UNC | LINEBERGER COMPREHENSIVE CANCER CENTER

UNIVERSITY CANCER RESEARCH FUND
2023 LEGISLATIVE REPORT

Annual Financial Report to the Joint Legislative Education Oversight Committee and the Office of State Budget and Management
Submitted November 1, 2023, in accordance with G.S.116-29.1

LETTER FROM THE CHAIR

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

Cancer is a leading cause of death both in our state and across the world. With vision and foresight, the North Carolina General Assembly established the UCRF in 2007 to advance innovative research at UNC Lineberger — the state's only public National Cancer Institute-designated comprehensive cancer center — and UNC Health with the goal of improving cancer prevention, treatment and outcomes in North Carolina and beyond.

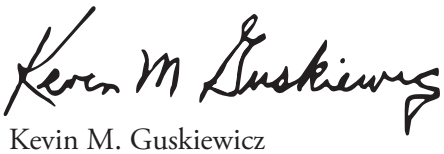
Since then, the UCRF has generated tremendous health and economic value for our state. Some of the financial benefits in Fiscal Year 2023 that are highlighted in this year's report include:

- The recruitment and retention of 30 outstanding faculty members who are experts in their fields, and the support of more than 3,500 high-paying research-related jobs in North Carolina;
- A direct and indirect economic impact of $746.9 million, including external research grants totaling $254.7 million;
- State and local tax revenues of $23.5 million generated by UCRF activities;
- And a 12-to-1 return on the state's investment in FY 2023 alone.

UCRF funding is deployed to have optimal impact by supporting three strategic research priorities: cancer genetics, therapies, and outcomes. UNC-CH can significantly advance our understanding of this disease and its subtypes. The UCRF also empowers us to better serve patients throughout our entire state by sustaining critical infrastructure, sharing resources including practitioner training and telehealth networks, and by expanding community-focused research and engagement initiatives.

None of this would be possible without Dr. Shelley Earp, director of UNC Lineberger, who announced his retirement at the end of the academic year. Dr. Earp has led UNC Lineberger since 2018, and previously from 1997 to 2014. He has been a leader not only locally in our state but across the nation, ushering in a new era of revolutionary advances in our understanding of cancer diagnosis, treatment and research. His leadership has helped make the UCRF's accomplishments of the past several years possible.

While our state's ongoing commitment to investing in cancer care and research has amplified UNC Lineberger and UNC Health's leadership on a global scale, the UCRF's most significant benefits remain focused on the people of North Carolina. Therefore, on behalf of cancer patients from all 100 counties in our state, and on behalf of the researchers and clinicians who work tirelessly to care for them and discover new ways to treat their disease, thank you for your continued support.



Kevin M. Guskiewicz
Chancellor
Chair, Cancer Research Fund Committee

INTRODUCTION

HISTORY

The General Assembly created the University Cancer Research Fund in 2007 as a pioneering investment in support of cancer care and research at the UNC Lineberger Comprehensive Cancer Center and UNC Health. Funded by a combination of state appropriations and taxes on noncigarette tobacco products, the total Fiscal Year 2023 allocation to the UCRF was $59.5 million.

To ensure that these funds are invested effectively, the General Assembly also formed the Cancer Research Fund Committee, which developed a strategic plan and provides ongoing oversight to focus UCRF resources in areas where they can have maximum impact:

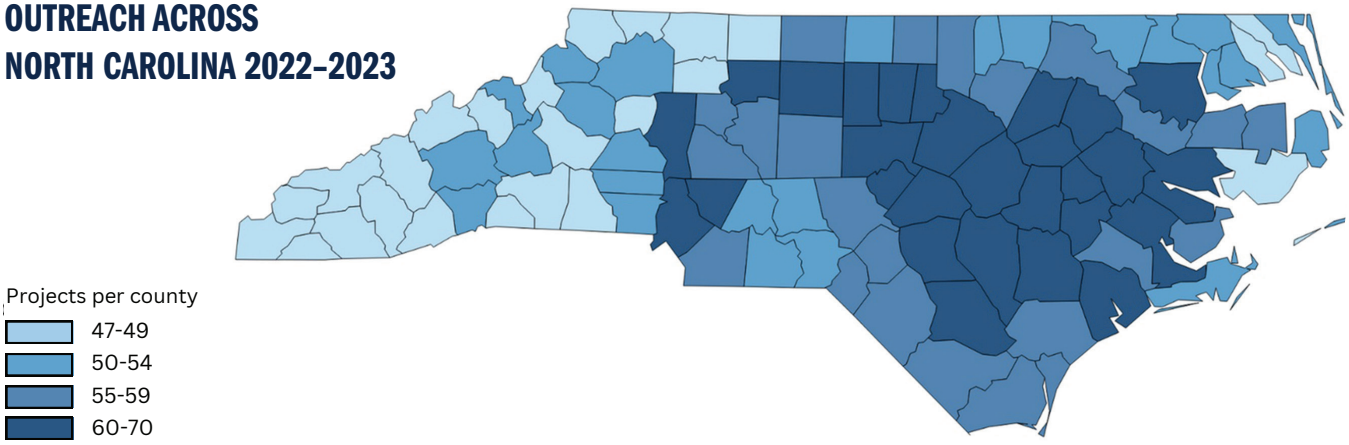
- Strategic research priorities in genetics, novel therapies, and cancer outcomes;
- Clinical excellence through selective opportunities that enable UNC Lineberger to continue to be a leader in a rapidly changing field of research; and
- Critical infrastructure such as technology, training, outreach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

In addition to its ongoing support of the UCRF, the General Assembly made two major capital investments to enhance UNC's cancer care and research capacities. The N.C. Basnight Cancer Hospital, funded by the legislature in 2004, opened in 2009 and serves patients from all 100 North Carolina counties, with more than 250,000 patient visits this year. In 2010, the General Assembly approved funding to build the Biomedical Research Imaging Building, a cutting-edge collaborative research facility that opened in 2014 and, now named Marsico Hall, is home to advanced equipment and technology to further accelerate cross-disciplinary research capabilities.

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

OUTREACH

OUTREACH ACROSS NORTH CAROLINA 2022–2023



A. Cancer Data Resources
- Cancer Information and Population Health Resource (CIPHR)
- Carolina Breast Cancer Study, Phase 3
- Carolina Breast Cancer Study, Phase 4
- Carolina Senior Registry
- Lung Cancer Screening Registry

B. Understanding Cancer Disparities
- Ancestry-related RNA Splicing and Immune Expression in Metastatic Breast Cancer
- Biology of breast cancer in Black women
- Breast Cancer Mortality Disparities: Biology and Access
- Breast cancer treatment access and outcomes among Black women
- Cancer disparities among American Indians
- Centering Equity in HBOC Genetic Testing
- Community-based breast cancer screening and surveillance
- Disparities in Diagnosis of Cancer in the ER
- Enhancing comparative effectiveness research
- Equity in virtual oncology visits
- GMaP: Geographic Management of Cancer Health Disparities Program
- Increasing minority recruitment in multiple myeloma clinical trials
- Integrating Biology and Access to Understand Metastatic Breast Cancer Disparities
- Multilevel Drivers of Liver Cancer Disparities
- Racial disparities hot-spotting to improve breast cancer outcomes
- SE Consortium for Lung Cancer Health Equity
- Southern Liver Health Cohort
- Survivin in Black Breast Cancer Patients
- Treatment disparities in kidney cancer
- Well Empowered

C. Cancer Screening
- Breast cancer sociodemographic disparities study
- Carolina Cancer Screening Initiative
- Comorbidity in those undergoing lung cancer screening
- Digital outreach intervention for lung cancer screening
- Remote CRC screening intervention
- SCORE: Scaling Colorectal Cancer Screening Through Outreach, Referral, and Engagement

D. Cancer Survivorship
- Eliciting Patient Treatment Preferences to Inform Treatment Decisions in Glioblastoma Patients
- Implementing Financial Navigation in NC Communities
- Interactive Prostate Cancer Information, Communication and Support Program
- Intervention to increase endocrine therapy adherence
- Navigator-assisted ecomaps to support to rural cancer caregivers
- Patient-reported measure to identify treatment priorities of patients with advanced blood cancers
- Physical activity intervention with Black colorectal cancer survivors
- Pillsy cap shipping to optimize endocrine therapy adherence
- PROmoting CLinicAl TrIal EngageMent for Pancreatic Cancer

E. Clinic-based Prevention
- Duke & UNC Tobacco Treatment Specialist Credentialing Program
- EMR-integrated referrals to community services to promote equity
- Maximizing HPV vaccine uptake in young cancer survivors

F. Community-based Prevention/Education
- A new measure for youth prevention media campaigns
- ASPiRE: Advancing Science & Practice in the Retail Environment
- CAREGIVER & COVID PROJECT
- Educational Tools to Advance Equity in Cancer Clinical Trial Participation
- Fort Freedom Tobacco Control
- Impact of e-cigarette prevention messages on adolescents
- Increasing BIPOC representation in clinical research
- Quantitative models of cell cycle arrest
- UNC Superfund Research Program Community Engagement Core Activities
- Understanding vaping among the vulnerable

G. Improving Treatment Outcomes
- Care gaps and needs in adolescent and young adult cancers
- Chemotherapy and cognitive decline in acute leukemia
- Comparison of operative to medical endocrine therapy for DCIS
- Exercise program for acute leukemia patients
- Funding patient transportation
- Impact of race and age on breast cancer treatment
- Integrating Molecular Pathology, Radiology and Genetics to Improve Breast Cancer Risk Prediction
- Mobile health app to promote participation of Black women in breast cancer clinical trials
- Oncology Navigation to enhance equity Palliative care intervention for new AM leukemia patients
- Patient-centered Pharmacy Pathway for Oral Chemotherapy
- Patient Reported Outcomes in Acute Myeloid Leukemia
- Personalizing kidney cancer communication to support decision-making
- Quality of Life & Physical Activity in Black Breast Cancer Survivors
- Remote monitoring of leukemia and lung cancer patients
- System for risk differences in patients with lung cancer
- Testing a prognostic calculator in patients with breast cancer
- Treatment options for recurrent bladder cancer
- UNC Cancer Network eTumor Boards
- UNC Cancer Network telehealth lectures

H. Patient/community advisory board
- Immune landscape of non-small cell lung cancer in African Americans
- Improving outcomes for parents with advanced cancer

ECONOMIC IMPACT

ECONOMIC IMPACT

As in years past, UNC Lineberger hired the nationally respected consulting firm Tripp Umbach to estimate the UCRF's economic impact for Fiscal Year 2023 (see the full report in the Appendix). The Fund's overall economic impact is calculated as the sum of its direct, indirect and induced impacts.

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.

Using standard methodologies, Tripp Umbach estimated that in FY 2023 the UCRF:

- Had an overall economic impact of $746.9 million, including $377.2 million in direct spending and $369.7 million in indirect and induced impact attributable to external grant funding and downstream spending by employees, vendors and contractors.
- Generated $12 in economic impact for every UCRF dollar spent.
- Supported more than 3,577 jobs, including the direct support of 1,439 jobs and an additional 2,138 jobs through the increased extramural funding and the indirect and induced impacts of those direct jobs and the spending generated within North Carolina.
- Resulted in more than $23.5 million in state and local tax revenues to North Carolina.

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

ECONOMIC IMPACT

Faculty Job Creation and Retention

The UCRF's successes are fueled by UNC Lineberger's world-class faculty. They train future leaders in cancer care; invest in staff, equipment and technology; and earn research funds from other sources both inside and outside our state. Their innovative research yields meaningful scientific and clinical advancements that lead to earlier detection and diagnosis, more effective treatments, and better prevention programs. UCRF support has made it possible to recruit and retain 384 outstanding leaders in their fields since the Fund was created in 2007.

- Recruitment: The UCRF has enabled UNC to recruit 26 faculty this year and 307 since 2007. These renowned cancer experts are delivering high-quality cancer care for patients and cultivating a wide range of research programs in areas that are critical to improving cancer prevention, diagnosis and treatment in North Carolina.
- Retention: The UCRF has supported the retention of 4 faculty this year and 77 since 2007, allowing top-notch talent to remain at UNC Lineberger to continue their research and clinical work.

Extramural Funding Growth

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

- In FY 2023, funding from outside sources that is directly attributable to the UCRF was $254.7 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 2023, representing one year of funding and showing a significant growth in UCRF-related extramural funding since $5 million in FY 2008. A complete list of the awards is included in the Appendix.

Intellectual Property, Innovation, and Entrepreneurship

UCRF-backed innovations and discoveries have helped to create jobs and launch companies whose goal is to convert these research findings into clinical advances. Partnering with UNC's North Carolina Translational and Clinical Sciences Institute (NC TraCS), the UCRF promotes an entrepreneurial mindset at UNC and supports specialized staff to maximize the development and licensing of university intellectual property.

With the help of the UCRF, external grants and other sources of support, there are more than 50 startup companies focused on advancing biomedical research and human health. Nearly all of these companies are based in North Carolina. Together they employ a workforce of approximately 625 in our state.

RESEARCH IMPACT

RESEARCH IMPACT

Guiding Principles

To optimize its effectiveness, the UCRF is leveraged for key clinical and infrastructure resources and is invested in research areas in which UNC Lineberger can be a world leader and have meaningful impact. Accordingly, the Cancer Research Fund Committee's strategic plan targets three specific research priorities:

- **Understanding the Role of Genetics in Cancer Causation and Treatment:** Discovering the genes that predispose families to cancer and that predispose cancer patients to poor treatment outcomes – especially by looking for the various genetic mutations in specific cancer subtypes that lead to cancer therapy failure.
- **Developing Novel Therapeutics:** Creating innovative therapies, including novel immunotherapies, that target the specific vulnerabilities of treatment-resistant cancers, and finding new ways of delivering treatments that lessen toxic side effects for patients. This research priority relates closely to the genetics research priority and generates key findings to be used in clinical applications as quickly as possible.
- **Optimizing NC Cancer Outcomes:** Improving the quality of oncology and survivor care, and supporting the growth and application of population-based datasets that track the occurrence and treatment of cancer across North Carolina, including in the rural areas, in support of research aiming to improve community prevention and early detection. The ultimate goal is understanding cancer at a level unprecedented in the nation and designing research interventions to address patients' challenges at the practice, health system and community levels.

In addition to the three research priorities, investing UCRF funds in infrastructure and clinical excellence allows UNC Lineberger to seize research or clinical opportunities as they arise and to provide the top minds in the field with critical resources that keep UNC at the forefront of current and future research. This approach enables UNC Lineberger to adapt to a constantly changing field and to continue building leadership and expertise in key clinical and research areas.

UCRF provides seed funds to recruit top researchers, purchase technology and equipment for use by multiple faculty members, and support the development of shared research resources. Investments in imaging and informatics give UNC Lineberger's clinician scientists the tools they need to improve patient outcomes, while telemedicine and virtual tumor boards allow oncology experts to connect and collaborate with doctors and hospitals across North Carolina.

Through these investments, the UCRF strengthens UNC Lineberger's multidisciplinary excellence in cancer care and supports a statewide infrastructure to bring leading-edge clinical research and applications into community practices and research institutions throughout the state.

RESEARCH IMPACT

Devising a smarter way to treat brain tumors

Aggressive brain tumors are notoriously tough to treat. Many tumors are difficult to reach because they grow deep into the brain. The protective capillary system surrounding the brain, designed to shield it from toxins, can weaken a drug's ability to kill the tumor cells it's meant to target. And the complexity of different brain tumor mutations can render some genetic analyses ineffective. These and other factors can make it a challenge for patients and their doctors to decide on the best course of action.

UNC Lineberger scientists have developed a tool called a "slice platform" that may help make those decisions easier. This process, which offers a unique way to keep tumor cells alive outside of a cancer patient, entails removing a few tumor cells from a patient's brain and placing them on a living slice of rodent brain. (Human brain tumor cells placed in a tissue culture dish will rapidly die. However, human brain tumor cells embed into the rodent brain slice grow.) Researchers can then simultaneously test up to a dozen different drugs to see which ones most effectively kill the live tumor cells. This highly complex process takes just four days.

The team of scientists and clinicians advancing the development of this technology uses the lab of **Shawn Hingtgen, PhD,** as their home base. Running point on the innovative project is **Andrew Satterlee, PhD,** who has a powerful personal incentive to advance this technology: about 16 years ago, as a 20-year-old college student, he was diagnosed with brain cancer. The surgery to remove the cancer was successful, but because his tumor was rare, his doctors could not agree on what kind of chemotherapy regimen would best prevent recurrence. The decision was left with Satterlee and his family, who did a lot of research themselves and consulted with outside experts for advice and guidance.

Hingtgen

Satterlee

Higgins

"I feel so lucky to be developing this tool because I know how helpful it can be. If there was a better way to decide what drugs I needed, we would have used it," said Satterlee, associate director of the Brain Slice Technology Program. "If this test can offer an objective data point and ease the burden on patients, it can be a really important puzzle piece to help physicians make care decisions."

Slice technology has been previously used to successfully study stroke and neurodegenerative disease, and around 2016, researchers like UNC Lineberger's Al Baldwin, PhD, Kenan Distinguished Professor of Cell Biology, began exploring it to study cancer. But putting live patient tumor tissue onto the brain slices so they can grow is a novel idea, and the research team's excitement about the possibilities is palpable.

"We've realized that putting fresh tumor cells on the slices allows them to survive unlike they do anywhere else," Satterlee said, adding that embedding high-grade or low-grade tumors, or primary brain tumors

versus metastases, has yielded similarly exciting lab results. "We haven't found a tumor type yet that won't grow on the slice."

In May, the research team published their key findings in Cell Reports Medicine. They also patented their process and, thanks to a grant from the UCRF, are recruiting patients for a feasibility clinical trial that will take the first steps toward validating the brain slice as a clinical tool to help guide the treatment of patients. Through this trial, the researchers hope to optimize the testing process, find a correlation between their test results and the patients' clinical responses, and collect robust data that could eventually be submitted to the Federal Drug Administration to help their technology gain approval for clinical use.

"It is really hard to get funding to bridge that translational gap from basic science into the clinic, and the UCRF was able to step in and bridge that gap," said Hingtgen, professor of pharmacoengineering and molecular pharmaceutics at UNC Eshelman School of Pharmacy and professor of neurosurgery at the UNC School of Medicine. "The feasibility trial is the first full deployment of this system in the clinical setting, where we can take the critical first steps toward showing that the system can really help patients."

Assistant Professor of Neurosurgery **Dominique Higgins, MD, PhD,** is the highly skilled neurosurgeon who does most of the clinical procedures to remove patients' tumor cells for the brain slice team. His expertise in cell biology complements Satterlee and Hingtgen's pharmacology backgrounds, enabling the team to fully consider the intricacies of how this tool should ideally work in a clinical setting.

A specialist in brain tumor treatment, Higgins is starting a separate clinical trial using brain slices to study ferroptosis, a type of cell death triggered by removing certain amino acids from the diet. His previous research uncovered that glioblastoma cells are susceptible to ferroptosis; he hopes that using brain slices can help identify therapies to promote or accelerate that process.

"This is a high-throughput way of testing new agents in a native microenvironment that a tumor would typically see," Higgins said. "It's a great opportunity to study drugs that target tumor metabolism, and brain slice technology can help answer some of these questions. It's also exciting to think about applying this technology not just to brain tumors, but to other cancers."

To that end, the research team includes translational researchers like David Kram, MD, MCR, FAAP, an associate professor of pediatric hematology and oncology who is working toward new therapies for pediatric brain tumors, and clinician-researchers like Victoria Bae-Jump, MD, PhD, professor of gynecologic oncology, who is exploring the possibilities of using a similar slice platform to test treatments for ovarian cancer. Given the platform's potential to accelerate drug development, the team also collaborates with outside academic institutions, organizations and pharmaceutical industry partners.

"It comes back to partnership. We all have different tools and expertise, and it's been amazing to watch everyone come together and work so well as a team," Hingtgen said. "In the end, the goal for all of us is ultimately to improve outcomes for patients." ◀

Parenting with cancer: New clinic helps parents navigate tough issues

Parents who receive a cancer diagnosis not only have to battle a serious disease — they also grapple with how best to talk to their kids about their illness, continuing to be there for them as much as possible, making sure their legal and financial affairs are in order, and other challenges. The newly established **Parenting with Cancer Clinic** at the N.C. Basnight Cancer Hospital, UNC Lineberger's clinical home, can help parents with cancer navigate those questions and get the help and support they need.

The cancer hospital is a national leader with its Comprehensive Cancer Support Program (CCSP), which provides a wide range of services to cancer patients and their families from diagnosis to treatment and into survivorship. As part of the CCSP, the Parenting with Cancer Clinic's mission is to help cancer patients with minor children talk to their children openly and honestly about their illness, and to assist with cancer-related legal issues such as advance directives, wills, trusts and guardianship of minors.

Yopp

Rogers

Justin Yopp, PhD, a clinical psychologist who specializes in providing therapeutic services for families facing cancer, leads the clinic with **Cindy Rogers, JD,** an attorney who uses her legal expertise and network to guide patients and families to the right resources. Rogers and Yopp decided to combine their areas of expertise into the Parenting with Cancer Clinic after working with a 40-year-old cancer patient with four young children who tragically passed away before saying goodbye to her children or making guardianship arrangements.

Supported by UCRF funds and private gifts, including the Lynn Hall Parenting with Cancer Fund, the clinic has served more than 40 families since it opened in May, offering free services both in person and via telehealth. The clinic provides dedicated space and time to meet with families and provide services tailored to families' individual needs.

"Our clinical experience brought to the forefront how important it is to connect with patients early in their cancer journey to offer guidance about communicating openly and honestly, and resources for planning for the future care of their families," said Rogers, director of patient assistance at the CCSP. "Legal documents require time and thoughtful planning. Ideally arrangements should not be made when a patient is physically compromised by their illness or when there is a sense of urgency. I try to plant a seed that putting your affairs in order does not mean giving up hope — but rather offers peace of mind that their families will be taken care of."

Rogers has been working with legal organizations including Legal Aid of North Carolina, the UNC School of Law, the N.C. Bar Association, and attorneys in the community to create a referral network for low-income patients to receive

"Generally, almost every parent thinks about two key issues: how are my kids doing, and how will they be in the future?" he said. "Parents with cancer have the same questions. These conversations are about securing their children's current and future well-being. These can be hard conversations, so we want to meet each patient where they are."

– Justin Yopp

discounted or pro bono services. "It's been really rewarding to meet with folks in the legal community and see how generous they are with their time and expertise," she said.

Yopp, an associate professor in the Department of Psychiatry at the UNC School of Medicine, said the clinic is open to any patient being treated for cancer at UNC who has children under 18, regardless of their prognosis or the type of cancer they have. During counseling, he works to provide patients with the right tools to help them talk with their children honestly and lovingly about their cancer. Because establishing trust around this issue is key to helping both the parents and the children cope with the situation, the clinic offers parents specific language and recommendations for communicating in an age-appropriate way with their children about diagnosis, treatment, and prognosis.

"Generally, almost every parent thinks about two key issues: how are my kids doing, and how will they be in the future?" he said. "Parents with cancer have the same questions. These conversations are about securing their children's current and future well-being. These can be hard conversations, so we want to meet each patient where they are."

This combination of counseling and legal services is what makes the Parenting with Cancer Clinic unique. In addition to growing the clinic's capacity, Yopp and Rogers plan to implement a research component to learn how to better support parents and their families while they go through their cancer diagnoses and treatments.

