck cancers; cancer outcomes
University of North Carolina

Wendell Yarbrough, MD, MMHC, FACS
Thomas J. Dark Distinguished Professor of Otolaryngology/Head and Neck Surgery
UNC School of Medicine
Department of Otolaryngology/Head and Neck Surgery
Cancer cell biology; head and neck surgery
Yale School of Medicine

DEVELOPING NEW TREATMENTS

Tessa Andermann, MD, MPH
Assistant Professor
UNC School of Medicine
Department of Medicine
Infection and immune responses in bone marrow transplant patients
Stanford University School of Medicine

Matthew Flick, PhD
Associate Professor
UNC School of Medicine
Department of Pathology and Laboratory Medicine
Pancreatic cancer
Cincinnati Children's Hospital Medical Center

Stephanie Downs-Canner, MD
Assistant Professor
UNC School of Medicine
Department of Surgery
Breast surgical oncology; tumor immunology
Memorial Sloan Kettering Cancer Center

OPPORTUNITY

Daniel Dominguez, PhD
Assistant Professor
UNC School of Medicine
Department of Pharmacology
RNA processing in cancer
Massachusetts Institute of Technology

Ageliki Tsagaratou, PhD
Assistant Professor
UNC School of Medicine
Department of Genetics
Epigenetics of cancer and immune response
La Jolla Institute for Allergy and Immunology

OPTIMIZING NC OUTCOMES

Chineme Enyioha, MD, MPH
Assistant Professor
UNC School of Medicine
Department of Medicine
Health disparities; patient engagement
University of North Carolina

Marissa Hall, PhD
Assistant Professor
UNC Gillings School of Global Public Health
Department of Health Behavior
Cancer prevention
University of North Carolina

Erin Kent, PhD
Associate Professor
UNC Gillings School of Global Public Health
Department of Health Policy and Management
Patient-centered and family-engaged outcomes research
National Cancer Institute

Sarah Mills, PhD, MPH
Assistant Professor
UNC Gillings School of Global Public Health
Department of Health Behavior
Tobacco use; tobacco-related disease
University of North Carolina

Emily Ray, MD, MPH
Assistant Professor
UNC School of Medicine
Department of Medicine
Breast cancer; cancer outcomes research
University of North Carolina

Trevor Royce, MD, MPH
Assistant Professor
UNC School of Medicine
Department of Radiation Oncology
Genitourinary cancer; breast cancer; health care policy
Harvard Medical School

Institutions from which the faculty were recruited

FY 19 RETENTION

DEVELOPING NEW TREATMENTS

Sharon Campbell, PhD
Professor
UNC School of Medicine
Department of Biochemistry & Biophysics
Molecular therapeutics; oncogene structure

Greg Wang, PhD
Associate Professor
UNC School of Medicine
Department of Biochemistry and Biophysics
Cancer epigenetics; leukemia; myeloma

Jared Weiss, MD
Associate Professor
UNC School of Medicine
Department of Medicine
Lung cancer; immunotherapy

OPPORTUNITY

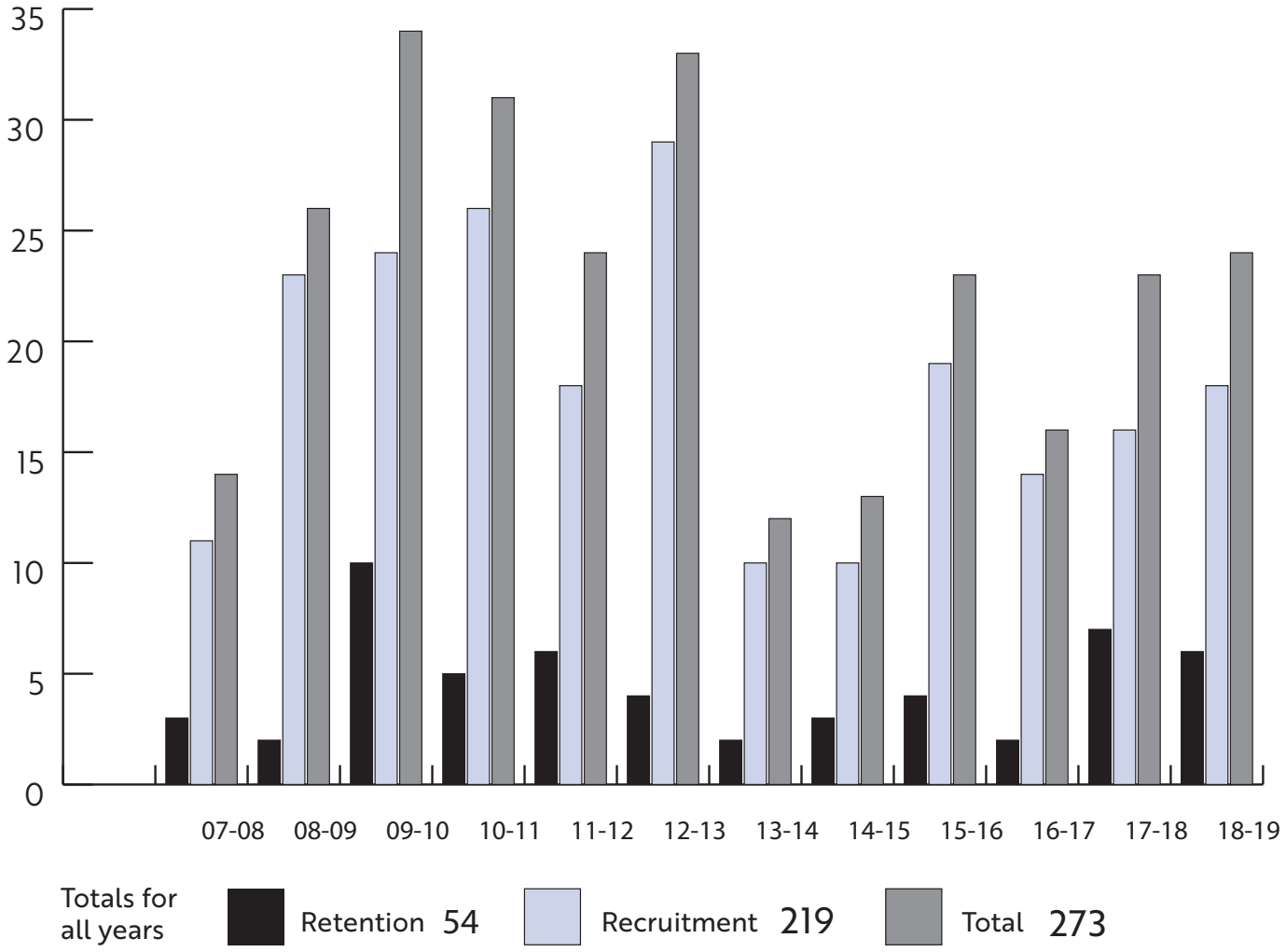
Dirk Dittmer, PhD
Professor
UNC School of Medicine
Department of Microbiology and Immunology
Cancer virology

OPTIMIZING NC OUTCOMES

Louise Henderson, PhD, MSPH
Associate Professor
UNC School of Medicine
Department of Radiology
Cancer screening; outcomes

Melissa Troester, PhD
Professor
UNC Gillings School of Global Public Health
Department of Epidemiology
Breast cancer epidemiology; cancer and the environment

FACULTY RETENTION AND RECRUITMENT



SUPPORTING INFRASTRUCTURE AND SHARED RESOURCES

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

UNC CANCER NETWORK EDUCATES MEDICAL PROFESSIONALS, PATIENTS

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

The UNC Cancer Network is the main source of continuing education for oncology professionals. The program's bi-monthly continuing education series reaches physicians, nurses and allied health professionals across North Carolina through live, interactive medical and nursing lectures delivered by UNC faculty. The lecture series enables practitioners to access timely, evidence-based oncology therapeutic updates from the convenience of their own practice, while earning continuing education credits. Medical professionals earned 47 CME credit hours this year for lecture participation via the telehealth infrastructure.

The UCRF has significantly improved UNC's ability to connect with oncologists and cancer patients across North Carolina. Using infrastructure supported by UCRF funds, UNC faculty regularly hold virtual "tumor boards" – in-depth reviews of a particular patient's case with a team of doctors – with doctors in hospitals across the state, and consult in specialties that are not available in rural communities. This year 274 virtual tumor boards helped connect community-based medical professionals with UNC oncology experts.

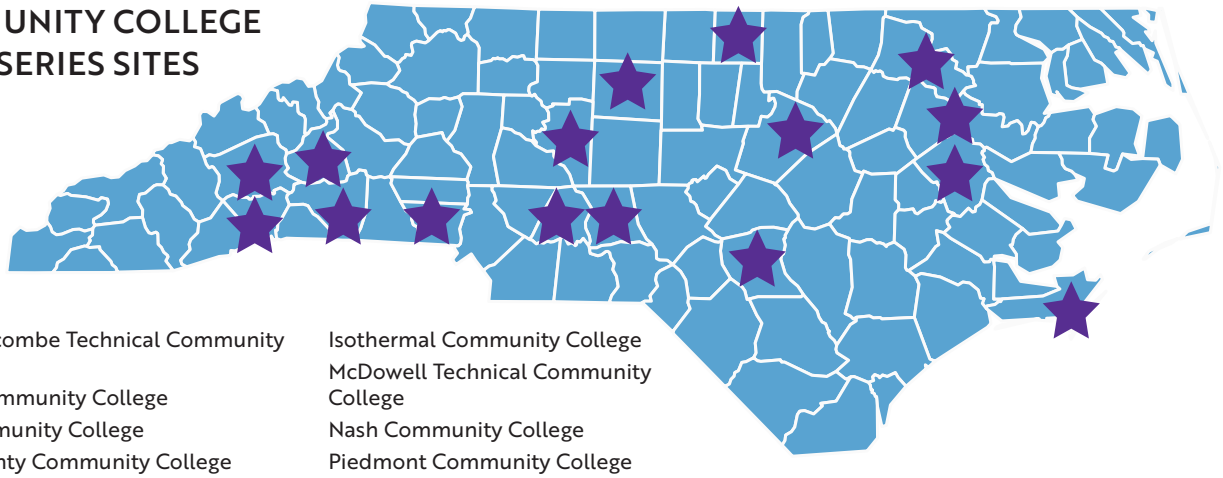
The tumor boards are another source for continuing education. This year, tumor boards provided nearly 2,800 credit hours in the following specialty areas:

Breast	958
Gastro-Intestinal	710
Head and Neck	465
Hematology-Oncology (Parker)	320
Pediatrics	343
TOTAL	**2,796**

UNC also uses its telehealth network to connect in real time with health care providers to discuss best practices for patient care and cutting-edge research, and to hold community education events aiming to raise patient awareness of issues related to cancer. This year, UNC hosted 24 telehealth lectures with more than 2,230 participants including nurses, doctors, physician assistants, nurse practitioners, pharmacists, social workers, nutritionists and clinic managers in more than 20 oncology practices across the state.

The UNC Cancer Network North Carolina Community College Lecture Series also offered four courses designed for students enrolled in nursing and allied health sciences programs at 16 community college sites. These lectures provide opportunities for students to become more familiar with strategies necessary for caring for cancer patients. It is hoped that this series will lead to improvements in cancer care, in particular by developing a greater interest in oncology-related professions. The need for a larger oncology workforce is expected to grow dramatically during the next decade.

NC COMMUNITY COLLEGE LECTURE SERIES SITES



Asheville Buncombe Technical Community College
Blue Ridge Community College
Carteret Community College
Davidson County Community College
Fayetteville Technical Community College
Gaston College
Guilford Technical Community College
Halifax Community College
Isothermal Community College
McDowell Technical Community College
Nash Community College
Piedmont Community College
Pitt Community College
Sandhills Community College
Stanly Community College
Wake Technical Community College

INNOVATIVE CANCER DATA RESOURCE EXPANDS

Academics and policymakers are using comprehensive UCRF-supported data resources to knit together information from multiple public and private sources in order to examine a wide range of complex issues tied to improving cancer outcomes in North Carolina.

UCRF funds were used in 2010 to launch a unique research tool to facilitate “big data” population-based cancer research. The Cancer Information & Population Health Resource (CIPHR) aggregates information on more than 750,000 cancer patients the state; approximately 85 percent of whom are linked to insurance claims data.

CIPHR provides 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 – like Stephanie Wheeler in her study on financial toxicity, for example – to examine real-world information about real-world patients, or provides population scientists with more insights into possible cancer clusters in certain parts of the state. Using CIPHR’s data, our faculty have published 82 scientific papers detailing the incidence patterns, early detection success and failures, geographic delays in treatment and diagnosis, and geographic level data regarding adherence to cancer treatment regimens.

BUDGET AND EXPENDITURE INFORMATION

UNC LINEBERGER COMPREHENSIVE CANCER CENTER

UNIVERSITY CANCER RESEARCH FUND 2019 LEGISLATIVE REPORT

BUDGET AND EXPENDITURE INFORMATION

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 2019 Anticipated and Actual Fund Revenue

	* Amount
Anticipated	
State Appropriation	$16,020,000
Projected OTP Tax Receipts	$31,780,000
Total	$47,800,000
Actual	
State Appropriation	$16,020,000
Actual OTP Tax Receipts	$35,562,456
Total	$51,582,456

* Rounded to the nearest dollar

Fund Balance

FY 2019 Budget and Expenditures

	* Amount
Anticipated Budget	
Revenue	$47,800,000
Carryover From FY18	($69,387)
Carryover From Unrealized FY18 OTP Tax Receipts	$0
Total	$47,730,613
Actual Budget	
Revenue	$51,582,456
Carryover From FY18	($69,387)
Carryover From Unrealized FY18 OTP Tax	$0
Total	$51,513,069
Expenditures	$51,566,869
Balance	($53,800)

* Rounded to the nearest dollar

RESTRICTIONS ON THE USE OF UCRF MONIES

G.S. 116 29.1 established the UCRF as a special revenue fund and created the Cancer Research Fund Committee to provide accountability and oversight. As the Cancer Research Fund Committee, led by its Chairman, then-UNC President Erskine Bowles, developed the UCRF Strategic Plan in 2009, 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.

More than half the funding from UCRF has been used to recruit world-class researchers to North Carolina. Only 1 percent of the total UCRF budget is used for ongoing administrative expenses.

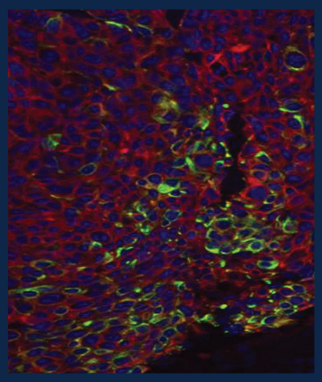
Categories	YTD Actual*
Tier 1: Research Priorities	
Optimizing NC Cancer Outcomes	**$6,383,708**
Understanding Genetics in Cancer - Basic Approaches and Clinical Applications	**$8,000,387**
Developing New Cancer Treatments	**$8,768,810**
Tier 2: Opportunity Fund	**$11,964,199**
Tier 3: Critical Infrastructure	
Clinical Excellence – Research & Outreach	**$6,419,597**
Research & Tech Development and Training	**$10,030,168**
Total	**$51,566,869**

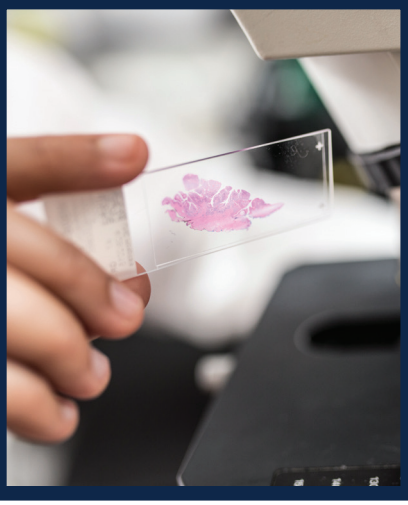
* Rounded to the nearest dollar
Note: FY19 expenses have been adjusted by a prior accrual of $69,387

CONCLUSION

Thanks to the General Assembly's continued support, the University Cancer Research Fund has been a tremendous investment in ongoing efforts to improve cancer prevention, diagnosis, treatment and outcomes. The UCRF is invested responsibly and effectively to support innovative research, shared resources and infrastructure, and partnerships with institutions, providers, and communities throughout North Carolina. Economically, the UCRF had a 10-to-1 return on investment last year – which includes leveraging external funding, creating jobs, promoting commercialization opportunities, and other factors. The UCRF's economic, research and health impacts continue to grow and will have both an immediate and a lasting impact for people and communities in our state and beyond.

APPENDIX





UNC LINEBERGER COMPREHENSIVE CANCER CENTER

UNIVERSITY CANCER RESEARCH FUND 2019 LEGISLATIVE REPORT

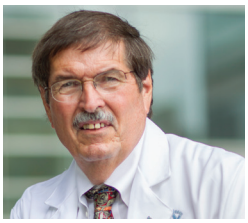
APPENDIX

CANCER RESEARCH FUND COMMITTEE

CANCER RESEARCH FUND COMMITTEE

The legislatively established Cancer Research Fund Committee, chaired by Kevin M. Guskiewicz, PhD, Interim 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 Drs. Edward Benz (President and CEO Emeritus, Dana-Farber Cancer Institute) and Gary Gilliland (President and Director, Fred Hutchinson Cancer Research Center).

Kevin M. Guskiewicz, PhD, Chair
Interim Chancellor
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

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

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

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

Dhiren Thakker, PhD
Interim Dean
UNC Eshelman School of Pharmacy
The University of North Carolina at Chapel Hill

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

APPENDIX

ECONOMIC IMPACT ANALYSIS

UNC | LINEBERGER COMPREHENSIVE CANCER CENTER

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

UNC | 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] Additionally, lung cancer continues to be the leading cancer-causing death in North Carolina.[2] The state is investing in this fund, ensuring that future generations of North Carolinians will develop cancer less often and live longer and better when they do.

The initial investment in 2007 to the University Cancer Research Fund (UCRF) of $25 million has grown to greater than $51.5 million for FY 2019. This year alone the FY 2019 $51.5 million investment produced an economic impact of more than $519.4 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 LCCC) is one of only 51 National Cancer Institute-designated comprehensive cancer centers. The center brings together some of the most exceptional physicians and scientists in the country to investigate and improve the prevention, early detection, and treatment of cancer. With research that spans the spectrum from the laboratory to the bedside to the community, the faculty work to understand the causes of cancer at the genetic and environmental levels, to conduct groundbreaking laboratory research, and to translate findings into pioneering and innovative clinical trials. Investment in the UCRF allows the state an even greater ability to continue its tradition of care for all North Carolinians. It is an investment in making the best care in the world available in North Carolina, and it is difficult to think of a better investment than one for the future health of the state's residents.

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

[1] Cancer in North Carolina 2013 Report. North Carolina State Center for Health Statistics.
[2] Cancer Profiles North Carolina April 2017 http://www.schs.state.nc.us/schs/CCR/cp2017/NorthCarolina.pdf

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 $519.4 million in total economic impact in North Carolina in 2019. This includes direct spending of more than $281.8 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 $197.5 million in research funding received in 2019 alone. The ripple effect of in-state spending accounts for nearly $237.6 million in additional funds, representing downstream spending by employees, vendors, and contractors. This is just the impact of the current year (2019). Tripp Umbach estimates that through the commercialization of the discoveries made from this research, the impact by 2029 will be dramatically larger.

- **Creating jobs.** UCRF directly supported employment in 2019 of more than 1,308 jobs in North Carolina and an additional 1,753 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 3,061 jobs.

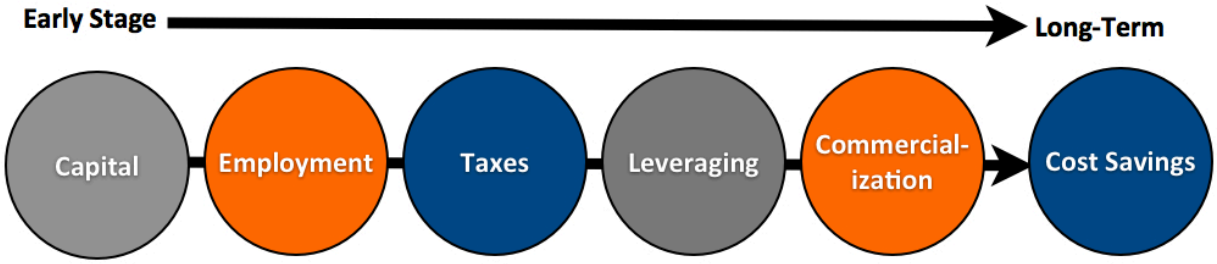
- **Generating tax revenue.** Tripp Umbach estimates that UCRF provided greater than $17.2 million in local and state tax revenue in 2019.

- **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 $164.6 million in federal research grants, bringing the total to more than $197.5 million in external funding in 2019 alone. This would not have been possible without the UCRF funding, which elevated UNC Lineberger to the top rankings.

Impacts of UCRF in 2019

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):

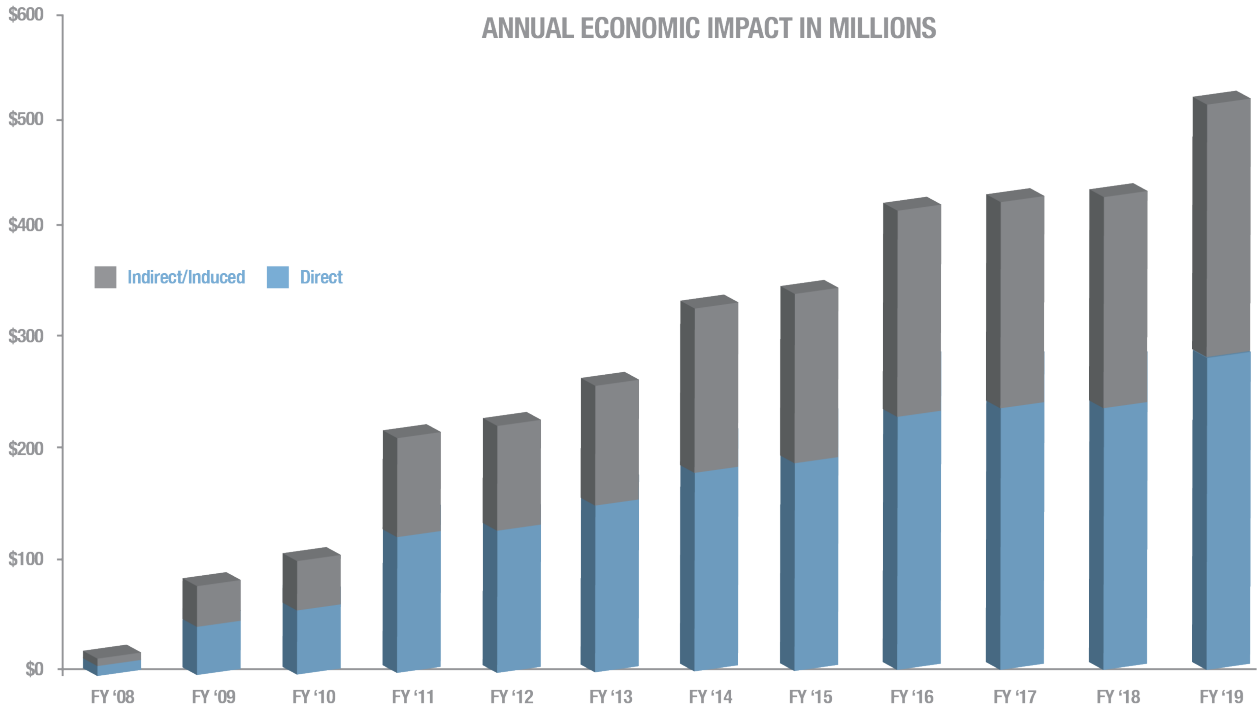
Figure 1: Research Return on Investment Timeline



Early Stage Economic Impact of Funding

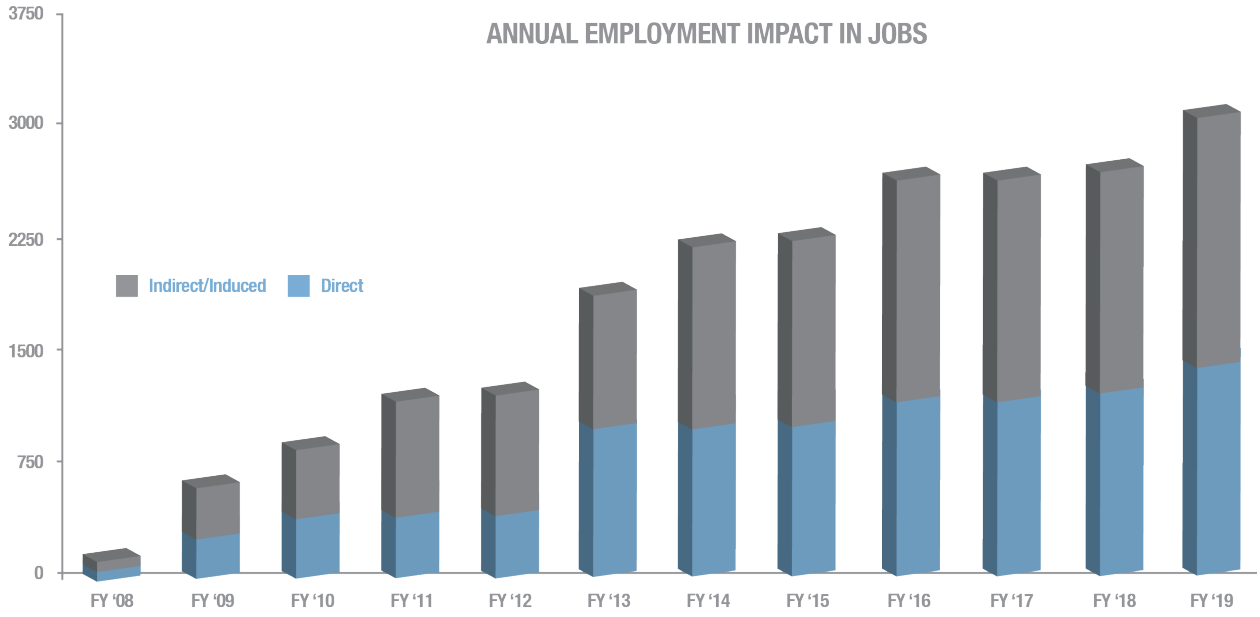
UCRF dollars invested in research in 2019 have resulted in an expansion of the state's economy by greater than $519.4 million. Tripp Umbach's economic impact analysis indicates that even in the early stage (2007-2011), program investments in capital and human resources have returned greater than three dollars to the state's economy for every one dollar invested. In 2019, this amount has risen to more than 10 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.


ANNUAL ECONOMIC IMPACT IN MILLIONS
$600
$500
$400
$300
$200
$100
$0
Indirect/Induced
Direct
FY '08
FY '09
FY '10
FY '11
FY '12
FY '13
FY '14
FY '15
FY '16
FY '17
FY '18
FY '19

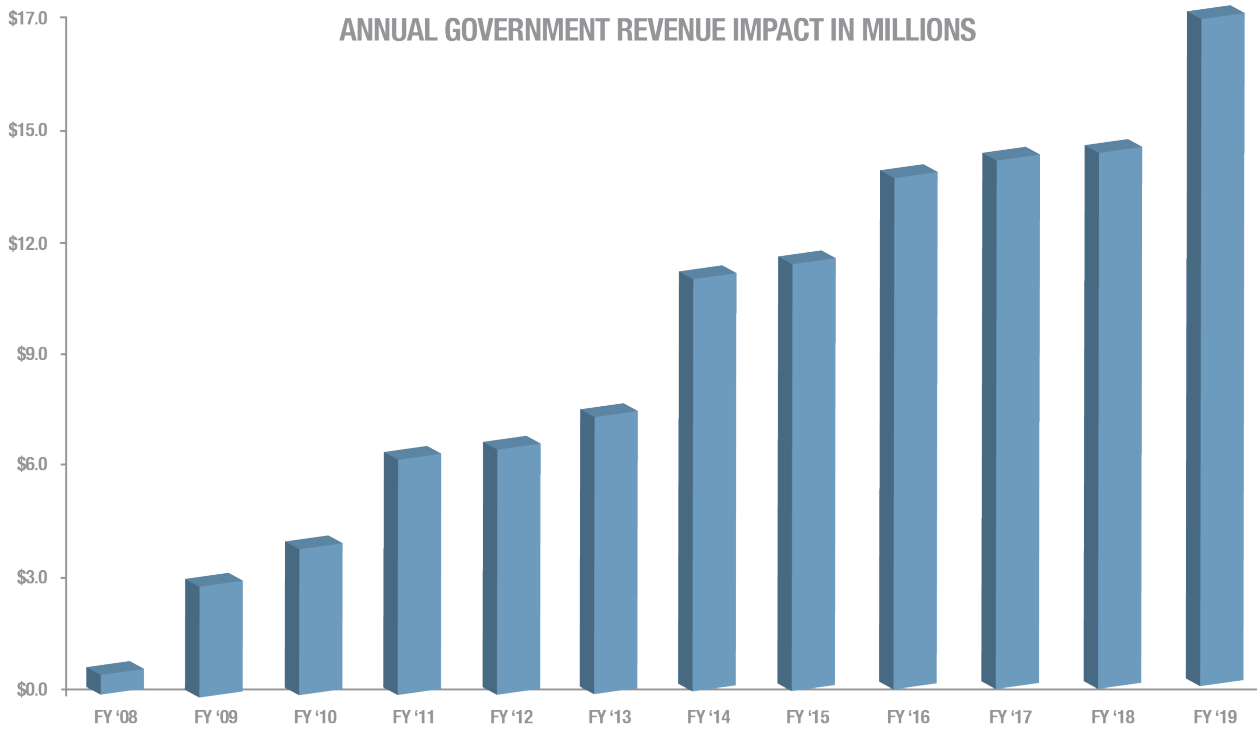
Early Stage Impact of UCRF Dollars on Employment

Tripp Umbach estimates that in 2019, UCRF dollars for healthcare research have created and sustained 3,061 high-paying research-related jobs throughout the state of North Carolina. This includes both the 1,308 high-paying research-related jobs directly attributed to UNC in addition to the 1,753 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 2019 have resulted in nearly $17.2 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 ranks 11th for total annual economic impact.[3]

These funds from the state's UCRF have encouraged researchers at the recipient organization to collaborate to apply for and win highly competitive federal grants. These funds have enabled

[3] In 2019, North Carolina ranked 11th in Academic Medical Impact of AAMC members and COTH hospitals.

recipients of UCRF dollars to leverage federal research funds amounting to more than $164.6 million, bringing the total to nearly $197.5 million in external funding in 2019 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 $7 in healthcare cost-savings for every dollar invested in NIH-sponsored research.[4]

Commercialization

Additional impacts that will be realized because of the UCRF are the levels of commercialization that occur when clusters of research professionals collaborate on a specialty area of research. Tripp Umbach estimates that after 10 years of funding and operations, the commercialization of the UCRF will produce discoveries and spinoff businesses generating additional economic activity in the state of North Carolina. Looking at projected commercialization impact in 2029, Tripp Umbach estimates this to be from $606.3 million at a conservative level of growth scenario to $1.1 billion using the aggressive level of growth in additional economic activity within North Carolina. These activities will also create an additional 3,662 (conservative) to 6,671 jobs (aggressive) high-paying jobs. These additional economic and employment impacts will translate into additional state and local government revenue of $19.6 million to $35.4 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 2019 funding and the national experience of peer academic medical centers that have implemented similar academic, clinical, research, and

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

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.

Appendix A: Definition of Terms

Study Year

Fiscal Year 2019

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 impact, 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 528 different industries (generally three- or four-digit SIC code breakdown) and 21 different economic variables. IMPLAN sources their 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 2015. While the data is not current, 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 Medical Center. In addition to work on multiple occasions for the six allopathic medical schools and academic medical centers in Pennsylvania, Tripp Umbach has completed statewide studies for multiple institutions in Ohio, Virginia, South Carolina, Wisconsin, and Minnesota.

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

In addition to completing similar studies for UNC LCCC over the last 10 years, Tripp Umbach has also completed economic impact studies for cancer centers such as the CURE Funding for PA Cancer Alliance, The Wistar Institute, University of North Carolina's Cancer Hospital, Ohio State University's James Cancer Hospital and Solove Research Institute, Ohio State University's Comprehensive Cancer Center, Milton S. Hershey Medical Center's Cancer Institute, Mayo Clinic/Allegheny General Hospital Cancer Services planning, UPMC Hillman Cancer Center feasibility and economic impact projections study, University of Pennsylvania projected economic impact of the Cancer Center as a component of the Civic Center project, and University of Florida Shands HealthCare economic impact projections.

For more information on Tripp Umbach, please go to www.trippumbach.com, and for more information on this research please contact:

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APPENDIX

ESTABLISHING LEGISLATION

ESTABLISHING LEGISLATION

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

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

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

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

(d) Chair. – The chair shall be the Chancellor of the University of North Carolina at Chapel Hill.

(e) Quorum. – A majority of the members shall constitute a quorum for the transaction of business.

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

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

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

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

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

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

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

APPENDIX

FY 2019 EXPENDITURES

FISCAL YEAR 2019 EXPENDITURES

Strategy	Annual Budget	Year to Date Actual (note) *	Cash Balance
Optimizing NC Cancer Outcomes	$6,505,000	$6,383,708	$121,292
Understanding Genetics in Cancer - Basic Approaches and Clinical Applications	$8,100,000	$8,000,387	$99,613
Developing New Cancer Treatments	$8,500,000	$8,768,810	($268,810)
Tier 2: Opportunity Fund	$11,850,000	$11,964,199	($114,199)
Tier 3: Infrastructure - Clinical Excellence and Outreach	$6,900,000	$6,419,597	$480,403
Infrastructure	$9,727,456	$10,030,168	($302,712)
Grand Total	**$51,582,456**	**$51,566,869**	**$15,587**

* Rounded to the nearest dollar

Note: FY19 expenses have been adjusted by a prior accrual of $69,387

FISCAL YEAR 2019 EXPENDITURES SUMMARY

Expense Category	Year To Date Actual	Expense to Total Expenditure
Faculty Salaries	$14,894,510	28.9%
EPA Student Salaries	$2,932,591	5.7%
Staff Salaries	$6,999,337	13.6%
Other Staff	$370,837	0.7%
Benefits	$6,630,600	12.9%
Phy Benefits	$211,105	0.4%
Other Staff Benefits	$293,585	0.6%
Transit Tax	$75,541	0.1%
Consultants/Contracted Services	$1,008,061	2.0%
Employee Education	$9,432	0.0%
Repairs and Maint	$3,977,822	7.7%
Other Current Services	$2,916,295	5.7%
Supplies, Other	$4,085,892	7.9%
Travel	$492,678	1.0%
Maintenance Contracts	$1,408,439	2.7%
Advertising	$10,917	0.0%
Meetings & Amenities	$54,099	0.1%
Printing and Binding	$58,042	0.1%
Communication	$106,308	0.2%
Computer Services	$434,862	0.8%
Rental/Lease Facilities	$1,015,312	2.0%
Equipment	$2,522,781	4.9%
Study Subjects & Exp	$133,665	0.3%
Insurance	$2,440	0.0%
Student Support	$820,738	1.6%
Utilities	$68,265	0.1%
Legal Fees	$32,715	0.1%
Grand Total	**$51,566,869**	**100.0%**

** Rounded to the nearest dollar.*

Tier 1: Research Priorities
Optimizing NC Cancer Outcomes

Expense Category	Year to Date Actual*
Faculty Salaries	$2,376,218
EPA Student Salaries	$292,545
Staff Salaries	$1,267,981
Other staff	$67,005
Benefits	$1,132,479
Phy Benefits	$8,479
Other Staff Benefits	$53,527
Transit Tax	$12,076
Consultants/Contracted Services	$37,186
Employee Education	$4,160
Repairs and Maint	$822
Other Current Services	$184,365
Supplies, Other	$94,806
Travel	$124,086
Maintenance Contracts	$35,493
Advertising	$600
Meetings & Amenities	$2,089
Printing and Binding	$14,644
Communication	$22,964
Computer Services	$203,321
Rental/Lease Facilities	$321,764
Equipment	$18,963
Study Subjects & Exp	$13,390
Insurance	$86
Student Support	$94,659
Total	**$6,383,708**

**Rounded to nearest dollar*

Tier 1: Research Priorities
Understanding Genetics in Cancer - Basic Approaches & Clinical Applications

Expense Category	Year to Date Actual*
Faculty Salaries	$2,380,204
EPA Student Salaries	$259,220
Staff Salaries	$1,302,895
Other staff	$108,793
Benefits	$1,169,096
Phy Benefits	$8,191
Other Staff Benefits	$52,885
Transit Tax	$12,118
Consultants/Contracted Services	$114,573
Employee Education	$100
Repairs and Maint	$239,285
Other Current Services	$428,766
Supplies, Other	$660,875
Travel	$60,263
Maintenance Contracts	$332,218
Advertising	$639
Meetings & Amenities	$1,884
Printing and Binding	$19,813
Communication	$7,160
Computer Services	$168,359
Rental/Lease Facilities	$254,449
Equipment	$234,900
Study Subjects & Exp	$81,732
Insurance	$17
Student Support	$22,517
Utilities	$68,265
Legal Fees	$11,170
Total	**$8,000,387**

**Rounded to nearest dollar*

Tier 1: Research Priorities
Developing New Cancer Treatments

Expense Category	Year to Date Actual*
Faculty Salaries	$2,065,371
EPA Student Salaries	$286,490
Staff Salaries	$1,012,407
Other staff	$25,364
Benefits	$954,424
Phy Benefits	$1,716
Other Staff Benefits	$41,518
Transit Tax	$10,154
Consultants/Contracted Services	$21,897
Employee Education	$1,280
Repairs and Maint	$45,394
Other Current Services	$776,203
Supplies, Other	$1,487,294
Travel	$22,838
Maintenance Contracts	$310,471
Advertising	$1,455
Meetings & Amenities	$10,598
Printing and Binding	$3,350
Communication	$22,066
Computer Services	$259
Rental/Lease Facilities	$412,969
Equipment	$1,188,429
Insurance	$3,694
Student Support	$58,429
Legal Fees	$4,740
Total	**$8,768,810**

**Rounded to nearest dollar*

Tier 2: Opportunity Fund

Expense Category	Year to Date Actual*
Faculty Salaries	$1,444,228
EPA Student Salaries	$1,152,332
Staff Salaries	$737,678
Other staff	$143,312
Benefits	$813,327
Phy Benefits	$18,508
Other Staff Benefits	$32,539
Transit Tax	$10,426
Consultants/Contracted Services	($13,738)
Employee Education	$990
Repairs and Maint	$3,629,608
Other Current Services	$1,038,764
Supplies, Other	$1,456,121
Travel	$169,299
Maintenance Contracts	$264,923
Advertising	$225
Meetings & Amenities	$5,666
Printing and Binding	$14,106
Communication	$20,491
Computer Services	$40,162
Rental/Lease Facilities	$26,130
Equipment	$784,892
Study Subjects & Exp	$33,713
Insurance	($1,357)
Student Support	$125,049
Legal Fees	$16,805
Total	**$11,964,199**

**Rounded to nearest dollar*

Tier 3: Critical Infrastructure - Clinical Excellence and Outreach Total

Expense Category	Year to Date Actual*
Faculty Salaries	$4,397,427
EPA Student Salaries	$53,736
Staff Salaries	$274,192
Other Staff	$9,289
Benefits	$1,032,794
Phy Benefits	$166,465
Other Staff Benefits	$35,672
Transit Tax	$14,204
Consultants/Contracted Services	$25,296
Employee Education	$2,787
Repairs and Maint	$14,489
Other Current Services	$65,764
Supplies, Other	$61,391
Travel	$50,325
Maintenance Contracts	$181,250
Advertising	$260
Meetings & Amenities	$3,305
Printing and Binding	$3,837
Communication	$10,874
Computer Services	$557
Equipment	$790
Study Subjects & Exp	$4,830
Student Support	$10,063
Total	**$6,419,597**

**Rounded to nearest dollar*

Tier 3: Critical Infrastructure - Infrastructure

Expense Category	Year to Date Actual* (note)
Faculty Salaries	$2,231,062
EPA Student Salaries	$888,268
Staff Salaries	$2,404,184
Other Staff	$17,074
Benefits	$1,528,480
Phy Benefits	$7,746
Other Staff Benefits	$77,444
Transit Tax	$16,563
Consultants/Contracted Services	$822,847
Employee Education	$115
Repairs and Maint	$48,224
Other Current Services	$422,433
Supplies, Other	$325,405
Travel	$65,867
Maintenance Contracts	$284,084
Advertising	$7,738
Meetings & Amenities	$30,557
Printing and Binding	$2,292
Communication	$22,753
Computer Services	$22,204
Equipment	$294,807
Student Support	$510,021
Total	**$10,030,168**
Grand Total	**$51,566,869**

**Rounded to nearest dollar*
Note: FY19 expenses have be adjusted by a prior accrual of $69,387.

APPENDIX

LIST OF ACTIVE EXTRAMURAL AWARDS

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Akulian	Jason	Veracyte, Inc.		10/16/15	12/31/19	ProspectivE Registry to Evaluate Percepta Bronchial Genomic ClassifiEr Patient DaTA: The PERCEPTA Registry (the	$2,547
Recruitment	Akulian	Jason	Chiltern International, Inc		9/1/16	3/31/20	A Pivotal Multi-Center, Randomized, Controlled, Single-Blinded Study Comparing the Silver Nitrate-Coated Indwelling Pleural Catheter (SNCIPC) to the Uncoated PleurX® Pleural Catheter for theManagement of Symptomatic, Recurrent, Malignant Pleural Effusions	$5,675
Recruitment	Alexander	Thomas	AbbVie, Inc.	M16-106 83476/PO#420	11/7/17	9/30/20	A Phase 1 Dose Escalation, Open-Label Study of Venetoclax in Combination with Navitoclax and Chemotherapy in Subjects with Relapsed Acute Lymphoblastic Leukemia	$36,561
Recruitment	Alexander	Thomas	St. Jude Children's Research Hospital, Inc.		3/22/18	10/31/21	VENAML: A Phase I and Expansion Cohort Study of Venetoclax in Combination with Chemotherapy in Pediatric Patients with Refractory or Relapsed Acute Myeloid Leukemia	$19,093
Recruitment	Amelio	Antonio	Scripps Research Institute	5-27219	8/1/17	7/31/19	Development and Validation of a Genetically Engineered Model of Neurofibromatosis Type 2 to Facilitate Discovery of Neurotherapeutics	$21,204
Recruitment	Amelio	Antonio	NIH National Institute of Dental and Craniofacial Research	1-F31-DE027282-02	3/1/18	2/29/20	FELLOW:A MUSICANT Role of CRTC1/MAML2-Mediated Interactions with CREB and MYC in Defining the Cellular Heterogeneity of Salivary Tumors	$34,616
Theme Investment	Anton	Eva	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS090029-01-04	9/28/14	8/31/19	Mechanisms underlying Joubert syndrome related brain malformations	$488,754
Theme Investment	Anton	Eva	NIH National Institute of Mental Health	5-R01-MH060929-17-20	12/1/99	5/31/20	Radial Glial Development and Differentiation	$380,000
Theme Investment	Anton	Eva	NIH National Institute of Child Health and Human Development	1-R01-HD098657-01	5/8/19	1/31/24	Role of Radial Glial Tiling in the Formation and Malformation of the Cerebral Cortex	$507,066
Recruitment	Armistead	Paul	NIH National Cancer Institute	5-R01-CA201225-01-04	2/1/16	1/31/21	Leukemia Specific Splice Isoforms as Neo-Antigens for T-Cell Immunotherapy	$456,823
Innovation Award	Armistead	Paul	Cell Microsystems, Inc.		7/3/17	6/30/19	STTR: CellRaft Array for Screening and Isolation of Highly Effective Cytotoxic T Cells	$240,863
Recruitment	Arthur	Janelle	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-K01-DK103952-01-05	9/17/14	8/31/19	Intestinal inflammation and genotoxicity of the colonic-adherent microbiota	$151,681
Recruitment	Arthur	Janelle	Spirovation, Inc.	19-1666	9/11/18	3/22/19	Evaluation of crPhage Rescue Treatments on De-Colonization of AIEC	$70,454
Recruitment	Aube	Jeffrey	Cornell University Medical Campus	183629	7/1/15	6/30/19	TRI-INSTITUTIONAL TB RESEARCH UNIT: PERSISTENCE AND LATENCY 1U19AI111143 - Chemistry Core	$613,104
Recruitment	Aube	Jeff	University of Kansas Center for Research, Inc.	FY2016-020-M1	7/8/15	5/31/20	Molecular Cancer Therapy Targeting HuR-ARE Interaction	$80,817
Recruitment	Aube	Jeff	University of Kansas Center for Research, Inc.	FY2016-006	7/1/15	3/31/20	HTS to identify small molecules to disrupt abnormal huntingtin interactions in hd	$69,920
Recruitment	Aube	Jeff	Scripps Research Institute	5-27127	2/1/17	1/31/21	Novel Probes of the Kappa Opioid Receptor: Chemistry, Pharmacology, and Biology	$199,093
Recruitment	Aube	Jeff	Scripps Research Institute	5-27127	5/1/16	1/31/21	Novel Probes of the Kappa Opioid Receptor: Chemistry, Pharmacology, and Biology	$146,516
Recruitment	Aubé	Jeff	NIH National Cancer Institute	1-F31-CA239322-01	2/19/19	2/18/21	Chimeric Inhibitors of Androgen Biosynthesis and Signaling	$36,340
Retention	Bae-jump	Victoria	American Cancer Society	RSG-15-138-01-CCE	1/1/16	12/31/19	Obesity, Cation-Selective Transporters and Metformin in Endometrial Cancer	$198,000
Retention	Bae-Jump	Victoria	V Foundation for Cancer Research	T2017-015	11/1/17	11/1/20	Metabolic and Molecular Biomarkers of Metformin Response in Obesity-driven Endometrial Cancer	$200,000
Retention	Bae-Jump	Victoria	NIH National Cancer Institute	5-R21-CA220269-01-02	9/25/17	8/31/19	Inter-relationship between microbiota diversity, obesity and race in Endometrial Cancer	$169,106
Retention	Bae-Jump	Victoria	NIH National Cancer Institute	1-R01-CA226969-01	3/14/18	2/28/23	Obesity-driven Metabolic and Molecular Biomarkers of Metformin Response in Endometrial Cancer	$355,706
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	$131,143
Theme Investment (CC)	Baric	Ralph	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI110700-01-05	4/20/15	3/31/20	Mechanisms of MERS-CoV Entry, Cross-species Transmission and Pathogenesis	$721,207
Theme Investment (CC)	Baric	Ralph	University of Alabama at Birmingham	000502793-005	3/1/15	2/28/19	Antiviral Drug Discovery and Development Center	$462,644
Investment (CC)	Baric	Ralph	Columbia University	5(GG008377-39)	3/1/16	2/29/20	Diagnostic and Prognostic Biomarkers for Viral Severe Lung Disease	$889,034
Theme Investment (CC)	Baric	Ralph	University of Minnesota	N005402801	6/7/16	5/31/19	Receptor recognition and cell entry of coronaviruses	$120,384
Theme Investment (CC)	Baric	Ralph	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI132178-01-02	8/9/17	7/31/22	Broad-spectrum antiviral GS-5734 to treat MERS-CoV and related emerging CoV	$1,166,670
Theme Investment (CC)	Baric	Ralph	Vanderbilt University Medical Center	VUMC 41666	3/1/18	2/29/20	Determinants of Coronavirus Fidelity in Replication and Pathogenesis	$293,121
Theme Investment (CC)	Baric	Ralph	University of Texas at Austin	UTA18-000140	2/1/18	1/31/20	Molecular Analysis of Serum Antibody Constituents in Zika Virus Infection	$116,625
Theme Investment (CC)	Baric	Ralph	NIH National Institute of Allergy and Infectious Diseases	HHSN27220180462P	3/5/18	3/4/19	Immunological Data for MERS-CoV vaccine and immunotherapeutic candidates	$146,246
Theme Investment (CC)	Baric	Ralph	University of Alabama at Birmingham	000520254-002	3/7/19	2/29/20	Antiviral Drug Discovery and Development Center	$581,913
Investment (CC)	Baric	Ralph	NIH National Institute of Allergy and Infectious Diseases	1-U01-AI149644-01	4/19/19	3/31/24	Respiratory Virus Vaccine and Adjuvant Exploration	$1,000,000
Theme Investment (CC)	Baric	Ralph	Pagoda Genomics	19-3032	6/3/19	6/2/21	Antibody Sample Testing	$7,672
Recruitment	Baron	John	University of Michigan (UMICH)	3004034932	4/6/16	3/31/19	Great Lakes New England Clinical Validation Center	$36,245
Recruitment	Baron	John	NIH National Cancer Institute	1-R01-CA226086-01A1	4/9/19	3/31/24	The immune contexture of colorectal adenomas and serrated polyps	$676,555
Recruitment	Basch	Ethan	Mayo Clinic	UNC-194321-04 / 66188158	8/1/14	7/31/19	Alliance NCORP Research Base	$70,282
Retention	Basch	Ethan	Patient-Centered Outcomes Research Institute	ME-1507-32079	8/1/16	12/31/20	Patient-Reported Outcomes-based Performance Measures (PRO-PMs)	$94,358
Retention	Basch	Ethan	Alliance for Clinical Trials in Oncology Foundation	IHS-1511-33392	11/1/16	1/31/22	Electronic Patient Reporting Of Symptoms During Outpatient Cancer Treatment: A U.S. National Randomized Controlled Trial	$448,781
Retention	Basch	Ethan	University of Michigan (UMICH)	3004700015	8/17/17	3/31/22	Advanced Development and Dissemination of EMERSE for Cancer Phenotyping from Medical Records	$92,720
Retention	Basch	Ethan	NIH National Cancer Institute	2-T32-CA116339-11	7/1/05	7/31/23	Cancer Care Quality Training Program	$344,174
Retention	Basch	Ethan	NIH National Cancer Institute	1-U01-CA233046-01	9/30/18	8/31/23	Analyzing and Interpreting PRO-CTCAE with CTCAE and Other Clinical Data to Characterize Drug Tolerability	$595,910
Retention	Basch	Ethan	Boston Medical Center	11645658/7147	9/1/18	3/31/19	Establishing a mechanism for patient powered cancer research at safety-net hospital	$42,833
Retention	Bateman	Ted	Wake Forest University School of Medicine	WFUHS 111777	6/25/17	3/31/19	Exercise Countermeasures for Knee and Hip Joint Degradation during Spaceflight	$48,800
Recruitment	Batrakova	Elena	Elsa U Pardee Foundation		10/1/17	3/31/19	Targeting the Triple Negative Breast Cancer with Paclitaxel-loaded Biomimetic Nanovesicles, Exosomes	$150,254
Recruitment	Batrakova	Elena	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS102412-01A1-02	3/1/18	11/30/22	Cell-based Platform for Gene Delivery to the Brain	$338,579