"There aren't programs that integrate a legal component like ours, especially being free of charge to families, so this does feel in some ways like we're trailblazers," Yopp said. "Our primary mission is to provide these services for these families, but we imagine we'll learn a lot and want to do it in a systematic way and figure out what's most helpful for these families and disseminate what we do to other cancer centers." ◀

RESEARCH IMPACT

Small molecules make big impact in advancing cancer research

Working with small molecules to make big impacts, **Lindsey James, PhD,** is at the forefront of innovative chemical biology research to find new and more effective ways to treat cancer.

James

James, an assistant professor in the UNC Eshelman School of Pharmacy's Division of Chemical Biology and Medicinal Chemistry, explores epigenetic abnormalities that lead to cancer and applies medicinal chemistry, chemical biology and cancer biology approaches to discover potential therapeutic agents. Her lab creates small molecules that attach to and block the activity of certain proteins that lead to the development of various types of cancer.

"My dad was a doctor, and I always thought I'd go into medicine or science," said James, who grew up in Philadelphia. "In high school, I had a great teacher who really sparked my interest in chemistry. From there, I was all in."

James earned her undergraduate degree in chemistry from Colgate University in New York. After being accepted by several larger schools for her graduate degree, she decided to move south in 2005.

"It turned out to be a very good decision – I've been at UNC almost 20 years," said James, who earned her PhD in bioorganic chemistry in 2010 under the mentorship of Marcey Waters, Glen H. Elder Jr., Distinguished Professor of Chemistry. For her postdoctoral research at UNC Eshelman, James worked for more than two years with UNC Lineberger member Stephen Frye, PhD, professor of chemical biology and medicinal chemistry, who was the founding director of the Center for Integrative Chemical Biology and Drug Discovery.

"Working in the center allowed me to apply my background in physical organic chemistry to biological applications with more therapeutic goals in mind," said James, who became a research faculty member after her postdoc and in 2019 transitioned to a tenure track-position in chemical biology and medicinal chemistry. "Drug discovery allows me to bridge my interest in basic science with a health care endpoint and provides the opportunity to forge collaborations with cancer biologists, clinicians and other researchers."

Collaboration is a key component of James's work. Her research lab is multidisciplinary, and when her team makes progress on a potential therapy, they seek out colleagues within UNC who have expertise with a specific disease. "There is so much opportunity for collaboration in this discipline which I embrace wholeheartedly. It makes my team more productive and successful and my job far more enjoyable, and ultimately, gets us closer to being able to help patients," she said.

James received startup funding from the University Cancer Research Fund to support some of her early research and appreciates the bridge between UNC

Lineberger and the School of Pharmacy. "The UCRF grant funding that I received was really valuable," she said. "I was able to leverage that grant to secure independent funding and help make progress on some of my early projects."

One of her primary research workstreams focuses on the NSD2 protein, which plays important roles in gene regulation. NSD2 dysfunction can contribute to the growth and development of several diseases, including multiple myeloma, a devastating and aggressive blood cancer that develops in bone marrow. NSD2's presence in multiple cancers makes it an interesting target for potential cancer therapies, and James has been developing and testing various small-molecule compounds in hopes of discovering therapies with the potential to effectively inhibit NSD2.

Her lab was the first to receive funding from Pinnacle Hill, a research and development partnership between UNC and Deerfield Management Company, an investment management firm, that devotes targeted resources to accelerate biomedical and life-science discoveries that have great therapeutic potential for patients. James met regularly with a team of Deerfield scientists throughout the project, with the findings generating multiple next research steps.

"The collaboration with Pinnacle Hill and Deerfield provided an opportunity to progress compounds that had been discovered in the lab closer to the clinic and go beyond what we would routinely do in the lab, as well as learn more about the drug discovery process," James said. "We've made a lot of interesting discoveries so far and have new scientific directions to pursue. It has been extremely rewarding."

Her work with Pinnacle Hill has led to other collaborative partnerships, including a team led by James that has been named a 2023 UNC Creativity Hub winner. Creativity Hubs are virtual research networks that promote interdisciplinary collaboration on big ideas, with the goal of moving new discoveries and ideas into practice. James's hub project involves an emerging technique called small molecule-induced protein degradation, which has the potential to target a broader range of proteins than traditional small molecule compounds. Her lab recently uncovered a novel mechanism to degrade proteins. The multidisciplinary team will investigate whether this discovery can be applied broadly to target a range of proteins known to influence the growth and spread of cancer.

When she's not building new compounds or new partnerships, James keeps busy with her family. She and her husband, Drew, who earned his undergraduate and MBA degrees from UNC, live in Chapel Hill with their three children (their daughters are 9 and 6, and their son is almost 2). They enjoy skiing and going to the beach, and James enjoys taking her daughters to men's and women's Tar Heel sporting events at Carolina. "My girls bleed Carolina blue, through and through," she said. ◀

Building collaborations to examine cancer through a social work lens

One of UNC Lineberger's hallmarks is its focus on team science, addressing complex cancer issues through a highly collaborative environment that reaches across disciplines to leverage expertise from many fields of study. A new partnership with the UNC School of Social Work demonstrates this cooperative approach, resulting in the first joint recruitment and appointment of two tenure-track faculty members — Assistant Professors **Bridgette Thom, PhD,** and **Tess Thompson, PhD, MPH** — who hold posts at the School of Social Work and UNC Lineberger.

Thom

Thompson

"I am thrilled to join forces with UNC Lineberger to bring these esteemed researchers and educators to Carolina. We are building bridges together in an effort to improve the lives of vulnerable and marginalized populations in North Carolina and around the world," School of Social Work Dean Ramona Denby-Brinson, PhD, said. "Our UNC School of Social Work researchers are committed to serving humanity by developing and implementing evidence-based policies and practices that address societal problems. The work of Drs. Thom and Thompson will bring an even greater depth of discovery to those efforts."

Coming to UNC from Memorial Sloan Kettering Cancer Center in New York, Thom earned her master's and doctorate degrees in social work from Columbia University. Her work examines the financial impact of cancer and how that can affect adherence to treatment. Early in her career at Memorial Sloan Kettering, Thom worked on research on the fertility experiences of young adult cancer patients, which then sparked her interest in the financial aspects of the patient experience.

"Through patient survey work, we found a whole litany of concerns around oncofertility, but one that was nearly always present was the financial issue, which, to me, highlighted disparities in outcomes and inequity in access," Thom said. "I started trying to build my own program of research centered around financial hardship and affordability issues, and my social work background encouraged me to look at the problem as a systemic issue. The next step is developing interventions that will help fix the problems, and ideally, we want to have interventions that target every layer of the health care system with which patients interact."

Thompson studies how social determinants of health — such as financial stability, employment status and access to food and housing — affect cancer prevention and control, and how to improve support for cancer survivors as well as their caregivers. Before joining UNC's faculty, she was a research assistant professor at Brown School of Social Work at Washington University in St. Louis, where she earned a master's in public health and a doctorate in social work. Thompson, who also has a master's in English from Oxford University and is a former protocol associate for the American College of

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– Ramona Denby-Brinson

Radiology, also studies how to improve health equity through health communication.

"Collaborating with clinicians at Siteman Cancer Center in St. Louis led me to see the importance of caregiving and the family and social context — cancer affects not just the patient, but also their family members and friends," Thompson said. "There has been a lot of research on how cancer affects the patient, but we don't know a lot about whether a caregiver's unmet needs for food, housing and transportation may have effects on the patient as well, especially if the caregiver is not the patient's spouse and does not live with the patient."

Support from UNC Lineberger and the opportunity to work in a highly collaborative multidisciplinary environment were partly what drew Thom and Thompson to Carolina. UCRF funds were leveraged to provide startup funds to support their research at UNC.

Thom will continue her work to help educate patients about financial issues related to their care. Her projects include working with a digital educational company to create online content to teach young adults how to financially navigate the healthcare system, and developing educational tools to help cervical cancer patients better understand insurance issues.

"This position was a perfect fit for the kind of work I had been doing in that it combines my training in social work with my background in cancer," Thom said. "Having this partnership and joint appointment will be integral to my next steps. UNC Lineberger has a top-notch Adolescent and Young Adult cancer program, which was also a big draw."

Thompson is looking forward to getting back into teaching while continuing to build upon her research. She's working to develop health care interventions that support partnerships between Black women with breast cancer and their caregivers, and she hopes to find ways to support the health, social and psychological needs of cancer patients and caregivers at a more systemic level.

"I am interested in exploring whether the cancer care setting is the most appropriate place to address

patients' and caregivers' social needs, or whether in some cases it may be more effective to partner with community organizations or advocate for policy changes to support patients and families," she said. "There was no doubt in my mind that the UNC School of Social Work and Lineberger Comprehensive Cancer Center would be the best place to carry out this work. The interdisciplinary collaboration here is wonderful, and I'm looking forward to working together with my new colleagues to serve cancer patients and their caregivers across North Carolina."

Societal and systemic factors are critical issues to address as UNC continues its work to advance cancer research and care, said UNC Lineberger member Donald L. Rosenstein, MD, director of the Comprehensive Cancer Support Program and professor of psychiatry and hematology in the School of Medicine.

"We are excited to have Drs. Thom and Thompson, two outstanding social work researchers, bring their expertise to the Lineberger team," said Rosenstein, who worked closely with the School of Social Work to bring Thom and Thompson to UNC. "Examining cancer through a social work lens is so important to improve our understanding of all the factors that can contribute to different patient experiences and outcomes." ◀

"Societal and systemic factors are critical issues to address as UNC continues its work to advance cancer research and care. ... Examining cancer through a social work lens is so important to improve our understanding of all the factors that can contribute to different patient experiences and outcomes." – *Donald L. Rosenstein*

White House turns to UNC Lineberger for cancer prevention, smoking cessation insights

UNC Lineberger's stature as a global leader in cancer research and its participation in the Cancer Moonshot program inspired a key White House advisor to visit Chapel Hill early this year, leading to an invitation to participate in the first-ever Biden Administration summit on tobacco cessation.

In February, White House staff reached out to UNC Lineberger leadership to arrange a visit from the President's Chief Science and Technology Advisor Arati Prabhakar, MS, PhD, who met with leading UNC Lineberger researchers to discuss their work supported by the Cancer Moonshot program and other innovative research in improving cancer prevention:

The Moonshot-initiated Tobacco Cessation and Prevention Programs

Goldstein

Ribisl

Adam Goldstein, MD, MPH, director of the UNC Tobacco Intervention Program and professor of family medicine; and **Kurt Ribisl, PhD,** co-lead of the UNC Lineberger Cancer Prevention & Control Program, and professor and chair of behavioral health at the UNC Gillings School of Global Public Health. They discussed prevention measures to reduce teen vaping and how telehealth was used during the COVID pandemic to keep tobacco cessation top of mind.

The Moonshot-initiated Cancer Screening Efforts

Wheeler

Reuland

Stephanie Wheeler, PhD, MPH, associate director of UNC Lineberger Community Outreach & Engagement, and professor of health policy and management at UNC Gillings; and **Daniel Reuland, MD, MPH,** co-director of the Carolina Cancer Screening Initiative and professor of medicine at the UNC School of Medicine. They spoke on the success of the Carolina Cancer Screening Initiative in Roanoke Rapids, North Carolina.

Cancer, Nutrition & Obesity, Endometrial Cancer as a Focus

Victoria Bae-Jump, MD, PhD, director of the UNC Lineberger Endometrial Cancer Center of Excellence and professor of gynecologic oncology at the UNC School of Medicine; and **Marissa Hall, PhD,** assistant professor of health behavior

at UNC Gillings. They explained their research that showed food warning labels could reduce the purchase of less healthy foods.

Hall

Bae-Jump

"Working on solutions to cancer is one of the most important things we can do, and these solutions are so important to the President and First Lady," Prabhakar told the researchers. "I'm heartened by the progress you've made and we all know we need to do more. It was just such a pleasure to dig in and see the quality of work and commitment you bring to this work."

Thanks to this successful visit, Goldstein was invited to the White House to participate in the Cancer Moonshot Smoking Cessation Forum, focusing on reducing the government's commitment to reduce the number of Americans who smoke. Goldstein was there representing UNC Lineberger and a consortium of academic health and cancer centers that developed "MATTCH – Medicare Access to Tobacco Treatment for Cessation and Health," a proposal to address payment reform for smoking cessation.

"I emphasized that for cessation efforts to reach larger populations to provide intensive counseling and pharmacotherapy, payment reform must occur, or providers won't have the ability to sustain the treatment," Goldstein said. "If you can't figure out a way to pay for it, you'll never reach the White House objectives."

Goldstein began working in tobacco cessation nearly 20 years ago, when UNC Hospitals became a tobacco-free workplace. While they initially focused on helping hospital employees quit smoking, Goldstein's team noticed a major need for cessation programs in the inpatient setting: Roughly 5,000 tobacco users were being admitted for treatment every year, with half of them being there for smoking-related illness.

This realization led to the creation of one of the first, and one of the largest, inpatient tobacco cessation programs in the country, thanks to seed funds from a UCRF grant. UNC's Tobacco Treatment Program in the School of Medicine now treats almost 5,000 tobacco users annually in inpatient, outpatient and worksite settings.

A second UCRF grant funded an examination of what other cancer centers across the country were doing to help patients quit smoking; researchers found while cancer centers had a major interest in implementing patient smoking cessation efforts, few were able to fund and sustain such programs. Their findings helped motivate the National Cancer Institute a few years later to provide a $25 million financial incentive program to help U.S. cancer centers establish comprehensive tobacco cessation programs for patients.

While those programs have been successful — seeing 75,000 patients nationwide and helping

about 20,000 of them quit, saving $2 billion in health care costs — funding for the program has expired, making these recent conversations with White House officials and other federal leaders interaction critical.

"Looking at actuarial data, funding a tobacco cessation program has a positive return on value within three years — and saves substantial money within five years — so investing in tobacco cessation produces savings in the health care systems that should sustain cessation programs across the country," Goldstein said. "I felt that if we could get these ideas included as part of the Administration's plans, that means we were in the right place, with the right kind of prescription, at the right time and the right price."

Since the White House forum, Goldstein and his MATTCH colleagues have continued payment-reform discussions with federal officials, including Medicare and Medicaid leaders, to develop demonstration projects to validate the return on investment that actuarial data suggests. The consortium also has submitted testimony to help inform the final White House cessation plan, and it is writing a paper to submit to a major research journal to provide a road map for achieving payment reform from a policy perspective.

"Lineberger leadership made some big leaps of faith by giving us those first UCRF grants — they really understood the problem and believed patient cessation programs were critical and valuable," Goldstein said. "By being onsite with cancer patients, it is pretty amazing what we can do through counseling and treatment to help them quit tobacco use — which helps stop their progression of cancer, prevent recurrence, and even helps prevent new cancers. I'm really proud to be at UNC and to have the ability to have an impact on these national conversations." ◀

"Looking at actuarial data, funding a tobacco cessation program has a positive return on value within three years – and saves substantial money within five years – so investing in tobacco cessation produces savings in the health care systems that should sustain cessation programs across the country." ***– Adam Goldstein***

RESEARCH IMPACT

RESEARCH PRIORITY 1: GENOMICS

National study sheds new light on progression of metastatic breast cancer

In one of the first studies to genetically analyze original tumors along with their metastatic counterparts, UNC Lineberger researchers collaborated with scientists across the country to identify unique molecular features responsible for the development and progression of metastatic breast cancer.

UNC is a major part of the AURORA US Metastasis Network Project, a multi-institutional, national initiative that performed a study of 55 women with metastatic breast cancer. Researchers collected tumor tissue that represented 51 primary cancers and 102 paired metastases and used multiple genomic platforms to analyze the original tumors and their paired metastases to shed light on the key differences between them. Most earlier studies examined primary cancers or metastases separately from each other.

Perou

"This study involved extensive collaboration among many institutions to advance our understanding of breast cancer," said the study's corresponding author, **Charles M. Perou, PhD,** the May Goldman Shaw Distinguished Professor of Molecular Oncology and co-leader of UNC Lineberger's Breast Cancer Research Program. "Our knowledge of breast cancer biology comes from studies of original tumors, but when people die of breast cancer, it is from the metastatic disease, so our lack of understanding of the biology of metastasis hinders patient care."

The study, published in Nature Cancer, found that a key feature of metastatic breast cancer involves two changes in the HLA-A gene: One is methylation, or the addition of a small chemical group to a DNA molecule; the other is focal deletions, or the loss of part of the HLA-A gene. Researchers learned that independently of each other, either methylation or focal deletions resulted in fewer immune cells being available to attack breast cancer cells.

T-cells and B-cells, which largely direct anti-tumor immune response, were significantly fewer in metastases compared to the original tumors. Additionally, in examining differences between various sites of metastasis, the study found lower levels of immune cell response in liver and brain metastasis compared to lung metastases.

UNC Lineberger members conducting the study include co-lead author Susana Garcia-Recio, PhD, assistant professor of genetics, and study co-authors Katherine A. Hoadley, PhD, assistant professor of

genetics, and **Lisa A. Carey, MD, ScM, FASCO,** deputy director of clinical science and the L. Richardson and Marilyn Jacobs Preyer Distinguished Professor in Breast Cancer Research.

Carey

"We saw changes in biology in about 30% of patients, including loss of immune activation, especially in liver and brain metastases," Carey said. "Many of these changes occurred through mechanisms that can be reversed or treated. For this reason, we are very excited about the potential for improved treatment of metastatic disease, or even prevention of metastases themselves, based on this effort."

Immune system B-cells can help predict HER2-positive breast cancer treatment response

Understanding why cancers respond, or don't respond, to therapy is crucial to effective and personalized treatment. UNC Lineberger researchers have published a study on how the activity of certain immune system cells can predict whether anti-cancer drugs would effectively treat HER2-positive breast cancer.

Combining the results of two large clinical trials in which more than 450 patients received drug therapy for HER2 and then had surgery to remove their tumors, Lineberger scientists examined different measures of immune system activation. These include measuring the total number of immune cells around a tumor; the activity of B-cells, which create antibodies that neutralize cancer cells and infections; and the activation of T-cells, which directly fight cancers and infections.

The researchers found that measuring activation of B-cells was the best way to predict whether HER2-positive breast cancer responds to treatment. While the total number of immune cells were associated with the elimination of breast cancers in the trials, six of seven B-cell immune signatures were most strongly associated with higher elimination rates. The six B-cell signatures were also associated with better survival, while the total number of immune cells did not predict survival outcomes as effectively.

Data from this study, which was published in JAMA Oncology, have been incorporated into a large and integrated database combining gene expression and clinical data, including response to therapy and survival outcomes from over 1,000 women who are participating in clinical trials. This information may help doctors be more precise in choosing which and how many drugs to use in treating HER2-positive breast cancer, and potentially could apply to treatments for other subtypes of breast cancer as well.

Fernandez-Martinez

"The analysis of these data will provide essential information for biomarker development and precision medicine in HER2-positive breast cancer and the insights will inform clinicians when someone may need more — or less — chemotherapy, and more — or less — anti-HER2 drugs," said UNC Lineberger research associate **Aranzazu Fernandez-Martinez, MD, PhD,** the paper's first author.

Two HPV-related cancer subtypes can forecast treatment outcomes

Cases of human papillomavirus (HPV)-associated cancers of the head and neck, known as head and neck squamous cell carcinoma (HNSCC), are rapidly increasing throughout the United States. Patients with HPV-positive HNSCC are typically treated with high doses of radiation combined with chemotherapy, which comes with difficult and long-lasting side effects including muscle fibrosis, swallowing difficulties, and artery hardening.

Personalized therapy may allow oncologists to make better treatment choices for their patients, but unfortunately, little is known about what makes some HPV-positive HNSCC tumors more aggressive and treatment-resistant than others. Not knowing how the patient's tumor will respond to therapy makes it difficult for doctors to determine the type and intensity of treatment that might work best for their patients.

To determine why some patients with HPV-positive head and neck cancers respond better to radiation therapy than others, researchers from UNC Lineberger and the UNC Department of Otolaryngology/Head and Neck Surgery collaborated with scientists at the Yale Cancer Center and the ECOG-ACRIN Cancer Research Group to analyze large samples of HNSCC tumors.

They made an important discovery: that these types of cancers can be divided into two distinct subtypes that determine how well patients will respond to therapy — and that one subtype is more responsive to radiation therapy. The subtypes were differentiated due to different activity levels of NF-kB, a type of protein involved in stimulating RNA synthesis from DNA. NF-kB plays important roles in inflammation and cell death and has been associated with carcinogenesis of HNSCC.

The subtypes identified by high or low NF-kB activity were notably different from one another in several ways, including the genes that were mutated in the cancers, factors driving the mutations, the number of mutations per cancer, and the ability of certain immune cells to attack the tumor. Most importantly, the subtypes were also directly correlated with different outcomes.

Yarbrough

"Tumors with high NF-kB activity were more responsive to radiation therapy, potentially contributing to improved patient survival," said Lineberger member **Wendell Yarbrough, MD, MMHC, FACS,** the Thomas J. Dark Distinguished Professor of Otolaryngology/Head and Neck Surgery at the UNC School of Medicine, who co-led and authored the study. "We know that there's something about activating the NF-kB pathway that makes the tumors more sensitive to radiation therapy, which could explain how and why those patients are surviving better."

Ultimately, this greater understanding could lead to the development of more personalized approaches to treatment, giving doctors the ability to identify patients whose therapy can be safely de-intensified to treat the tumor more effectively and with reduced side effects. The goal is to provide patients with a better quality of life.

RESEARCH PRIORITY 2 – NOVEL THERAPIES

Researchers join forces to improve pancreatic cancer treatments, outcomes

Pancreatic cancer has the lowest five-year survival rate — about 10% — of all major cancers, in part because it is difficult to detect early and difficult to treat. It is the fourth leading cause of cancer deaths in the country.

Bringing together research expertise and resources in a cohesive effort to improve that survival rate, in 2021 UNC Lineberger established the Pancreatic Cancer Center of Excellence (PCCE) to provide outstanding patient care and generate research discoveries that can translate into new, more effective approaches and, ultimately, cures for pancreatic cancer.

This commitment to developing a multidisciplinary pancreatic cancer care program that is focused on the best possible outcomes and quality of life for its patients has generated significant national attention.

Last year, the National Cancer Institute awarded the PCCE a prestigious five-year, $10.9 million Pancreatic Cancer Specialized Program of Research Excellence (SPORE) grant intended to further enhance treatment solutions for pancreatic cancer by focusing on key challenges to identifying, producing and directing new therapies.

SPORE grants are highly competitive — and highly coveted — sources of funding that support basic and clinical/applied research focused on discovering and developing with new approaches to the prevention, early detection, diagnosis and treatment of human cancers.

In addition, the National Pancreas Foundation has designated UNC Lineberger as a National Pancreas Foundation Center of Excellence.

Yeh

"Being awarded an NCI SPORE grant and earning the National Pancreas Foundation Center of Excellence designation speaks to UNC Lineberger's commitment to provide the most advanced, equitable and compassionate pancreatic cancer care that is informed by research," said **Jen Jen Yeh, MD,** PCCE director, professor of surgery and pharmacology and the Oliver Smithies Investigator at the UNC School of Medicine.