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Batrakova	Elena	University of Western Ontario		7/1/18	6/30/20	Evaluating the neuroprotective potential of CAT-SKL in a pre-clinical model of AD	$26,533
Innovation Award	Bautch	Victoria	NIH National Heart, Lung, and Blood Institute	5-R35-HL139950-02	1/1/18	12/31/24	Molecular and cellular control of angiogenesis	$922,295
Innovation Award	Bautch	Victoria	Johns Hopkins University	2004080385	8/15/18	7/31/19	New Roles for VEGFR1 in Angiogenesis	$206,249
Innovation Award	Bear	James	NIH National Institute of General Medical Sciences	3-R01-GM111557-04S1	9/1/14	8/31/19	The role of the Arp2/3 complex in cellular actin dynamics	$73,100
Retention	Bear	James	North Carolina State University	2014-0702-02	7/1/18	5/31/22	Multiscale modeling of wound healing	$362,101
Retention	Bear	James	Oregon Health and Science University	1012389_UNCCH	6/1/18	3/31/23	Molecular Mechanisms of Cell Migration	$11,869
Retention	Bear	James	NIH National Institute of General Medical Sciences	1-R35-GM130312-01	2/1/19	1/31/24	Systematic analysis of the actin cytoskeleton and directed cell migration	$581,059
Retention	Bear	James	NIH National Institute of General Medical Sciences	1-F32-GM131578-01	4/1/19	3/31/21	FELLOW: M.BUTLER Spatiotemporal regulation of branched actin in cells	$61,226
Recruitment	Beaven	Anne	Genentech, Inc.		7/18/18	8/1/28	A Phase III, Multicenter, Randomized,Double-Blind, Placebo-Controlled Trial Comparing the Efficacy and Safety of Polatuzumab Vedotin in Combination with Rituximab and CHP (R-CHP) Versus Rituximab and CHOP (R-CHOP) in Previously Untreated Patients with Diffuse Large B-Cell Lymphoma	$32,927
Recruitment	Bennett	Antonia	Alliance for Clinical Trials in Oncology Foundation	PCS-1505-30497	7/1/16	12/1/21	Comparison of Operative to Medical Endocrine Therapy (COMET) for Low-Risk DCIS	$171,402
Recruitment	Bennett	Antonia	Duke University	A030254	9/30/17	9/29/19	Admin Core - Enhancing Clinical Meaningfulness And Usefulness Of PROMIS Pediatric Measures Via Validation In Children And Adolescents With Rheumatic Disease, Cancer, Or Inflammatory Bowel Disease	$18,357
Recruitment	Bennett	Antonia	Duke University	A030250	9/30/17	9/29/19	BIOS Core - Enhancing Clinical Meaningfulness And Usefulness Of PROMIS Pediatric Measures Via Validation In Children And Adolescents With Rheumatic Disease, Cancer, Or Inflammatory Bowel Disease	$86,069
Recruitment	Bennett	Antonia	Duke University	2037159	4/1/18	3/31/19	Creating and Validating Child Adverse Event Reporting in Oncology Trials	$12,373
Recruitment	Bennett	Antonia	Boston University Board of Trustees	4500003048	7/1/18	12/31/19	Access to and Value of Treatment Innovation Study	$245,081
Recruitment	Bennett	Antonia	Duke University	2037090	9/30/17	9/29/19	RP1 - Enhancing Clinical Meaningfulness And Usefulness Of PROMIS Pediatric Measures Via Validation In Children And Adolescents With Rheumatic Disease, Cancer, Or Inflammatory Bowel Disease	$92,302
Recruitment	Bennett	Antonia	Duke University	A030251	9/30/17	9/29/19	RP2 - Enhancing Clinical Meaningfulness And Usefulness Of PROMIS Pediatric Measures Via Validation In Children And Adolescents With Rheumatic Disease, Cancer, Or Inflammatory Bowel Disease	$55,176
Recruitment/Theme Investment	Berg	Jonathan	NIH National Institute of Child Health and Human Development (NICHD)	3-U19-HD077632-05S2	9/5/13	8/31/19	NC NEXUS, North Carolina Newborn Exome Sequencing for Universal Screening	$350,000
Recruitment/Theme Investment	Berg	Jonathan	NIH National Human Genome Research Institute	5-U01-HG006487-07	12/5/11	5/31/21	North Carolina Clinical Genomic Evaluation by Next-gen Exome Sequencing 2	$3,271,101
Recruitment/Theme Investment	Berg	Jonathan	NIH National Human Genome Research Institute	5-U41-HG009650-02	9/12/17	7/31/21	The Clinical Genome Resource - Expert Curation and EHR Integration	$3,266,855
Recruitment/Theme Investment	Berg	Jonathan	NIH National Human Genome Research Institute	3-U41-HG009650-02S1	9/12/17	7/31/21	The Clinical Genome Resource - Expert Curation and EHR Integration - Admin Supplement	$458,276
Recruitment	Bowers	Albert	Arnold and Mabel Beckman Foundation		9/1/14	8/31/19	Synthetic Biology Approach to Scaffolding Pathways for Small Molecule Biosynthesis	$750,000
Recruitment	Bowers	Albert	NIH National Institute of General Medical Sciences	5-R35-GM125005-01-02	9/5/17	8/31/22	Chemoenzymatic Synthesis, Mode of Action and Evolution of Natural Product-based Macrocycles	$383,398
Recruitment	Branca	Rosa	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK108231-01-04	9/25/15	8/31/20	Sensitive and Specific Detection of BAT Tissue and Activity by Magnetic Resonance with Hyperpolarized Xe-129	$333,192
Innovation Award	Brewer	Noel	Centers for Disease Control and Prevention	5-U01-IP001073-02	8/1/17	7/31/20	Impact of AFIX and Physician-to-Physician Engagement on HPV Vaccination in Primary Care: An RCT	$499,751
Recruitment	Brown	Nicholas	NIH National Institute of General Medical Sciences	1-R35-GM128855-01	8/1/18	7/31/23	Spindle Assembly Checkpoint Silencing	$388,750
Recruitment	Brudno	Yevgeny	North Carolina State University	572654	3/15/19	12/13/19	Biomaterial-Assisted In Situ Generation of CAR-T Cells	$7,500
Investment (GeriOnc)	Busby-Whitehead	Jan	NIH National Institute on Aging	5-T35-AG038047-10	5/1/10	5/31/20	UNC-CH Summer Research Training in Aging for Medical Students	$76,181
Recruitment	Calabrese	Mauro	NIH National Institute of General Medical Sciences	5-R01-GM121806-01-03	1/23/17	12/31/21	Mechanisms of gene silencing induced by long noncoding RNAs	$316,141
Recruitment	Calabrese	Mauro	NIH National Institute of General Medical Sciences	3-R01-GM121806-03S1	1/23/17	12/31/21	Mechanisms of gene silencing induced by long noncoding RNAs	$73,918
Retention	Campbell	Sharon	NIH National Institute of General Medical Sciences	3-R01-GM115597-03S1	4/1/16	3/31/20	Mechanisms of vinculin activation and force transmission	$56,301
Retention	Campbell	Sharon	NIH National Institute of General Medical Sciences	5-R01-GM115597-01-04	4/1/16	3/31/20	Mechanisms of vinculin activation and force transmission	$380,388
Retention	Campbell	Sharon	NIH National Heart, Lung, and Blood Institute	5-F31-HL131429-03	4/1/16	3/31/19	FELLOW:HYUNNA LEE Role of metavinculin in actin reorganization and force transmission	$33,055
Innovation Award	Campbell	Sharon	NIH National Institute of General Medical Sciences	5-R01-GM114130-01-03	9/1/16	8/31/20	Structure and function of novel G protein conformations	$304,002
Retention	Campbell	Sharon	University of Louisville Research Foundation, Inc.	ULRF 15-0024A5-01	6/1/18	11/30/18	Generation of best-in-class Ras inhibitors	$50,000
Investment (Protocol)	Carey	Lisa	GlaxoSmithKline (GSK), Inc.		11/15/11	12/31/18	mec116180 Defining the Triple Negative Breast Cancer Kinome Response to GSK1120212	$11,541
Investment (Protocol)	Carey	Lisa	Seattle Genetics, Inc		8/8/16	8/7/27	Ph 2 Random, Dbl-Blind, Control Stdy of ONT-380 vs. Placebo in Combination with Capecitabine and Trastuzumab in Patients with Pretreated Unresectable Locally Advanced or Metastatic HER2+ Breast Carcinoma	$13,922
Investment (Protocol)	Carey	Lisa	Clinipace Worldwide		8/9/16	12/31/19	A Phase 1/2 Open-Label Study to Evaluate the Safety, Tolerability, Pharmacokinetics, Pharmacodynamics and Efficacy of VT-464 in Patients with Advanced Breast Cancer	$28,759
Investment (Protocol)	Carey	Lisa	Breast Cancer Research Foundation	BCRF-17-023	10/1/17	9/30/18	The Assessment of Genomic Instability in Breast Cancer Patients	$250,000
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	$400,000
Investment (Protocol)	Carey	Lisa	Immunomedics, Inc.		8/14/18	8/13/28	An International, Multi-Center, Open-Label, Randomized, Phase III Trial of Sacituzumab Govitecan versus Treatment of Physician Choice in Patients with Metastatic Triple-Negative Breast Cancer Who Received at Least Two Prior Treatments	$33,198
Investment (Protocol)	Carey	Lisa	Breast Cancer Research Foundation	BCRF-18-023	10/1/18	9/30/19	The Assessment of Genomic Instability in Breast Cancer Patients	$250,000

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Investment (Protocol)	Carey	Lisa	NIH National Cancer Institute	1-R01-CA229409-01A1	6/1/19	5/31/24	Optimizing HER2-targeting using RNA- and DNA-based predictive algorithms	$610,656
Investment (Protocol)	Carey	Lisa	NIH National Cancer Institute	1-UG1-CA233373-01	5/1/19	4/30/25	UNC Lead Academic Participating Site	$505,201
Innovation Award	Caron	Kathleen	The Lalor Foundation	18-2214	6/1/18	5/31/19	Defining the role of ACKR3 in Implantation Success.	$50,000
Recruitment	Chen	Ronald	Patient-Centered Outcomes Research Institute	CER-1310-06453	1/1/15	8/31/19	North Carolina Prostate Cancer Comparative Effectiveness & Survivorship Study (NCProCESS): A Stakeholder-Driven, Population-Based Prospective Cohort Study	$178,663
Recruitment	Chen	Ronald	Livestrong Foundation		3/1/15	12/31/19	True NTH USA Projects of Self-Management Portal Intervention and The Care Plan & Navigation Intervention	$81,303
Recruitment	Chen	Ronald	Alliance for Clinical Trials in Oncology	CER-1503-29220	2/1/16	6/30/19	Optimizing the Effectiveness of Routine Post-Treatment Surveillance in Prostate Cancer Survivors	$384,161
Recruitment	Chen	Ronald	NIH National Institute on Minority Health and Health Disparities (NIMHD)	5-R21-MD012465-01-02	9/26/17	6/30/19	Disparities in care of prostate cancer survivors, a population-based cohort study	$203,136
Recruitment	Chen	Ronald	Capio Biosciences, Inc.		3/1/18	11/30/19	Investigation of Circulating Tumor Cells from Cancer Patients Undergoing Radiation Therapy	$233,708
Recruitment	Chen	Ronald	University of Florida	UFDSP00012215	4/1/18	3/31/24	Prospective Comparative Study of Outcomes with Proton and Photon Radiation in Black and White Men with Prostate Cancer	$257,702
Recruitment	Chen	Xian	Cullgen, Inc.		3/10/19	3/9/21	Development of Protein-Protein Interaction Assays between Viral Protein and E3 Ligases	$125,000
Recruitment	Coombs	Catherine	Gilead Sciences, Inc.		5/7/14	5/6/28	A Phase 2, Open-Label Study Evaluating the Efficacy, Safety, Tolerability, and Pharmacodynamics of GS-9973 in Subjects with Relapsed or Refractory Hematologic Malignancies	$15,962
Recruitment	Coombs	Catherine	Incyte Corporation		1/31/17	12/31/19	INCB 57643-101 A Phase 1/2, Open-Label, Dose-Escalation/Dose-Expansion, Safety and Tolerability Study of INCB057643 in Subjects with Advanced Malignancies	$39,062
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	$79,926
Investment (Training)	Cox	Adrienne	NIH National Cancer Institute	5-T32-CA071341-22	9/30/96	8/31/22	Cancer Cell Biology Training Program	$147,378
Investment (HTSF)	Crowley	James	NIH National Institute of Mental Health	5-R01-MH105500-01-05	1/20/15	11/30/19	Genetic & Environmental Predictors of Tourette Syndrome & OCD in Denmark	$604,199
Investment (HTSF)	Crowley	James	NIH National Institute of Mental Health	5-R01-MH110427-01-03	8/1/16	4/30/22	OCD: Novel Comparative Genomic Approaches to Identify Disease and Treatment Mechanisms	$556,755
Investment (HTSF)	Crowley	James	NIH National Institute of Mental Health	5-R21-MH112963-01-02	8/15/17	7/31/20	Investigating the molecular mechanisms and consequences of assortative mating in major psychiatric disorders: completing a missing piece of the psychiatric genetics puzzle	$144,247
Retention	Damania	Blossom	NIH National Cancer Institute	5-P01-CA019014-37-39	5/1/97	6/30/21	Herpesviral, Oncogenesis, Latency and Reactivation	$1,812,080
Retention	Damania	Blossom	NIH National Cancer Institute	3-P01-CA019014-39S1	5/1/97	6/30/21	Herpesviral, Oncogenesis, Latency and Reactivation	$63,936
Retention	Damania	Blossom	NIH National Cancer Institute	1-K99-CA230178-01	7/16/18	6/30/20	FELLOW: Z.MA Role of DNA Sensing Pathways in KSHV Associated Cancers	$113,624
Retention	Damania	Blossom	American Cancer Society	PF-18-046-01-MPC	7/1/18	2/1/19	FELLOW: S. HOPCRAFT Viral Co-Infection and Oncogenesis	$163,500
Retention	Damania	Blossom	NIH National Cancer Institute	2-R01-CA096500-16	7/15/02	7/31/23	Role of KSHV Viral Proteins in Signaling and Pathogenesis	$314,888
Retention	Damania	Blossom	NIH National Institute of Dental and Craniofacial Research	1-R01-DE028211-01	9/11/18	6/30/23	Modulation of Innate Immunity by KSHV	$441,375
Investment (HTS)	Dangl	Jeff	Two Blades Foundation	TB15 03	6/1/15	6/30/20	Multi-scale Genomic Interrogation of the Angiosperm Immune Receptor Repertoire	$21,435
Investment (HTS)	Dangl	Jeff	University of Nebraska at Lincoln	25-1215-0123-010	8/15/15	8/14/19	Systems Analysis of the Physiological and Molecular Mechanisms of Sorghum Nutrient Use Efficiency, Water Use Efficiency and Interactions with the Soil Microbiome	$260,297
Investment (HTS)	Dangl	Jeff	NIH National Institute of General Medical Sciences	5-R01-GM107444-05-06	9/1/13	8/31/21	The intersection of development and the innate immune system function in arabidopsis	$265,905
Innovation Award	Davis	Ian	Vanderbilt University Medical Center	VUMC58792	9/30/15	8/31/19	Chromatin Maintenance in Cancer Progression	$298,669
Retention	Dayton	Paul	North Carolina State University	570253	4/13/15	2/29/20	Ultrasound Molecular Imaging to Assess Therapeutic Response	$81,024
Retention	Dayton	Paul	SonoVol, Inc.	PA-16-302	3/3/17	2/29/20	SBIR: Development of a mobile and automated platform for multiplexed multi-modality imaging	$76,580
Retention	Dayton	Paul	NIH National Cancer Institute	5-F31-CA220970-02	9/1/17	1/4/19	FELLOW:SAMANTHA FIX Image-guided, sonoporation-enhanced immunotherapy for pancreatic cancer treatment	$35,485
Retention	Dayton	Paul	NIH National Cancer Institute	5-R01-CA220681-01-02	8/10/17	7/31/22	High Frame Rate 3-D Super Resolution Ultrasound Microvascular Imaging	$553,288
Retention	Dayton	Paul	NIH National Institute of Biomedical Imaging and Bioengineering	5-R01-EB025149-01-02	9/30/17	7/31/20	An academic industrial partnership for the development of high frame-rate transcranial super resolution ultrasound imaging	$400,375
Retention	Dayton	Paul	NIH National Institute of Biomedical Imaging and Bioengineering	3-R01-EB025149-02S1	9/30/17	7/31/20	An academic industrial partnership for the development of high frame-rate transcranial super resolution ultrasound imaging	$125,530
Retention	Dayton	Paul	NIH National Cancer Institute	1-R01-CA232148-01	6/1/18	5/31/23	Treating Tumoral Hypoxia via Ultrasound-Guided Oxygen Release for Improving Radiation Therapy	$676,220
Retention	Dayton	Paul	Triangle Biotechnology, Inc.		7/5/18	6/30/20	Towards commercialization of cavitation-enhancing nanodroplets for DNA sample fragmentation in NGS applications	$64,370
Retention	Dayton	Paul	North Carolina State University	572402	7/1/18	3/31/22	Acoustic Angiography Using Dual-Frequency and Ultrawideband CMUT Arrays	$105,248
Retention	Dayton	Paul	North Carolina State University	572469	8/15/18	6/30/22	Forward viewing catheter-delivered microbubble enhanced sonothrombolysis (FV-CAMUS)	$144,028
Retention	Dees	Elizabeth	Novartis Pharmaceuticals Corporation		7/1/11	12/31/18	LCCC 1024 A four part, Phase I Dose-Escalation Study of the Cominations of Concurrent BKM120 and Capecitabine, or Concurrent BYL719 and Capecitabine, or Concurrent BKM120 and Capecitabine and Trastuzumab, or Concurrent BKM120 and Capecitabine and Lapatinib in Patients with Metastatic Breast Cancer	$79,973
Retention	Dees	Elizabeth	Merck Sharp and Dohme Corp.		7/24/13	7/31/22	A Phase Ib Multi-Cohort Study of MK-3475 in Subjects with Advanced Solid Tumors	$3,470
Retention	Dees	Elizabeth	Duke University	2036079	4/1/16	2/29/20	Duke-UNC-Wash U Partnership for Early Phase Clinical Trials in Cancer	$415,640
Retention	Dees	Elizabeth	Duke University	2036088	4/1/16	2/29/20	Duke-UNC-Wash U Partnership for Early Phase Clinical Trials in Cancer	$155,500
Retention	Dees	Claire	TESARO, Inc.		2/15/17	4/30/21	Phase 1/2 Trial of Niraparib in Combination with Pembrolizumab in Patients with Advanced or Metastatic Triple-Negative Breast Cancer and in Patients with Recurrent Ovarian Cancer	$6,180
Retention	Dees	Claire	NSABP Foundation Inc.		10/13/14	5/1/23	Phase III study evaluating palbociclib (PD-0332991), a cyclin-dependent kinase (CDK) 4/6 inhibitor in patients with hormone-receptor-positive, HER2-normal primary breast cancer with high relapse risk after neoadjuvant chemotherapy	$13,290