Among the many collaborative PCCE projects is a paper in Cell Reports Medicine examining how B-cells, a type of immune system cell, can be

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reprogrammed to limit pancreatic tumor growth. UNC Lineberger's **Yuliya Pylayeva-Gupta, PhD,** was the study's corresponding author. Their findings suggest that reprogramming B-cells could make immunotherapy work more effectively on pancreatic cancer.

Pylayeva-Gupta

PCCE researchers also have key leadership roles in the Pancreatic Ductal Adenocarcinoma Stromal Reprogramming Consortium, a partnership of multiple academic institutions aiming to identify, integrate, and mechanistically evaluate additional tumor microenvironment elements driving pancreatic cancer progression and response to therapy. The National Cancer Institute (NCI) has awarded the consortium $9.3 million in support of two five-year research projects.

Yeh and **Naim Rashid, PhD,** associate professor of biostatistics, are among the leaders of the first project, "Integrating tumor and stroma to understand and predict treatment response." This study will use a combination of cancer biology and computational approaches to understand the tumor and tumor microenvironment and help predict treatment response in patients.

Rashid

UNC Lineberger member **Matthew Flick, PhD,** associate professor of pathology and lab medicine, will help lead the second study, "Reprogramming PDAC stroma by targeting coagulation in the tumor microenvironment," with the goal of learning how targeting coagulation activity in the pancreatic tumor microenvironment can enhance the delivery and performance of anti-tumor chemotherapy and immunotherapy.

Flick

"We're proud to have such amazing clinical and scientific teams here at UNC and across institutions focused on making progress in the fight against pancreatic cancer," Yeh said. "Receiving these grants from the NCI is a testament to the amazing work our researchers have done and the lofty goals we have for the future of cancer treatment."

Yeh has received another grant award for her PROmoting CLinicAl TrIal EngageMent for Pancreatic Cancer App Study (PROCLAIM Study). PROCLAIM focuses on breaking down the barriers to diverse clinical trial population recruitment, such as racial bias, distrust, poor communication, and culturally discordant clinical trial materials. This study is the inaugural recipient of the Lustgarten Equity, Accessibility, and Diversity (LEAD) Project Grant, which provides $150,000 annually for three consecutive years, from the Lustgarten Foundation, the largest private funder of pancreatic cancer research in the world.

The researchers will employ a mobile health technology initiative as an educational and communication tool to promote open discussion between Black patients with pancreatic cancer and their care teams. Their goal is to increase clinical

trial participation and improve outcomes of an historically underserved patient population.

Charlot

PROCLAIM is based on recent work by UNC Lineberger's **Marjory Charlot, MD, MPH, MSc,** associate professor of medicine, that shed light on the barriers to timely treatment faced by historically marginalized patients and identified crucial interventions to eliminate disparities in cancer treatment.

"We will be collaborating with key Black community stakeholders to view community- and culturally-specific barriers through their lenses and learn how to address these barriers with effective interventions," Yeh said. "We hope to contribute to Dr. Charlot's progress and help ensure that historically marginalized groups are fairly represented in pancreatic cancer clinical trials, better informed about care options, and more effectively served by their providers."

These projects are just a few of the ways PCCE researchers are working together toward innovative and effective treatments for pancreatic cancer. "From our labs to our clinics," Yeh said, "we have a singular focus to discover, develop and provide innovative care that leads to better outcomes for our patients."

Genetic analysis of common bladder cancer type yields guidance on treatment options

UNC Lineberger researchers collaborated with scientists at other U.S. institutions on a comprehensive genomic analysis of more than 200 patients with metastatic urothelial carcinoma, a common type of bladder cancer.

When mutations occur in urothelial cells, which line the urinary system, they can develop into urothelial carcinoma, the most common form of bladder cancer. As part of this study, published in Nature Communications, the research team developed a repository of biological data and deployed computational models integrating molecular and clinical data to help predict how a patient with this type of cancer might respond to immunotherapy. These tools could offer valuable guidance on the most effective options for bladder cancer treatment.

The Bladder Cancer Advocacy Network (BCAN) initiated this nationwide collaboration as a follow up to the UC-GENOME study, which conducted genetic analysis of 218 patients with metastatic urothelial cancer. About 69% of the people in the study had potential treatment options, according to genetic sequencing analyses of their tumor tissue, but only 5% went on to receive therapy based on their genomic profiles.

"We hope that moving forward, genomically informed decisions can lead to patients being matched with the therapy that gives them a high likelihood to achieve the best outcome," said lead

author **Jeffrey S. Damrauer, PhD,** Bladder Cancer Research Program manager at UNC Lineberger who co-led the study.

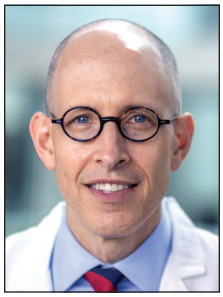
Damrauer

Through integrating the analyses with clinical data, the team also found that a subset of genomic and clinical features could predict whether a patient would respond to immunotherapy.

"BCAN is already working to develop a new funding mechanism to utilize the biospecimens collected in this study alongside our analyses so that all patients can benefit from a better understanding of bladder cancer biology," said co-corresponding author **William Y. Kim, MD,** Rush S. Dickson Distinguished Professor of Medicine and Genetics at the UNC School of Medicine and UNC Lineberger member.

Kim

Matthew Milowsky, MD, FASCO, the George Gabriel and Frances Gable Villere Distinguished Professor at the UNC School of Medicine, is co-corresponding author of the article. He's also section chief of Genitourinary Oncology in the UNC Division of Oncology and co-director of the Urologic Oncology Program at UNC Lineberger.



Milowsky

"The overarching goal of our study was to provide every patient with metastatic urothelial cancer the opportunity to become an exceptional responder and to develop a rich clinical database and biorepository for future collaborative research efforts," Milowsky said.

Biological pathways provide evidence for how to overcome barriers limiting cancer immunotherapies

Laying the groundwork for the potential to develop more effective immunotherapies, researchers at UNC Lineberger have found a possible way to overcome barriers that block effective anti-cancer immune responses, especially in pancreatic and breast cancers.

An unfavorable immune environment immediately surrounding a tumor cell is a major obstacle in using immunotherapy to treat many solid tumors because it can block immune responses that could be helpful in attacking a tumor. One protein, the STimulator of INterferon Genes (STING), has the potential to break down these barriers and provoke multiple parts of the immune system into action, according to the study's findings, which are published in Nature.

"Although activating the immune system to control malignant tumors has revolutionized cancer treatment, a sizable portion of patients do not respond to immunotherapy treatments," said the paper's co-corresponding author **Jenny Ting, PhD,** the William R. Kenan Professor of Genetics and professor

Ting

of microbiology and immunology at the UNC School of Medicine, director of the Center for Translational Immunology and a UNC Lineberger member. “New drugs that target STING have been a high priority for pharmaceutical development, yet clinical trials have revealed significant tumor resistance to STING-directed drugs.”

Researchers mainly focused on pre-clinical models of pancreatic cancer because of its low survival rate and dearth of treatment options, and expanded the study to other solid tumors, including melanoma, triple-negative breast cancer and lung cancer. They hope to better understand how STING-directed drugs influence different immune cells, so that the beneficial effects of STING outweigh its unintended immune-suppressive effects.

Using mouse models, they discovered that activators of STING can make immunotherapy less effective — unless they are paired with antibodies that block an immunosuppressive molecule called interleukin-35 (IL-35). The STING antibody combination significantly reduced tumor growth compared to using just a STING activator or IL-35 antibody alone.

The researchers have submitted a patent application for the dual therapy, and their next steps are to clarify if the experimental combination therapy targeting STING and IL-35 will benefit cancer patients.

Researchers identify how cancer hijacks enzyme mutations to fuel tumorigenesis

Cancer can grow and spread throughout the body in multiple ways. One of these is mutating key enzymes to promote tumor growth, produce therapy resistance, and hasten metastasis from the original tumor site to the bloodstream or other organs. Enzyme functions and mutations can differ greatly depending on which surface, or substrate, the enzyme adheres to — but UNC Lineberger researchers believe that they may have potential as therapeutic targets for cancer.

Liu

Tan

Kinase enzymes, particularly those of a specific type called AGC kinase enzymes, play critical roles in cancer metastasis, proliferation, drug resistance, and development. In a study published in the Journal of Experimental Medicine, UNC Lineberger members **Pengda Liu, PhD,** associate professor of Biochemistry and Biophysics, and **Xianming Tan, PhD,** a research associate professor in the Department of Biostatistics in the Gillings School of Public Health, report findings that found that the highest rate of enzyme mutation occurs in the AGC kinase motif, the active part of the molecule referred to as RxRxxS/T. This enables cancer to thrive by creating

mutations on RxRxxS/T motifs to give itself more advantages for tumor growth and survival.

The Liu and Tan groups further investigated the AGC kinase motif mutations that cause colorectal cancer, the second most lethal cancer and the third most prevalent malignant tumor worldwide. They discovered that colon cancer "hijacks" mutations in BUD13, a protein-coding gene, to sidestep key functions of the AGC kinase and to promote tumor growth and chemotherapy resistance. They also uncovered a new, potential targeted therapy for colon cancer within the BUD13 mutation.

Chen

"We think understanding the roles of mutations on enzyme substrates, instead of the enzyme as a whole, may help to improve efficacy of targeted therapies, especially for enzymes that have both oncogenic and tumor suppressive function through controlling distinct subsets of substrates," said **Jianfeng Chen, PhD,** the study's first author and a postdoctoral fellow in Liu's lab.

RESEARCH PRIORITY 3: OUTCOMES

Cancer screening initiatives focus on improving cervical and lung cancer outcomes

Finding and treating tumors early, before cancer can spread, can lead to better outcomes for the patient. While regular screening can be useful for early detection, questions remain about which patients need to screen, when and how often screening should occur, and what types of screening tools are most effective. Teams of researchers at UNC Lineberger are working to answer those questions.

Disparities in health care are all too common, and access to screening can vary widely among different patient populations. For example, cervical cancer disproportionately affects Black and Hispanic women, with Hispanic women having the highest incidence rates and Black women having the highest mortality rates for the disease in North Carolina and in the United States. Most cervical cancers occur among under-screened women; in fact, the Centers for Disease Control and Prevention estimate 22% of eligible U.S. adults are overdue for screening.

Cervical cancer screening typically involves testing for human papillomavirus (HPV), which is associated with this type of cancer. In a randomized trial aiming to improve access to cervical cancer screening for under-screened, low-income women, UNC Lineberger researchers discovered a solution: instead of sending women to the clinic, send the test to the women.

RESEARCH IMPACT

Smith

"My hope going into this study was that mailing kits for home-based collection might increase cervical cancer screening, but we were thrilled to find a nearly two-fold increase in screening uptake," said UNC Lineberger's **Jennifer S. Smith, PhD, MPH,** professor of epidemiology at the UNC Gillings School of Global Public Health and corresponding author of this study. "Many hadn't engaged in the screening system for a while and getting the kit to their homes helped break down a fundamental barrier."

Screening uptake was 72% among women who received mailed HPV kits followed by offers to help book in-clinic screening appointments, compared to 37% for women who received scheduling assistance alone. The researchers are now working with clinical partners to provide at-home testing kids to other women who are overdue for screening. They also hope to convince the Food and Drug Administration to approve HPV self-collection as a primary screening test for cervical cancer.

While at-home kits offer convenient screening options for patients, other methods of cancer screening are more involved. The only recommended screening option for lung cancer, for instance, is low-dose computed tomography (CT), a special kind of X-ray that provides detailed images of the lungs. Based on randomized controlled trials — most notably, the National Lung Screening Trial — finding that annual low-dose CT screening can reduce lung cancer deaths by 15–20%, this screening approach has been recommended for current or former smokers, aged 50–80 years, with 20 or more pack-years of smoking history.

Lund

But the patients in that trial were generally younger, less racially diverse, less likely to be current smokers, had a higher educational level, and had fewer comorbidities compared to the population of actual patients who are eligible for the screening. UNC Lineberger's **Jennifer Lund, PhD, MSPH,** and **Louise Henderson, PhD,** received a five-year, $1.76 million National Cancer Institute grant to study the real-world benefits and harms of low-dose CT lung cancer screening.

Henderson

They hope to determine whether the National Lung Screening Trial results will be validated by doing a similar study on a real-world patient population, and to better inform screening recommendations and refine shared decision-making tools for lung cancer screening in clinical practice settings.

Henderson, professor of radiology and cancer epidemiology program leader at UNC Lineberger, said addressing the knowledge gaps in lung cancer screening will generate contemporary data that can inform clinical practice and policy decisions. "Our ultimate goal is to help support more effective delivery of lung cancer screening in the community and ultimately improve patient and population-level outcomes," she said.

RESEARCH IMPACT

Specific sequence of drugs reduces cost of treating metastatic breast cancer while preserving quality of life

Giving standard chemotherapy drugs in a specific sequence for some types of metastatic breast cancer can help reduce overall costs and improve the value of care while preserving quality of life, according to a study led by UNC Lineberger researchers.

Wheeler

"The cost of cancer drugs in the U.S. has rapidly increased, even for generics. As a society, we urgently need more strategies to reduce cancer drug costs without compromising outcomes, and our analysis provides quantifiable evidence to help providers choose lower priced, but equally effective sequences of drugs," said the study's corresponding author, **Stephanie B. Wheeler, PhD, MPH,** professor of health policy and management at the UNC Gillings School of Global Public Health and associate director of Community Outreach and Engagement at UNC Lineberger. "The implications of this study are fairly straightforward for medical oncologists and those developing value-based clinical pathways to implement in practice now."

Reeder-Hayes

Wheeler and UNC Lineberger's **Katherine E. Reeder-Hayes, MD, MBA, MSc,** section chief of breast oncology and associate professor of medicine at the UNC School of Medicine, developed three different computer models to predict how a hypothetical set of 10,000 patients with specific types of metastatic breast cancer would respond to different sequences and types of chemotherapy. The purpose of the study was to test whether putting the drugs in one sequence compared to another could keep the patient on treatment for similar times while decreasing their side effects and/or financial burden.

The costs calculated in this study included medical and nonmedical costs borne by patients, including lost productivity. Productivity days lost due to sickness were similar across the drug sequences, so most of the cost difference was due to drug savings. In the simulation, patients were placed in three groups, depending on what treatments they had already received for earlier episodes of breast cancer.

"I hope our study will help expand the framework that we use to make these decisions from one where we just think about the biologic action of the drug to one where we also consider the bigger picture of what the treatment experience is like for the patient, including their financial burden, investment of time, and side effects," Reeder-Hayes said. "The most potent drug isn't always the next best choice depending on what the patient values and wants to accomplish with their treatment."

Study provides guidance on quality-of-life choices for rectal cancer treatments

A growing area of emphasis in health care is the use of patient-reported information. Asking patients to rate their pain, or report their symptoms and side effects, can provide a more complete picture for both doctors and patients to consider when making important health care decisions.

A multi-institutional study led by UNC Lineberger researchers compared treatment options for rectal cancer while collecting patient-reported treatment side effects, generating insights that can lead to more informed quality-of-life treatment choices. The study, published in the Journal of Clinical Oncology, is part of the PROSPECT study, a large national Phase III clinical trial to evaluate whether patients being treated for localized rectal cancer can receive chemotherapy alone instead of the current standard approach of radiation therapy with some chemotherapy prior to surgery.

Each option had similar survival benefits, meaning that quality-of-life choices could be a top-of-mind factor for patients trying to decide which type of treatment to pursue. During treatment with chemotherapy alone, and before undergoing surgery, patients noted lower rates of diarrhea, whereas during radiation with chemotherapy patients reported significantly lower rates of anxiety, appetite loss, depression, fatigue, nausea, nerve pain, and other symptoms. But 12 months after their surgeries, patients treated only with chemotherapy had significantly less fatigue, sexual dysfunction, and nerve pain than those who had received radiotherapy.

Basch

"During the treatment itself, multiple symptoms were worse with chemotherapy, but a year after treatment ended, those symptoms resolved and the pattern flipped so that patients who received radiation exhibited lingering symptoms," said lead author **Ethan Basch, MD, MSc,** the Richard M. Goldberg Distinguished Professor of Medicine, chief of medical oncology, and director of the Cancer Outcomes Research Program at UNC Lineberger. "Patients ideally will understand the potential impact of treatments on how they feel and function when making choices, so as oncologists we need to talk with our patients about their options and the consequences of those options."

Patient-reported outcomes that assess quality of life started to formally be incorporated into cancer trials in the 1980s, but this is the first trial in which patient-reported adverse events were collected with a novel, highly detailed tool: the National Cancer Institute's Patient-Reported Outcomes version of the Common Terminology Criteria for Adverse Events (PRO-CTCAE). Basch said this rigorous tool is now used in hundreds of trials, but "this is a landmark study because it is the first large clinical trial to embed PRO-CTCAE and therefore is an exemplar for future global clinical trials."

RESEARCH IMPACT

Black women with breast cancer may have worse outcomes than peers despite similar genetic recurrence scores

Abdou

A study led by UNC Lineberger member **Yara Abdou, MD,** assistant professor at the UNC School of Medicine, provides new data highlighting racial disparities in breast cancer outcomes and points to the need for increased representation in clinical trials.

Abdou and colleagues analyzed the clinical outcomes with respect to race and ethnicity in the RxPONDER clinical trial, which assessed the value of the 21-gene recurrence score in patients with lymph node-positive, HR-positive/HER2-negative breast cancer and the benefit of adjuvant chemotherapy in these patients. They found that non-Hispanic Black women with hormone receptor (HR)-positive/HER2-negative, lymph node-positive breast cancer had worse outcomes compared to non-Hispanic whites, Asians, and Hispanics, despite similar 21-gene recurrence scores of the cancer.

The 21-gene recurrence score is a genomic test that measures the expression level of a group of 21 genes in the tumor tissue to predict the risk of breast cancer recurrence and the response to therapy. The results are measured on a scale of 0 to 100. The test is an important tool to guide treatment decisions among women with early-stage breast cancer.

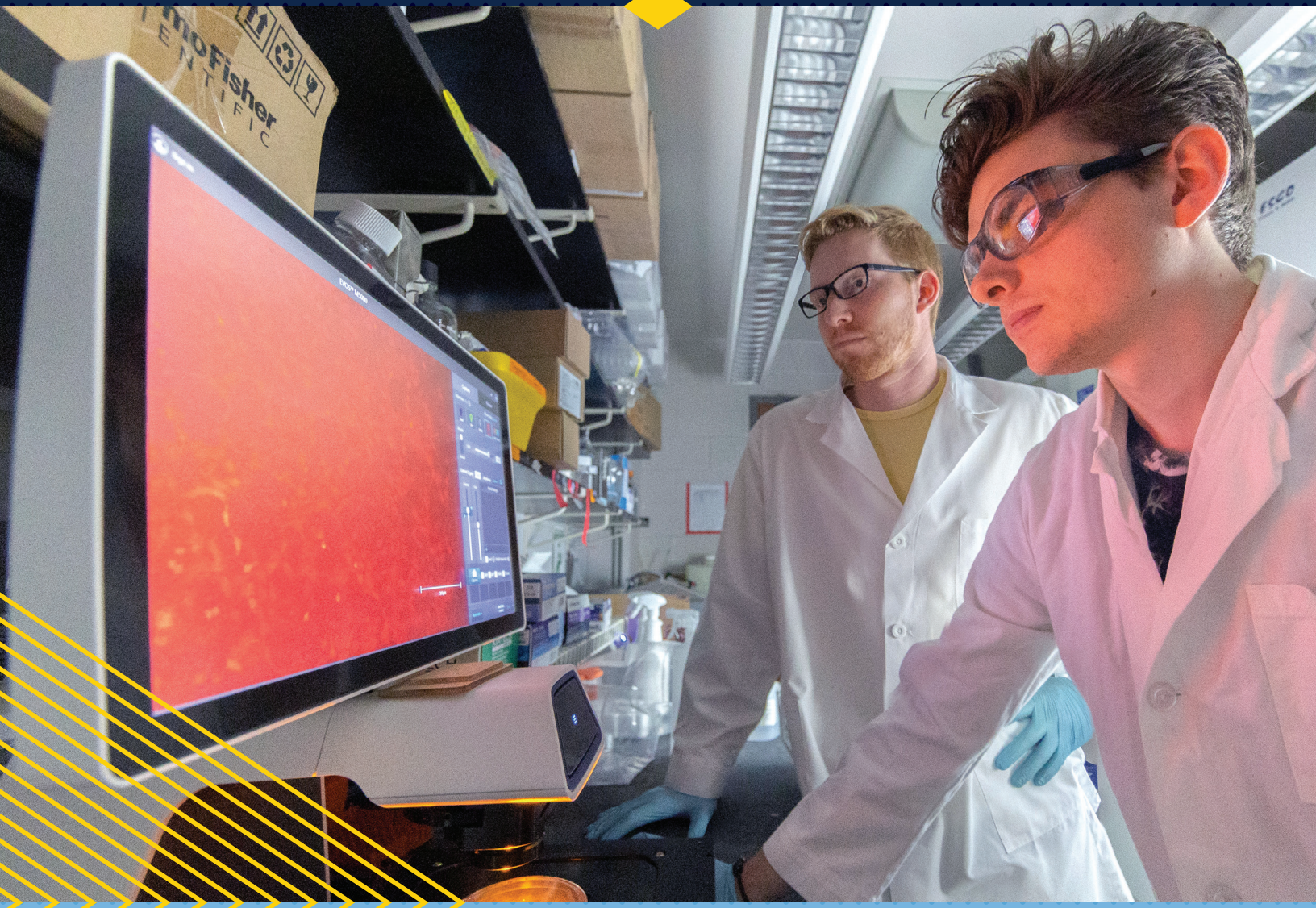
"In accordance with previous studies, our results indicate racial disparities in breast cancer, particularly in HR-positive breast cancer. These differences were observed despite analyzing a carefully chosen and uniformly treated study population, suggesting that biological factors other than disparities in care may be contributing to inferior outcomes in racial minorities," Abdou said, adding that the study was limited by the small size of the racial/ethnic minority cohorts included in the clinical trial, which limited the statistical power of certain analyses. "Our findings also highlight the necessity for greater representation of racial and ethnic minorities in clinical trials."

The researchers found that the 21-gene recurrence scores were similar across all racial subgroups, and there were no significant differences in tumor size and in the number of lymph nodes involved. But non-Hispanic Black and Hispanic patients had a higher frequency of high-grade tumors than non-Hispanic white and Asian patients. The five-year invasive disease-free survival rate, indicating the percentage of patients who were alive and free of breast cancer or any other type of invasive cancer, was also lower for non-Hispanic Black women.

After adjusting for age, menopausal status, grade, treatment arm, and recurrence scores, non-Hispanic Black patients had a 37 percent increased risk of invasive cancer than non-Hispanic whites. Additionally, non-Hispanic Black patients had lower distant relapse-free survival (defined as the time from surgery to the first distant recurrence) than non-Hispanic whites.

"Racial disparities in breast cancer outcomes continue to be a major health care challenge, with Black women more likely to die from the disease than non-Black women," Abdou said. "There is now wide-ranging evidence for differences in tumor biology contributing to this disparity. Understanding these differences will help us discover new opportunities for intervention that will ultimately reduce cancer health disparities."

FACULTY IMPACT: RESEARCH AND SCIENCE



FACULTY IMPACT

Sharpless elected to the National Academy of Medicine

Sharpless

Norman E. "Ned" Sharpless, MD, professor of medicine, cancer policy and innovation at the UNC School of Medicine, was elected to the National Academy of Medicine. A highly regarded cancer researcher, Sharpless was recognized for his significant contributions to help advance the understanding of cellular aging, circular RNAs and the cell cycle.

Sharpless, who served as director of UNC Lineberger for three years before becoming director of the National Cancer Institute from 2017–2022, is the seventh UNC Lineberger member to be elected to the Academy. He is internationally known for his research into how normal cells age and undergo malignant conversion.

The National Academy of Medicine addresses critical issues in health, science, medicine and related policy. Election to the Academy is considered one of the highest honors in the fields of health and medicine. New members are elected by current members through a process that recognizes individuals who have demonstrated outstanding professional achievement and commitment to service and who have made major contributions to the advancement of the medical sciences, health care and public health.

Rosenstein receives lifetime achievement award

Rosenstein

UNC Lineberger's **Donald Rosenstein, MD,** received the Jimmie Holland Lifetime Achievement Award from the American Psychosocial Oncology Society (APOS). Named for Dr. Jimmie Holland, one of the founders of the field of psychosocial oncology and the founder of APOS, the award recognizes APOS members who show distinguished leadership in the field of psychosocial oncology, with outstanding contributions in leadership, training, research, clinical practice, and service to APOS.

Rosenstein, a professor of psychiatry and medicine, is the founding director of the Comprehensive Cancer Support Program at the N.C. Basnight Cancer Hospital, UNC Lineberger's clinical home, and division head of general adult psychiatry in the Department of Psychiatry. In addition to his clinical responsibilities, Rosenstein conducts research on interventions for cancer-related financial toxicity, screening initiatives for suicide risk, and organizational leadership.

One of the country's most respected leaders in the field of psycho-oncology, Rosenstein has published his research findings in leading medical journals and co-authored "The Group: Seven Widowed Fathers Reimagine Life," a book that looked at the grieving process, adaptation and resiliency as

experienced by the seven men following the death of their partner. Before coming to UNC in 2009, Rosenstein held various leadership roles at the National Institutes of Health over the course of 17 years. He has served as president of APOS and the Academy of Consultation Liaison Psychiatry.

Davis, Savoldo awarded $1 Million research grant by V Foundation

Davis

Savoldo

UNC Lineberger's **Ian Davis, MD, PhD,** the G. Denman Hammond Professor of Childhood Cancer and division chief of pediatric hematology/oncology, and **Barbara Savoldo, MD, PhD,** professor of pediatrics and assistant director of the UNC Lineberger Immunotherapy Program, have received a grant award totaling $1 million over five years for their research to find ways to improve CAR-T immune cell therapy for children with cancer.

Funded by the V Foundation's Dick Vitale Pediatric Cancer Research Fund, Davis and Savoldo will lead research to enhance the effectiveness of CAR-T therapy to treat neuroblastoma, a cancer of immature nerve cells and occurs mainly in children younger than six years of age. This innovative therapy, led by George Hucks, MD, assistant professor of pediatrics, is developed at UNC Lineberger's Advanced Cellular Therapeutics Facility, an FDA-certified Current Good Manufacturing Practices laboratory that was created using UCRF funds. UNC Lineberger is one of only a handful of academic medical centers in the country that has the faculty, technology and facilities to conduct this research.

UNC Lineberger faculty recognized as world's most highly cited researchers

Twelve UNC Lineberger members were named to Clarivate's 2022 Highly Cited Researchers™ list, which recognizes scientists who published papers that ranked in the top 1% of cited publications in their field during the past decade.

The Highly Cited Researchers™ list identifies scientists and social scientists from 21 scientific fields who have demonstrated significant influence through publication of multiple highly cited papers between 2011–2021. Approximately 179,000 cited papers were included in the analysis.

UNC Lineberger members named to the 2022 Highly Cited Researchers list included:

- Ralph Baric, PhD
- Noel T. Brewer, PhD
- Gianpietro Dotti, PhD
- Kelly R. Evenson, PhD
- Katherine A. Hoadley, PhD
- Leaf Huang, PhD
- Charles M. Perou, PhD
- Barry M. Popkin, PhD, MS
- Kurt M. Ribisl, PhD
- Bryan L. Roth, MD, PhD
- Barbara Savoldo, MD, PhD
- Jenny P.Y. Ting, PhD

FACULTY IMPACT

Perou elected as fellow of the American Association for Cancer Research Academy

Perou

The American Association for Cancer Research has elected UNC Lineberger's **Charles M. Perou, PhD,** as a fellow to the AACR Academy for his pioneering research that identified distinct subtypes of breast cancer and led to the development of new clinical diagnostic tests for breast cancer patients based on tumors' molecular characteristics.

Perou, the May Goldman Shaw Distinguished Professor of Molecular Oncology and professor of genetics, and professor of pathology and laboratory medicine at the UNC School of Medicine, is co-director of the Computational Medicine Program and co-director of UNC Lineberger's Breast Cancer Research Program. He has authored more than 470 peer reviewed articles in some of the top scientific journals.

AACR Academy fellows are top contributors to cancer science and medicine who help advance the mission of the AACR to prevent and cure all cancers through research, education, communication, collaboration, science policy and advocacy, and funding for cancer research.

NCI awards Pecot $1.8 million lung cancer research grant

Pecot

The National Cancer Institute has awarded a five-year, $1.835 million grant to **Chad Pecot, MD,** professor in the Division of Oncology and director of the UNC RNA Discovery Center, to support his research on the roles that circular RNA may have in influencing whether a form of lung cancer will spread beyond the original cancer site.

Lung cancer is the leading cause of cancer-related deaths in the United States, accounting for 20% of all cancer deaths each year. While targeted therapies of lung adenocarcinoma have improved overall survival, there have not been similar advances in lung squamous cell carcinoma, partly because squamous cell lung tumors are highly irregular and difficult to treat.

Pecot's lab has found that a unique circular RNA, CDR1as, is an unexpected vulnerability for this difficult-to-treat cancer, making it an attractive potential target for therapy. The NCI grant will support the next step in his research plans: investigating the fundamental mechanisms responsible for how CDR1 regulates the spread of lung squamous cell carcinoma, and evaluating the biologic and therapeutic implications of targeting this RNA for potential treatment.

FACULTY IMPACT

UNC Board of Governors honors Earp with 2023 Oliver Max Gardner Award

Earp

The University of North Carolina Board of Governors presented the Oliver Max Gardner Award, its highest faculty honor, to **Shelley Earp, MD,** director of UNC Lineberger and UNC Cancer Care and the Lineberger Professor of Cancer Research and professor of medicine and pharmacology.

"Dr. Earp has dedicated his life and work to battling one of the deadliest diseases known to humankind," UNC System President Peter Hans said. "His passion for scientific research, combined with his commitment to the understanding, prevention and compassionate treatment of cancer, have made Dr. Earp an outstanding leader in his field."

Since 1997, Earp has worked to make UNC Lineberger into the premier institution it is today. The N.C. Basnight Cancer Hospital, clinical home of UNC Lineberger, is ranked among the top cancer centers in the country. He has also initiated partnerships with other University of North Carolina System schools, including North Carolina State University, North Carolina Central University, North Carolina A&T State University and East Carolina University, recognizing the importance of collaboration in research that leads to new treatments for cancer. In addition, Earp's scientific discoveries have led to intellectual property and new companies that are committed to turning research findings into clinical advances to benefit cancer patients.

Pancreatic Cancer Action Network names Yeh to scientific and medical advisory board

Yeh

UNC Lineberger's **Jen Jen Yeh, MD,** has been appointed to the Pancreatic Cancer Action Network's scientific and medical advisory board.

Yeh is the director of the UNC Lineberger Pancreatic Cancer Center of Excellence, a professor of surgery and pharmacology and the Oliver Smithies Investigator at the UNC School of Medicine, and vice chair for research in the Department of Surgery.

Founded in 1999, PanCAN is dedicated to improving the lives of everyone impacted by pancreatic cancer by advancing scientific research, building community, sharing knowledge and advocating for patients. Its scientific and medical advisory board is comprised of leading scientists, clinicians and healthcare professionals who specialize in pancreatic cancer from institutions across the United States. They provide scientific and clinical expertise to guide PanCAN in planning and implementing its research initiatives, as well as its in-depth information, resources and services for patients, caregivers, and health care professionals.

INFRASTRUCTURE AND SHARED RESOURCES

INFRASTRUCTURE AND SHARED RESOURCES

The UCRF sustains critical core infrastructure and shared resources that benefit patients and health care providers across the state, in addition to supporting the research and clinical work of UNC's world-class cancer experts. Imaging, informatics and other research equipment and technology are essential tools in the push to advance cancer research and care. Virtual tumor boards, telemedicine, partnerships with health care providers, and robust community outreach and engagement efforts have helped UNC Lineberger serve patients and clinical practices in all 100 of North Carolina's counties.

Telehealth network connects health care across North Carolina

UNC Lineberger 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 Lineberger hosted 37 telehealth live webinars with more than 2,600 participants including nurses, doctors, physician assistants, nurse practitioners, pharmacists, social workers, nutritionists and clinic managers in 45 oncology practices across the state.

The webinars covered a range of issues, including providing an overview of screening for breast, colon, lung, and prostate cancers; integrating the caregiver as a member of the multidisciplinary care team; occupational therapy for cancer survivors; pain management from a palliative care perspective; and parenting with cancer.

To support care providers and caregivers, the UNC Lineberger Cancer Network assisted with 33 Palliative Care Grand Rounds lectures, which cover topics that impact the practice of palliative medicine, and five Schwartz Rounds, which focus on issues related to the emotional impacts of patient care.

Virtual tumor boards promote statewide collaborations

To promote collaboration with oncologists and cancer patients across North Carolina, UNC cancer experts use UCRF-funded infrastructure to regularly hold virtual tumor boards — in-depth reviews of a particular patient's case with a team of doctors — and consult in specialties that are not available in rural communities. This year, 703 virtual tumor boards, across 21 different disciplines, helped connect community-based medical professionals with UNC oncology experts. Tumor boards are another source for continuing education, providing roughly 2,500 credits this year in the following specialty areas:

Benign Hematology Case Conference
Bone Marrow Transplant and Cellular Therapy
Neuro Oncology

Breast Radiation Pathology
Breast Tumor Board
Gastrointestinal Tumor
Gynecological Oncology Disposition Conference
Head/Neck Tumor Board
Hematology/Oncology
Multidisciplinary Pulmonary Nodule Board
Melanoma Tumor Board
Molecular Tumor
Pediatric Tumor Board

On-demand education video library

The UNC Lineberger Cancer Network's video library now houses 905 oncology videos, including 112 Patient Centered Care webinars, 102 Research to Practice webinars, 25 Advanced Practice Provider webinars, seven Southeastern American Indian Cancer Health Equity Partnership webinars, 141 Palliative Care Grand Rounds, 176 Didactic Fellows Lectures, and 32 Exploring Cancer Lectures. The videos cover a broad range of topics and are available to watch on-demand and at a time and location most convenient for the viewer.

The UNC Lineberger Cancer Network also provided various levels of planning and support this year for numerous other activities, including:

- Community College Oncology. A series of four webinars and recordings created in coordination with the North Carolina Community College System.
- Exploring Cancer. A series of 10 lectures and recordings created in coordination with North Carolina Central University and North Carolina Agricultural and Technical State University.
- Support and recording for three Southeastern American Indian Cancer Health Equity Partnership webinars in coordination with Duke Cancer Institute and Wake Forest School of Medicine.
- The Pathology of Disease, a pathology course with 23 classes taught online to students at N.C. A&T State University and N.C. Central University.

INFRASTRUCTURE AND SHARED RESOURCES

UNC Lineberger Cancer Network educates medical professionals, patients

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

- 35 American Medical Association Continuing Medical Education credits;
- 881 American Nurses Credentialing Center credits;
- 146 American Society of Radiologic Technologist credits; and
- 502 Accreditation Council for Pharmacy Education credits.

Between lecture participation and self-paced online courses, medical professionals logged a total of 2,158 credit hours this year.

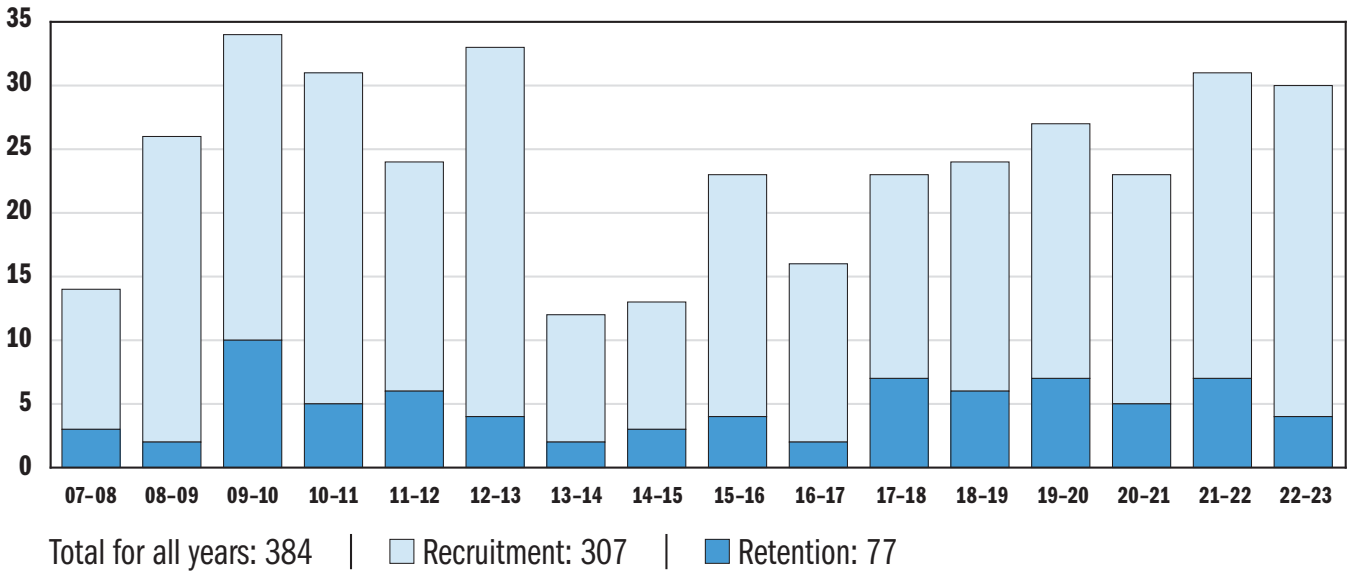
Cancer Information & Population Health Resource a national model

UCRF funds were used to build and maintain the Cancer Information & Population Health Resource (CIPHR), a comprehensive data resource that integrates information from multiple public and private sources, giving researchers and policymakers a deeper understanding of the various and complicated issues tied to North Carolina cancer outcomes.

With information on more than 1 million cancer patients in the state, this unique research tool links data on 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. A rich data resource that enables researchers to analyze real-world information about real-world patients, CIPHR is used in several population-based studies aiming to improve our understanding of cancer burdens across the state and designing interventions that help improve access and quality of cancer care.

INFRASTRUCTURE AND SHARED RESOURCES

Recruitment and Retention



Faculty Recruitment

Cancer Genetics

Holly Dressman, PhD
Professor
UNC School of Medicine
Department of Genetics
Genomics and shared resource management
Duke University

Karin Leiderman, PhD
Associate Professor
UNC College of Arts and Sciences
Department of Mathematics
Mathematical modeling, cancer, thrombosis
University of Colorado

Critical Infrastructure

Jeremiah Deneve, DO
Associate Professor
UNC School of Medicine
Department of Surgery
Surgical oncology, GI malignancy, hyperthermic intraperitoneal chemotherapy
University of Tennessee at Memphis

Kimberly Dessources, MD
Assistant Professor
UNC School of Medicine
Department of Obstetrics & Gynecology
Health services, women's cancer
Memorial Sloan Kettering Cancer Center

INFRASTRUCTURE AND SHARED RESOURCES

Elizabeth Gleeson, MD
Assistant Professor
UNC School of Medicine
Department of Surgery
Division of Surgical Oncology
Hyperthermic intraperitoneal chemotherapy clinical trials and cancer outcomes
University of Edinburgh

Dominique Higgins, MD
Assistant Professor
UNC School of Medicine
Department of Neurosurgery
Neurosurgery, brain tumor therapy
University of Miami

****Valerie Howard, EdD, RN**
Dean and Professor
UNC School of Nursing
Department of Nursing
Nursing education
Duke University

Joannie Ivory, MD
Assistant Professor
UNC School of Medicine
Department of Medicine
Division of Oncology
Breast cancer, outcomes research
University of North Carolina at Chapel Hill

Christopher Jensen, MD
Assistant Professor
UNC School of Medicine
Department of Medicine
Division of Hematology
Lymphoma care and clinical trials
University of North Carolina at Chapel Hill

Olivia Lara, MD
Assistant Professor
UNC School of Medicine
Department of Obstetrics & Gynecology
Molecular genomics of women's cancer
New York University

Julia Selfridge, MD
Assistant Professor
UNC School of Medicine
Department of Surgery
Division of Surgical Oncology
Breast cancer surgery, health services
Moffitt Cancer Center

Astha Thakkar, MBBS
Assistant Professor
UNC School of Medicine
Department of Medicine
Division of Hematology
Bone marrow transplant clinical trials
Albert Einstein College of Medicine

Developing New Treatments

Nima Kobaki, MD
Associate Professor
UNC School of Medicine
Department of Radiology
Interventional radiology and cancer
Emory University

INFRASTRUCTURE AND SHARED RESOURCES

Steven Rowe, MD, PhD
Professor
UNC School of Medicine
Department of Radiology
Nuclear medicine, prostate cancer
Johns Hopkins University

Sumita Trivedi, MD
Assistant Professor
UNC School of Medicine
Department of Medicine
Division of Oncology
Head and neck cancer, CAR-T immunotherapy
University of Pennsylvania

Opportunity

****Jean Cook, PhD**
Professor and Chair
UNC School of Medicine
Department of Biochemistry & Biophysics
Cancer cell cycle research
University of North Carolina at Chapel Hill

Janice Hwang, MD
Associate Professor
UNC School of Medicine
Department of Medicine
Division of Endocrinology and Metabolism
Obesity and metabolism
Yale University

Optimizing NC Outcomes

Ronny Bell, PhD
Professor
UNC Eshelman School of Pharmacy
Department of Pharmaceutical Outcomes and Policy
Cancer prevention and screening, community-based participatory research
Wake Forest University

Matthew LeBlanc, PhD, RN
Assistant Professor
UNC School of Nursing
Department of Nursing
Multiple myeloma, patient care research
University of North Carolina at Chapel Hill

****Nancy Messonnier, MD**
Professor and Dean
UNC Gillings School of Global Public Health
Department of Public Health
Public health
Skoll Foundation

Mya Roberson, PhD, MSPH
Assistant Professor
UNC Gillings School of Global Public Health
Department of Health Policy and Management
Health services, epidemiology, disparities
Vanderbilt University

Jessica Schmacher, PhD
Associate Professor
UNC School of Medicine
Department of Surgery
Cancer surgery, quality of care research
University of Wisconsin Madison

INFRASTRUCTURE AND SHARED RESOURCES

Natalicio Serrano, PhD
Assistant Professor
UNC Gillings School of Global Public Health
Department of Health Behavior
Physical exercise and built environment
University of Illinois Chicago

Bridgette Thom, PhD, MS
Assistant Professor
UNC School of Social Work
Social Work
Adolescent and young adult with cancer, financial toxicity
Columbia University

Tess Thompson, PhD, MPH
Assistant Professor
UNC School of Social Work
Social Work
Caregiver/cancer patient dyads, emotional health, cancer outcomes
Washington University St. Louis

Lynne Wagner, PhD
Professor
UNC Gillings School of Global Public Health
Department of Health Policy & Management
Cancer outcomes and patient reported outcomes
Wake Forest University

Faculty Retention

Critical Infrastructure

Kaitlin Morrison, PhD
Assistant Professor
UNC School of Medicine
Department of Medicine
Division of Hematology
Clinical translation, investigational new drugs, FDA, research operations

Optimizing NC Outcomes

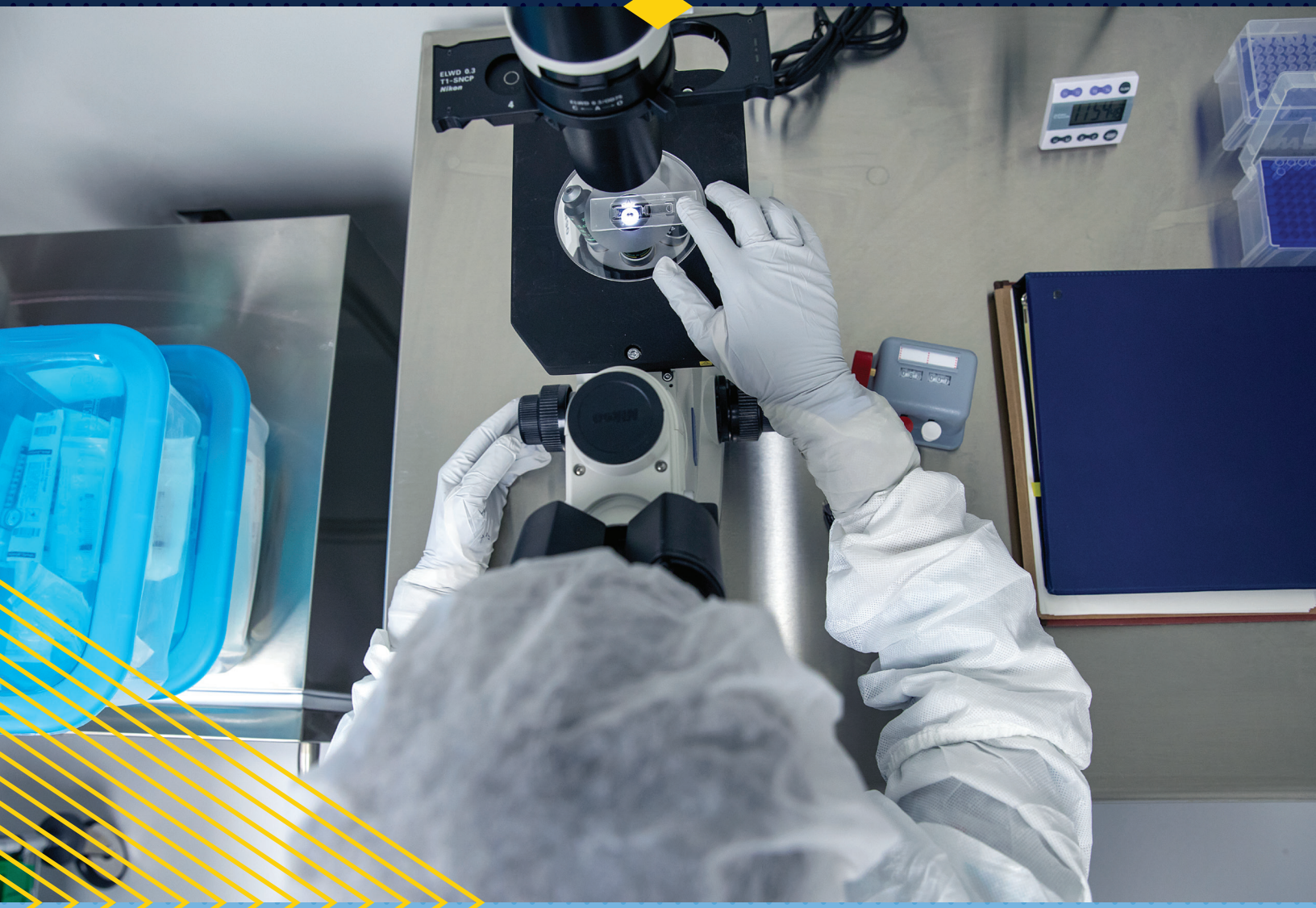
Ashley Leak Bryant, PhD, RN, OCN
Professor
UNC School of Nursing
Department of Nursing
Training, education, cancer care

Seth Noar, PhD
Professor
UNC College of Arts and Sciences
Hussman School of Journalism and Media
Vaping and tobacco cessation and prevention

Carmina Valle, PhD
Assistant Professor
UNC Gillings School of Global Public Health
Department of Nutrition
Communications, obesity, mHealth, AYA

*** Denotes leadership position*

BUDGET AND EXPENDITURE INFORMATION



BUDGET AND EXPENDITURE INFORMATION

When it was initially established in 2007, the UCRF had three sources of revenue: tobacco settlement funds, taxes on other (non-cigarette) tobacco products (OTP) such as snuff, and state appropriations. In the 2013–14 budget, the General Assembly consolidated all tobacco settlement funds into the State's General Fund, eliminating tobacco settlement funds as a source of UCRF support. The UCRF still receives the original $16 million state appropriation each year, along with OTP tax proceeds which very in amount year by year based on product sales. This year's funding included an appropriation in June to address an administrative oversight that resulted in an unanticipated reduction in OTP tax receipts.