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
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	$129,362
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	$91,438
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 or metastatic hormone receptor-positive, HER2-, breast cancer, followed by expansion cohorts.	$34,978
Investment (Proteomics)	Der	Channing	NIH National Cancer Institute	5-R01-CA175747-01-05	2/5/14	1/31/19	Mechanisms of PAK1 activation, signaling and tumor resistance	$24,320
Investment (Proteomics)	Der	Channing	NIH National Cancer Institute	5-U01-CA199235-01-04	9/1/15	6/30/20	Identification of synthetic lethal interactors in pancreatic cancer	$316,801
Innovation Award	Der	Channing	NIH National Cancer Institute	5-P01-CA203657-01-03	6/1/16	5/31/21	Defining RAS isoform- and mutation-specific roles in oncogenesis	$1,539,964
Investment (Proteomics)	Der	Channing	NIH National Cancer Institute	5-T32-CA009156-43	7/1/80	7/31/21	Integrated Training in Cancer Model Systems	$793,807
Investment (Proteomics)	Der	Channing	Washington University in St. Louis School of Medicine	WU-19-113 / PO2934311G	7/28/16	6/30/21	Combination Inhibition of ERK for Pancreatic Cancer Treatment	$90,764
Investment (Proteomics)	Der	Channing	Dana-Farber Cancer Institute	1203001	6/8/18	3/31/23	The Role of RHOA in Diffuse Gastric Cancer	$188,871
Investment (Proteomics)	Der	Channing	NIH National Cancer Institute	1-R35-CA232113-01	9/1/18	8/31/25	Targeting undruggable RAS for cancer treatment	$909,182
Investment (Proteomics)	Der	Channing	The Slomo and Cindy Silvian Foundation, Inc.		1/1/19	12/31/19	Revolutionizing pancreatic cancer treatment by targeting	$30,000
Investment (Proteomics)	Der	Channing	NIH National Cancer Institute	1-F32-CA232529-01	1/2/19	1/1/22	FELLOW: C. STAINECKER Defining the contributions of wild-type RAS in RAS-mutant lung cancer	$58,654
Training	Deshmukh	Mohanish	NIH National Institute of General Medical Sciences	5-T32-GM008719-20	7/1/99	6/30/19	Medical Scientist Training Program	$902,652
Retention	Dittmer	Dirk	University of California at Los Angeles	1568 G TA857	9/1/15	8/31/19	AIDS Malignancy Laboratory Consortium (AMC)	$236,577
Retention	Dittmer	Dirk	NIH National Cancer Institute	5-R01-CA163217-06-08	9/1/11	7/31/21	Targeted Therapies for HIV-Associated Kaposi Sarcoma and Lymphoma	$342,759
Retention	Dittmer	Dirk	Tulane University	TUL-HSC-555238-17/18	4/1/17	12/31/19	Exosome Origin in HIV Pathogenesis	$53,449
Retention	Dittmer	Dirk	Baylor College of Medicine Childrens Foundation-Malawi	7000000573	8/1/17	7/31/19	(PQ5) Exploring the Biological Distinctions between HIV-Related and Endemic Pediatric Kaposi Sarcoma in a KSHV-Endemic Region of Africa	$51,800
Retention	Dittmer	Dirk	NIH National Cancer Institute	1-R01-CA228172-01	6/1/18	5/31/23	Impact of HIV on the tumor microenvironment	$466,495
Retention	Dittmer	Dirk	Baylor University College of Medicine	7000000787	8/1/18	7/31/19	(PQ5) Exploring the Biological Distinctions between HIV-Related and Endemic Pediatric Kaposi Sarcoma in a KSHV-Endemic Region of Africa	$12,950
Retention	Dittmer	Dirk	NIH National Cancer Institute	1-R01-CA239583-01	5/1/19	4/30/24	Mechanisms of KSHV transmission	$527,310
Retention	Dittmer	Dirk	NIH National Institute of Dental and Craniofacial Research	2-R01-DE018304-11	5/15/07	4/30/24	ART Modulation of Viral Pathogenesis	$369,313
Recruitment	Dittus	Christopher	QuintilesIMS		11/17/14	12/31/19	A Phase Ib Study of the Safety and Pharmacology of MPDL3280A Administered with Obinutuzumab in Patients with Relapsed/Refractory Follicular Lymphoma and Diffuse Large B-Cell Lymphoma	$22,796
Recruitment	Dittus	Christopher	NIH National InstitUniversity of California at Los Angeles	1568 G UA023	9/1/16	8/31/19	Clinical trials unit (CTU) for the AIDS Malignancy Clinical Trials Consortium (AMC)	$77,750
Recruitment	Dittus	Christopher	Millennium Pharmaceuticals, Inc.	218558	8/28/17	8/6/22	A Phase 1b Dose Escalation Study to Determine the Recommended Phase 2 Dose of TAK-659 in Combination With Bendamustine (± Rituximan), Gemcitabine, Lenalidomide, or Ibritinib for the Treatment of Patients With Advanced Non-Hodgkin's Lymphoma After At Least 1 Prior Line of Therapy	$34,076
Recruitment	Doerschuk	Claire	NIH National Heart, Lung, and Blood Institute	5-T32-HL007106-42	7/1/75	4/30/22	Multidisciplinary research training in pulmonary diseases	$13,479
Recruitment	Doerschuk	Claire	NIH National Heart, Lung, and Blood Institute	1-R01-HL145396-01	1/1/19	12/31/22	Trafficking and function of macrophage subpopulations within the lung microenvironment during pneumonia	$585,761
Recruitment	Dotti	Gianpietro	NIH National Cancer Institute	5-R01-CA193140-01-04	2/1/16	1/31/21	Targeting the Ig-Light Chains with CAR-T Cells in Lymphoid Tumors	$554,685
Recruitment	Dotti	Gianpietro	DOD DA Army Medical Research Acquisition Activity	W81XWH-16-1-0501	9/1/16	8/31/20	Strategies to Counteract Resistance Mechanisms in CAR + T Cell-based Immunotherapy for Triple Negative Breast Cancer	$202,481
Recruitment	Dotti	Gianpietro	Baylor College of Medicine		4/1/17	3/31/20	BCM-UNC SIRA Project 5: Development of Alpha-Beta TCR survivin-NKTs	$712,310
Recruitment	Dotti	Gianpietro	Baylor College of Medicine		4/1/17	3/31/20	BCM-UNC SIRA Project 4: Development of CSPG4.CAR-NKTs Using the scFv 763.74 Specific for CSPG4	$627,395
Recruitment	Dotti	Gianpietro	Bellicum Pharmaceuticals, Inc.		6/2/17	6/2/20	Bellicum CAR.CD19 Manufacturing Support for LCCC 1541	$286,035
Recruitment	Dotti	Gianpietro	Alex's Lemonade Stand Foundation		2/1/18	1/31/20	Targeting Chondroitin Sulphate Proteoglycan 4 (CSPG4) in Glioblastoma	$125,000
Recruitment	Dotti	Gianpietro	Multiple Myeloma Research Foundation		3/1/18	2/28/19	New Generation CD138 Chimeric Antigen Receptor Targeting Multiple Myeloma	$75,000
Recruitment	Dotti	Gianpietro	Marsha Rivkin Center for Ovarian Cancer Research		4/1/18	3/31/19	Targeting B7-H3 in Ovarian Cancer	$75,000
Recruitment	Dotti	Gianpietro	Conquer Cancer Foundation		7/1/18	12/31/19	FELLOWSHIP: Preclinical Evaluation of B7H3-Specific Chimeric Antigen Receptor T-cells for the Treatment of Acute Myeloid Leukemia	$50,000
Recruitment	Dotti	Gianpietro	Mary Kay Foundation	24-18	7/1/18	6/30/20	Natural Killer T Cells (NKTS) Specific for Triple Negative Breast Cancer	$50,000
Recruitment	Dotti	Gianpietro	Lymphoma Research Foundation of America		3/1/19	2/28/22	A new and augmented form of CAR_T cells targeting the kappa light chain on B cell lymphomas for clinical evaluation	$75,000
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	$100,750
Recruitment	Dotti	Gianpietro	NIH National Cancer Institute	1-R21-CA229938-01A1	4/1/19	3/31/21	Targeting and Delivering CAR-Ts in Glioblastoma	$202,928
Recruitment	Dotti	Gianpietro	Baylor University College of Medicine	7000000853	3/1/19	2/29/20	Tailoring CAR-Based Immunotherapy Strategies to T Cell Lymphoma	$700,000
Recruitment	Dotti	Gianpietro	Massachusetts General Hospital	232880	7/13/18	6/30/20	B7-H3-Specific CAR T Cells for Intrahepatic Cholangiocarcinoma: Safety and Therapeutic Efficacy	$38,875
Recruitment	Dowen	Jill	NIH National Institute of General Medical Sciences	5-R35-GM124764-01-02	9/1/17	7/31/22	Regulation of chromosome structure and gene expression by architectural proteins	$386,074
Recruitment	Dowen	Jill	NIH National Institute of General Medical Sciences	3-R35-GM124764-02S1	9/1/17	7/31/22	Regulation of chromosome structure and gene expression by architectural proteins	$47,400
Investment (CBCS)	Earp	Shelton	Susan G Komen for the Cure	OGUNC1202	5/1/12	4/30/21	Carolina Breast Cancer Study: PHASE III	$241,667
Theme Investment	Earp	Shelton	NIH National Cancer Institute	5-P30-CA016086-40-43	6/1/97	11/30/20	Cancer Center Core Support Grant	$7,252,540

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Investment (CBCS)	Earp	Shelton	NIH National Cancer Institute	5-U54-CA156733-09	9/28/10	8/31/20	NCCU-LCCC Partnership in Cancer Research (2 of 2)	$1,003,901
Retention	Elston	Timothy	NIH National Institute of General Medical Sciences	5-R01-GM114136-01-04	5/1/15	4/30/19	Mechanisms of noise regulation in cell fate transitions	$523,852
Retention	Elston	Timothy	NIH National Institute of General Medical Sciences	5-T32-GM067553-14	7/1/05	6/30/20	Predoctoral Training Program in Bioinformatics and Computational Biology	$235,650
Retention	Elston	Timothy	NIH National Institute of General Medical Sciences	1-R35-GM127145-01	7/1/18	6/30/23	Mathematical modeling of cellular signaling systems	$182,117
Recruitment	Elston Lafata	Jennifer	Virginia Commonwealth University	FP00005212_SA001	7/1/17	6/30/21	Unveiling the role of physician implicit bias and communication behaviors in dissatisfaction, mistrust, and non-adherence in Black patients with Type 2 diabetes	$54,284
Recruitment	Elston Lafata	Jennifer	Henry Ford Health System	B45206UNC	4/15/18	3/31/23	Center for Research to Optimize Precision Lung Cancer Screening in Diverse Populations	$20,620
Recruitment	Elston Lafata	Jennifer	Memorial Sloan-Kettering Cancer Center	BD525155	9/25/18	8/31/23	Using a Mixed Methods Approach to Understand Shared Decision-Making in Lung Cancer Screening	$29,677
Recruitment	Lafata	Jennifer	NIH National Cancer Institute	5-R01-CA197205-02-04	8/1/16	7/31/20	e-Assist: A Post-Visit Patient Portal Tool to Promote Colorectal Cancer Screening	$571,799
Recruitment	Emanuele	Michael	NIH National Institute of General Medical Sciences	5-R01-GM120309-01-03	9/1/16	8/31/21	SCF Ubiquitin Ligases in Cell Cycle Control and Chromosome Stability	$301,840
Recruitment	Emanuele	Michael	NIH National Institute of General Medical Sciences	3-R01-GM120309-03S1	9/1/16	8/31/21	SCF Ubiquitin Ligases in Cell Cycle Control and Chromosome Stability	$114,825
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	$198,000
Recruitment	Engel	Stephanie	Duke University	A03-0200	9/15/17	7/31/20	Reproducibility and Robustness of Dimensionality Reduction	$32,893
Recruitment	Engel	Larry	National Institutes of Health	2479801	5/1/19	4/30/20	IPA for Lawrence Engel to the NIEHS	$53,440
Investment (HTSF)	Farrell	Marty	NIH National Institute of Mental Health	5-K01-MH108894-01-03	8/8/16	7/31/20	MARTILIAS FARRELL The Genomics of Highly Treatment Resistant Schizophrenia	$141,831
Recruitment	Franco	Hector	NIH National Cancer Institute	5-R00-CA204628-02-04	2/17/17	1/31/20	Mechanisms of FoxA1 Latent Enhancer Formation in Response to Proinflammatory Signaling in Hormone Dependent Cancers	$248,997
Recruitment	Franco	Hector	DOD DA Army Medical Research Acquisition Activity	W81XWH1910049	3/1/19	2/28/22	Mechanisms of Non-Coding Enhancer RNA Function in the Triple Negative Breast Cancer	$194,375
Recruitment	Frerichs	Leah	Prevent Cancer Foundation	17-0444	1/16/17	7/15/19	A Randomized Trial of a Culturally-Adadpted Colorecial Cancer Screening Decision Aid Designed for American Indians	$50,000
Recruitment	Frerichs	Leah	NIH National Heart, Lung, and Blood Institute	5-K01-HL138159-01-02	8/1/17	7/31/22	Identifying and disentangling social and physical environmental effects on physical activity in diverse adolescent and young adult populations	$159,386
Retention	Fry	Rebecca	Johns Hopkins University	2003583375	3/1/17	11/30/21	Arsenic and immune response to influenza vaccination in pregnant women and newborns	$2,685
Retention	Fry	Rebecca	NIH National Institute of Environmental Health Sciences	5-T32-ES007018-42	7/1/77	6/30/20	Biostatistics for Research in Environmental Health	$1,439,238
Recruitment	Frye	Stephen	NIH National Institute of General Medical Sciences	5-R01-GM100919-05-07	5/1/12	7/31/20	Discovery of Chemical Probes for Chromatin Readers	$416,687
Recruitment	Frye	Stephen	NIH National Institute of General Medical Sciences	3-R01-GM100919-07S1	5/1/12	7/31/20	Discovery of Chemical Probes for Chromatin Readers	$90,000
Recruitment	Frye	Stephen	NIH National Cancer Institute	5-R21-CA216673-01-02	12/18/17	11/30/19	Modulating the DNA methylation program through UHRF1 antagonism	$172,680
Recruitment	Frye	Stephen	NIH National Cancer Institute	5-R01-CA218392-01-02	4/1/18	3/31/21	DISCOVERY OF IN VIVO CHEMICAL PROBES FOR POLYCOMB CBX DOMAINS	$504,942
Retention	Gallagher	Kristalyn	Johns Hopkins University		6/22/16	6/21/21	The Incidence of Adjacent Synchronous Ipsilateral Infiltrating Carcinoma and/or DCIS in Patients Diagnosed with Intraductal Papilloma without Atypia or Flat Epithelial Atypia by Core Needle Biopsy	$21,039
Retention	Gallagher	Kristalyn	Alliance Foundation Trials, LLC		4/17/18	1/31/20	Comparison Of Operative To Monitoring and Endocrine Therapy (COMET) Trial For Low Risk DCIS: A Phase III Prospective Randomized Trial	$14,573
Recruitment	Gershon	Timothy	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS088219-01-05	2/15/15	1/31/20	Glycolytic regulation of cerebellar development and medulloblastoma tumorigenesis	$327,837
Recruitment	Gershon	Timothy	NIH National Institute of Neurological Disorders and Stroke	5-F31-NS100489-02	8/1/17	7/31/19	FELLOW:J OCASIO ADORNO Proliferation of cerebellar neural progenitors and Shh-driven medulloblastoma requires suppression of WNT by GSK-3	$35,124
Recruitment	Gershon	Timothy	NIH National Institute of Neurological Disorders and Stroke	5-F31-NS101883-02	12/1/17	8/31/19	FELLOW:K VELETA Cooperation of BCL-xL and SHH in regulating cell survival during cerebellar neurogenesis and in medulloblastoma	$30,500
Recruitment	Gershon	Timothy	NIH National Institute of Neurological Disorders and Stroke	1-R01-NS102627-01A1	6/1/18	4/30/23	Bcl-xL-regulated apoptosis in cerebellar development and medulloblastoma treatment	$350,758
Recruitment	Gershon	Timothy	NIH National Institute of Neurological Disorders and Stroke	1-R01-NS106227-01A1	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
Recruitment	Gilkey	Melissa	Harvard Pilgrim Health Care	IHS-1602-34331	11/17/17	2/28/20	Comparing adults and children with asthma in high-deductible health plans with and without preventive drug lists	$29,140
Theme Investment (HTS)	Giusti	Paola	NIH National Institute of Mental Health	5-K01-MH109772-01-04	4/1/16	3/31/20	Interpreting GWAS associations in schizophrenia using genome-wide chromatin mapping	$155,168
Innovation Award	Goldstein	Bob	NIH National Institute of General Medical Sciences	5-R01-GM083071-09-11	6/1/08	7/31/20	C. elegans Gastrulation: a Model for Understanding Apical Constriction Mechanisms	$334,215
Investment (HTS)	Gordon-larsen	Penny	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK104371-01-04	9/17/15	6/30/20	Transition to a Western diet and cardiometabolic risk: Biomarkers derived from the microbiome	$612,914
Investment (HTS)	Gordon-Larsen	Penny	NIH National Heart, Lung, and Blood Institute	1-R01-HL143885-01A1	4/1/19	3/31/23	Leveraging multi-omics approaches to examine metabolic challenges of obesity in relation to cardiovascular diseases	$2,210,843
Recruitment	Grilley-Olson	Juneko	Pharmaceutical Product Development (PPD), LLC		5/13/14	12/12/19	NC-6004-0043A: A Phase 1b/2 Dose Escalation and Expansion Trial of NC-6004 (Nanoparticle Cisplatin) plus Gemcitabine in Patients with Advanced Solid Tumors or Non-Small Cell Lung Cancer	$374
Recruitment	Grilley-Olson	Juneko	Genentech, Inc.		2/23/15	3/31/20	My Pathway: An Open-Label Phase IIA Study Evaluating Trastuzumab/Pertuzumab, Erlotinib, Vemurafenib, and Vismodegib in Patients who have Advanced Solid Tumors with Mutations or Gene Expression Abnormalities Predictive of Response to one of these Agents.	$4,234
Recruitment	Grilley-Olson	Juneko	Seattle Genetics, Inc		4/9/15	4/8/21	SGNS40-001 - A phase 1, open-label, dose-escalation study of SEA-CD40 in adult patients with advanced malignancies	$125,123
Recruitment	Grilley-Olson	Juneko	MedImmune, Inc.		9/29/15	3/28/21	A Phase I, First-Time-in-Human Study of MEDI9197, a TLR 7/8 Agonist, Administered Intratumorally in Subjects with a Solid Tumor Cancer	$40,655
Recruitment	Grilley-Olson	Juneko	Medpace, Inc.		11/16/16	10/31/26	A Phase II Basket Study of the Oral TRK Inhibitor LOXO-101 in Subjects with NTRK Fusion-Positive Tumors	$62,900
Recruitment	Grilley-Olson	Juneko	NanoCarrier Co., Ltd.		1/3/17	1/17/20	Phase I/II Clinical Trial of NC-6004 in Combination with 5-FU and Cetuximab as First-line Treatment in Patients with Recurrent or Metastatic Squamous Cell Carcinoma of The Head and Neck	$14,498