FY 2023 Anticipated and Actual Fund Revenue

Anticipated	Amount*
State Appropriation	$16,020,000
Projected OTP Tax Receipts	$43,480,000
Total	**$59,500,000**
Actual	
State Appropriation	$16,020,000
State Appropriation – June 2023	$26,207,523
Actual OTP Tax Receipts	$17,316,749
Total	**$59,544,272**

* Rounded to the nearest dollar

FY 2023 Budget and Expenditures

Anticipated Budget	Amount*
Revenue	$59,500,00
Carryover from FY22	($43,693)
Total	**$59,456,307**
Actual Budget	
Revenue	$59,544,272
Carryover from FY22	($43,693)
Total	**$59,500,579**
Expenditures	**$59,576,131**
Balance	**($75,552)**

* Rounded to the nearest dollar

BUDGET AND EXPENDITURE INFORMATION

Restrictions on the Use of UCRF Monies

G.S. 116-29.1 established the UCRF as a special revenue fund and created the Cancer Research Fund Committee to provide accountability and oversight. As the Cancer Research Fund Committee developed the UCRF Strategic Plan, each potential use of UCRF resources was evaluated according to the following questions:

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

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

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

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

BUDGET AND EXPENDITURE INFORMATION

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.

FY 2023 Anticipated and Actual Fund Revenue

Strategic Plan Categories	YTD Actual*
Tier 1: Research Priorities	
Optimizing NC Cancer Outcomes	$8,987,358
Understanding Genetics in Cancer – Basic Approaches and Clinical Applications	$9,742,442
Developing New Cancer Treatments	$9,634,133
Tier 2: Opportunity Fund	$9,044,171
Tier 3: Critical Infrastructure	
Clinical Excellence and Outreach	$8,462,329
Infrastructure	$13,705,699
Total	**$59,576,131**

* Rounded to the nearest dollar

CONCLUSION

With significant economic benefits and a statewide reach serving cancer patients in all 100 counties, the University Cancer Research Fund continues to produce major impacts for North Carolina. As this report shows, the UCRF creates jobs, generates outside grant funds and tax revenues, and sustains critical resources that allow UNC Lineberger to continue to be a global leader in advancing cancer research and care. By fueling the innovative research and clinical work of world-class cancer experts, the UCRF strengthens UNC's work with health care partners and communities throughout our state, ultimately helping patients and families affected by cancer both in North Carolina and beyond. On their behalf, thank you for your ongoing support of this vital and visionary investment.

APPENDIX


PFAS Induce Platinum Resistance
Pluripotency Priming Overcomes

APPENDIX

CANCER RESEARCH FUND COMMITTEE

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

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

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

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

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

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

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

Nancy Messonnier, MD
Dean, UNC Gillings School
of Global Public Health
The University of
North Carolina at Chapel Hill

APPENDIX

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.

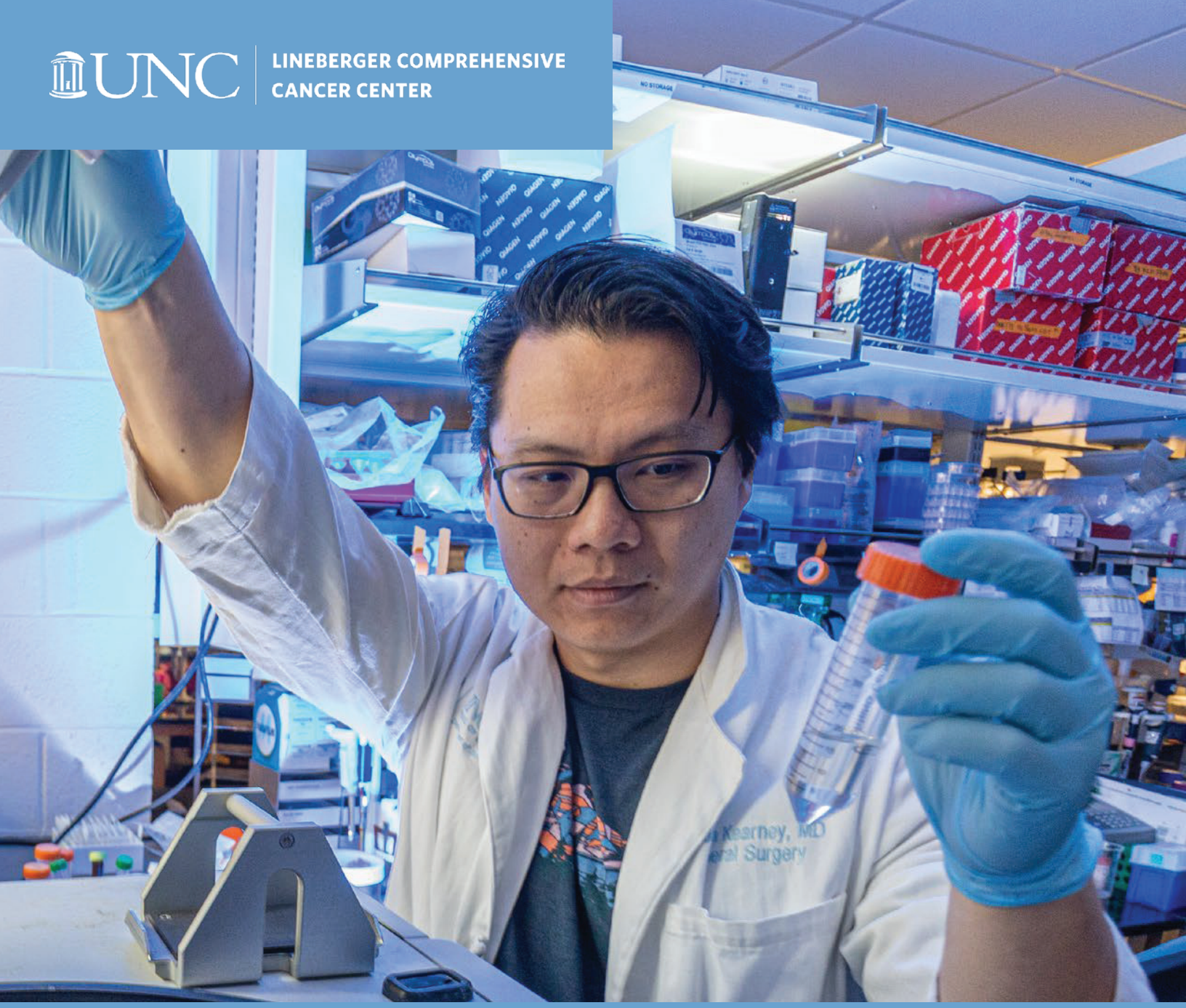
(2) Accounting of expenditures of extramural funds related to strategic initiatives, development of infrastructure, and ongoing administrative functions.

(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.

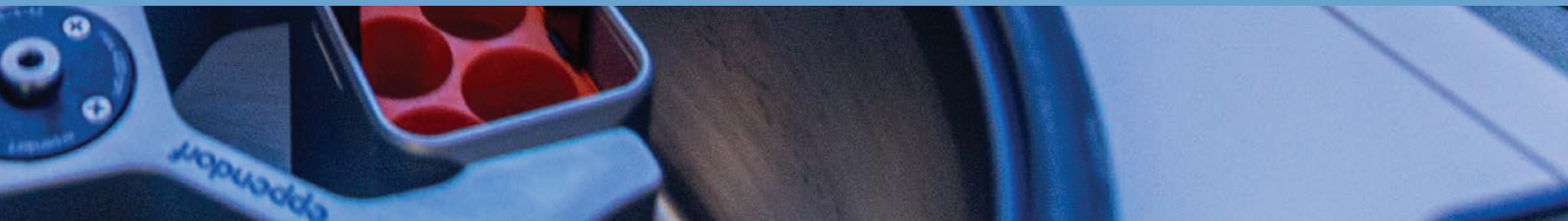
(5) Accounting of any fund balances retained by the Fund, along with information about any restrictions on the use of these funds.

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



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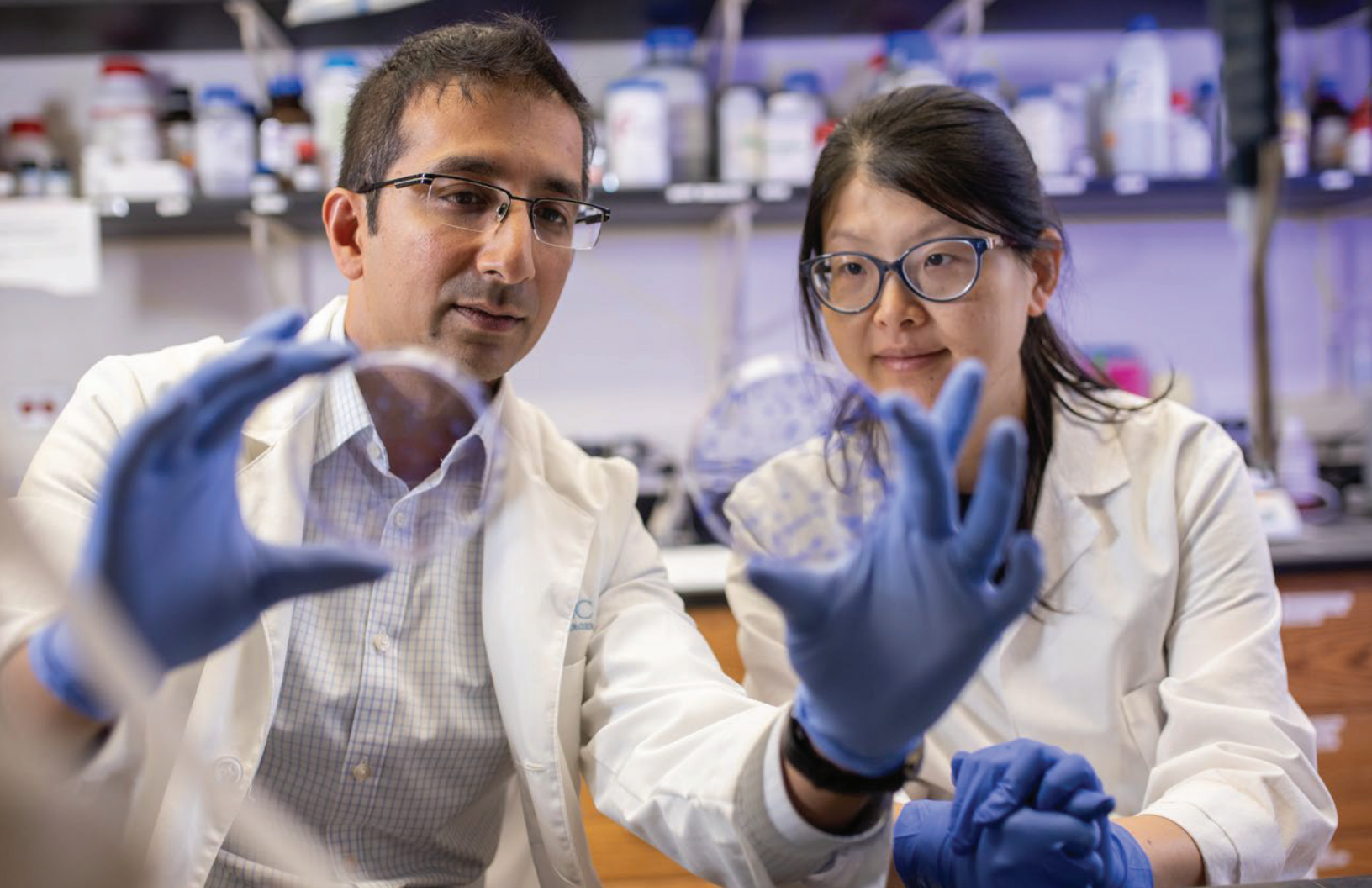


EXECUTIVE SUMMARY

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 (UNC Lineberger). The initial investment in 2007 to the University Cancer Research Fund (UCRF) of $25 million has grown to $59.5 million for FY 2023. This year alone the **$59.5 million** investment produced an economic impact of **$746.9 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. UNC Lineberger is one of only 56 National Cancer Institute-designated comprehensive cancer centers and is the only public NCI-designated facility in North Carolina.

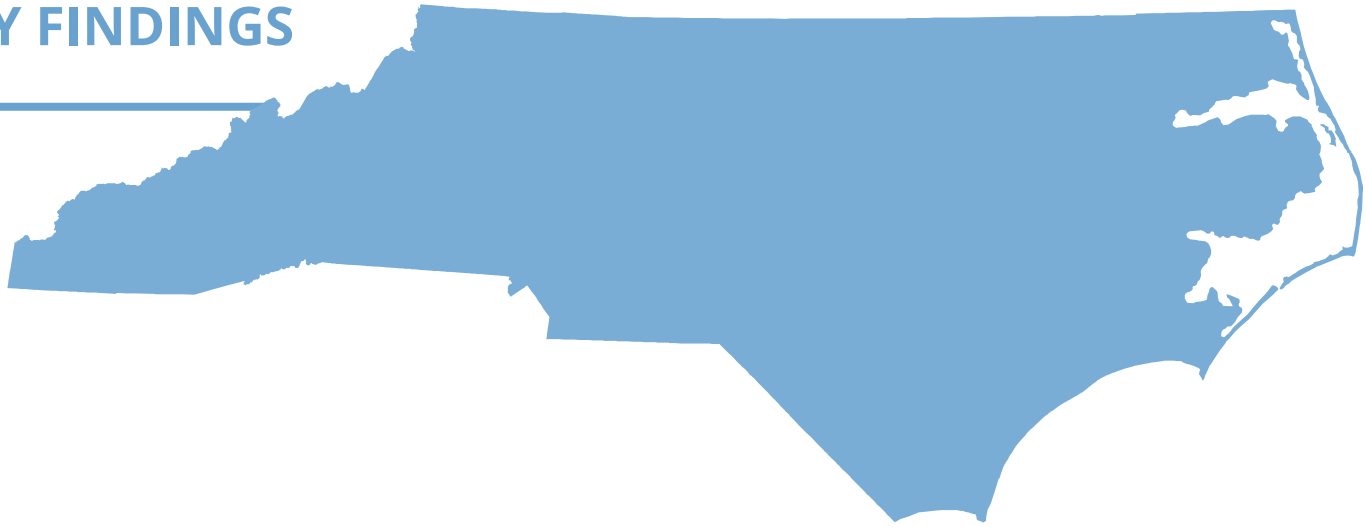
The cancer center brings together some of the most exceptional physicians and scientists in the country to investigate and improve the prevention, early detection, and treatment of cancer. With research that spans the spectrum from the laboratory to the bedside to the community, UNC Lineberger faculty work to understand the causes of cancer at the genetic and environmental levels, to conduct groundbreaking laboratory research, and to translate findings into pioneering and innovative clinical trials.

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

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

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

KEY FINDINGS



EXPANDING THE STATE'S ECONOMY

UCRF generated **$746.9 million** in total economic impact in North Carolina in FY 2023. This includes direct spending of more than $377.2 million within the state, much of which is a result of the generation of funds from national grants due to research activities, which accounted for $254.7 million in 2023. The ripple effect of in-state spending accounted for $369.7 million in additional funds, representing downstream spending by employees, vendors, and contractors.

CREATING JOBS

In FY 2023, UCRF directly supported 1,439 jobs in North Carolina and an additional 2,138 jobs through both the indirect and induced impacts of those direct jobs and the spending generated from the UCRF within North Carolina. The total impact of this fund supported **3,577 jobs** in FY 2023.

GENERATING TAX REVENUE

Tripp Umbach estimates that UCRF generated **$23.5 million** in local and state tax revenue in FY 2023.

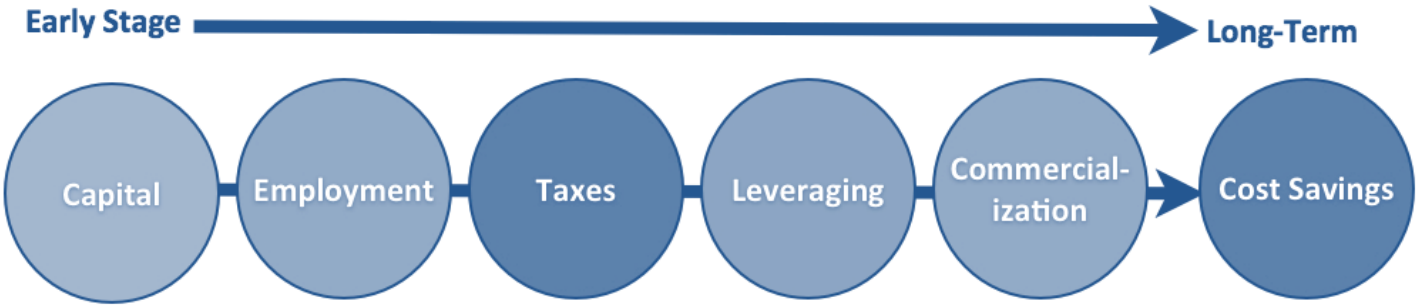
ENCOURAGING SCIENTIFIC COLLABORATION AND LEVERAGING FEDERAL RESEARCH FUNDS

These funds have encouraged recipient institutions to collaborate and to apply for and win highly competitive federal grants. Recipients of these state research funds have leveraged federal research funds amounting to $212.0 million in federal research grants, bringing the total to more than $254.7 million in external funding in 2023 alone. This would not have been possible without the UCRF funding, which elevated UNC Lineberger to the top rankings.

IMPACTS OF UCRF IN FY 2023

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).

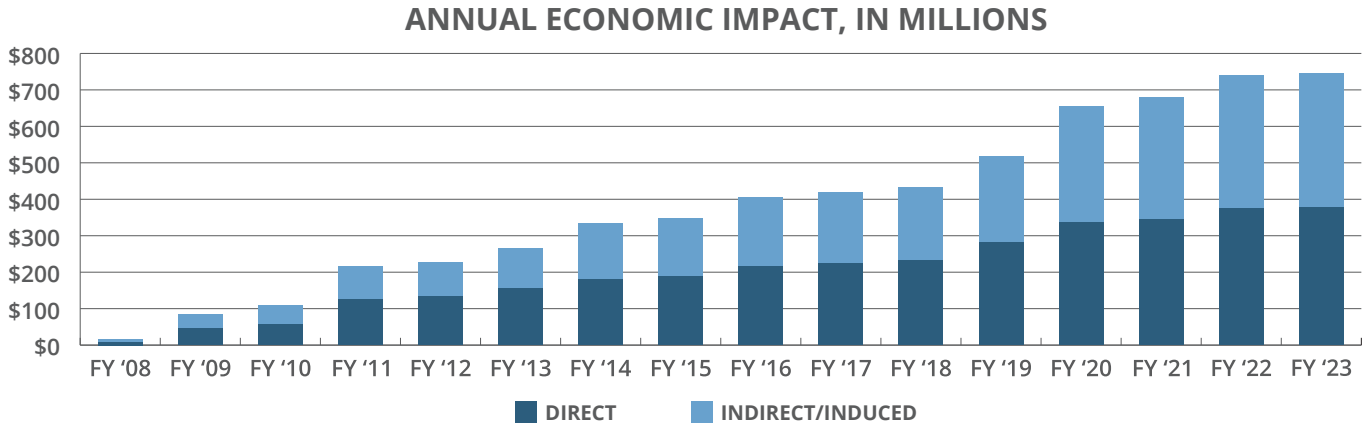
Figure 1: Research Return on Investment Timeline



ECONOMIC IMPACT OF FUNDING

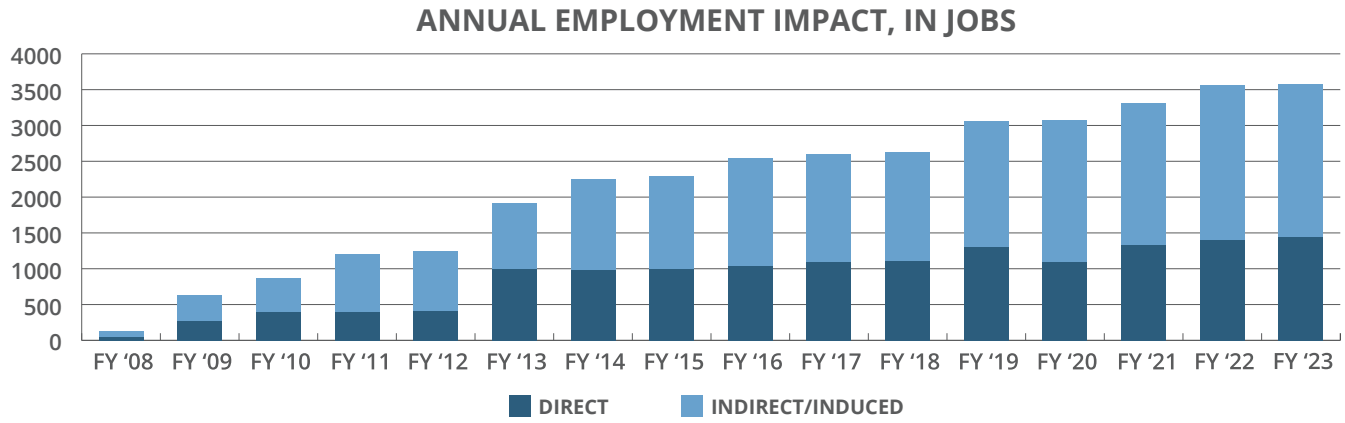
UCRF dollars invested in research in FY 2023 have resulted in an expansion of the state's economy by **$746.9 million**. Tripp Umbach's economic impact analysis indicates that even in the early stage (2007-2011), program investments in capital and human resources have returned greater than three dollars to the state's economy for every one dollar invested. In FY 2023, this amount has risen to nearly **$12.05 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 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 15 years are outlined below in the chart below.