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Grilley-Olson	Juneko	NanoCarrier Co., Ltd.		1/15/18	1/30/23	A Phase 1b/2 Dose-Escalation and Expansion Trial of NC-6300 (Nanoparticle Epirubicin) in Patients with Advanced Solid Tumors or Advanced, Metastatic, or Unresectable Soft Tissue Sarcoma	$85,572
Recruitment	Gupta	Gaorav	Burroughs Wellcome Fund	1012285.01	1/1/15	8/31/20	DNA Damage Responses in Breast Cancer Pathogenesis	$140,000
Recruitment	Gupta	Gaorav	NIH National Cancer Institute	5-F32-CA206345-03	6/1/16	5/31/19	FELLOW: K FAGAN-SOLIS Identifying Drivers of Genomic Instability in Triple-Negative Breast Cancer	$65,158
Recruitment	Gupta	Gaorav	Susan G Komen for the Cure	CCR16377075	7/1/16	6/30/19	Identifying Drivers of Genomic Instability in Triple Negative Breast Cancer	$150,000
Recruitment	Gupta	Gaorav	Washington State University	130544-G003764	7/1/17	11/30/19	Mechanisms of Genome Instability Induced by APOBEC Cytidine Deaminases and its Impacts During Cancer Development	$31,988
Recruitment	Gupta	Gaorav	DOD DA Army Medical Research Acquisition Activity	W81XWH-18-1-0047	3/15/18	3/14/21	Elucidating Polymerase Theta Functions and Genetic Determinants of Synthetic Lethality in Breast Cancer	$749,418
Recruitment	Gupta	Gaorav	NIH National Cancer Institute	1-R37-CA227837-01A1	12/1/18	11/30/23	Mre11-Dependent DNA Damage Responses in Breast Cancer Pathogenesis	$409,161
Recruitment	Gupton	Stephanie	NIH National Institute of General Medical Sciences	5-R01-GM108970-01-05	1/1/14	12/31/19	TRIM9 coordinates membrane trafficking and cytoskeletal dynamics	$28,726
Recruitment	Gupton	Stephanie	NIH National Institute of Neurological Disorders and Stroke	5-F31-NS096823-03	3/15/16	3/14/19	FELLOW:N BOYER TRIM67 regulates growth cone filopodia during netrin-dependent axon guidance	$39,213
Recruitment	Gupton	Stephanie	NIH National Institute of Neurological Disorders and Stroke	5-F31-NS103586-02	6/15/17	6/14/20	FELLOW:F URBINA TRIM67 as a novel regulator of exocytosis in developing neurons	$35,165
Recruitment	Gupton	Stephanie	Mizutani Foundation for Glycoscience	190005	4/1/19	3/31/20	Netrin-1 Glycosylation Distinguishes Chemotaxis and Haptotaxis	$25,000
Retention	Hahn	Klaus	University of Wisconsin at Madison	647K662	12/8/15	11/30/19	Mechanisms of cell migration on aligned matrices	$100,436
Retention	Hahn	Klaus	NIH National Institute of General Medical Sciences	5-F32-GM120958-03	8/1/16	7/31/19	FELLOW:N PINKIN Improving Environment Sensitive Dyes for Live Cell Single Molecule Imaging	$61,174
Retention	Hahn	Klaus	NIH National Institute of General Medical Sciences	5-R35-GM122596-01-02	4/1/17	3/31/22	Dissecting signaling in vivo via precise control and visualization of protein activity	$62,149
Retention	Hahn	Klaus	NIH National Institute of General Medical Sciences	3-R35-GM122596-02S1	4/1/17	3/31/22	Dissecting signaling in vivo via precise control and visualization of protein activity	$97,778
Retention	Hahn	Klaus	National Science Foundation	CMMI-1762468	5/15/18	4/30/21	Collaborative Research: Mechanobiology of Fiber Geometry-RhoGTPase Crosstalk at the Leading Edge of Cells Crawling on Fibers	$57,348
Recruitment	Han	Zongchao	NIH National Eye Institute	5-R01-EY026564-01-04	4/1/16	3/31/21	Targeting Retinitis Pigmentosa Using Nanoparticle-Mediated Delivery of Genomic DNA	$373,977
Innovation Award	Hanson	Laura	Massachusetts General Hospital	PLC-1609-35995	1/1/18	12/31/22	Comparative Effectiveness of Early Integrated Telehealth versus In-Person Palliative Care for Patients with Advanced Lung Cancer	$103,600
Innovation Award	Hanson	Laura	NCDHHS Division of Health Service Regulation (DHSR)	00037289	1/1/19	6/30/21	Disseminating Comfort Matters: A Web-based Training Toolkit for Comfort-focused Dementia Care	$498,981
Recruitment	Hathaway	Nate	NIH National Institute of General Medical Sciences	5-R01-GM118653-01-02	7/1/17	6/30/22	MECHANISM OF HP1-MEDIATED HETEROCHROMATIN ASSEMBLY AND DURABILITY IN LIVE CELLS	$302,270
Recruitment	Hathaway	Nate	NIH National Institute of General Medical Sciences	3-R01-GM118653-02S1	7/1/17	6/30/22	MECHANISM OF HP1-MEDIATED HETEROCHROMATIN ASSEMBLY AND DURABILITY IN LIVE CELLS	$30,000
Theme Investment (CC)	Heise	Mark	NIH National Institute of Allergy and Infectious Diseases	5-U19-AI100625-07	8/5/12	8/31/22	Systems Immunogenetics of Biodefense and Emerging Pathogens in the Collaborative Cross	$2,727,484
Theme Investment (CC)	Heise	Mark	NIH National Institute of Allergy and Infectious Diseases	5-R21-AI137887-01-02	2/5/18	1/31/20	Molecular Characterization of Functional RNA Structures in the ZIKV genome	$192,793
Theme Investment (CC)	Heise	Mark	NIH National Institute of Allergy and Infectious Diseases	1-R21-AI138056-01	6/1/18	5/31/20	Defining Functional RNA Structures in an Arthritic Alphavirus Genome	$231,668
Theme Investment (CC)	Heise	Mark	NIH National Institute of Allergy and Infectious Diseases	2-T32-AI007419-26	9/1/93	8/31/23	Molecular Biology of Viral Diseases Predoctoral Training Grant	$207,970
Theme Investment (CC)	Heise	Mark	University of Alabama at Birmingham	000520254-006	3/7/19	2/29/20	Antiviral Drug Discovery and Development Center	$259,152
Retention	Henderson	Louise	University of California at Davis	201600303-08	9/1/16	8/31/19	Comparative Effectiveness of Breast Cancer Screening and Diagnostic Evaluation by Extent of Breast Density	$106,946
Investment (HTS)	Henderson	Gail	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI127024-01-03	6/15/16	5/31/20	Integrating Decision Making Studies into HIV Cure Trials: A real-time longitudinal assessment	$533,093
Retention	Henderson	Louise	Harvard Pilgrim Health Care	AH000632	3/15/17	2/28/21	Advanced Breast Imaging: Trends and Outcomes Associated with Recent Breast Density Reporting Legislation	$86,208
Retention	Henderson	Louise	University of California at Davis (UCD)	201603696-08/A18-0177-S008	7/1/17	5/31/22	Risk-based Breast Cancer Screening and Surveillance in Community Practice	$327,916
Retention	Henderson	Louise	NIH National Cancer Institute	5-R01-CA212014-01-02	9/20/17	8/31/22	Evaluating Lung Cancer Screening Patterns and Outcomes through a North Carolina Registry	$640,870
Retention	Henderson	Louise	Georgetown University	411518_GR412884-UNC	1/1/18	12/31/19	Comorbidity and screening outcomes among older women undergoing mammography	$34,315
Recruitment	Hingtgen	Shawn	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS097507-01-04	6/1/16	5/31/21	Nanofiber matrices to improve neural stem cell-mediated cancer therapy	$328,885
Recruitment	Hingtgen	Shawn	North Carolina State University	2017-1369	2/1/17	1/31/20	3D Printing of Fibrous Tissue Engineered Medical Products: A New Paradigm for Tissue Biofabrication and Therapeutics	$30,000
Recruitment	Hingtgen	Shawn	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS099368-01-02	9/26/17	6/30/22	Engineering stem cell therapies to understand and overcome glioblastoma adaption	$312,561
Recruitment	Hingtgen	Shawn	Accelerate Brain Cancer Cure, Inc.		6/1/19	5/31/20	Tumor-homing beacons as a novel approach to cellular therapy for glioblastoma.	$169,291
Recruitment	Hoadley	Katherine	Susan G Komen for the Cure	CCR16376756	7/7/16	7/6/20	Therapeutic Relevance of Genetic Subtypes Within Basal-Like Breast Cancer	$150,000
Investment (HTS)	Hoadley	Katherine	NIH National Cancer Institute	5-U24-CA210988-03	9/1/16	8/31/21	RNA sequencing analysis of Cancer	$416,184
Recruitment	Hoadley	Katherine	Translational Breast Cancer Research Consortium		3/28/17	2/16/22	TBCRC AURORA Clinical Data Coordinating Center (	$118,629
Recruitment	Hoadley	Katherine	University of Minnesota Board of Regents	P006781501	9/1/18	8/31/20	Bidimensional integration for pan-omics pan-cancer analysis	$13,674
Investment (Nanotech)	Huang	Leaf	NIH National Cancer Institute	5-U54-CA198999-04	8/1/15	7/31/20	Nano Approaches to Modulate Host Cell Response for Cancer Therapy	$2,261,936
Recruitment	Hursting	Stephen	NIH National Cancer Institute	5-R35-CA197627-04S2	8/1/15	7/31/22	Breaking the Obesity-Cancer Link: New Targets and Strategies	$762,608
Investment (CC)	Hursting	Stephen	NIH National Cancer Institute	5-R35-CA197627-04	8/1/15	7/31/22	Genetic and Dietary Influence on Cancer Susceptibility in a Population-Based (CC-RIL) Mouse Model of Prostate and Basal-Like Breast Cancer	$200,847
Recruitment	Hursting	Stephen	NIH National Cancer Institute	1-F30-CA225142-01A1	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	$39,802
Recruitment	Hursting	Stephen	Breast Cancer Research Foundation	BCRF-18-073	10/1/18	9/30/19	Combining Intermittent Energy Restriction and Anti-Inflammatory Regimens to Mimic the Anticancer Effects of Bariatric Surgery	$250,000
Recruitment	Hursting	Stephen	Purdue University	11000823-020	2/1/19	1/31/24	Obesity, Metabolism and Breast Cancer Metastasis	$157,444
Retention	Ibrahim	Joseph	Amgen, Inc.	PO#7300001228	7/31/08	12/31/19	Supported Research Agreement	$276,776
Retention	Ibrahim	Joseph	Merck and Co., Inc.		7/1/09	3/31/20	Methods for Interim Analysis with Incomplete Adjudication of Events	$260,000

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Investment (Bios/HTS)	Ibrahim	Joseph	NIH National Institute of General Medical Sciences	5-R01-GM070335-17-19	3/1/96	6/30/20	Bayesian Approaches to Model Selection for Survival Data	$383,181
Investment (Bios/HTS)	Ibrahim	Joseph	NIH National Cancer Institute	5-T32-CA106209-13	5/1/04	7/31/21	Biostatistics for Research in Genomics and Cancer	$225,066
Recruitment	Innocenti	Federico	Alliance for Clinical Trials in Oncology Foundation		2/1/19	1/31/20	A Phase III Randomized Study of Sorafenib plus Doxorubicin versus Sorafenib in Patients with Advanced Hepatocellular Carcinoma (HCC) - CALGB 80802 and Correlative Substudy - CALGB 150902.	$64,008
Investment (Proteomics)	Johnson	Gary	Indiana University at Indianapolis	IN4689880UNC	9/1/15	8/31/19	Developmental and Hyperactive Ras Tumor SPORE (Omics Core)	$289,553
Investment (Proteomics)	Johnson	Gary	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-U24-DK116204-02	9/1/17	8/31/23	Illuminating Function of the Understudied Druggable Kinome	$2,270,717
Recruitment	Jolly	Trevor	Odonate Therapeutics LLC		10/29/18	11/6/28	A Multinational, Multicenter, Randomized, Phase 3 Study of Tesetaxel plus a Reduced Dose of Capecitabine versusCapecitabine Alone in Patients with HER2 Negative, Hormone Receptor Positive, Locally Advanced or Metastatic Breast Cancer Previously Treated with a Taxane	$33,488
Theme investment (HTS)	Jones	Corbin	Leidos Corporation	16X250	11/17/16	8/30/19	RNA- Seq Services to the Genome Characterization Center	$3,400,000
Theme investment (HTS)	Jones	Corbin	Duke University	A03-0101	5/15/18	4/30/19	Epigenetic reprogramming of behaviors with sensory experience	$62,802
Theme investment (HTS)	Jones	Corbin	Duke University	A03-1446	5/1/19	4/30/20	Epigenetic reprogramming of behaviors with sensory experience	$60,766
Recruitment	Kabanov	Alexander	NIH National Cancer Institute	5-R01-CA184088-01-05	1/1/15	12/31/19	PEGylated Liposomal Doxorubicin and Pluronic Combination for and Cancer Therapy	$334,212
Recruitment	Kabanov	Alexander	NIH National Cancer Institute	5-U01-CA198910-04	8/14/15	7/31/20	Targeted Core Shell Nanogels for Triple Negative Breast Cancer	$562,533
Recruitment	Kabanov	Alexander	NIH National Cancer Institute	5-T32-CA196589-04	7/1/15	6/30/20	CAROLINA CANCER NANOTECHNOLOGY TRAINING PROGRAM (C-CNTP)	$409,752
Recruitment	Kabanov	Alexander	NIH National Cancer Institute	5-R21-CA220148-01-02	8/1/17	7/31/20	Targeted Magneto-Mechanic Nanotherapeutics for Cancer	$117,468
Investment (CC)	Kafri	Tal	NIH National Heart, Lung, and Blood Institute	5-R01-HL128119-01-04	9/2/15	6/30/20	Lentiviral vector-based gene therapy and the host genetic background	$758,060
Investment (CC)	Kelada	Samir	NIH National Institute of Environmental Health Sciences	5-R01-ES024965-01-05	10/5/14	10/31/19	Gene-Environment Interactions with Ozone in Experimental Asthma	$439,868
Investment (CC)	Kelada	Samir	NIH National Heart, Lung, and Blood Institute	5-R01-HL122711-01-04	8/15/15	5/31/20	Systems-level transcriptomic analyses to Identify mouse models of asthma	$383,526
Retention	Key	Nigel	Hennepin Healthcare Research Institute (formerly Minneapolis Medical Research Foundation)	07416-3	9/10/14	5/31/20	Targeting hypercoagulation to reduce inflammation in treated HIV disease	$128,269
Retention	Key	Nigel	University of Washington	UWSC8675/ BPO 9467	8/15/15	5/31/19	Trial Using Epsilon Aminocaproic Acid in Therapy in Thrombocytopenia (TREAT)	$281,920
Retention	Key	Nigel	Hoffmann La Roche, Inc.		2/8/17	2/29/20	A Multicenter, Open-Label, Phase III Study To Evaluate The Efficacy, Safety, Harmacokinetics And Pharmacodynamics Of Emicizumab Given Every 4 Weeks (Q4w) In Patients With Hemophilia A	$32,408
Retention	Key	Nigel	NIH National Heart, Lung, and Blood Institute	5-T32-HL007149-42	7/1/75	6/30/22	Research Training in Hematology at UNC Chapel Hill	$384,173
Retention	Key	Nigel	Shire US Inc.		10/27/17	10/26/20	An Observational Study of the Natural History of Outcomes in Hemophilics Undergoing Major Orthopedic Surgery	$42,119
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	$138,051
Retention	Key	Nigel	BioMarin Pharmaceutical, Inc.		3/13/18	9/30/20	BMN 270-902 A Prospective Non-Interventional Study of Bleeding Episodes, Factor VIII Infusions, and Patient-Reported Outcomes in Individuals with Severe Hemophilia A	$750
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 subjects with severe or moderately severe hemophilia B	$12,000
Retention	Key	Nigel	NIH National Heart, Lung, and Blood Institute	1-R01-HL146226-01	1/1/19	12/31/21	Fibrinolysis Evaluation in A-TREAT ('FEAT' Study)	$398,365
Retention	Key	Nigel	Global Blood Therapeutics, Inc.		11/14/18	11/30/20	An Open Label Extension Study of GBT440 Administered Orally toPatients with Sickle Cell Disease Who Have Participated in GBT440Clinical Trials	$10,195
Recruitment	Khagi	Simon	Nektar Therapeutics		1/13/17	1/31/20	A Phase 3 Open-Label, Randomized, Multicenter Study of NKTR-102 versus Treatment of Physician's Choice (TPC) in Patients with Metastatic Breast Cancer Who Have Stable Brain Metastases and Have Been Previously Treated with an Anthracycline, a Taxane, and Capecitabine	$38,731
Recruitment	Khagi	Simon	Orbus Therapeutics, Inc.		6/6/17	6/9/21	A Phase 3, Randomized, Open-Label Study To Evaluate the Efficacy and Safety of Eflornithine with Lomustine Compared to Lomustine Alone in Patients with Anaplastic Astrocytoma That Progress/Recur After Irradiation and Adjuvant Temozolomide Chemotherapy	$17,615
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)	$27,076
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	$25,631
Recruitment	Khagi	Simon	Inovio Pharmaceuticals, Inc.	GBM-001/8378210	10/5/18	10/30/28	An Open-Label, Multi-Center Trial of INO-5401 and INO-9012 Delivered by Electroporation (EP) in Combination with REGN2810 in Subjects with Newly- Diagnosed Glioblastoma (GBM)	$29,442
Recruitment	Khagi	Simon	Lambda Technologies, Inc.		4/22/19	10/22/19	Lambda / UNC Research Agreement	$39,110
Recruitment	Kibbe	Melina	University of Cincinnati	010635-002	10/24/16	10/23/19	Development of a Targeted Intravascular Therapy to Stop Non-Compressible Torso Hemorrhage	$284,703
Recruitment	Kibbe	Melina	Department of Veterans Affairs	558-D72052	7/1/17	9/30/19	IPA NICK TSIHLIS Bioengineering Catalytically Active Grafts for Vascular Surgery	$51,731
Recruitment	Kibbe	Melina	Department of Veterans Affairs	558-D72053	7/1/17	9/30/19	IPA FOR LU YU Bioengineering Catalytically Active Grafts for Vascular Surgery	$23,650
Recruitment	Kibbe	Melina	Department of Veterans Affairs	558-D72054	7/1/17	9/30/19	IPA FOR ROBIN SILETZKY Bioengineering Catalytically Active Grafts for Vascular Surgery	$21,804
Recruitment	Kibbe	Melina	Department of Veterans Affairs	558-D82031	1/1/18	9/30/19	IPA DAVID GILLIS Bioengineering Catalytically Active Grafts for Vascular Surgery	$50,271
Recruitment	Kibbe	Melina	NIH National Heart, Lung, and Blood Institute	1-R01-HL129156-01A1	1/1/19	12/31/22	A Novel Endovascular Approach to Remove Atherosclerotic Plaque Lesions In Situ	$755,738
Recruitment	Kibbe	Melina	Burroughs Wellcome Fund	1019946	6/1/19	12/31/20	Development of injectable, niche-responsive peptide amphiphile nanofibers to reduce atherosclerotic plaque burden	$8,000
Retention	Kim	William	American Cancer Society	RSG-14-219-01-TBG	1/1/15	12/31/18	Intrinsic Subtypes of Bladder Cancer	$197,750
Retention	Kim	William	NIH National Cancer Institute	5-1R01CA202053-01-03	8/1/16	7/31/21	Kinase Inhibition in Kidney Cancer	$432,423
Retention	Kim	William	NIH National Cancer Institute	5-F31-CA213985-03	9/30/16	6/29/19	FELLOW:ALEISHA M SMITH Investigating HIF-MYC interactions within a Clear Cell Renal Cell Carcinoma Murine Model	$30,557
Retention	Kim	William	GeneCentric Therapeutics, Inc.		7/26/18	7/26/20	Bladder cancer sample identification, sample procurement, imaging, and performance of assays or delivery of sample for performance of assays.	$136,500

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Kim	William	NIH National Cancer Institute	2-K12-CA120780-11	9/17/07	6/30/23	UNC Oncology Clinical/Translational Research Training Program (OCT-RTP)	$547,714
Recruitment	Kistler	Christine	Beth Israel Deaconess Medical Center	01027406	6/12/14	5/31/19	Randomized Trial of a Mammography Decision Aid for Women Aged 75 and Older	$38,915
Recruitment	Kistler	Christine	Agency for Healthcare Research and Quality	5-R01-HS024519-03	4/1/16	3/31/20	Nurse and Physician Decision-making for Suspected Urinary Tract Infections in Nursing Homes: Potential Targets to Reduce Antibiotic Overuse	$482,591
Investment (HTS)	Knowles	Michael	Chronic Obstructive Pulmonary Disease Foundation		10/15/08	10/14/23	Bronchiectasis Research Registry	$42,430
Investment (HTS)	Knowles	Michael	NIH National Heart, Lung, and Blood Institute	5-U54-HL096458-15	8/6/04	7/31/19	Genetic Disorders of Mucociliary Clearance	$1,244,095
Investment (HTS)	Knowles	Michael	NIH National Heart, Lung, and Blood Institute	3-U54-HL096458-15S1	8/6/04	7/31/19	Genetic Disorders of Mucociliary Clearance	$65,785
Investment (HTS)	Knowles	Michael	Johns Hopkins University	2003962800/ SAP129012 90072501	5/1/18	4/30/19	Genotyping SLC26A9 and CYP3A variants in GOAL subjects	$22,942
Investment (HTS)	Knowles	Michael	Medical University of South Carolina	MUSC18-060-8D353	7/1/18	6/30/20	IGHG and IGKC Genes and Lung Disease Severity in Cystic Fibrosis	$34,596
Investment (HTS)	Knowles	Michael	NIH National Heart, Lung, and Blood Institute	2-R01-HL071798-13	8/17/18	4/30/22	Pathogenesis of PCD Lung Disease	$612,031
Investment (Bios)	Kosorok	Michael	NIH National Cancer Institute	5-P01-CA142538-06-10	4/1/10	3/31/20	Statistical Methods for Cancer Clinical Trials	$2,120,644
Investment (Bios)	Kosorok	Michael	NIH National Library of Medicine	5-T32-LM012420-05	5/1/15	4/30/20	Big Data Visualization Methods and Software for Population Health Research	$232,721
Investment (CC)	Kulis	Mike	NIH National Institute of Allergy and Infectious Diseases	1R03AI140161-01	6/6/18	5/31/20	Therapeutic DNA Vaccine for Shellfish Allergies	$88,433
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)	$671,412
Recruitment	Laederach	Alain	University of Michigan Ann Arbor	3004537869	5/1/17	2/28/19	Spliceosome mechanism dissected at the single molecule level	$50,433
Recruitment	Laederach	Alain	NIH National Institute of General Medical Sciences	5-R01-GM101237-05-06	5/1/12	8/31/21	Structural and functional consequences of disease SNP's on the transcriptome	$322,350
Recruitment	Laederach	Alain	NIH National Institute of General Medical Sciences	3-R01-GM101237-06S1	5/1/12	8/31/21	Structural and functional consequences of disease SNP's on the transcriptome	$70,294
Recruitment	Laederach	Alain	Georgia Institute of Technology - The Georgia Tech Research Corporation	RJ-193-G1/PO#3700450037	8/1/17	7/31/22	Collaborative Research: Multimodal RNA structural motifs in alphavirus genomes: discovery and validations	$112,850
Recruitment	Laederach	Alain	NIH National Institute of General Medical Sciences	1-F31-GM130040-01	1/1/19	12/31/20	A novel melanoma therapeutic target: Elucidating the structure and mapping functional domains of the lncRNA SAMMSON	$34,490
Recruitment	Lai	Sam	Burroughs Wellcome Fund	1017727	6/1/18	5/31/21	Young Innovators Program: an immersive research experiential program at the Eshelman School of Pharmacy	$60,000
Recruitment	Lai	Sam	North Carolina Biotechnology Center	2018-GTF-6905	11/1/17	10/31/19	Enhancing AAV gene therapy via bispecific fusion proteins that block anti-AAV antibodies while conferring active targeting	$95,170
Recruitment	Lai	Sam	NIH National Heart, Lung, and Blood Institute	1-R01-HL141934-01	5/10/18	4/30/22	Overcoming anti-PEG immunity to restore prolonged circulation and efficacy of PEGylated therapeutics	$633,547
Recruitment	Lai	Sam	National Science Foundation	DMR-1810168	8/1/18	7/31/21	Dynamic tuning of barrier properties of hydrogels using weakly adhesive third-party crosslinkers	$110,354
Recruitment	Lai	Sam	Mucommune, LLC		7/8/18	6/30/20	SBIR: Development of a biologic for non-hormonal contraception	$67,288
Recruitment	Lai	Sam	Mucommune, LLC		5/7/18	4/30/20	SBIR: Sustained vaginal delivery of monoclonal antibodies for preventing HIV transmission	$61,235
Recruitment	Lai	Sam	Mucommune, LLC		9/17/18	8/31/20	SBIR: Capsule-intravaginal ring providing sustained release of antibodies for non-hormonal contraception and prevention of vaginal HIV transmission	$56,771
Recruitment	Lai	Sam	Boston University Board of Trustees	4500002926	9/14/18	3/31/20	Antibody-based Contraceptive MPTs: Preclinical and Clinical Research	$149,981
Recruitment	Lai	Sam	AI Tracking Solutions, Inc.		9/13/18	9/12/20	STTR: An integrated neural network analysis and video microscopy platform for fully automated particle tracking	$85,241
Innovation Award	Lawrence	David	NIH National Cancer Institute	5-R01-CA203032-01-04	2/2/16	1/31/21	Single Cell Sampling of Signaling Activity in Triple Negative Breast Cancer	$476,069
Innovation Award	Lawrence	David	NIH National Institute of Neurological Disorders and Stroke	1-R01-NS103486-01A1	6/15/18	3/31/23	Spatiotemporal Control of Migratory Cellular Behavior	$340,156
Recruitment	Lazear	Helen	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI139512-01A1	1/1/19	12/31/23	The Role of Interferon Lambda signaling in flavivirus transmission and pathogenesis at the maternal-fetal interface	$388,750
Recruitment	Lazear	Helen	NIH National Institute of Allergy and Infectious Diseases	1-R21-AI144631-01	2/25/19	1/31/21	Protective Immune Mechanisms against Zika Virus Infection in the Female Reproductive Tract	$191,533
Investment (CC)	Lazear	Helen	NIH National Institute of Allergy and Infectious Diseases	1-R21-AI145377-01	6/11/19	5/31/21	Identifying Novel Immune Factors Controlling Flavivirus Pathogenesis	$232,909
Recruitment	Lee	Michael	QuintilesIMS		8/10/16	9/1/20	A Phase I, open-label, multiple-ascending dose trial to investigate the safety, tolerability, pharmacokinetics, biological and clinical activity of MSB0011359C in subjects with metastatic or locally advanced solid tumors and expansion to selected indications	$1,393
Recruitment	Lee	Michael	Genentech, Inc.		10/26/16	11/15/28	AN OPEN-LABEL, MULTICENTER PHASE Ib STUDY OF THE SAFETY AND TOLERABILITY OF ATEZOLIZUMAB (ANTI?PD-L1 ANTIBODY) ADMINISTERED IN COMBINATION WITH BEVACIZUMAB AND/OR OTHER TREATMENTS IN PATIENTS WITH SOLID TUMORS	$74,587
Recruitment	Lee	Carrie	Incyte Corporation		2/14/18	2/22/23	A Phase 1/2 Study Exploring the Safety, Tolerability, and Efficacy of INCAGN01876 in Combination with Immune therapies in Subjects with Advanced or Metastatic Malignancies	$39,773
Recruitment	Lee	Michael	Amgen, Inc.		2/9/18	2/15/23	LCCC 1632: Phase II multicenter trial of panitumumab, nivolumab, and ipilimumab for KRAS/NRAS/BRAF wild-type MSS refractory metastatic colorectal adenocarcinoma	$162,965
Recruitment	Lee	Michael	Pfizer, Inc.		1/8/18	11/1/21	Phase II study of the combination of palbociclib and cetuximab in KRAS/NRAS/BRAF wild-type metastatic colorectal cancer	$80,000
Recruitment	Lee	Yueh	NIH National Cancer Institute	1-R21-CA216780-01A1	9/18/18	8/31/20	Clinical Evaluation of Primary Sampling Scatter Correction for Chest Tomosynthesis	$164,065
Recruitment	Lee	Yueh	Kitware, Inc.	K002789-00-S02	9/30/18	8/31/20	STTR: Automated Assessment of Leptomeningeal Collaterals on CT Angiograms, Phase II	$200,000
Recruitment	Lee	Michael	Symphogen A/S	Sym004-13	11/2/18	10/9/28	Phase 2, Randomized, Open-Label, Multicenter, Three-Arm Trial of Sym004 versus each of its Component Monoclonal Antibodies, Futuximab and Modotuximab, in Patients with Chemotherapy-Refractory Metastatic Colorectal Carcinoma and Acquired Resistance to Anti-EGFR Monoclonal Antibody Therapy	$37,890
Recruitment	Lee	Carrie	V Foundation for Cancer Research	DM2019-001	1/15/19	1/15/20	The Use of Clinical Trial Navigators to Increase Minority Patient Enrollment and Retention in Cancer Clinical Trials	$71,000
Recruitment	Lee	Michael	Hoosier Cancer Research Network		1/7/19	12/18/28	A single arm, multi-center Phase 2 trial of mFOLFOX6 + trastuzumab + avelumab in first-line, metastatic, HER2-amplified gastric and esophageal adenocarcinomas	$22,364

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Lemon	Stanley	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI095690-06-09	4/15/11	3/31/21	Micro-RNA 122 and Chronic Hepatitis C	$380,000
Recruitment	Lemon	Stanley	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI131685-01-03	3/6/17	2/28/22	Murine Model of Human Hepatitis A	$388,750
Recruitment	Lemon	Stanley	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI103083-06-07	9/24/12	8/31/22	Membrane Hijacking: Biogenesis and Fate of Quasi-Enveloped Hepatovirus	$388,750
Recruitment	Lemon	Stanley	CRDF Global	OISE-18-64079-1	10/15/18	10/14/19	Intrahepatic Persistence of Hepatitis A Virus Post Viremia and Fecal Shedding	$25,000
Recruitment	Li	Zibo	University of Georgia (UGA)	SUB00001509	3/15/17	1/31/20	Nanoscintillator-based X-ray sensitizers to enable efficient non-small cell lung cancer treatment with X-ray irradiation	$184,315
Recruitment	Li	Zibo	OncoTrap Inc.		5/1/18	10/31/19	Evaluation of OncoTrap's lead drugs in tumor bearing mouse model	$186,600
Recruitment	Li	Zibo	NIH National Cancer Institute	1-R01-CA233904-01	12/7/18	11/30/23	Development of IDO PET agents for immunotherapy	$404,087
Theme Investment	Lin	Weili	NIH National Institute of Mental Health	5-U01-MH110274-03	9/1/16	5/31/20	UNC/UMN Baby Connectome Project	$1,016,486
Theme Investment	Lin	Weili	NIH National Institute of Mental Health	3-U01-MH110274-03S1	9/1/16	5/31/20	UNC/UMN Baby Connectome Project	$286,927
Recruitment	Liu	Pengda	NIH National Cancer Institute	5-R00-CA181342-03-05	7/1/14	2/28/19	Elucidating a Novel Akt Activation Mechanism for Targeted Prostate Cancer Therapy	$217,518
Recruitment	Liu	Pengda	V Foundation for Cancer Research	V2018-009	11/1/18	11/1/20	Novel Functions for cGAS in Cancer	$100,000
Recruitment	Liu	Pengda	NIH National Cancer Institute	1-R21-CA234979-01A1	6/1/19	5/31/21	Targeting EWS-FLI1 protein stability as therapeutic strategy for Ewing sarcoma	$169,106
Investment (HTSF)	Liu	Jiandong	NIH National Heart, Lung, and Blood Institute	-R56-HL133081-01A1	9/15/17	2/28/19	Molecular regulation of ventricular maturation	$388,750
Recruitment	Lund	Jennifer	Patient-Centered Outcomes Research Institute	ME-2017C3_9337	12/1/18	6/1/22	Enhancing Hybrid Study Designs for Comparative Effectiveness Research	$422,778
Investment (CC)	Magnuson	Terry	NIH National Institute of Child Health and Human Development (NICHD)	5-R01-HD036655-15-19	1/1/99	4/30/20	Developmental Gene Regulation Via Chromatin Remodeling	$315,400
Investment (CC)	Magnuson	Terry	NIH Office of the Director	3-U42-OD010924-19S1	9/30/99	2/28/20	A Carolina Center to Characterize and Maintain Mutant Mice	$435,573
Investment (CC)	Magnuson	Terry	NIH Office of the Director	5-U42-OD010924-20	9/30/99	2/28/20	A Carolina Center to Characterize and Maintain Mutant Mice	$1,399,761
Investment (CC)	Magnuson	Terry	NIH National Institute of General Medical Sciences	3-R01-GM101974-30S1	12/1/89	3/31/20	Albino Deletion Complex and Early Mouse Development	$61,963
Investment (CC)	Magnuson	Terry	NIH National Institute of General Medical Sciences	5-R01-GM101974-29-31	12/1/89	3/31/20	Albino Deletion Complex and Early Mouse Development	$409,640
Investment (CC)	Magnuson	Terry	Jackson Laboratory	210265	4/1/18	3/31/19	Mutant Mouse Resource and Research Center Annual Meeting	$9,640
Investment (Bios/HTS)	Marron	James	National Science Foundation	IIS-1633074	9/1/16	8/31/20	BIGDATA: F: Statistical Approaches to Big Data Analytics	$176,213
Innovation Award	Matera	Greg	NIH National Institute of General Medical Sciences	5-R01-GM118636-01-04	4/1/16	3/31/20	In vivo models of small RNP biogenesis and Spinal Muscular Atrophy	$296,629
Innovation Award	Matera	Greg	NIH National Institute of General Medical Sciences	1-R01-GM129132-01	7/13/18	3/31/22	Epigenetic control of metazoan transcription and pre-mRNA processing by histone PTMs	$426,395
Investment (HTSF)	Matute	Daniel	National Institutes of Health	5-R01-GM121750-01	9/1/17	7/31/22	The prevalence of genetic introgression in speciation	$318,230
Retention	Mayer	Deborah	American Cancer Society	GSCNP-17-134-01-SCN	7/1/17	6/30/19	Fellow: Rabenberg - Graduate Scholarship in Cancer Nursing Practice	$20,000
Retention	Mayer	Deborah	Duke Endowment	6650-SP	5/2/17	5/1/20	Improving Cancer Outcomes in North Carolina with Lay Patient Navigation	$246,083
Retention	Mayer	Deborah	NIH National Cancer Institute		1/15/18	9/30/19	IPA Assignment Agreement	$107,820
Retention	Mayer	Deborah	Memorial Sloan-Kettering Cancer Center	BD524525	7/1/18	6/30/22	Effectiveness trial of a head and neck cancer survivorship tool	$6,284
Recruitment	McGinty	Robert	Searle Scholars Program	SSP-2017-2016	7/1/17	6/30/20	Deciphering the nucleosome interactome	$100,000
Recruitment	McGinty	Robert	Pew Charitable Trusts	00030551	8/1/17	7/31/22	Deciphering the nucleosome interactome	$60,000
Recruitment	McGinty	Robert	American Cancer Society	132609-PF-18-153-01-DMC	4/1/19	3/31/22	FELLOW: A SKRAJNA Deciphering the nucleosome interactome	$54,500
Investment (CC)	McMillan	Leonard	NIH National Human Genome Research Institute	5U24GG010100-01	4/1/19	3/31/23	Genomic Resources for the Collaborative Cross	$355,574
Retention	McRee	Autumn	GlaxoSmithKline (GSK), Inc.		4/30/13	7/3/22	An Open-Label, Three-Part, Phase I/II Study to Investigate the Safety, Pharmacokinetics, Pharmacodynamics, and Clinical Activity of the MEK Inhibitor GSK1120212, BRAF Inhibitor GSK2118436 and the anti-EGFR Antibody Panitumumab in Combination in Subjects with BRAF-mutation V600E or V600K Positive Colorectal Cancer	$52,587
Retention	McRee	Autumn	Hoosier Cancer Research Network		4/21/17	4/20/21	A pilot study of pembrolizumab in combination with Y90 radioembolization in patients with high risk hepatocellular carcinoma with preserved liver function	$71,599
Retention	McRee	Autumn	Hoosier Cancer Research Network		11/7/17	11/30/23	An Open Label Randomized Phase I/II Trial of MLN0128 Compared to Sorafenib in Patients with Advanced or Metastatic Hepatocellular Carcinoma: Big Ten Cancer Research Consortium BTCRC-GI13-002	$12,833
Retention	McRee	Autumn	BioMed Valley Discoveries, Inc.		1/22/18	12/31/23	A Phase I Trial of Ulixertinib (BVD-523) in Combination with Palbociclib in Patients with Advanced Solid Tumors with Expansion Cohort in Previously Treated Metastatic Pancreatic Cancer	$37,045
Retention	McRee	Autumn	Rgenix, Inc.		10/25/18	11/20/28	A Phase 1 Study of RGX-202-01, a Small Molecule Inhibitor of the Creatine Transporter, SLC6a8, with or without FOLFIRI in Patients with Advanced Gastrointestinal Malignancies with Select Expansion Cohorts	$42,594
Retention	McRee	Autumn	Merck Sharp and Dohme Corp.		12/13/18	2/1/29	A Phase Ib Study to Evaluate the Safety and Tolerability of MK-8353 in combination with Pembrolizumab in Patients with Advanced Malignancies	$14,168
Recruitment	Miao	Edward	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI119073-01-05	5/1/15	4/30/20	Role of caspase-11 in innate immunity	$341,839
Recruitment	Miao	Edward	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI133236-01-02	3/1/18	2/28/23	Natural killer cell cytotoxicity against intracellular bacteria	$425,744
Recruitment	Miao	Edward	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI139304-01	5/11/18	4/30/23	Intestinal epithelial cell exfoliation by caspases	$427,625
Recruitment	Miao	Edward	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI136920-01A1	12/1/18	11/30/23	Complement and efferocytosis in clearing pyroptotic cells	$455,471
Recruitment	Miao	Edward	NIH National Institute of Allergy and Infectious Diseases	1-F30-AI142990-01	1/24/19	1/23/22	FELLOW: S.KOVACS Inflammasomes and Gasdermins in the Pathogenesis of Bullous Pemphigoid	$37,073
Recruiment	Milowsky	Matthew	Hoosier Cancer Research Network		12/2/15	12/1/20	UC-GENOME: Urothelial Cancer-GENOnomic analysis to iMprove patient outcomes and rEsearch	$35,862
Recruiment	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	$135,043
Recruiment	Milowsky	Matthew	Genentech, Inc.		7/12/16	6/10/20	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 Urothelial Carcinoma Who Are Ineligible For Cisplatin-Based Therapy	$38,938

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Recruiment	Milowsky	Matthew	Bristol-Myers Squibb Company		12/22/16	1/17/20	A Phase 3 Randomized, Double-blind, Multi-center Study of Adjuvant Nivolumab versus Placebo in Subjects with High Risk Invasive Urothelial Carcinoma	$66,799
Recruiment	Milowsky	Matthew	Incyte Corporation		1/31/17	11/30/19	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	$10,018
Recruiment	Milowsky	Matthew	Hoosier Cancer Research Network		10/25/16	2/29/20	Randomized, Double-Blinded, Phase II Study of Maintenance Pembrolizumab versus Placebo after First-line Chemotherapy in Patients with Metastatic Urothelial Cancer	$90,452
Recruiment	Milowsky	Matthew	Agensys 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	$152,308
Recruiment	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	$233,547
Recruiment	Milowsky	Matthew	Hoosier Cancer Research Network		9/25/18	9/23/28	Phase 2 Trial of Olaparib in Patients with Metastatic Urothelial Cancer Harboring DNA Damage Response Gene Alterations	$23,060
Recruiment	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	$35,836
Recruiment	Milowsky	Matthew	University of Chicago		1/11/19	11/30/28	Afatinib in advanced refractory urothelial cancer	$5,100
Investment (HTS)	Mohlke	Karen	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-U01-DK105561-05	5/1/15	4/30/20	Functional genetic variants for type 2 diabetes	$426,850
Investment (HTS)	Mohlke	Karen	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK072193-10-13	9/1/05	5/31/20	Targeted Genetic Analysis of T2D and Quantitative Traits	$595,294
Investment (HTS)	Mohlke	Karen	University of Colorado Denver	FY18.878.005	8/1/17	4/30/20	Sequence analysis of hematological traits in African Americans	$146,304
Investment (HTS)	Mohlke	Karen	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK093757-06-07	9/5/11	7/31/22	Genetic epidemiology of rare and regulatory variants for metabolic traits	$659,905
Investment (HTS)	Mohlke	Karen	NIH National Heart, Lung, and Blood Institute	1-F31-HL146121-01	5/1/19	4/30/22	FELLOW: K. CURRIN Functional annotation of cardiometabolic disease genetic risk variants using adipose open chromatin	$33,268
Recruitment	Mooberry	Micah	Mayo Clinic		9/12/17	12/31/20	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)	$89,629
Recruitment	Mooberry	Micah	Duke University	6964 COVET	3/15/18	4/1/22	COVET - Comparison of Oral Anticoagulants for Extended Venous Thromboembolism	$3,000
Recruitment	Moody	Cary	NIH National Cancer Institute	5-R01-CA181581-01-05	9/11/14	8/31/20	Regulation of Human Papillomavirus Replication by the DNA Damage Response	$315,400
Recruitment	Moody	Cary	NIH National Institute of Allergy and Infectious Diseases	5-R21-AI135542-01-02	5/14/18	4/30/20	The Role of ATR Signaling in the Life Cycle of HPV	$194,375
Recruitment	Moody	Cary	NIH National Cancer Institute	1-R01-CA226523-01A1	12/6/18	11/30/23	Epigenetic Regulation During the HPV Life Cycle	$354,527
Recruitment	Moorman	Nathaniel	NIH National Institute of Allergy and Infectious Diseases	2-R01-AI103311-06A1	12/1/12	6/30/23	The role of host and viral translation factors during HCMV infection	$310,441
Recruitment	Moorman	Nathaniel	University of Arizona	492004	9/24/18	8/31/23	Molecular switch regulating human cytomegalovirus replicative and latent states	$195,964
Recruitment	Moschos	Stergios	Amgen Pharmaceuticals		4/21/15	4/20/28	A Phase 1b/2 Study Evaluation of the Safety, Tolerability, Pharmacokinetics, Pharmacodynamics and Efficacy of AMG 232 Combined with Trametinib and Dabrafenib or Trametinib in Adult Subjects with Metastatic Cutaneous Melanoma	$2,264
Recruitment	Moschos	Stergios	Merck Sharp and Dohme Corp.		6/3/16	6/2/20	Pembrolizumab in Systemic Treatment-Naïve Distant Metastatic Melanoma and Exploration of use of 11Cmethyl-L-tryptophan (AMT) PET at Baseline as a Predictive Imaging Biomarker of Response	$41,319
Recruitment	Moschos	Stergios	Leidos Corporation	17X011 Task Order 5	5/24/17	5/23/22	A Phase 2 Study of Ibrutinib (PCI-32765) in Refractory Distant Metastatic Cutaneous Melanoma: Correlation of Biomarkers with Response and Resistance*** Sponsor: Leidos is providing multicenter correlative/support funding is related to the NCI9922 Clinical Trial which is being conducted under a existing grant funding.	$366,366
Recruitment	Moschos	Stergios	Syndax Pharmaceuticals, Inc.		5/11/17	5/31/21	A Phase 1b/2, Open-label, Dose Escalation Study of Entinostat in Combination with Pembrolizumab in Patients with Non-small Cell Lung Cancer, with Expansion Cohorts in Patients with Non-small Cell Lung Cancer and Melanoma	$277,222
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	$47,969
Recruitment	Moschos	Stergios	University of California Board of Regents	1554-S-WB088	10/5/18	10/5/20	Genomic and Epigenomic Determinants of Pembrolizumab Resistance in Melanoma, Its Microenvironment and Organ-specific Tumor Niche in Deceased Subjects (Warm Autopsy)	$88,034
Investment (CC)	Mosedale	Merrie	Takeda Pharmaceutical Company, Ltd.	4100173194	3/3/17	3/2/19	Identification of Stress Response Pathways Initiated in Primary Human Hepatocytes Exposed to TAK-875 & Toxicogenetic Analysis of TAK-875 Using Collaborative Cross Mice	$300,000
Investment (CC)	Mosedale	Merrie	SciKon Innovation Inc		9/19/17	2/28/19	SBIR: Standardization of a Fluidic In Vitro Exposure System for IVIVE Predictive Toxicity Data	$73,214
Investment (CC)	Mosedale	Merrie	Alnylam Pharmaceuticals	4510008959	2/21/19	2/20/20	Evaluation of 2D And 3D Heparg Models For Predicting Clinical Transaminase Elevations Associated With Trivalent N-Acetylgalactosamine-Conjugated Small Interfering RNAS	$48,271
Investment (CC)	Mosedale	Merrie	Janssen Research & Development, LLC	1281604 / PO#994042205	4/24/19	10/23/21	Exploring the Utility of Exosomes to Predict and Understand Idiosyncratic Drug-Induced Liver Injury (IDILI)	$302,927
Investment (CC)	Mosedale	Merrie	Burroughs Wellcome Fund	1017602	9/1/17	8/31/22	DEVELOPMENT OF AN IN VITRO PLATFORM FOR THE EVALUATION OF GENETIC SUSCEPTIBILITY FACTORS ASSOCIATED WITH ADVERSE DRUG RESPONSE	$500,000
Recruitment	Muss	Hy	Mayo Clinic		4/8/15	12/31/19	Adjuvant Ado-Trastuzumab Emtansine (TDM-1) for Older Patients with Human Epidermal Growth Factor Receptor 2 (HER2)-Positive Breast Cancer	$1,250
Recruitment	Muss	Hy	NIH National Cancer Institute	5-R01-CA203023-01-04	1/12/16	12/31/20	Biomarkers of Molecular Age to Predict the Toxicity of Cancer Chemotherapy	$411,049
Recruitment	Muss	Hy	Mayo Clinic in Rochester	UCH-194321/ PO65578650	8/1/17	7/31/19	Feasibility of an electronic geriatric assessment (EGA) for older adults with cancer	$2,000
Recruitment	Muss	Hy	Breast Cancer Research Foundation	BCRF-18-1147	10/1/17	9/30/19	p16INK4a Gene Expression, Chemotherapy Toxicity, and Age in Women with Breast Cancer	$250,000

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Muss	Hy	NIH National Cancer Institute	1-T32-CA233419-01	1/1/19	12/31/23	UNC Geriatric Oncology Training Grant (UNC-GO)	$83,511
Recruitment	Nichols	Hazel	NIH National Cancer Institute	5-R01-CA204258-01-02	7/1/17	6/30/22	Clinical Pregnancy Outcomes in Adolescent and Young Adult Female Cancer Survivors	$626,296
Recruitment	Nichols	Hazel	Michigan State University (MSU)	RC106691D	6/1/17	5/31/21	Assisted Reproductive Technology and Child Health: Risk of Birth Defects, Mortality, and Effect on Grade School Performance	$12,058
Recruitment	Nichols	Hazel	St Baldricks Foundation	523803	7/1/17	6/30/20	Reproductive Health after Adolescent and Young Adult Cancer	$50,000
Recruitment	Nicholson	Wanda	Duke University	203-7625	9/30/17	9/29/18	Comparing Options for Management: Patient-Centered Results in Uterine Fibroids (COMPARE-UF)	$351,537
Recruitment	Nicholson	Wanda	Duke University	203-7640	9/30/18	9/29/19	Comparing Options for Management: Patient-Centered Results in Uterine Fibroids (COMPARE-UF)	$274,261
Theme Investment	Niethammer	Marc	National Science Foundation	ECCS-1711776	7/15/17	6/30/20	Fast Predictive Medical Image Analysis	$130,363
Theme Investment	Niethammer	Marc	NIH National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMSD)	5-R01-AR072013-01-02	8/15/17	7/31/22	Large-scale automatic analysis of the OAI magnetic resonance image dataset	$407,303
Investment (Bios/HTS)	Nobel	Andrew	University of North Carolina at Charlotte	20160298-01-UNC	6/1/16	5/31/20	Random dynamical systems and limit theorems for optimal tracking	$19,467
Investment (Bios/HTS)	Nobel	Andrew	National Science Foundation	DMS-1613072	8/1/16	7/31/20	Iterative testing procedures and high-dimensional scaling limits of extremal random structures	$125,293
Investment (Bios/HTS)	Nobel	Andrew	NIH National Human Genome Research Institute	5-R01-HG009125-01-03	9/7/16	6/30/20	Multi-tissue and network models for next-generation EQTL studies	$395,344
Retention	North	Kari	NIH National Institute on Alcohol Abuse and Alcoholism	5-F31-AA024971-03	5/2/16	5/1/19	FELLOW:S LOVE Ethanol-metabolizing genes and the relationship between ethanol intake and cognitive decline	$36,043
Retention	North	Kari	NIH National Heart, Lung, and Blood Institute	5-T32-HL129982-03	5/1/16	4/30/21	The Genetic Epidemiology of Heart, Lung, and Blood Training Grant (GenHLB)	$368,150
Retention	North	Kari	Rutgers the State University of New Jersey	0859 PO 1024004	12/1/16	11/30/19	NHGRI Genome Sequencing Program Coordinating Center	$86,151
Retention	North	Kari	NIH National Heart, Lung, and Blood Institute	1-R01-HL142302-01	5/1/18	2/28/22	Hispanic Latino Lipid Consortium	$856,812
Retention	North	Kari	Rutgers the State University of New Jersey	0742 PO 951390	9/12/18	6/14/19	PAGE III: Population Architecture Using Genomics and Epidemiology	$106,193
Retention	North	Kari	American Diabetes Association (ADA)	1-19-PDF-045	1/1/19	12/31/19	American Diabetes Association Postdoctoral Fellowship Training Award - Heather Highland, PhD	$58,922
Innovation Award	Oldenburg	Amy	National Science Foundation	CBET-1803830	7/1/18	6/30/21	Collaborative Research: Tools for Noninvasive Nano-Optical Imaging of the Role of Extracellular Matrix in Pre-Malignant Breast Cancer	$120,160
Investment (CBCS)	Olshan	Andrew	University of Utah	10034028-01/U000159027	7/1/14	7/31/19	Exome sequencing for head and neck cancer susceptibility genes	$17,118
Investment (CBCS)	Olshan	Andrew	International Agency for Research on Cancer	CRA No. GEP/16/07	9/1/16	6/15/19	Biomarkers of human papillomavirus (HPV) infection and risk of two increasing cancers	$10,941
Investment (CBCS)	Olshan	Andrew	Vanderbilt University Medical Center	VUMC58928	1/1/16	6/30/19	Breast Cancer Genetic Study in African-Ancestry Populations	$12,594
Investment (CBCS)	Olshan	Andrew	International Agency for Research on Cancer	GEP/17/04	1/10/17	12/31/19	The role of germline and somatic DNA mutations in oral and oropharyngeal cancers	$21,191
Investment (CBCS)	Olshan	Andrew	Centers for Disease Control and Prevention	1-U01DD001231-01-00	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)	$770,000
Investment (CC)	Pardo Manuel de Villena	Fernando	University of Massachusetts Medical School	OSP2018037	8/5/17	7/31/22	Systems Genetics of Tuberculosis	$395,342
Investment (CC)	Pardo Manuel de Villena	Fernando	Neogen Corporation		3/24/17	3/23/20	Research Service Agreement for Genotyping Assays	$46,250
Investment (CC)	Pardo Manuel de Villena	Fernando	NIH National Institute of Environmental Health Sciences	1-R01-ES029925-01	2/1/19	1/31/24	Genetic underpinning of diabetes associated with arsenic exposure	$684,579
Recruitment	Park	Leeza	NIH National Cancer Institute	5-K07-CA218167-01-02	8/1/17	7/31/22	A Psychosocial Intervention to Improve Outcomes for Parents with Advanced Cancer	$176,839
Recruitment	Pecot	Chad	American Cancer Society	MRSG-14-222-01-RMC	1/1/15	12/31/19	Tumor Angiogenesis Regulation by the miR-200 Family	$145,800
Recruitment	Pecot	Chad	Free to Breathe		2/14/17	12/31/19	Targeting Lung Squamous Metastasis with CCR2 Inhibitors	$200,000
Recruitment	Pecot	Chad	Susan G Komen for the Cure	CCR17479814	8/7/17	8/6/20	HDAC11 Promotes Breast Cancer Metastasis via the Lymphatic Route	$150,000
Recruitment	Pecot	Chad	NIH National Cancer Institute	5-R01-CA215075-01-02	9/21/17	8/31/22	Immune Regulation of Lung Squamous Metastasis	$426,393
Theme Investment (HTS)	Peifer	Mark	NIH National Institute of General Medical Sciences	5-R35-GM118096-01-03	7/1/16	6/30/21	Regulating cell fate and shaping the body plan during morphogenesis and oncogenesis	$583,645
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	5-R01-CA148761-06-09	3/17/10	8/31/20	Therapeutic Targeting of Breast Cancer Tumor Initiating Cells	$431,667
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Susan G Komen for the Cure	SAC160074	7/15/16	7/14/19	Identification of the Genetic Drivers of HER2-Enriched Subtype Breast Cancers	$200,000
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	5-F32-CA210427-03	8/1/16	7/31/19	FELLOW:D HOLLERN Identifying Effective Immune Checkpoint Therapy Strategies in Triple Negative Breast Cancer	$59,038
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Johns Hopkins University	2003125644	8/23/16	6/30/21	TBCRC: AURORA GENOME CHARACTERIZATION CENTER RELATED PROJECT 5106566	$199,420
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Breast Cancer Research Foundation	2003125644	8/23/16	6/30/21	TBCRC: AURORA GENOME CHARACTERIZATION CENTER" RELATED TO 4100452	$93,162
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Baylor College of Medicine Childrens Foundation-Malawi	7000000410	6/7/17	5/31/22	MICROSCALED PROTEOGENOMICS FOR CANCER CLINICAL TRIALS	$33,467
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Susan G Komen for the Cure	PDF17479425	10/4/17	10/3/20	Identification of Genetic Drivers in HER2-Enriched/HER2 negative Breast Cancer	$60,000
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Duke University	3130817	6/15/18	6/14/20	Cancer cell intrinsic and extrinsic actions of steroid hormones in breast tumors	$62,473
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Breast Cancer Research Foundation	BCRF-18-127	10/1/18	9/30/19	Molecular Therapeutic for Luminal Tumor Subtypes	$250,000
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	2-P50-CA058223-24A1	8/5/97	8/31/23	SPORE in Breast Cancer	$2,499,932
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	1-F32-CA228326-01A1	2/1/19	1/31/20	FELLOW: J. SHEPHERD Epithelial Cancer Cell-Derived Determinants of Immune Involvement in Breast Cancer	$65,340
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	1-UG1-CA233333-01	3/13/19	2/28/25	UNITS: The UNC / UT National Clinical Trials Network Group Integrated Translational Science Production and Consultation Center	$730,000