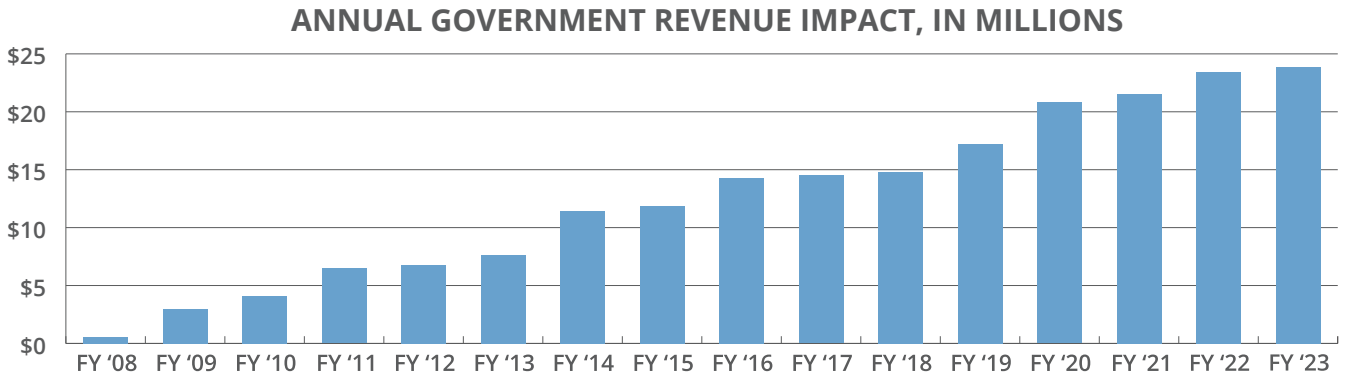
IMPACT OF UCRF DOLLARS ON EMPLOYMENT

Tripp Umbach estimates that in FY 2023, UCRF dollars for healthcare research have created and sustained **3,577 high-paying research-related jobs** throughout North Carolina. This includes both the 1,439 high-paying research-related jobs directly attributed to UNC and the 2,138 indirect and induced jobs supported throughout the state. 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 North Carolina.



TAX IMPACTS

Tripp Umbach estimates that funds provided in FY 2023 have resulted in **$23.5 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. Federal medical research funding helps fuel clinical enterprises. These funds from the state's UCRF have encouraged researchers at the recipient organization to collaborate to apply for and win highly competitive federal grants. These funds have enabled recipients of UCRF dollars to leverage federal research funds amounting to $212.0 million, bringing the total to **$254.7 million** in external funding in 2023 alone.

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. Looking at projected commercialization impact in 2032, Tripp Umbach estimates this to be from **$785.9 million** at a conservative level of growth scenario to greater than **$1.4 billion** using the aggressive level of growth in additional economic activity within North Carolina. These activities will also create an additional 4,028 (conservative) to 7,409 jobs (aggressive) high-paying jobs. These additional economic and employment impacts will translate into additional state and local tax impact of $26.8 million to $48.1 million.

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

APPENDIX A: DEFINITION OF TERMS

STUDY YEAR

Fiscal Year 2023

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

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

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

It should be noted that, at the time of performing the UCRF assessment, the most recent IMPLAN data files for the state of North Carolina were for 2021. While the data is not for the current year, it is unlikely that the fundamental economic structure of North Carolina's economic fabric has changed to an extent that would invalidate the analysis. IMPLAN data and accounts closely follow the accounting conventions used in the "Input/Output Study of the U.S. Economy" by the U.S. Bureau of Economic Analysis and the rectangular format recommended by the United Nations.

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

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 500 economic impact studies over the years for clients such as the Mayo Clinic Rochester, The Cleveland Clinic, University of Florida Shands HealthCare, and the Ohio State University Wexner Medical Center.

Besides completing similar studies for UNC Lineberger over the last 15 years, Tripp Umbach has also completed economic impact studies for cancer centers such as the The Wistar Institute, 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, 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.

Tripp Umbach

Turning Ideas Into Action

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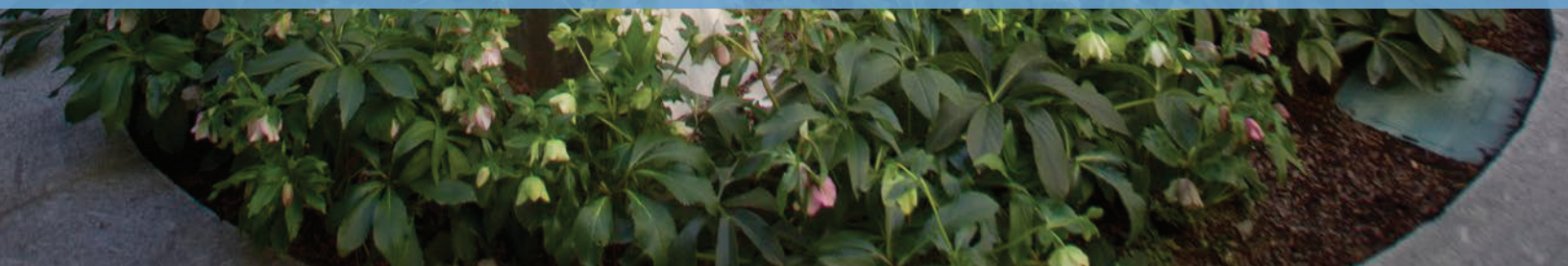
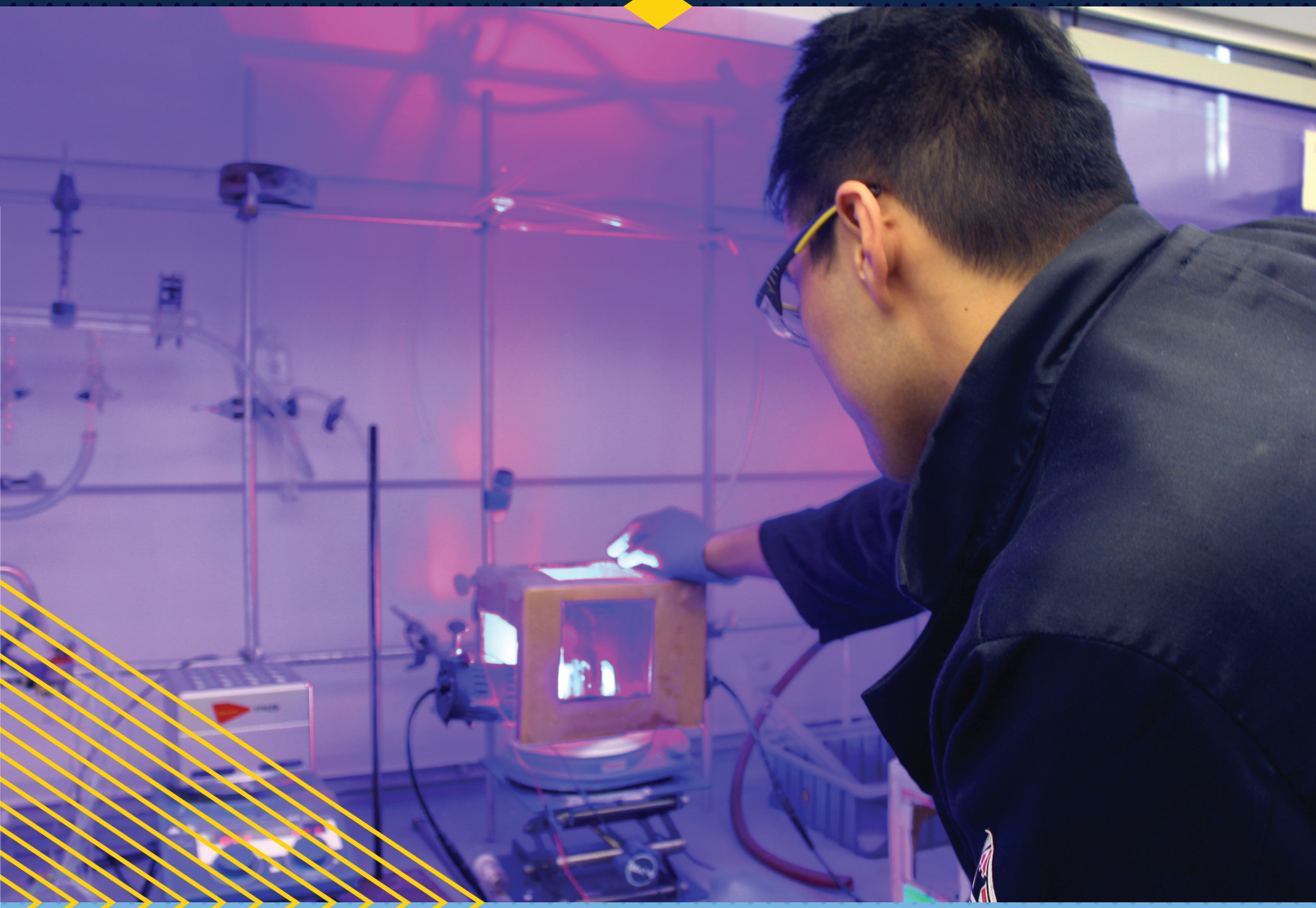


FY 2023 EXPENDITURES



FY 2023 EXPENDITURES

Fiscal Year Expenditures Summary

Strategy	Annual Budget	Year to Date Actual*	Cash Balance*
Theme 1: Optimizing NC Cancer Outcomes	$9,350,000	$8,987,358	$362,642
Theme 2: Understanding Genetics in Cancer – Basic Approaches & Clinical Applications	$9,744,000	$9,742,442	$1,558
Theme 3: Develop New Cancer Treatments	$9,300,272	$9,634,133	($333,861)
Tier 2: Opportunity Fund	$9,250,000	$9,044,171	$205,829
Tier 3: Infrastructure – Clinical Excellence and Outreach	$8,400,000	$8,462,329	($62,329)
Infrastructure	$13,500,000	$13,705,699	($205,699)
Grand Total	**$59,544,272**	**$59,576,131**	**($31,859)**

* Rounded to the nearest dollar

FY 2023 EXPENDITURES

Total Expenses

Expense Category	Year To Date Actual*	Expense to Total Expenditure
Faculty Salaries	$17,698,532	29.7%
EPA Student Salaries	$3,272,847	5.5%
Staff Salaries	$8,196,603	13.8%
Other Staff	$836,937	1.4%
Bonus Salaries	$411,611	0.7%
Benefits	$9,142,843	15.3%
Phy Benefits	$262,315	0.4%
Other Staff Benefits	$229,655	0.4%
Transit Tax	$90,562	0.2%
Consultants/Contracted Services	$2,198,642	3.7%
Employee Education	$37,617	0.1%
Repairs and Maint	$159,351	0.3%
Other Current Services	$3,817,817	6.4%
Supplies, Other	$5,875,992	9.9%
Travel	$643,051	1.1%
Maintenance Contracts	$635,176	1.1%
Advertising	$10,837	0.0%
Meetings & Amenities	$48,737	0.1%
Printing and Binding	$101,091	0.2%
Communication	$172,827	0.3%
Computer Services	$499,147	0.8%
Rental/Lease Facilities	$608,598	1.0%
Equipment	$2,806,863	4.7%
Study Subjects & Exp	$135,257	0.2%
HCS Residents	$359,530	0.6%
Insurance	$2,683	0.0%
Student Support	$1,286,026	2.2%
Legal Fees	$34,986	0.1%
Grand Total	**$59,576,131**	**100.0%**

* Rounded to the nearest dollar

FY 2023 EXPENDITURES

UCRF Funding by Strategy and Expense

Theme 1: Optimizing NC Cancer Outcomes	Year to Date Actual*
Faculty Salaries	$3,013,137
EPA Student Salaries	$197,325
Staff Salaries	$1,605,323
Other Staff	$456,675
Bonus Salaries	$105,159
Benefits	$1,697,252
Phy Benefits	$4,355
Other Staff Benefits	$52,292
Transit Tax	$16,137
Consultants/Contracted Services	$160,111
Employee Education	$14,310
Repairs and Maint	$2,172
Other Current Services	$274,938
Supplies, Other	$155,677
Travel	$118,354
Maintenance Contracts	$385
Advertising	$4,312
Printing and Binding	$27,729
Communication	$51,390
Computer Services	$37,949
Rental/Lease Facilities	$476,562
Equipment	$74,199
Study Subjects & Exp	$123,437
Student Support	$311,760
Legal Fees	$6,420
Theme 1: Optimizing NC Cancer Outcomes Total	**$8,987,358**

* Rounded to the nearest dollar

FY 2023 EXPENDITURES

Theme 2: Understanding Genetics in Cancer – Basic Approaches & Clinical Applications	Year to Date Actual*
Faculty Salaries	$3,021,232
EPA Student Salaries	$687,342
Staff Salaries	$1,124,403
Other Staff	$46,417
Bonus Salaries	$70,556
Benefits	$1,569,513
Phy Benefits	$7,023
Other Staff Benefits	$37,805
Transit Tax	$14,646
Consultants/Contracted Services	$349,084
Employee Education	$1,020
Repairs and Maint	$5,137
Other Current Services	$163,202
Supplies, Other	$1,837,314
Travel	$98,460
Maintenance Contracts	$74,173
Advertising	$1,089
Printing and Binding	$33,937
Communication	$2,044
Computer Services	$316,532
Equipment	$114,428
Study Subjects & Exp	$0
Student Support	$163,903
Legal Fees	$3,180
Theme 2: Understanding Genetics in Cancer – Basic Approaches & Clinical Applications	**$9,742,442**

* Rounded to the nearest dollar

FY 2023 EXPENDITURES

Theme 3: Developing New Cancer Treatment	Year to Date Actual*
Faculty Salaries	$1,604,727
EPA Student Salaries	$537,475
Staff Salaries	$759,250
Other Staff	$101,001
Bonus Salaries	$38,037
Benefits	$932,409
Phy Benefits	$13,103
Other Staff Benefits	$19,281
Transit Tax	$9,175
Consultants/Contracted Services	$578,349
Employee Education	$1,840
Repairs and Maint	$33,745
Other Current Services	$1,595,429
Supplies, Other	$1,798,246
Travel	$45,935
Maintenance Contracts	$195,769
Advertising	$325
Printing and Binding	$7,303
Communication	$31,212
Computer Services	$16,823
Rental/Lease Facilities	$85,292
Equipment	$1,005,158
Study Subjects & Exp	$0
Insurance	$2,683
Student Support	$212,686
Legal Fees	$8,880
Theme 3: Developing New Cancer Treatment	**$9,634,133**

* Rounded to the nearest dollar

FY 2023 EXPENDITURES

Tier 2: Opportunity Fund	Year to Date Actual*
Faculty Salaries	$1,675,548
EPA Student Salaries	$555,621
Staff Salaries	$1,072,495
Other Staff	$169,150
Bonus Salaries	$44,326
Benefits	$995,939
Phy Benefits	$22,443
Other Staff Benefits	$27,493
Transit Tax	$10,507
Consultants/Contracted Services	$59,725
Employee Education	$6,297
Repairs and Maint	$81,435
Other Current Services	$991,432
Supplies, Other	$1,213,900
Travel	$220,816
Maintenance Contracts	$189,453
Advertising	$99
Meetings & Amenities	$0
Printing and Binding	$26,373
Communication	$14,601
Computer Services	$91,899
Rental/Lease Facilities	$26,760
Equipment	$1,378,726
Study Subjects & Exp	$10,945
HCS Residents	$26,779
Insurance	$0
Student Support	$121,322
Legal Fees	$10,086
Tier 2: Opportunity Fund	**$9,044,171**

* Rounded to the nearest dollar

FY 2023 EXPENDITURES

Tier 3: Infrastructure – Clinical Excellence and Outreach	Year to Date Actual*
Faculty Salaries	$5,528,833
EPA Student Salaries	$80,768
Staff Salaries	$541,602
Other Staff	$46,716
Bonus Salaries	$26,597
Benefits	$1,526,800
Phy Benefits	$212,142
Other Staff Benefits	$15,295
Transit Tax	$18,578
Consultants/Contracted Services	$99,482
Employee Education	$8,204
Repairs and Maint	$73
Other Current Services	$18,146
Supplies, Other	$71,605
Travel	$6,066
Maintenance Contracts	$12,524
Advertising	$1,290
Printing and Binding	$45
Communication	$3,665
Computer Services	$7,850
Rental/Lease Facilities	$525
HCS Residents	$209,188
Study Subjects & Exp	$875
Student Support	$25,459
Legal Fees	$0
Tier 3: Infrastructure – Clinical Excellence and Outreach	**$8,462,329**

* Rounded to the nearest dollar

FY 2023 EXPENDITURES

Infrastructure	Year to Date Actual*
Faculty Salaries	$2,855,054
EPA Student Salaries	$1,214,315
Staff Salaries	$3,093,529
Other Staff	$16,978
Bonus Salaries	$126,937
Benefits	$2,420,930
Phy Benefits	$3,249
Other Staff Benefits	$77,489
Transit Tax	$21,518
Consultants/Contracted Services	$951,890
Employee Education	$5,946
Repairs and Maint	$36,788
Other Current Services	$774,671
Supplies, Other	$799,251
Travel	$153,420
Maintenance Contracts	$162,871
Advertising	$3,722
Meetings & Amenities	$48,737
Printing and Binding	$5,705
Communication	$69,915
Computer Services	$28,093
Rental/Lease Facilities	$19,459
Equipment	$234,351
HCS Residents	$123,563
Study Subjects & Exp	$0
Student Support	$450,896
Legal Fees	$6,420
Infrastructure	**$13,705,699**
Grand Total	**$59,576,131**

* Rounded to the nearest dollar

EXTRAMURAL AWARDS

Category	Last Name	First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Abdou	Yara	METAvivor Research and Support, Inc.		11/22/22	11/21/24	Investigating Survivin as a Novel Target for Immunotherapy in Black Women with Breast Cancer	$100,000
Recruitment	Abdou	Yara	University of Arizona		11/23/20	3/11/30	Palbo T-DM1: A randomized phase II study to evaluate efficacy of T-DM1 with or without Palbociclib in the treatment of patients with metastatic HER2 positive breast cancer	$3,210
Recruitment	Akulian	Jason	Bard Peripheral Vascular, Inc.		7/27/21	5/31/26	A comprehensive serial evaluation of tumor-immune interaction heterogeneity in malignant pleural disease.	$110,000
Recruitment	Akulian	Jason	NanOlogy, LLC	NANOPAC-2020-01	7/7/21	10/7/22	Phase 2 Trial Evaluating the Safety and Tolerability of Intratumoral Injections of NanoPac® with Standard of Care Therapy in Subjects with Lung Cancer	$108,674
Recruitment	Akulian	Jason	Biodesix		10/23/19	10/30/22	(INSIGHT): An Observational Study Assessing the Clinical Effectiveness of VeriStrat® and Validating Immunotherapy Tests in Subjects with Non-Small Cell Lung Cancer BDX00146	$31,771
Recruitment	Alexander	Thomas	NIH National Cancer Institute	1-R21-CA259926-01A1	6/30/22	6/29/24	Novel Sequencing Based Diagnostics for Leukemia in Low Resource Settings	$109,045
Recruitment	Andermann	Tessa	NIH National Institute of Allergy and Infectious Diseases	5-K23-AI163365-01-02	9/9/21	8/30/26	Precision characterization of antimicrobial resistance gene dynamics in bloodstream infection risk after hematopoietic stem cell transplantation	$202,619
Recruitment	Andermann	Tessa	National Marrow Donor Program	32979	7/31/19	12/30/23	Modulation of CAR-T Cell Therapy Efficacy by the Intestinal Microbiome in Patients with Leukemia and Lymphoma	$100,000
Theme Investment	Anton	Eva	NIH National Institute of Mental Health	5-R01-MH132710-01-02	8/18/22	5/30/27	Primary Cilia: A Novel Signaling Gateway To Neural Circuit Modulation	$1,094,968
Recruitment	Arthur	Janelle	NIH National Institute of Allergy and Infectious Diseases	5-R21-AI159786-01-02	2/12/21	1/30/23	Novel high-throughput in vivo approach to define pathobionts driving colitis	$194,375
Recruitment	Arthur	Janelle	NIH National Institute of Diabetes and Digestive and Kidney Diseases	5-R01-DK124617-01-04	5/31/20	5/30/25	Microbiota-mediated fibrotic remodeling in the inflamed intestine	$379,517
Recruitment	Atkins	Hannah	Pennsylvania State University	UNCCHCA274265	3/31/23	3/30/24	A co-infection model for papillomavirus associated infections and cancers	$13,883
Recruitment	Atkins	Hannah	Pennsylvania State University	UNCCHCA271069	2/28/22	2/28/24	The role of bacterial vaginosis-associated bacteria in papillomavirus persistence and cancers	$5,212
Recruitment	Aubé	Jeffrey	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI155510-01-02	7/12/21	6/29/25	Discovery of Phospopantetheinyl Transferse Inhibitors Against Mycobacterium tuberculosis	$779,927
Investment (Training)	Aubé	Jeffrey	NIH National Institute of General Medical Sciences	5-T32-GM135122-02	6/30/21	6/29/26	UNC Chemical Biology Interface Training Program	$263,965
Retention	Bae-Jump	Victoria	NIH National Cancer Institute	4-R37-CA226969-06	3/13/18	2/27/25	Obesity-driven Metabolic and Molecular Biomarkers of Metformin Response in Endometrial Cancer	$348,592
Retention	Bae-Jump	Victoria	NIH National Cancer Institute	1-R21-CA267584-01	7/31/22	7/30/24	Impact of Obesity on Immuno-Oncology Agents in Endometrial Cancer	$218,089
Retention	Bae-Jump	Victoria	University of Washington	UWSC12682/PO#55965	3/31/21	3/30/25	Social Interventions for Support during Treatment for Endometrial Cancer and Recurrence: SISTER Study	$25,200
Theme Investment	Baric	Ralph	NIH National Cancer Institute	4-U54-CA260543-02	9/29/20	8/30/25	North Carolina Seronet Center for Excellence	$2,018,073
Theme Investment (CC)	Baric	Ralph	NIH National Cancer Institute	4-U54-CA260543-02S1	9/29/20	11/30/24	North Carolina Seronet Center for Excellence	$1,475,028
Theme Investment (CC)	Baric	Ralph	University of Washington		9/15/20	8/31/25	Human Antibody-Based Countermeasures Against the Wuhan Coronavirus SARS-CoV-2	$371,363
Investment (HTSF)	Baric	Ralph	University of Alabama at Birmingham	000520254-SC002	3/1/22	2/28/23	Antiviral Drug Discovery and Development Center	$575,994
Theme Investment	Baric	Ralph	Janssen Pharmaceutica NV	C2022016830	10/3/22	6/29/25	Janssen Service Agreeement	$162,936

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Theme Investment	Baric	Ralph	University of Washington	UWSC14095 BPO# 69607	9/1/22	8/30/25	Structure-based design of broadly protective coronavirus vaccines: Core 2 Virology and Viral Evolution Core	$609,111
Theme Investment	Baric	Ralph	SK bioscience	22-3863	1/2/22	5/29/25	Broadening protection against SARS-COV-2 and new broadly protective Sarbecovirus candidate vaccines	$1,670,432
Theme Investment	Baric	Ralph	NIH National Institute of Allergy and Infectious Diseases	1-U19-AI171292-01	5/15/22	4/29/25	Rapidly Emerging Antiviral Drug Development Initiative-AViDD Center (READDI-AC)	$4,365,546
Theme Investment	Baric	Ralph	Vaxart, Inc.	22-2414	2/7/22	2/6/23	Vaxart Challenge Virus	$48,750
Theme Investment	Baric	Ralph	Duke University	303000021	9/15/21	8/30/23	Project 2: Design and Testing of Cross-Reactive Pan-Coronavirus Vaccines	$700,000
Theme Investment	Baric	Ralph	University of Texas at Austin	UTAUS-SUB00000595AM1	8/3/21	7/29/23	Development of an S2-directed Pan-B-coronavirus Vaccine	$219,998
Theme Investment	Baric	Ralph	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI148260-01-04	3/4/20	2/27/25	Antibody Landscape following Human Norovirus Infection and Vaccination	$734,952
Theme Investment	Baric	Ralph	NIH National Institute of Allergy and Infectious Diseases	5-U01-AI149644-05	4/18/19	3/30/24	Respiratory Virus Vaccine and Adjuvant Exploration	$1,000,000
Recruitment	Baron	John	Medical University of South Carolina	A21-0071-S002	8/31/20	8/30/24	The immune contexture of colorectal adenomas and serrated polyps	$28,798
Retention	Basch	Ethan	University of Alabama at Birmingham	000527573-SC001	5/3/21	2/27/26	Evaluating the implementation and impact of navigator-delivered ePRO home symptom monitoring and management	$108,110
Retention	Basch	Ethan	NIH National Cancer Institute	5-U01-CA233046-05	9/29/18	8/30/23	Analyzing and Interpreting PRO-CTCAE with CTCAE and Other Clinical Data to Characterize Drug Tolerability	$554,283
Investment (Training)	Basch	Ethan	NIH National Cancer Institute	5-T32-CA116339-15	6/30/05	7/30/23	Cancer Care Quality Training Program	$307,012
Recruitment	Batrakova	Elena	University of Texas Rio Grande Valley		7/15/20	6/29/25	A targeted anti-HIV drug delivery to the GALT	$78,647
Recruitment	Batrakova	Elena	NIH National Institute of Neurological Disorders and Stroke		8/31/19	6/29/24	Extracellular Vesicles for CNS Delivery of Therapeutic Enzymes to Treat Lysosomal Storage Disorders	$297,568
Innovation Award	Bautch	Victoria	American Heart Association	829371	3/31/21	3/30/23	Fellow: Morgan Oatley Overlapping functions of SMAD6 and SMAD7 in vascular development and stability	$67,118
Innovation Award	Bautch	Victoria	NIH National Heart, Lung, and Blood Institute	5-R35-HL139950-06	12/31/17	12/30/24	Molecular and Cellular Control of Angiogenesis	$922,295
Retention	Bear	James	NIH National Institute of General Medical Sciences	5-R35-GM130312-01-05	1/31/19	1/30/24	Systematic analysis of the actin cytoskeleton and directed cell migration	$581,059
Theme Investment (CC)	Beaven	Anne	Genentech, Inc.		7/17/18	7/31/28	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 Dif	$11,613
Recruitment	Bennett	Antonia	Beat AML, LLC		7/18/22	1/30/23	Beat AML PRO Consulting Agreement	$33,584
Recruitment/Theme Investment	Berg	Jonathan	NIH National Human Genome Research Institute	5-R01-HG012271-01-02	9/13/22	6/29/27	Age-based genomic screening in newborns, infants, and children: a novel paradigm in public health genomics	$918,019
Recruitment/Theme Investment	Berg	Jonathan	NIH National Human Genome Research Institute	3-U24-HG009650-06S1	9/11/17	6/29/26	The Clinical Genome Resource - Advancing genomic medicine through biocuration and expert assessment of genes and variants at scale	$5,052,647
Recruitment	Bjurlin	Marc	Janssen Research & Development, LLC		9/30/20	9/29/24	Exploratory Study to Evaluate the Feasibility of the Use of Real-world Data Collected via the Hugo Platform During the Post-treatment Follow-up Phase of the PROTEUS Clinical Protocol 56021927PCR3011 to Improve Traditional Study Methods for Data Generation	$73,939

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Recruitment	Bjurlin	Marc	Altor BioScience		6/21/20	12/30/23	A study of intravesical Bacillus Calmette-Guerin (BCG) in Combination with ALT-803 in Patients with Non-Muscle Invasive Bladder Cancer	$11,794
Recruitment	Bjurlin	Marc	Hoosier Cancer Research Network		7/17/19	8/10/29	PhAse 1/2 StuDy of Modern ImmunotherApy in BCG-RelaPsing UroThelial Carcinoma of the BLADDER - (ADAPT-BLADDER) HCRN GU16-243	$5,668
Recruitment	Bjurlin	Marc	Janssen Research & Development, LLC	WO# 56021927PCR3011	6/20/19	12/30/27	A Randomized, Double-blind, Placebo-controlled, Phase 3 Study of Apalutamide in Subjects with High-risk, Localized or Locally Advanced Prostate Cancer Who are Candidates for Radical Prostatectomy	$8,870
Recruitment	Bjurlin	Marc	MDxHealth Inc,		1/30/17	1/30/23	Prospective Validation of Prostate Bio markers for Repeat Biopsy:The PRIORITY Study	$7,895
Recruitment	Bjurlin	Marc	Medpace, Inc.		6/30/16	4/18/23	A Phase III, Open Label Study to Evaluate the Safety and Efficacy of INSTILADRIN (rAD-IFN/Syn3) Administered Intravesically to Patients with High Grade, BCG Unresponsive Non-Muscle Invasive Bladder Cancer (NMIBC)	$6,843
Theme Investment (CC)	Boucher	Richard	NIH National Heart, Lung, and Blood Institute	1-U01-HL156655-01A1	3/5/22	2/28/23	The molecular and cellular mechanisms of the STAT3 mutat	$734,207
Recruitment	Bowers	Albert	Enanta Pharmaceuticals, Inc.	23-3827	6/30/23	6/29/24	mRNA Display Selections against Enanta Targets	$187,687
Recruitment	Bowers	Albert	NIH National Institute of General Medical Sciences	3-R35-GM125005-06S1	9/4/17	8/30/27	Chemoenzymatic Synthesis, Mode of Action and Evolution of Natural Product-based Macrocycles	$427,007
Recruitment	Bowers	Albert	National Science Foundation	CHE-2204094	5/31/22	5/30/25	Controlling protein post-translational modification by separating affinity and catalysis in designer enzymes	$165,000
Recruitment	Branca	Rosa	University of Massachusetts Medical School	SUB00000106-UNC PO WA01180390	8/14/21	8/13/25	Advancement of CRISPR-based Adipose Therapeutics for Type 2 Diabetes to Non-human Primates	$339,088
Recruitment	Brewer	Noel	NIH National Cancer Institute	5-P01-CA250989-01-02	9/22/21	8/30/26	Program Project - Improving Provider Announcement Communication Training (IMPACT)	$2,345,967
Recruitment	Brewer	Noel	NIH National Cancer Institute	5-R01-CA246606-03	9/9/20	8/30/23	Understanding Uncontrolled Vaping Among Vulnerable Populations	$459,279
Recruitment	Brewer	Noel	NIH National Institute on Drug Abuse	5-R01-DA048390-01-03	6/30/20	4/29/25	Informing ENDS policies: Studying the impact of e-cigarette warnings on behavior	$472,092
Recruitment	Brown	Nicholas	American Heart Association	23IPA1048749	6/30/23	6/29/25	Dissecting Macromolecular Complexes of Protein Quality Control in the Heart	$200,000
Recruitment	Brown	Nicholas	American Heart Association	1025746	12/31/22	12/30/24	Visualizing Essential Molecular Mechanisms That Promote Mitotic Exit	$65,106
Recruitment	Brown	Nicholas	NIH National Institute of General Medical Sciences	5-R35-GM128855-01-05	7/31/18	7/30/23	Spindle Assembly Checkpoint Silencing	$388,750
Recruitment	Brudno	Yevgeny	North Carolina State University	567814	4/15/21	3/30/26	Biomaterial Scaffolds for Ex Vivo and In Situ CAR-T Cell Production	$41,995
Recruitment	Bryant	Ashley	NIH National Cancer Institute	5-K00-CA253762-03-04	5/16/22	4/29/26	Understanding Quality of Life and Physical Activity in Black Breast Cancer Survivors	$83,308
Recruitment	Bryant	Ashley	NIH National Institute of Nursing Research	5-F31-NR019927-02	1/6/22	1/5/24	Fellow: C Dictus Racial Disparities in Distressing Symptoms for Nursing Home Residents at EOL with Alzheimer's Disease and Related Dementias	$37,914
Recruitment	Bryant	Ashley	Carevive Systems, Inc.		11/1/21	12/30/23	Real World Treatment Experience of Patients with Acute Myelogenous Leukemia and Lung Cancer Using Remote Symptom Monitoring	$40,294
Recruitment	Bryant	Kirsten	Department of Defense	W81XWH2110693	8/31/21	8/30/24	Targeting KRAS-dysregulated metabolism for novel therapeutic approaches	$219,289
Recruitment	Bryant	Kirsten	NIH National Cancer Institute	5-R37-CA251877-01-03	6/30/20	6/29/25	Mechanistic dissection and inhibitor targeting of autophagy in RAS driven cancers	$315,401

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Investment (GeriOnc)	Busby-Whitehead	Jan	University of Louisville Research Foundation, Inc.	ULRF_19-0740S3-01	8/31/21	6/29/23	Geriatric Workforce Enhancement Project (2021-2023) - Supplement - NH Training	$71,000
Investment (Training)	Busby-Whitehead	Jan	NIH National Institute on Aging	5-T35-AG038047-14	5/31/20	5/30/25	UNC-CH Summer Research Training in Aging for Medical Students (MSTAR)	$112,409
Theme Investment	Buse	John	NIH National Center for Advancing Translational Sciences	1-UM1-TR004406-01	4/27/23	3/30/30	1/3 North Carolina Translational and Clinical Sciences Institute (NC TraCS)	$5,021,029
Theme Investment	Buse	John	Novo Nordisk Inc.	NN9536-4999	12/8/22	6/30/25	Effect and safety of semaglutide 7.2 mg once-weekly in participants with obesity	$59,242
Theme Investment	Buse	John	Novo Nordisk Inc.	NN9536-7545	12/8/22	6/30/25	Effect and safety of semaglutide 7.2 mg once-weekly in participants with obesity and type 2 diabetes	$34,963
Theme Investment	Buse	John	Novo Nordisk Inc.	NN9838-4608	10/26/22	9/29/26	A.NN9838-4608: Efficacy and safety of cagrilintide s.c. 2.4 mg in combination with semaglutide s.c. 2.4 mg (CagriSema s.c. 2.4mg/2.4 mg) once-weekly in participants with overweight or obesity, incorporated herein by reference, including any amendment the	$51,157
Theme Investment	Buse	John	Novo Nordisk Inc.	NN9535-4984	8/1/22	1/7/25	Investigation of once-weekly semaglutide s.c. dose-response in patients with type 2 diabetes and overweight - a participant- and investigator-blinded and sponsor open-label study (SemaMAX)	$38,491
Theme Investment	Buse	John	Novo Nordisk Inc.	NN9389-4606	12/8/21	1/1/25	Investigation of the safety and efficacy of semaglutide s.c. in combination with NNC0480-0389 in participants with type 2 diabetes - a dose finding study	$83,913
Theme Investment	Buse	John	University of California at Los Angeles	0125 G WC382	2/20/19	5/30/23	Towards Glucose Transporter-Mediated Glucose-Responsive Insulin Delivery with Fast Response	$34,456
Recruitment	Calabrese	Joseph	North Carolina Biotechnology Center	2023-IIG-0006	4/16/23	6/15/23	Next-generation DNA sequencing technologies to enable discoveries in biotechnology and medicine	$89,250
Recruitment	Calabrese	Joseph	NIH National Institute of Child Health and Human Development	1-F31-HD111292-01	2/28/23	2/27/26	Fellow: M Murvin Dissecting mechanisms of gene silencing by the lncRNA Kcnq1ot1 in mouse trophoblast stem cells	$40,954
Recruitment	Calabrese	Joseph	National Science Foundation	DBI-2228805	4/30/23	4/29/26	A computational approach to identify non-linear sequence similarity between lncRNAs	$662,630
Recruitment	Calabrese	Joseph	NIH National Institute of General Medical Sciences	5-R01-GM121806-06-07	1/22/17	3/30/26	Mechanisms of gene silencing induced by long noncoding RNAs	$334,354
Recruitment	Calabrese	Joseph	NIH National Institute of Child Health and Human Development	5-F31-HD103334-03	7/31/20	7/30/23	Regulation of Polycomb by long noncoding RNAs during pre-implantation development	$38,562
Recruitment	Calabrese	Joseph	NIH National Institute of Child Health and Human Development	5-F31-HD103370-03	7/31/20	7/30/23	Fellow: Keenan Braceros Control of gene silencing by long noncoding RNAs in trophoblast stem cells	$38,640
Recruitment	Calabrese	Joseph	NIH National Institute of General Medical Sciences	5-R01-GM136819-01-04	4/30/20	2/28/24	Cooperative control of Polycomb Repressive Complexes by long noncoding RNAs, CpG island DNA, and RNA-binding proteins	$425,451
Recruitment	Cameron	Craig	NIH National Institute of Allergy and Infectious Diseases	1-F31-AI179022-01	7/31/23	7/30/24	Fellow: D Aponte-Diaz Membrane and lipidome dynamics during enterovirus infection	$35,744
Recruitment	Cameron	Craig	NIH National Institute of Allergy and Infectious Diseases	4-R37-AI053531-20	1/31/23	1/30/28	Picornavirus Genome Replication	$534,015
Recruitment	Cameron	Craig	Leland Stanford Junior University	63054089-242682	5/15/22	4/29/25	Development of outpatient antiviral cocktails against SARS-CoV-2 and other potential pandemic RNA viruses	$318,775
Recruitment	Cameron	Craig	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI169462-01-02	4/12/22	3/30/27	Enteroviral 2C protein as a therapeutic target	$747,931
Recruitment	Cameron	Craig	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI161841-01-03	3/14/21	2/27/26	Coronavirus Genome Replication	$675,803

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Recruitment	Cameron	Craig	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI045818-22-23	8/31/19	6/26/26	RNA-dependent RNA Polymerase	$404,270
Retention	Campbell	Sharon	NIH National Cancer Institute	1-R01-CA281295-01	2/28/23	2/28/28	KRAS G12C: Kinetic and Redox Characterization of Covalent Inhibition	$582,947
Retention	Campbell	Sharon	American Cancer Society	PF-20-140-01-CDD	12/31/20	12/30/22	Oncogenic KRAS Q61 mutants possess novel targets for drug discovery	$59,750
Retention	Campbell	Sharon	NIH National Institute of General Medical Sciences	5-R35-GM134962-01-04	1/31/20	1/30/25	Structure and Mechanism of G-proteins and cell adhesion proteins in regulation of cell growth and motility	$597,953
Investment (Protocol)	Carey	Lisa	AstraZeneca Pharmaceuticals LP	59124350 VP9297763-9297764-59124350	6/14/23	6/13/24	Enhertu HER2low Steering Committee	$6,850
Investment (Protocol)	Carey	Lisa	Breast Cancer Research Foundation	BCRF-22-023	9/30/22	9/29/23	Clinical implications of metastatic subtype, microenvironment, and organ of involvement	$225,000
Investment (Protocol)	Carey	Lisa	METAvivor Research and Support, Inc.		10/31/22	10/30/24	HARMONY: Harnessing the Analysis of RNA expression and Molecular subtype to Optimize Novel TherapY for Metastatic Breast Cancer	$250,000
Investment (Protocol)	Carey	Lisa	Johns Hopkins University	TBCRC052/PO 2005234900	8/5/21	9/30/30	TBCRC-052: MARGetuximab Or Trastuzumab (MARGOT): A phase II study comparing neoadjuvant paclitaxel/margetuximab/pertuzumab to paclitaxel/trastuzumab/pertuzumab in patients with Stage II-III HER2-positive breast cancer	$23,358
Investment (Protocol)	Carey	Lisa	Dana-Farber Cancer Institute	DF-HCC 20-166	7/21/21	6/1/31	DF-HCC 20-166: Saci-IO TNBC: Randomized phase II study of sacituzumab govitecan with or without pembrolizumab in PD-L1-negative metastatic triple negative breast cancer (TNBC)	$12,000
Investment (Protocol)	Carey	Lisa	NIH National Cancer Institute	5-UG1-CA233373-05	4/30/19	2/27/25	UNC Lead Academic Participating Site	$504,995
Investment (Protocol)	Carey	Lisa	NIH National Cancer Institute	5-R01-CA229409-01-05	5/31/19	5/30/24	Optimizing HER2-targeting using RNA- and DNA-based predictive algorithms	$545,651
Investment (Protocol)	Carey	Lisa	Seattle Genetics, Inc		8/7/16	8/6/27	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	$1,920
Innovation Award	Caron	Kathleen	NIH National Institute of Child Health and Human Development	2-R01-HD060860-11A1	3/31/09	1/30/28	Adrenomedullin Signaling at the Maternal-Fetal Interface	$419,055
Innovation Award	Caron	Kathleen	American Heart Association	23POST1022945	12/31/22	12/30/24	Elucidating the functions of atypical chemokine receptor 3 signaling in ischemic heart injury-induced lymphangiogenic response	$140,558
Innovation Award	Caron	Kathleen	NIH National Heart, Lung, and Blood Institute	1-F31-HL163885-01	8/31/22	8/30/25	Elucidating the GPCR protein networks that drive lymphatic growth	$40,759
Theme Investment (CC)	Caron	Kathleen	NIH National Heart, Lung, and Blood Institute	5R01HL129086-07	4/1/16	6/30/24	Cardiac Lymphatics in Development and Repair	$583,072
Innovation Award	Caron	Kathleen	University of North Carolina at Wilmington	583240-22-0288-1-UNC	2/28/21	5/27/24	Brain Lymphatic Structure in Shallow, Mid, and Deep Diving Marine Mammals	$11,800
Innovation Award	Caron	Kathleen	American Heart Association	834898	6/30/21	6/29/23	Elucidating the VE-cadherin protein network governing lymphatic function and permeability	$31,520
Investment (Training)	Caron	Kathleen	NIH National Institute of General Medical Sciences	5-T32-GM133364-04	6/30/20	6/29/25	Training Program in Cellular Systems and Integrative Physiology	$210,146
Innovation Award	Caron	Kathleen	NIH National Institute of Diabetes and Digestive and Kidney Diseases	5-R01-DK119145-01-05	3/31/19	1/30/24	GPCR-mediated pathways for regulation of intestinal lymphatic function	$517,480

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Recruitment	Charlot	Marjory	Conquer Cancer Foundation		6/30/21	6/29/24	A User-centered Mobile Health App to Promote Participation of Black Women in Breast Cancer Clinical Trials	$150,000
Recruitment	Charlot	Marjory	Lung Cancer Research Foundation	20-5421	11/30/20	11/29/22	Understanding the immune landscape of Non-Small Cell Lung Cancer in African Americans	$75,000
Theme Investment	Clark	Leslie	Northwestern University	60058459 UNC	12/31/20	7/30/23	A Novel Preventive Strategy Using Metformin and Megestrol Acetate versus Megestrol Acetate Alone for Endometrial Intraepithelial Neoplasia	$5,127
Theme Investment	Clark	Leslie	Northwestern University	60058459 UNC	1/1/21	7/31/23	A Novel Preventive Strategy Using Metformin and Megestrol Acetate versus Megestrol Acetate Alone for Endometrial Intraepithelial Neoplasia	$12,911
Investment (HTSF)	Conlon	Brian	NIH National Institute of Allergy and In	1-R56-AI158511-01A1	8/22/2022	7/31/2024	The contribution of respiratory burst to antibiotic fail	$674,578
Investment (HTSF)	Conlon	Frank	NIH National Heart, Lung, and Blood Institute	5-R01-HL156424-01-03	4/16/2021	6/30/2025	Mechanism and Function of Cardiac Transcriptional Repres	$536,739
Investment (HTSF)	Conlon	Frank	NIH National Heart, Lung, and Blood Institute	5-R01-HL165785-01-02	9/15/2022	7/31/2026	Function and regulation of chromatin remodeling complexe	$566,508
Investment (Chair Package)	Cook	Jeanette	American Heart Association	1027147	12/31/22	12/30/24	Angiogenesis regulation by c-Myc-mediated endothelial cell proliferation	$65,106
Investment (Chair Package)	Cook	Jeanette	NIH National Cancer Institute	1-F31-CA268866-01	7/31/22	2/27/25	The mechanism and consequences of MCM degradation induced by CDK4/6 inhibition	$33,621
Investment (Chair Package)	Cook	Jeanette	NIH National Institute of General Medical Sciences	3-R35-GM141833-02S2	6/30/21	6/29/26	Cell Cycle Dynamics that ensure Genome Maintenance	$10,992
Investment (Chair Package)	Cook	Jeanette	NIH National Institute of General Medical Sciences	5-R25-GM055336-20-24	9/29/96	2/28/24	UNC Initiative for Maximizing Student Development	$593,547
Recruitment	Coombs	Catherine	Memorial Sloan-Kettering Cancer Center	20-044	6/1/22	2/26/32	A Phase II Venetoclax-Based Therapy for the Treatment of Fit Patients with Chronic Lymphocytic (CLL) in the Front-Line Setting.	$10,000
Recruitment	Corcoran	David	H Lee Moffitt Cancer and Research Institute	11-22224-99-01-G1	12/1/22	4/29/23	Role of CRTC1-MAML2 in Salivary Mucoepidermoid Carcinoma Pathobiology	$30,248
Investment (HTS)	Crowley	James	NIH National Institute of Mental Health	5-U01-MH125050-02	9/1/21	6/30/26	1/2 Trans-ancestry genomic analysis of obsessive-compulsive disorder	$309,386
Investment (HTS)	Crowley	James	NIH National Institute of Mental Health	5-R01-MH124675-01-03	12/14/20	10/30/25	2/2 Rare Genetic Variation and Risk for Obsessive Compulsive Disorder	$155,501
Retention	Damania	Blossom	Leukemia and Lymphoma Society	5653-24	6/30/23	6/29/26	Elucidating the role of FAM72A in EBV-driven B cell lymphomagenesis	$210,000
Retention	Damania	Blossom	NIH National Cancer Institute	2-P01-CA019014-42A1	4/30/97	6/29/27	Viral Oncogenesis, Latency and Replication	$1,936,921
Retention	Damania	Blossom	Lymphoma Research Foundation of America		2/28/21	2/27/23	Adenosinergic signaling as a novel target for viral lymphomas	$52,500
Retention	Damania	Blossom	NIH National Cancer Institute	3-U54-CA254564-03S1	8/12/20	7/30/25	Innovations for screening and prognosis in HIV+ cancers including Kaposi sarcoma, cervical cancer, and lymphoma in Malawi and South Africa	$125,000
Retention	Damania	Blossom	NIH National Cancer Institute	3-R01-CA096500-20S1	7/14/02	7/30/23	Role of KSHV Viral Proteins in Signaling and Pathogenesis	$387,182
Investment (Genomics)	Davis	Ian	NIH National Cancer Institute	1-R01-CA276663-01	12/31/22	12/30/27	Developmental control of chromatin states in cancer	$411,481
Investment (Genomics)	Davis	Ian	V Foundation for Cancer Research	AST2023-003	2/28/23	2/29/28	Novel mechanisms to improve CAR-T cell therapy for pediatric solid tumors	$333,333
Investment (Genomics)	Davis	Ian	V Foundation for Cancer Research	T2020-003	10/31/20	10/31/23	Combining Cellular and Epigenetic Therapies to Treat Pediatric Solid Tumors	$200,000
Retention	Dayton	Paul	Vanderbilt University Medical Center	VUMC110935	1/31/23	12/30/27	Next generation transcranial ultrasound brain therapies using phase change nanoemulsions	$195,565
Retention	Dayton	Paul	SonoVol, Inc.		8/31/22	8/30/23	SBIR: A preclinical multi-modal system for dynamic noninvasive assessment of liver disease	$72,000