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Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	1-U01-CA238475-01	6/1/19	5/31/24	Predictive Modeling of the EGFR-MAPK pathway for Triple Negative Breast Cancer Patients	$572,275
Recruitment	Phanstiel	Douglas	NIH National Human Genome Research Institute	5-R00-HG008662-03-05	9/2/16	11/30/19	The development and application of tools to characterize the 4D nucleome	$248,999
Recruitment	Phanstiel	Douglas	NIH National Institute of General Medical Sciences	1-R35-GM128645-01	7/19/18	6/30/23	MECHANISMS OF DYNAMIC CHROMATIN LOOPING DURING DIFFERENTIATION	$382,407
Recruitment	Pinton	Gianmarco	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS091195-01-05	4/1/15	3/31/20	Shear shock wave propagation in the brain: high frame-rate ultrasound imaging, characterization, and simulations	$328,132
Recruitment	Pinton	Gianmarco	Vanderbilt University	UNIV59046	2/15/16	1/31/20	Suppression of Analysis of Ultrasonic Clutter During Liver Focal Lesion Biopsy	$14,639
Recruitment	Pinton	Gianmarco	Duke University	283-2447	4/30/18	3/29/19	Incapacitation Prediction for Readiness in Expeditionary Domains: an Integrated Computational Tool (I-PREDICT) - Thorax Model Prototype	$20,000
Recruitment	Pinton	Gianmarco	Duke University	A03-0631	1/1/19	12/31/19	Improved ultrasound imaging using elevated acoustic output	$18,240
Recruitment	Purvis	Jeremy	WM Keck Foundation		7/1/15	6/30/19	Systematic Assembly of the Sequence of Molecular Events in the Human Cell Cycle	$325,000
Recruitment	Purvis	Jeremy	NIH National Heart, Lung, and Blood Institute	5-F31-HL134336-03	9/1/16	8/31/19	FELLOW: R HAGGERTY Single-cell dynamics of the OCT4-GATA6 axis in human lung progenitors	$32,591
Recruitment	Purvis	Jeremy	NIH National Cancer Institute	5-F30-CA213876-02	6/1/17	7/31/21	FELLOW:CHAO, HUI Defining the quantitative relationship between DNA damage and cell cycle dynamics in CUL9-deficient cells	$480
Recruitment	Purvis	Jeremy	National Science Foundation	MCB-1845796	1/1/19	12/31/23	CAREER: Predicting cell fate from cell history: Theory, experiment, and outreach	$483,632
Recruitment	Pylayeva-Gupta	Yuliya	Washington University in Saint Louis	WU-18-82 PO 2935148E	7/1/17	6/30/19	Role of Immunosuppressive B cells in Pancreatic Cancer	$50,000
Recruitment	Pylayeva-Gupta	Yuliya	Concern Foundation		7/1/18	6/30/20	Role of IL35 in Immunotherapy Resistance in Pancreatic Cancer	$60,000
Recruitment	Pylayeva-Gupta	Yuliya	NIH National Cancer Institute	1-R37-CA230786-01A1	4/1/19	3/31/24	Function of IL35+ B cells in pancreatic cancer	$462,460
Recruitment	Pylayeva-Gupta	Yuliya	V Foundation for Cancer Research	DVP2019-016	2/1/19	2/1/20	Mechanisms of pancreatic cancer-driven re-programming of tumor promoting B lymphocytes	$100,000
Recruitment	Ramsden	Dale	NIH National Cancer Institute	1-R01-CA222092-01A1	6/15/18	5/31/22	Polymerase Theta Mediated End Joining: Mechanism and Essential Functions in Repair of Chromosome Breaks	$442,581
Retention	Ramsey	J	University of Delaware	PC2.1-059	12/1/18	7/18/20	Development of a microchip CE-HPMS Analyzer for Bioreactor Monitoring	$367,329
Recruitment	Rashid	Naim	Fred Hutchinson Cancer Research Center	0000905066	5/1/16	8/30/18	Statistical Methods for RNA-seq Data Analysis	$14,853
Innovation Award	Redinbo	Matthew	NIH National Cancer Institute	5-R01-CA098468-11-15	9/23/14	8/31/20	Improving CPT-11 Efficacy Using Structural and Chemical Biology	$263,899
Innovation Award	Redinbo	Matthew	NIH National Cancer Institute	5-R01-CA207416-01-03	8/1/16	7/31/20	Microbiome-Targeted Probes to Eliminate Chemotherapy-Induced GI Toxicity	$596,764
Innovation Award	Redinbo	Matthew	Merck Sharp and Dohme Corp.		9/28/18	9/27/20	Characterization of Beta-Glucuronidases in the Human Gut Microbiome Using Sugar-Based Probes: Towards Functional Understanding of the Human Gut Microbiome	$403,036
Recruitment	Reeder-Hayes	Katie	Susan G Komen for the Cure	CCR15333140	11/3/15	11/2/19	Molecular, Treatment and Behavioral Factors in Breast Cancer Race Disparities	$158,375
Recruitment	Reeder-Hayes	Katie	Lung Cancer Initiative of North Carolina		7/2/18	6/28/19	Patterns and Predictors of Unplanned Emergency Department Visits and Readmissions in Patients with Newly Diagnosed Lung Cancer	$25,000
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 and Autologous Stem Cell Transplantation	$193,069
Recruitment	Reeves	Brandi	Janssen Research & Development, LLC	54767414SMM3001	9/6/18	6/16/26	A Phase 3 Randomized, Multicenter Study of Subcutaneous Daratumumab Versus Active Monitoring in Subjects with High-risk Smoldering Multiple Myeloma	$20,920
Recruitment	Reeves	Brandi	Genentech, Inc.		1/15/19	1/25/29	A Phase 1b study of the safety and pharmacokinetics of Atezolizumab (anti-PD-L1 antibody) alone or in combination with an immunomodulatory drug and/or Daratumumab In patients with MM (relapsed/refractory and post-autologous stem cell transplantation)	$28,439
Retention	Reuland	Dan	NIH National Cancer Institute	1-UG3-CA233251-01	9/30/18	8/31/19	Scaling Colorectal Cancer Screening Through Outreach, Referral, and Engagement (SCORE): A State-Level Program to Reduce Colorectal Cancer Burden in Vulnerable Populations	$762,693
Retention	Ribisl	Kurt	NIH National Cancer Institute	5-T32-CA057726-27	7/1/17	6/30/22	Cancer Control Education Program	$415,895
Retention	Ribisl	Kurt	University of Connecticut Health Center	UCHC-106156488	9/1/17	8/15/19	UCONN Health Personal Service Agreement - UCHC91522216	$30,516
Retention	Ribisl	Kurt	University of Virginia	GB10546.158752	5/1/18	2/28/23	The Determinants of Tobacco Relapse and Initiation Following a Period of Forced Abstinence in the U.S. Military: A Social Ecological Approach	$34,006
Retention	Ribisl	Kurt	NIH National Cancer Institute	1-P01-CA225597-01	9/1/18	8/31/23	ASPiRE: Advancing Science & Practice in the Retail Environment	$2,575,060
Retention	Ribisl	Kurt	NIH National Institute on Drug Abuse	1-F31-DA045424-01A1	7/31/18	7/30/20	FELLOW:A SEIDENBERG Consumer Responses to Modified Risk Tobacco Product Claims	$36,377
Recruitment	Riches	Marcie	Atara Biotherapeutics, Inc.		2/3/17	12/18/20	Multicenter Expanded Access Protocol of Allogeneic Epstein-Barr Virus Cytotoxic T Lymphocytes (EBV-CTLs) for Patients with EBV-Associated Lymphomas and Lymphoproliferative Disorders in Immunocompromised Patients for Whom There are No Other Comparable Options	$10,311
Recruitment	Robinson	Whitney	NIH National Institute on Minority Health and Health Disparities	5-R01-MD011680-01-02	9/26/17	6/30/22	Racial Differences in Treatment with Hysterectomy: a Multilevel Investigation	$675,798
Recruitment	Robinson	Whitney	NIH National Institute on Minority Health and Health Disparities	5-R01-MD011680-01-02	9/26/17	6/30/22	Racial Differences in Treatment with Hysterectomy: a Multilevel Investigation	$75,089
Recruitment	Rose	Tracy	X4 Pharmaceuticals Inc.		2/27/17	3/15/19	A Phase 1b/2a Trial Adding X4P-001 in Patients Receiving Nivolumab for Treatment of Advanced Clear Cell Renal Cell Carcinoma	$8,531
Recruitment	Rose	Tracy	Genentech, Inc.		6/9/17	6/30/22	A PHASE III, MULTICENTER, RANDOMIZED, PLACEBO-CONTROLLED, DOUBLE-BLIND STUDY OF ATEZOLIZUMAB (ANTI?PD-L1 ANTIBODY) AS ADJUVANT THERAPY IN PATIENTS WITH RENAL CELL CARCINOMA AT HIGH RISK OF DEVELOPING METASTASIS FOLLOWING NEPHRECTOMY	$144,323
Innovation Award	Rosenman	Julian	NIH National Cancer Institute	5-R01-CA158925-06	4/1/13	3/31/19	Integration of Endoscopic and CT data for Radiation Therapy Treatment Planning	$245,857
Recruitment	Rosenstein	Donald	Rising Tide Foundation for Clinical Cancer Research		7/1/17	6/30/20	Thiamine for the Prevention of Delirium in Hematopoietic Stem Cell Transplantation	$72,997
Investment (HTS)	Sancar	Aziz	NIH National Institute of General Medical Sciences	5-R35-GM118102-01-04	4/1/16	3/31/21	Molecular Mechanism of Mammalian DNA Excision Repair, DNA Damage Checkpoints, and the Circadian Clock	$980,142
Investment (HTS)	Sancar	Aziz	NIH National Institute of Environmental Health Sciences	5-R01-ES027255-01-03	8/1/16	7/31/21	Single Nucleotide Resolution Map of Formation and Repair of Bulky Adducts in the Human Genome	$468,393

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Sanoff	Hanna	Bayer HealthCare		12/6/10	12/25/19	LCCC 1029 AMulti-Center, Randomized, Placebo-Controlled Phase II Study of Regorafenib in Combination with FOLFIRI (Irinotecan, 5-Fluorouracil, and Leucovorin) Versus Placebo with FOLFIRI as Second-Line Therapy in Patients with K-RAS or BRAF Mutant Metastatic Colorectal Cancer	$582,607
Recruitment	Savoldo	Barbara	Hyundai Hope on Wheels		9/26/16	12/31/18	New generation Chimeric Antigen Receptor (CAR)-based cell therapy for Neuroblastoma	$125,000
Recruitment	Savoldo	Barbara	Leukemia and Lymphoma Society	6536-18	10/1/17	9/30/20	Exploiting the inducible Caspase9 to pharmacologically modulate CD19.CAR-T cell function in vivo	$200,000
Recruitment	Savoldo	Barbara	V Foundation for Cancer Research	T2017-006	11/1/17	11/1/20	Exploiting the inducible Caspase9 safety switch to pharmacologically modulate CD19.CAR-T cell function in vivo	$200,000
Recruitment	Savoldo	Barbara	Childrens Research Institute	30004929-01	9/30/18	8/31/23	Enhancing Cell Therapy for Brain Tumors	$219,420
Retention	Schoenfisch	Mark	NIH National Institute of Dental and Craniofacial Research	5-R01-DE025207-01-05	7/2/15	4/30/20	Nitric oxide-releasing dendrimers for the treatment of periodontal disease	$309,913
Retention	Schoenfisch	Mark	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK108318-01-04	12/1/15	11/30/19	Role of diabetes and nitric oxide release duration on analytical performance of in vivo glucose biosensors	$493,428
Innovation Award	Sekelsky	Jeff	NIH National Institute of General Medical Sciences	5-R35-GM118127-01-03	6/1/16	5/31/21	Mechanisms of meiotic and mitotic recombination	$520,113
Retention	Serody	Jonathan	Merck Sharp and Dohme Corp.	54823	12/15/16	12/14/19	Immune Biomarker Analysis of Pembrolizumab in AML	$281,310
Retention	Serody	Jonathan	NIH National Cancer Institute	5-T32-CA211056-02	8/1/17	7/31/22	Duke UNC-Chapel Hill Immunotherapy Training Grant	$449,807
Retention	Serody	Jonathan	NIH National Heart, Lung, and Blood Institute	5-R01-HL139730-01-02	7/15/17	5/31/21	Mechanistic Evaluations of ILC2 Cells for the Treatment/Prevention of GVHD	$543,763
Retention	Serody	Jonathan	GlaxoSmithKline Biologicals S.A.		12/18/17	6/1/20	GSK NTHI-MCAT-002	$4,560
Retention	Serody	Jonathan	University of Minnesota	N006335101	10/1/17	9/30/20	Innate Lymphoid Cell Type 2 Infusion for Graft-versus-Host Disease (GVHD) Prevention and Treatment	$300,000
Retention	Serody	Jonathan	NIH National Cancer Institute	1-F30-CA225136-02	2/13/18	2/12/23	FELLOW:CHRISTOF SMITH Design and Delivery of Neoantigen-based Tumor Vaccines	$36,185
Retention	Serody	Jonathan	Merck Sharp and Dohme Corp.	58116	1/30/19	1/30/21	OTSP: Evaluating the Function of B cells in the Activity of Anti-PD-1 mAb Therapy in Patients with Metastatic Breast Cancer.	$320,847
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	$54,490
Retention	Shaheen	Nicholas	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-T35-DK007386-39	5/1/80	2/28/21	Short Term Research Training	$119,609
Retention	Shaheen	Nicholas	CDx Diagnostics		8/8/16	8/7/26	CDX 707 WATS Registry Services Agreement	$53,200
Retention	Shaheen	Nicholas	Duke University	A03-0637	12/13/16	11/30/19	Imaging and Biomarkers for Early Cancer Detection (R01)	$245,500
Retention	Shaheen	Nicholas	Case Western Reserve University (CWRU)	RES513129	5/17/17	4/30/20	Genetic Determinants of Barrett's Esophagus and Esophageal Adenocarcinoma	$42,560
Retention	Shaheen	Nicholas	CSA Medical, Inc.		11/2/17	10/31/22	A Prospective Single Arm Multicenter Study Evaluating the Effects of Spray Cryotherapy in Patients with Persistent Local Esophageal Cancer	$22,067
Investment (Protocol)	Shea	Thomas	Brigham and Womens Hospital		4/1/10	8/7/22	Brigham and Women's Hospital Service Agreement--CALGB	$159,861
Investment (Protocol)	Shea	Thomas	Ohio State University		10/5/16	10/13/21	BMT CTN 1301: A Randomized, Multi-Center, Phase III Trial of Calcineurin Inhibitor-FreeInterventions for Prevention of Graft-versus-Host Disease	$51,372
Investment (Protocol)	Shea	Thomas	Jazz Pharmaceuticals plc		7/3/18	10/2/20	A Phase 2, Prospective, Randomized, Open-label Study on the Efficacy of Defibrotide Added to Standard of Care Immunoprophylaxis for the Prevention of Acute Graft-versus-Host-Disease in Adult and Pediatric Patients After Allogeneic Hematopoietic Stem Cell Transplant	$28,299
Investment (CC)	Sheahan	Timothy	Rockefeller University	5R01AI1316888-02	3/15/17	2/28/20	Analysis of immunity, viral adaptation and pathogenesis in a new mouse model of HCV-related rodent hepacivirus infection	$64,795
Investment (HTSF)	Sheikh	Shehzad	NIH National Institute of Diabetes, Digestive, and Kidney Diseases	5-R01-DK104828-01-03	9/1/16	7/31/20	Integrative Genetic and Genomic Analyses in the Inflamma	$303,192
Recruitment	Smith	Jennifer	NIH National Cancer Institute	5-R01-CA183891-01-05	4/9/15	3/31/20	Effect of HPV Self-Collection on Cervical Cancer Screening in High Risk Women	$557,170
Recruitment	Smith	Angie	Agency for Healthcare Research and Quality (AHRQ)	5-K08-HS024134-03	4/1/16	3/31/19	Developing an Interactive, Patient-Centered mHealth Tool to Enhance Post-Cystectomy Care	$154,464
Recruitment	Smith	Angie	UroGen Pharma Ltd.		11/1/16	9/14/19	A phase 3 Multi-center Trial Evaluating the Efficacy and Safety of Mitogel on Ablation of Upper Urinary Tract Urothelial Carcinoma	$161,831
Recruitment	Smith	Angie	Bladder Cancer Advocacy Network		7/1/17	6/30/19	Patient Empowerment through Research Training and Engagement in Bladder Cancer PCOR	$35,281
Recruitment	Smith	Angie	UroGen Pharma Ltd.		11/7/18	12/1/22	A Phase 2b, Single-Arm, Multicenter Trial to Evaluate the Efficacy and Safety of UGN-102 as Primary Chemoablative Therapy in Patients with Low Grade (LG) Non-Muscle-Invasive Bladder Cancer (NMIBC) at Intermediate Risk of Recurrence	$13,404
Recruitment	Smith	Angie	University of Washington	UWSC11055/38451	2/1/19	1/31/20	Comparison of Intravesical Therapy and Surgery as Treatment Options (CISTO) for Recurrent Bladder Cancer	$109,677
Innovation Award	Sondek	John	NIH National Institute of General Medical Sciences	2-R01-GM057391-A8A1	5/1/98	5/31/22	Regulation of phospholipase C	$425,572
Recruitment	Song	Lixin (Lee)	NIH National Cancer Institute	5-R21-CA212516-01-02	12/1/16	11/30/19	Enhancing Survivorship Care Planning for Patients with Localized Prostate Cancer Using A Couple-focused Web-based Tailored Symptom Self-management Program	$16,530
Recruitment	Song	Lixin (Lee)	NIH National Institute of Nursing Research	5-R01-NR016990-01-02	9/25/17	6/30/22	Testing the Efficacy of a Couple-focused, Tailored mHealth Intervention for Symptom Self-Management among Men with Prostate Cancer and Their Partners	$533,948
Recruitment	Song	Juan	NIH National Institute of Neurological Disorders and Stroke	1-R21-NS104530-01A1	9/1/18	8/31/20	Role of TRIM9 in regulating neurogenesis-associated hippocampal functions	$194,375
Innovation Award	Strahl	Brian	NIH National Institute of General Medical Sciences	1-R35-GM126900-01	5/1/18	4/30/23	Mechanisms of chromatin and transcriptional regulation	$638,875
Innovation Award	Strahl	Brian	EpiCypher, Inc.		11/16/18	8/31/20	SBIR: A novel protein engineering tool for rapid manufacturing of designer nucleosomes	$257,070
Innovation Award	Stürmer	Til	AstraZeneca Pharmaceuticals LP		10/1/14	9/30/18	Clinical Trial Generalizability Estimating Treatment Effect in Real World	$367,598
Innovation Award	Stürmer	Til	NIH National Institute on Aging	5-R01-AG056479-01-02	9/15/17	4/30/21	Propensity Scores and Preventive Drug Use in the Elderly	$484,066
Innovation Award	Su	Lishan	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI136990-01A1	7/1/18	6/30/23	Blocking Type I Interferon Signaling to Reverse T Cell Exhaustion and Control HIV-1 Reservoirs	$862,217
Innovation Award	Su	Lishan	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI138797-01A1	9/24/18	8/31/23	Modeling Immune Impairments and Pathogenesis in Novel Humanized Mice for HBV-HIV Co-Infection	$797,362
Investment (HTS)	Sullivan	Patrick	NIH National Institute of Mental Health	5-R01-MH077139-07-10	4/1/06	4/30/20	1/2 A Large-Scale Schizophrenia Association Study in Sweden	$985,429

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Investment (HTS)	Sullivan	Patrick	NIH National Institute of Mental Health	5-U01-MH109528-03	4/1/16	3/31/21	1/7 Psychiatric Genomics Consortium: Finding actionable variation	$430,909
Investment (HTS)	Sullivan	Patrick	Duke University	283-2497	9/1/18	8/31/20	To support research on the development CRISPR-based epigenome editing tools to refine genome wide association studies	$179,961
Investment (HTS)	Swanstrom	Ronald	University of Massachusetts	WA00737030/ OSP2017046	9/1/14	7/31/19	Interdependency of Drug Resistance Evolution and Drug Design: HIV-1 Protease a Case Study	$243,054
Investment (HTS)	Swanstrom	Ronald	University of California at San Francisco	9091SC	9/30/15	7/31/20	Compartmentalized CSF Viral Escape and the CNS HIV Reservoir	$276,289
Investment (HTS)	Swanstrom	Ronald	NIH National Institute of Allergy and Infectious Diseases	5-P30-AI050410-19-21	8/20/01	7/31/21	The University of North Carolina Center for AIDS Research	$2,679,863
Investment (HTS)	Swanstrom	Ronald	NIH National Institute of Allergy and Infectious Diseases	5-R21-AI134438-01-02	7/17/17	6/30/20	Identifying a New Class of HIV Maturation Inhibitors	$233,250
Investment (HTS)	Swanstrom	Ronald	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI140970-01	6/25/18	5/31/23	HIV Evolution Defines Virus-Host/Drug Interactions In Viremic and Aviremic People	$672,672
Recruitment	Tan	Ray	Medpace, Inc.		7/1/16	6/14/20	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)	$96,424
Recruitment	Tan	Ray	MDxHealth Inc,		1/31/17	1/31/20	Multi-Institutional Study To Evaluate DNA Methylation Markers For Detection Of Primary Bladder Cancers In Urine Samples From A Cohort Of Patients With Hematuria	$19,170
Recruitment	Tan	Ray	American Cancer Society	MRSG-18-193-01	1/1/19	12/31/23	Designing visual tools to enhance cancer surgeon decision-making	$147,487
Recruitment	Tan	Ray	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	$10,520
Investment (CC)	Tarantino	Lisa	Jackson Laboratory	210247-0418-07	8/15/16	4/30/21	Center for Excellence	$177,228
Investment (CHAI Core)	Tate	Deborah	Virginia Commonwealth University	PD303771-SC107091	2/1/15	8/31/19	Low Intensity Weight Loss for Young Adults: Autonomous vs. Extrinsic Motivation	$59,654
Investment (CHAI Core)	Tate	Deborah	University of Pittsburgh	0041597 (130470-1)	12/1/16	11/30/19	Identifying Strategies for Effective Weight Management in Diverse Interventions	$125,704
Investment (CHAI Core)	Tate	Deborah	Miriam Hospital	710-9144	9/1/15	5/31/19	Study of Novel Approaches to Weight Gain Prevention - Extension (SNAP-E)	$176,469
Investment (CHAI Core)	Tate	Deborah	University of Michigan Board of Regents	3004941494	12/1/17	7/31/19	Adaptation of a digital weight loss intervention promoting self-regulation for use in type 2 diabetes	$49,869
Investment (CHAI Core)	Tate	Deborah	Weight Watchers International, Inc		5/16/18	3/31/20	Randomized Controlled Trial of and International Commercial Program on Weight Loss and Health Outcomes	$963,579
Investment (CHAI Core)	Tate	Deborah	Westat, Inc.	6632.01-S02	11/15/18	6/15/19	Behavior Change Techniques Taxonomy	$91,936
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)	$435,086
Recruitment	Thompson	Patrick	H Lee Moffitt Cancer and Research Institute		1/7/16	1/31/24	A Phase I Trial of Dose Escalation of Metformin in Combination with Vincristine, Irinotecan, and Temozolomide in Children with Relapsed or Refractory Solid Tumors	$42,344
Recruitment	Thompson	Patrick	H Lee Moffitt Cancer and Research Institute		3/14/18	2/28/22	Phase II Study of nab-Paclitaxel in Combination with Gemcitabine for Treatment of Recurrent/Refractory Sarcoma in Teenagers and Young Adults	$19,938
Retention	Ting	Jenny	Duke University Medical Center	A30235	8/1/10	7/31/19	Inflammation and Radiation-Induced Lung Injury	$346,899
Retention	Ting	Jenny	NIH National Institute of Allergy and Infectious Diseases	5-U19-AI109965-05	3/1/14	2/29/20	Discovery of New Innate Immune Pathways in Viral Recognition	$2,863,677
Retention	Ting	Jenny	National Multiple Sclerosis Society (NMSS)	CA1068-A-10	4/1/14	3/31/20	Preclinical Therapeutic Development for Multiple Sclerosis	$165,000
Retention	Ting	Jenny	NIH National Institute of Allergy and Infectious Diseases	5-U19-AI109784-05	7/1/14	6/30/20	Novel Nanoparticle Platform for the Delivery of Vaccines and Adjuvants	$4,221,587
Retention	Ting	Jenny	NIH National Cancer Institute	5-R01-CA156330-06-07	5/1/11	7/31/22	Colitis, Colon Cancer and the NLR Family	$383,978
Retention	Ting	Jenny	North Carolina Biotechnology Center (NCBC)	2018-BIG-6504	1/1/18	12/31/19	Advancement of Immunotherapeutic Formulation for Breast Cancer	$68,000
Retention	Ting	Jenny	NIH National Institute of Allergy and Infectious Diseases	2-R01-AI029564-26	7/1/91	5/31/23	Molecular and Functional Analysis of NLR Family Members	$502,378
Retention	Ting	Jenny	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI141333-01	12/14/18	11/30/23	Micro-Particle Delivery of a Potent Intracellular Adjuvant for a Universal Flu Vaccine	$1,473,686
Retention	Troester	Melissa	NIH National Cancer Institute	5-U01-CA179715-01-05	6/1/14	5/31/20	Biology of Race and Progression Associated Breast Tumor Gene Expression	$313,159
Retention	Troester	Melissa	NIH National Institute of Environmental Health Sciences	5-P30-ES010126-17	2/1/00	3/31/21	UNC Center for Environmental Health and Susceptibility	$1,506,662
Retention	Troester	Melissa	NIH National Institute of Environmental Health Sciences	3-P30-ES010126-17S1	2/1/00	3/31/21	UNC Center for Environmental Health and Susceptibility	$74,085
Retention	Troester	Melissa	Susan G Komen for the Cure	GTDR16381071	8/5/16	8/4/19	Breast Cancer Mortality Disparities: Integrating Biology and Access	$135,000
Retention	Troester	Melissa	Leidos Biomedical Research, Inc.	X17346M/X17346N	8/17/17	9/29/19	Blanket Purchase Agreement for Testing Services and Nucleic Acid Extraction	$1,000,000
Retention	Troester	Melissa	American Cancer Society	55228	8/23/17	12/31/19	Gene Expression Profiling of Breast Tumors from Cancer Prevention Study 3	$297,556
Retention	Troester	Melissa	Michigan State University (MSU)	RC108247UNC	11/1/17	6/30/19	Translating Rodent Mammary Structure to Human Breast Density: Comparative Digital Analysis of Histology	$38,197
Retention	Troester	Melissa	Northwestern University		2/13/18	2/12/19	Estimating Composition of Normal Breast Using Digital Image Analysis	$7,637
Retention	Troester	Melissa	NIH National Cancer Institute	1-F30-CA236199-01	12/13/18	12/12/21	FELLOW:HALEI BENEFIELD The role of estrogen receptor in breast cancer outcomes and the effect of exposure history	$37,463
Retention	Troester	Melissa	ECOG-ACRIN Medical Research Foundation	5UG1CA189828-05-UNC1	8/1/18	7/31/19	ECOG-ACRIN NCORP Research Base	$232,640
Recruitment	Trogdon	Justin	Centers for Disease Control and Prevention	15IPA1504755	7/1/15	8/31/19	Justin Trogdon IPA to CDC 070115 through 063016	$39,404
Recruitment	Trogdon	Justin	NIH National Institute on Aging	5-R01-AG050733-01-03	9/1/16	5/31/20	Cancer, Care Coordination, and Medication Use for Multiple Chronic Conditions	$186,960
Recruitment	Trogdon	Justin	Robert Wood Johnson Foundation	73923	9/1/16	8/31/21	RWJF Health Policy Research Scholar	$30,000
Recruitment	Trogdon	Justin	Agency for Healthcare Research and Quality	1-R01-HS025723-01	8/1/18	5/31/22	Affordability and Efficiency of the COMprehensive Post-Acute Stroke Services (COMPASS)	$399,200
Recruitment	Trogdon	Justin	George Washington University	73923	8/1/18	7/31/19	RWJF Health Policy Research Scholars Dissertation Award - Shafer	$10,000
Recruitment	Tuchman	Sascha	Prothena Therapeutics Limited		3/16/16	3/15/19	A Phase 3, Randomized, Multicenter, Double-Blind, Placebo-Controlled, 2-Arm, Efficacy and Safety Study of NEOD001 Plus Standard of Care vs. Placebo Plus Standard of Care in Subjects with Light Chain (AL) Amyloidosis	$6,765
Recruitment	Tuchman	Sascha	Roche		6/8/17	6/30/22	OPEN-LABEL, MULTICENTER, DOSE-ESCALATION/ EXPANSION PHASE IB STUDY TO EVALUATE SAFETY, PHARMACOKINETICS, AND ACTIVITY OF BET INHIBITOR RO6870810, GIVEN AS MONO- AND COMBINATION THERAPY TO PATIENTS WITH ADVANCED MULTIPLE MYELOM	$32,381

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
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	$91,143
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	$122,325
Recruitment	Valdar	William	NIH National Institute of Mental Health	5-F30-MH108265-03	8/1/16	7/31/19	FELLOW:CORTY, R Statistical modeling of genetic effects on behavior and its variability	$44,890
Recruitment	Valdar	William	Wake Forest University School of Medicine	WFUHS113519	8/1/17	6/30/19	Systems genetics of adiposity traits in outbred rats	$29,532
Recruitment	Valdar	William	NIH National Institute of General Medical Sciences	5-R35-GM127000-01-02	4/1/18	3/31/23	Statistical Modeling of Multiparental and Genetic Reference Populations	$336,445
Recruitment	Valle	Carmina	NIH National Cancer Institute	5-R01-CA204965-01-03	2/7/17	1/31/21	Promoting Physical Activity in Young Adult Cancer Survivors Using mHealth and Adaptive Tailored Feedback Strategies	$507,080
Recruitment	Van Duin	David	Duke University	203-7732	12/1/15	11/30/19	ARLG-CRaCKIeII	$91,707
Recruitment	Van Duin	David	Rutgers the State University of New Jersey	8316	12/16/16	2/28/19	The molecular basis of the carbapenem resistance epidemic	$18,555
Recruitment	Van Duin	David	Duke University	A039076	12/1/17	11/30/19	Crackle MDRO	$93,075
Recruitment	Van Duin	David	University of Pittsburgh	0057518(131270-2)	6/1/18	5/31/20	Study Network of Acinetobacter as a Carbapenem-Resistant Pathogen (SNAP)	$19,049
Recruitment	Van Duin	David	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI143910-01	2/13/19	1/31/24	Bacterial Characteristics of Community-associated Carbapenem-Resistant Enterobacteriaceae	$418,165
Recruitment	Vaziri	Cyrus	NIH National Cancer Institute	5-R01-CA215347-01-02	2/1/18	1/31/23	Defining Mechanisms of Pathological Trans-Lesion Synthesis during Carcinogenesis	$502,902
Recruitment	Vaziri	Cyrus	NIH National Institute of Environmental Health Sciences	1-R01-ES029079-01A1	2/1/19	11/30/23	Pathological Reprogramming of DNA Damage Signaling in Neoplastic Cells	$469,870
Recruitment	Vaziri	Cyrus	NIH National Cancer Institute	1-R01-CA229530-01A1	4/2/19	3/31/24	Establishing MAGE-A4/RAD18 as a novel cancer-specific chemotherapeutic target	$413,559
Recruitment	Vincent	Benjamin	Susan G Komen for the Cure	CCR17483467	8/15/17	8/14/20	Improving Immunotherapy in Triple-Negative Breast Cancer	$150,000
Recruitment	Vincent	Benjamin	Vanderbilt University Medical Center	VUMC65676	4/1/18	3/31/20	Metabolic Barriers to T Cell Activation in Clear Cell Renal Cell Carcinoma	$44,413
Recruitment	Vincent	Benjamin	V Foundation for Cancer Research	T2018-009	11/1/18	11/1/21	Immunotherapy to treat Triple Negative Breast Cancer Brain Metastases	$200,000
Recruitment	Vincent	Benjamin	Sage Bionetworks		3/1/19	12/31/19	Pan-Cancer Immune Atlas	$58,737
Recruitment	Vincent	Benjamin	Duke University	2832782	1/14/19	6/30/19	Molecular Dissection and Immune Characterization of Breast Cancer Brain Metastases to Predict Outcomes and Reveal Novel Therapeutic Strategies	$59,886
Investment (HTSF)	Voora	Neeta	NIH National Center for Advancing Translational Sciences	1-R21-TR002770-01	4/1/19	3/31/20	Genetic and Functional Dissection of Congenital Anomalie	$126,344
Recruitment	Wan	Yisong	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI123193-01-03	12/12/16	11/30/21	Functional protein networks underlying T cell growth, proliferation and differentiation	$377,975
Recruitment	Wan	Yisong	National Multiple Sclerosis Society	RG-1802-30483	10/1/18	9/30/21	Targeting T Cell Function to Halt MS/EAE Development	$207,117
Retention	Wang	Greg	American Cancer Society	RSG-16-039-01-DMC	7/1/16	6/30/20	Decipher PRC2 Dysregulation Mechanisms in Multiple Myeloma	$198,000
Retention	Wang	Greg	NIH National Cancer Institute	5-R01-CA211336-01-03	2/1/17	1/31/22	Cancer Epigenetics: A Novel PRC2 Dysregulation Mechanism in Multiple Myeloma	$378,924
Retention	Wang	Greg	NIH National Cancer Institute	5-R01-CA215284-01-02	4/1/17	3/31/22	Determining the Role of DNA Methylation Deregulation in Oncogenesis	$34,858
Recruitment	Wang	Andrew	Asell, LLC		6/19/17	8/31/19	Evaluation of the CytoRADx System as a Biodosimeter With Human Subjects Receiving Radiation Therapy	$5,749
Retention	Wang	Greg	Gilead Sciences, Inc.		6/21/17	6/20/19	Decipher and target epigenetic dependency in acute myeloid leukemia with DNMT3A mutation	$65,000
Retention	Wang	Greg	Icahn School of Medicine at Mount Sinai	0255-3281-4609	6/8/17	5/31/19	Targeting Lysine Methyltransferases EZH2 and EZH1 for Treating MLL-rearranged Leukemias	$249,644
Retention	Wang	Greg	Leukemia and Lymphoma Society	1363-19	7/1/18	6/30/23	Decipher and Target AML Cell Dependency on Epigenetic Mutations	$110,000
Retention	Wang	Greg	When Everyone Survives Foundation		7/1/18	6/30/19	To understand and target epigenetic vulnerability in AML with DNMT3A somatic mutation	$50,000
Recruitment	Wang	Andrew	Capio Biosciences, Inc.	SBIRSub1	8/1/18	1/31/20	SBIR-CapioCyte Circulating Tumor Cell Assay as a Biomarker for Cancer Immunotherapy Response	$25,000
Recruitment	Wang	Andrew	University of Illinois Board of Trustees	092585-17169	8/15/18	4/30/22	Targeting through Selective Cell Labeling	$190,449
Recruitment	Wang	Andrew	NIH National Institute of General Medical Sciences	1-R01-GM130590-01	2/1/19	11/30/22	Basement Membrane Targeted Nanoparticles for Post-Surgical Adhesion Prevention	$373,205
Innovation Award	Waters	Marcey	NIH National Institute of General Medical Sciences	5-R01-GM118499-01-02	9/1/17	8/31/21	Origins of Ligand Binding and Selectivity in Methyllysine Reader and Writer Proteins	$286,878
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	$446
Retention	Weiss	Jared	Pfizer, Inc.		8/27/13	8/26/20	Phase 1 Safety, Pharmacokinetic and Pharmacodynamic Study of PF-02341066, A C-Met/HGRF Selective Tyrosine Kinase Inhibitor, Administered Orally to Patients with Advanced Cancer	$216,068
Retention	Weiss	Jared	Alliance Foundation Trials, LLC		4/14/15	4/13/25	A Phase I Dose Escalation and Phase 2 Randomized, Placebo-Controlled Study of the Efficacy and tolerability of Veliparib in Combination with Paclitaxel/Carboplatin-Based Chemoradiotherapy Followed by Veliparib and Paclitaxel/Carboplatin Consolidation in Subjects with Stage III Non-Small Cell Lung Cancer (NSCLC)	$3,831
Retention	Weiss	Jared	AstraZeneca Pharmaceuticals LP		1/14/16	1/13/20	A Phase III Randomized, Open-label, Multi-center, Global Study of MEDI4736 in Combination with Tremelimumab versus Standard of Care in the Treatment of First-line Recurrent or Metastatic Squamous Cell Head and Neck Cancer Patients	$29,390
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 Pembrolizumab after Standard First-Line Induction Chemotherapy in Advanced NSCLC	$84,412
Retention	Weiss	Jared	Amgen, Inc.		7/21/17	7/31/22	A Phase 1b/3 Multicenter, Randomized Trial of Talimogene Laherparepvec in Combination With Pembrolizumab for the Treatment of Subjects With Recurrent or Metastatic Squamous Cell Carcinoma of the Head and Neck	$27,543
Retention	Weiss	Jared	AstraZeneca Pharmaceuticals LP		4/28/17	8/31/22	Multimodality Therapy with Induction Carboplatin/nab-Paclitaxel/Durvalumab (MEDI4736) Followed by Surgical Resection and Risk-adapted Adjuvant Therapy for the Treatment of Locally-Advanced and Surgically Resectable Squamous Cell Carcinoma of the Head and Neck	$94,376
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	$118,125

UCRF Category	PI Last Name	PI First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
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	$121,073
Retention	Weiss	Jared	V Foundation for Cancer Research	D2018-034	9/15/18	9/15/21	Targeting GD2 Ganglioside in Small Cell Lung Cancer	$100,000
Retention	Weiss	Jared	American Association for Cancer Research	18-40-12-SHET	8/1/18	7/31/19	FELLOW: Siddharth Sheth	$100,000
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	$35,227
Recruitment	Wheeler	Stephanie	Duke University	A031031	1/1/19	12/31/23	Disparities in the Use of Oral Anticancer Agents in Kidney Cancer	$41,985
Recruitment	Wheeler	Stephanie	American Cancer Society	60241	2/9/19	2/10/20	Developing and validating a risk stratification framework for breast cancer survivors	$110,000
Investment (HTS)	Wilhelmsen	Kirk	University of North Texas Health Science Center at Forth Worth	Barber	8/22/18	8/31/20	Epigenetic Risk Factors for Early Age at Onset of Alzheimer's & MCI among non-Caribbean Hispanics	$32,474
Recruitment	Williams	David	Virginia Commonwealth University	FP00007299_SA001	8/1/18	6/30/23	The role of the MBD2-NuRD complex in globin gene silencing	$328,069
Recruitment	Willson	Tim	Duke University	3130816	6/15/18	6/14/19	Cancer cell intrinsic and extrinsic actions of steroid hormones in breast tumors	$23,303
Recruitment	Willson	Tim	North Carolina Biotechnology Center	2018-IDG-1030	3/15/18	3/14/19	Kinase Chemical Biology Center at UNC-CH	$66,263
Recruitment	Willson	Tim	Structural Genomics Consortium	UNC Phase IV Award	9/30/18	6/30/20	Structural Genomics Consortium Grant Funding	$400,000
Investment (CC)	Wiltshire	Tim	North Carolina State University	2015-3275-02	6/1/16	4/30/20	Systems Toxicogenomics of Endocrine Disrupting Chemicals in Brain	$103,399
Theme Investment	Wiltshire	Tim	North Carolina State University	2011-2427-05	4/1/17	3/31/19	Genetic Etiology of Cancer Drug Response	$270,670
Theme Investment	Wiltshire	Tim	American Heart Association	18PRE33960079	7/1/18	6/30/19	FELLOW:OLVIA DONG Pharmacogenomic Testing with DNA2RXTM in Cardiac Catheterization Laboratory Patients	$26,844
Recruitment	Wood	William	Incyte Corporation		9/18/17	12/31/20	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 allogenic stem cell transplantation (REACH 3)	$85,127
Recruitment	Wood	William	University of Alabama	000515978-SC007-Woo	1/1/18	12/31/19	Understanding Causes of Outcome Disparities in Adolescents and Young Adults with ALL	$6,600
Recruitment	Wood	William	Pfizer, Inc.	CP197890	12/18/18	10/31/19	LCCC 1851: Digital Assessment of Functional Endpoints in Adults with Cancer: an Observational Study	$459,189
Recruitment	Wood	William	Vanderbilt University Medical Center	VUMC 71409	1/15/19	7/31/20	Identifying Cost and Coverage to Medicare Beneficiary Access to Specialty Drugs	$10,000
Recruitment	Yarbrough	Wendell	NIH National Institute of Dental and Craniofacial Research	1-R01-DE027942-01A1	6/1/19	7/31/24	Exploring mechanisms of therapeutic demethylation effects in HPV-associated head and neck cancer	$487,357
Retention	Yeh	Jen Jen	NIH National Cancer Institute	5-R01-CA193650-01-04	5/1/15	7/31/20	The adaptive kinome in pancreatic cancer	$593,093
Retention	Yeh	Jen Jen	NIH National Cancer Institute	5-R01-CA199064-01-03	8/1/16	7/31/21	Tumor subtypes and therapy response in pancreatic cancer	$591,406
Retention	Yeh	Jen Jen	NIH National Cancer Institute	3-R01-CA199064-03S1A1	8/1/16	7/31/21	Tumor subtypes and therapy response in pancreatic cancer	$171,400
Retention	Yeh	Jen Jen	University of Rochester	416909-G	9/1/16	8/31/19	Targeting macrophages to improve chemotherapy in metastatic pancreas cancer.	$125,657
Retention	Yeh	Jen Jen	Princeton University	SUB0000166	9/15/16	8/31/19	Pathway and Network Integration of Cancer Genomics and Clinical Data	$91,000
Retention	Yeh	Jen Jen	NIH National Cancer Institute	5-F30-CA213916-02	7/1/17	6/30/20	FELLOW:M LIPNER FOLFOX-induced kinome reprogramming in pancreatic cancer tumor xenografts	$30,558
Retention	Yeh	Jen Jen	North Carolina Central University	A18-0017-S001/P0099431	10/1/18	12/31/19	Service agreement with North Carolina Central University (NCCU)	$65,296
Recruitment	Zamboni	William	ChemoGLO, LLC		11/24/16	6/30/20	ChemoGLO - Service Agreement	$13,826
Recruitment	Zamboni	William	Meryx, Inc.		2/1/18	2/1/20	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	$120,530
Recruitment	Zeidner	Joshua	Tolero Pharmaceuticals, Inc.		11/30/15	5/28/20	A Phase 2, Randomized, Biomarker-driven, Clinical Study in Patients with Relapsed or Refractory Acute Myeloid Leukemia (AML)	$100,549
Recruitment	Zeidner	Joshua	Merck Sharp and Dohme Corp.		12/18/15	9/30/20	Phase 2 Study of High Dose Cytarabine Followed by Pembrolizumab in Relapsed and Refractory Acute Myeloid Leukemia	$72,007
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 Myelogenous Leukemia	$19,147
Recruitment	Zeidner	Joshua	Tolero Pharmaceuticals, Inc.		1/9/18	1/31/23	Phase 1, Open-label, Dose-escalation, Safety and Biomarker Prediction of Alvocidib and Cytarabine/Daunorubicin (7+3) in Patients with Newly Diagnosed Acute Myeloid Leukemia (AML)	$501,589
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 Leukemia, or Low-Blast Acute Myelogenous Leukemia	$26,723
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	$38,243
Theme Investment	Zhou	Otto	NIH National Cancer Institute	1-F30-CA235892-01	1/1/19	12/31/22	FELLOW:A PUETT Improved cancer screening with synthetic and stationary 3D mammography	$36,694

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