Category	Last Name	First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Dayton	Paul	North Carolina Biotechnology Center	2022-TRG 6709	8/14/22	2/13/24	Developing a platform for acoustic therapies to treat chronic wound biofilm infections	$110,000
Retention	Dayton	Paul	Sunnybrook Health Sciences Centre	410014759	3/31/21	3/30/26	Functional micro-ultrasound imaging of the neurovascular response to focal ischemia	$24,000
Retention	Dayton	Paul	Advanced MicroBubbles, Inc.	22-2661	2/14/22	11/14/22	Evaluation of Immunologic Effects of Size Isolated Microbubbles in Pancreatic Cancer	$50,000
Retention	Dayton	Paul	SonoVol, Inc.	PA-20-260	7/27/22	7/26/24	SBIR: A turnkey research platform to accelerate clinical translation of targeted immunomodulation-enhanced therapies	$110,000
Retention	Dayton	Paul	NIH National Cancer Institute	5-R01-CA220681-01-06	8/9/17	7/30/23	High Frame Rate 3-D Super Resolution Ultrasound Microvascular Imaging	$347,834
Retention	Dayton	Paul	NIH National Cancer Institute	5-R01-CA189479-05-06	9/3/14	8/30/26	Academic-Industrial Partnership for Translation of Acoustic Angiography	$482,698
Retention	Dees	Elizabeth	Carisma Therapeutics, Inc	CT-0508-101	11/17/20	11/29/30	A Phase 1, First in Human Study of Adenovirally Transduced Autologous Macrophages Engineered to Contain an Anti-HER2 Chimeric Antigen Receptor in Subjects with HER2 Overexpressing Solid Tumors.	$201,284
Retention	Dees	Elizabeth	Apollomics, Inc.		7/29/19	8/13/29	Phase 1 / 2 Multicenter Study of the Safety, Pharmacokinetics, and Preliminary Efficacy of APL-101 in Subjects with Non-Small Cell Lung Cancer with c-Met EXON 14 skip mutations and c-Met Dysregulation Advance Solid Tumors	$4,488
Retention	Dees	Elizabeth	NRG Oncology		2/28/19	2/27/25	NRG Oncology Prime eIPF	$7,450
Retention	Dees	Elizabeth	Debiopharm International SA		5/12/19	5/22/29	A Phase II basket study of the oral selective pan-FGFR inhibitor Debio 1347 in subjects with solid tumors harboring a fusion of FGFR1, FGFR2 or FGFR3 (Study # Debio 1347-201)	$39,824
Retention	Dees	Elizabeth	Boehringer Ingelheim Pharmaceuticals, Inc.		11/18/18	11/17/28	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	$76,641
Retention	Dees	Elizabeth	Meryx, Inc.		7/18/18	7/30/28	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	$9,081
Retention	Dees	Elizabeth	G1 Therapeutics		6/19/18	6/29/28	A Phase 1, Open-Label, Multicenter Study to Assess the Safety, Tolerability, Pharmacokinetics, and Preliminary Antitumor Activity of Ascending Doses of G1T48 in Women with Estrogen Receptor-Positive, HER2-Negative Advanced Breast Cancer	$32,390
Retention	Dees	Elizabeth	H3 Biomedicine Inc.		4/11/18	4/29/28	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	$109,022
Retention	Dees	Elizabeth	NSABP Foundation Inc.		10/12/14	4/30/23	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	$480

Category	Last Name	First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Dees	Elizabeth	inVentiv Clinical LLC		7/24/16	7/23/28	Phase 1B Study to Assess the Safety, Tolerability, and Clinical Activity of Gedatolisib in Combination with Palbociclib and either Letrozole or Fulvestrant in Women with Metastatic or Locally Advanced/Recurrent Breast Cancer (MBC)	$10,980
Retention	Dees	Elizabeth	Merck Sharp and Dohme Corp.		3/31/16	11/16/22	Phase II Study Of Single-dose Cyclophosphamide +Pembrolizumab In Patients With Metastatic Triple Negative Breast Cancer (TNBC)	$53,728
Recruitment Dean	Denby-Brinson	Ramona	Duke Endowment	2131-SP	5/2/23	4/30/28	Children with Disabilities: Increasing Kinship Caregivers' Capacity and Improving Child Outcomes	$339,600
Investment (HTSF)	De Paris	Kristina	Cornell University Weill Medical College	227909-5	12/1/20	3/31/24	Early Life Vaccination to Prevent HIV Aquisition During	$354,758
Investment (Training)	Der	Channing	NIH National Cancer Institute	2-T32-CA071341-26	9/29/96	6/29/28	Cancer Cell Biology Training Program	$314,720
Investment (Proteomics)	Der	Channing	Pancreatic Cancer Action Network	22-WG-DERB	6/30/22	6/29/24	Determination of novel RAF/MEK and/or FAK inhibitor combinations in KRAS-mutant PDAC	$170,000
Investment (Proteomics)	Der	Channing	NIH National Cancer Institute	1-F31-CA275260-01	7/31/22	7/30/24	Fellow: A Edwards Mechanisms of YAP1-driven resistance to KRAS-G12C inhibition	$37,842
Investment (Proteomics)	Der	Channing	American Cancer Society	PF-22-066-01	6/30/22	6/29/25	Targeting mitochondrial function as a therapeutic strategy for pancreatic cancer	$35,000
Investment (Proteomics)	Der	Channing	Department of Defense	W81XWH2110692 0011663366	8/31/21	8/30/24	Targeting KRAS-dysregulated metabolism for novel therapeutic approaches	$110,358
Investment (Proteomics)	Der	Channing	NIH National Cancer Institute	5-R35-CA232113-05	8/31/18	8/30/25	Targeting undruggable RAS for cancer treatment	$899,999
Investment (HTSF)	Deshmukh	Mohanish	NIH National Institute on Aging	1-R01-AG082140-01	3/31/23	12/30/27	miR-29: A brain homeostasis molecule for Alzheimer's disease prevention	$622,753
Investment (HTSF)	Deshmukh	Mohanish	The Chan Zuckerberg Initiative	2022-250520	7/31/22	7/30/26	Illuminating Organelle Dynamics in Development and Neurodegeneration	$800,000
Investment (HTSF)	Deshmukh	Mohanish	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS122399-01-03	6/2/21	3/30/26	Spatial Restriction of Apoptotic Machinery during Neuronal Apoptosis and Pruning	$382,943
Investment (HTSF)	Deshmukh	Mohanish	NIH National Institute of Neurological Disorders and Stroke	1-RF1-NS117113-01A1	1/31/21	1/30/24	Unexpected Function of Inflammasomes in Axon Pruning: Focus on NLRP1	$545,973
Investment (Training)	Deshmukh	Mohanish	NIH National Institute of General Medical Sciences	5-T32-GM008719-25	6/30/99	6/29/24	Medical Scientist Training Program	$1,035,017
Investment (HTSF)	Desilva	Aravinda	University of California at Berkeley	10455	8/21/20	10/30/23	Protective Immunity Following Dengue Virus Natural Infec	$407,000
Investment (HTSF)	Dichter	Gabriel	NIH National Institute of Child Health and Human Development	5-P50-HD103573-03	8/23/22	5/31/23	Clinical Translational Research Center for Neurodevelopm	$1,244,000
Retention	Dittmer	Dirk	NIH National Cancer Institute	2-R01-CA163217-11	8/31/11	6/29/27	Targeted Therapies for HIV-Associated Kaposi Sarcoma and Lymphoma	$400,137
Retention	Dittmer	Dirk	University of California at Los Angeles	1560 B ZA805	11/30/21	11/29/22	Leadership and Operations Center (LOC), AIDS Clinical Trials Group (ACTG) [UM1AI068636]	$55,872
Retention	Dittmer	Dirk	University of California at Los Angeles	1560 G LA429	11/30/21	11/29/22	Leadership and Operations Center (LOC), AIDS Clinical Trials Group (ACTG) [UM1AI068636]	$42,937
Retention	Dittmer	Dirk	The Emmes Company, LLC	13765	8/31/20	8/30/25	AIDS Malignancy Consortium (AMC)	$93,300
Retention	Dittmer	Dirk	NIH National Cancer Institute	5-R01-CA250080-01-04	2/29/20	2/27/25	PQ6: Transgenic Mouse Model for Kaposi Sarcoma	$507,637
Retention	Dittmer	Dirk	Tulane University	TUL-HSC-558039-20/21	3/31/20	2/28/24	Exploratory Research on HIV Contribution to Heart and Lung Comorbidities	$87,178
Retention	Dittmer	Dirk	NIH National Institute of Dental and Craniofacial Research	5-R01-DE018304-11-15	5/14/07	4/29/24	ART Modulation of Viral Pathogenesis	$369,313
Retention	Dittmer	Dirk	NIH National Cancer Institute	5-R01-CA239583-01-05	4/30/19	4/29/24	Mechanisms of KSHV transmission	$583,738

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Recruitment	Dittus	Christopher	Atrium Health		9/27/20	9/27/30	LCI-HEM-PCNSL-RMPV-001- A Phase 1B Trial of Nivolumab Consolidation Following Completion of High Dose Methotrexate Containing Induction Chemotherapy in Older (Greater Than or Equal to 65 years) Patients with Previously Untreated Primary CNS Lymphoma	$11,863
Recruitment	Dittus	Christopher	AstraZeneca Pharmaceuticals LP		3/2/20	3/1/30	A Phase II Trial of Acalabrutinib in Relapsed/Refractory Primary and Secondary CNS Lymphomas	$126,978
Recruitment	Dittus	Christopher	Seattle Genetics, Inc		10/17/17	10/31/22	Brentuximab Vedotin with Cyclophosphamide, Doxorubicin, Etoposide, and Prednisone (BV-CHEP) for the treatment of Adult T-Cell Leukemia/Lymphoma: A Phase II Trial of the Rare Lymphoma Working Group	$38,400
Investment (Training)	Doerschuk	Claire	NIH National Heart, Lung, and Blood Institute	1-T32-HL166141-01A1	6/30/23	6/29/28	UNC Research Training Program in Respiratory Diseases and Critical Care	$526,943
Investment (Chair Package)	Dohlman	Henrik	NIH National Institute of General Medical Sciences	5-R35-GM118105-06-08	4/30/21	4/29/26	Negative and positive feedback in cell signaling	$659,119
Recruitment	Dominguez	Daniel	Yale University	CON-80004061 (GR118142)	9/20/22	8/30/27	RNA Splicing Defects as Oncogenic Events and Targets in Pancreatic Cancer	$45,812
Recruitment	Dominguez	Daniel	NIH National Institute of General Medical Sciences	3-R35-GM142864-02S1	7/31/21	7/30/26	Protein Disorder as a Mechanism of RNA Binding and Regulation	$464,644
Recruitment	Dominguez	Daniel	Yale University	GR 109212 (CON-80002335)	5/31/20	5/30/23	Altered mRNA splicing dependent on mutant p53 identifies novel therapeutic vulnerability in pancreatic cancer	$34,591
Recruitment	Dotti	Gianpietro	Leukemia and Lymphoma Society	6625-21	6/30/21	6/29/24	Targeting Cathepsin G in Acute Myeloid Leukemia	$200,000
Recruitment	Dotti	Gianpietro	Fastback Bio, LLC		9/30/20	9/29/22	Development of improved HVEM-based chimeric antigen receptor (CAR) T cells	$159,476
Recruitment	Dotti	Gianpietro	NIH National Cancer Institute	5-R01-CA256898-01-03	1/31/21	1/30/26	Targeting B7-H3 in ovarian cancer.	$109,227
Recruitment	Dotti	Gianpietro	Massachusetts General Hospital	237271	8/31/20	8/30/24	B7-H3-specific antigen receptor (CAR) T Cell immunotherapy for metastatic triple negative breast cancer (mTNBC).	$126,944
Recruitment	Dotti	Gianpietro	NIH National Cancer Institute	5-R01-CA247436-01-03	12/31/20	12/30/25	Tuning CAR-T Cell Functions.	$487,050
Recruitment	Dotti	Gianpietro	University of California at Los Angeles	0125 G XA917	6/30/19	6/29/24	Platelets-Mediated Delivery of Checkpoint Inhibitors for Post-Surgical Cancer Immunotherapy	$46,683
Recruitment	Dotti	Gianpietro	NIH National Cancer Institute	5-R01-CA243543-01-04	8/31/19	8/30/24	Cellular Immunotherapy of Ovarian Cancer	$387,206
Recruitment	Dotti	Gianpietro	Baylor College of Medicine	7000000853	2/28/19	8/30/23	Tailoring CAR-Based Immunotherapy Strategies to T Cell Lymphoma	$233,887
Investment (HTSF)	Duronio	Robert	NIH National Institute of General Medica	1-R35-GM145258-01	9/20/22	7/31/27	Epigenetic Control of the Cell Cycle During Animal Devel	$250,900
Theme Investment	Earp	Shelley	NIH National Cancer Institute	1-R01-CA270792-01A1	11/30/22	11/29/27	Divergent Roles of MerTK, Tyro3, and Axl in Pancreatic Cancer and Metastasis	$537,271
Theme Investment	Earp	Shelley	Breast Cancer Research Foundation	BCRF-22-041	9/30/22	9/29/23	Receptor Tyrosine Kinases and Breast Cancer Progression	$225,000
Theme Investment	Earp	Shelley	NIH National Cancer Institute	3-P30-CA016086-47S1	5/31/97	11/29/25	Cancer Center Support Grant	$8,117,018
Recruitment	Elmore	Shekinah	American Society of Clinical Oncology		6/30/23	6/29/26	Adapting and implementing a telehealth-enhanced navigator program to improve breast cancer care adherence and clinical outcomes in Malawi	$200,000
Recruitment	Elmore	Shekinah	Bristol-Myers Squibb Foundation		10/13/22	10/12/24	Extended HARMONY: Adapting the Harnessing Analysis RNA Expression and Molecular Subtype to Optimize Novel TherapY MBCA Trial to the UNC Project Malawi Breast Cancer Cohort	$240,000
Retention	Elston	Timothy	NIH National Institute of General Medical Sciences	5-R35-GM127145-01-05	6/30/18	6/29/23	Mathematical modeling of cellular signaling systems	$450,950

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Recruitment	Elston Lafata	Jennifer	HMH Center for Discovery and Innovation	G00018-2233	9/30/22	8/30/23	Using a Mixed Methods Approach to Understand Shared Decision-Making in Lung Cancer Screening	$37,860
Recruitment	Elston Lafata	Jennifer	American Cancer Society	84266	6/30/22	12/30/24	Implementing Navigation Decision Support to Enhance Oncology Care Equity	$300,000
Recruitment	Elston Lafata	Jennifer	Agency for Healthcare Research and Quality	5-R01-HS028455-01-02	8/31/21	8/30/24	Development of a Shared Decision Making Support (SDM-S) Measure for Use with Team-based Care	$499,999
Recruitment	Elston Lafata	Jennifer	The Genentech Foundation	G-89311	12/31/20	12/30/22	How to Pursue Equity in Oncology Virtual Visits	$749,994
Recruitment	Elston Lafata	Jennifer	Memorial Sloan-Kettering Cancer Center	SUB00000426 CC22131213	9/24/18	9/29/22	Using a Mixed Methods Approach to Understand Shared Decision-Making in Lung Cancer Screening	$3,443
Recruitment	Elston Lafata	Jennifer	Henry Ford Health System	UNCB45271	4/14/18	3/30/23	Center for Research to Optimize Precision Lung Cancer Screening in Diverse Populations	$39,635
Recruitment	Emanuele	Michael	NIH National Institute of General Medical Sciences	3-R01-GM120309-07S1	8/31/16	3/30/26	SCF Ubiquitin Ligases in Cell Cycle Control and Chromosome Stability	$353,982
Investment (Training)	Emanuele	Michael	NIH National Institute of General Medical Sciences	5-T32-GM135095-04	6/30/20	6/29/25	Pharmacological Sciences Training Program	$530,535
Recruitment	Emanuele	Michael	NIH National Institute of General Medical Sciences	5-R01-GM134231-01-04	4/30/20	2/28/24	Deubiquitinases in Cell Cycle Control	$427,157
Recruitment	Emanuele	Michael	American Cancer Society	RSG-18-220-01-TBG	12/31/18	12/30/22	Ubiquitin Ligases in Breast Cancer Proliferation and Therapeutic Resistance	$264,000
Recruitment	Engel	Lawrence	NIH National Institute of Environmental Health Sciences	22-5752/ 2479801	6/30/22	6/29/24	IPA for Lawrence Engel to the NIEHS	$62,108
Recruitment	Engel	Lawrence	NIH National Institute of Environmental Health Sciences	5-F31-ES033509-02	11/30/21	11/29/23	Fellow: H Jardel Exposure to volatile organic compounds and glycemic dysregulation among oil spill cleanup workers	$40,121
Recruitment	Engel	Lawrence	NIH National Institute of Environmental Health Sciences	5-R01-ES031127-02-04	7/31/20	5/30/24	Neurological Effects of Environmental Styrene and BTEX Exposure in a Gulf of Mexico Cohort.	$434,040
Recruitment	Enyioha	Chineme	NIH National Institute on Drug Abuse	1-K23-DA057416-01	9/29/22	8/30/27	Development of a prototype for a mobile health intervention for smoking cessation with features culturally adapted for African American smokers	$201,237
Theme Recruitment (HTSF)	Falk	Ronald	NIH National Institute of Diabetes and Digestive and Kidney Diseases	5-R01-DK125350-01-04	7/1/20	5/31/25	Pathobiology of ANCA Glomerulonephritis: Targeting Adapt	$682,709
Recruitment	Fenton	Owen	BASF Corporation	89261635	4/30/23	4/29/24	Lipid Formulations for Delivery to Plant Soil	$150,000
Recruitment	Flick	Matthew	Purdue University	11001337-027	8/31/22	8/30/27	Reprogramming to PDAC Stroma by Targeting Coagulation in the Tumor Microenvironment	$264,350
Recruitment	Flick	Matthew	Wayne State University	WSU22178	8/14/22	6/29/25	Novel mechanism underlying fibrinogen biogenesis in the endoplasmic reticulum	$26,374
Recruitment	Flick	Matthew	Canadian Institutes of Health Research	202110MFE-472665-FPP-229993	3/31/22	3/30/24	The protective role of plasminogen deficiency in non-alcoholic fatty liver disease and glucose dysmetabolism	$100,000
Recruitment	Flick	Matthew	NIH National Heart, Lung, and Blood Institute	5-R01-HL160046-01-02	8/31/21	7/30/25	Mechanisms linking the plasminogen/fibrinogen axis to the pathogenesis of COVID-19	$551,675
Recruitment	Flick	Matthew	NIH National Heart, Lung, and Blood Institute	5-U01-HL143403-05	7/31/18	7/30/23	Targeting the Plasminogen Activation System to Limit Pancreatic Cancer Progression and Associated Thrombosis	$834,158
Recruitment	Foster	Matthew	Lilly USA LLC	LOXO-IDH-20001	8/9/21	8/16/31	A Phase 1 Study of Oral LY3410738 in Patients with Advanced Hematologic Malignancies with IDH1 or IDH2 Mutations.	$32,332

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Recruitment	Foster	Matthew	Rafael Pharmaceuticals, Inc.		12/8/19	11/12/29	Phase III Multicenter Open-Label Randomized Trial to Evaluate Efficacy and Safety of CPI-613 in Combination with High Dose Cytarabine and Mitoxantrone (CHAM) Compared to High Dose Cytarabine and Mitoxantrone (HAM) in Older Patients (?60 years) with Relapse	$6,500
Recruitment	Foster	Matthew	Beat AML, LLC		2/24/19	8/21/23	BAML16-001 (BEAT)_Phase 1/2 Umbrella Study-A Master Protocol for Biomarker-Based Treatment of AML (The Beat AML Trial)	$45,667
Recruitment	Foster	Matthew	MacroGenics, Inc.		5/17/16	5/16/28	A Phase 1, First-in-Human, Dose Escalation Study of MGD006, a CD123 x CD3 Dual Affinity Re-Targeting (DART) Bi-Specific Antibody-Based Molecule, in Patients with Relapsed or Refractory Acute Myeloid Leukemia or Intermediate- 2/High Risk Myelodysplastic Sy	$66,939
Recruitment	Foster	Matthew	Celgene Corporation		5/30/12	10/26/22	LCCC 1111 An Open-Label Dose-Finding Study of Lenalidomide as Reinduction/Consolidation Followed by Lenalidomide Maintenance Therapy for Adults Over 60 Years of Age with AML in Partial or Complete Response Following Induction Therapy	$19,895
Recruitment	Franco	Hector	NIH National Cancer Institute	1-R01-CA273444-01	7/31/22	7/30/27	Posttranslational Regulation of FOXA1 in Breast Cancer	$478,930
Recruitment	Franco	Hector	Marsha Rivkin Center for Ovarian Cancer Research	935287	3/31/22	3/30/24	Identifying Drivers of Therapeutic Resistance in Ovarian Cancer at Single Cell Resolution	$75,000
Recruitment	Franco	Hector	American Cancer Society	134261-PF-20-059-01-	8/31/20	11/22/22	Defining Enhancer RNA Function in the Pathogenesis of Breast Cancer	$7,002
Recruitment	Franco	Hector	Susan G Komen for the Cure	CCR19608601	9/4/19	9/3/22	Crosstalk Between Estrogen and Inflammatory Signaling in Metastatic Breast Cancer.	$450,000
Recruitment	Frerichs	Leah	NIH National Cancer Institute	1-R01-CA273331-01A1	8/1/23	7/31/28	Evaluating a remotely delivered, digital health CRC screening intervention among racially diverse patients of a community health center	$650,993
Recruitment	Frerichs	Leah	Robert Wood Johnson Foundation	79640	4/14/22	4/13/25	Assessing and promoting equity in mental health systems of care for adolescent youth in a rural community in North Carolina	$361,012
Recruitment	Frerichs	Leah	NIH National Institute of Child Health and Human Development	A034101	8/18/20	6/29/23	Parks & Pediatrics Fit Together: Translating knowledge into action for child obesity treatment in partnership with Parks and Recreation	$54,590
Investment (Training)	Fry	Rebecca	NIH National Institute of Environmental Health Sciences	2-T32-ES007018-46	6/30/77	6/29/27	Biostatistics for Research in Environmental Health	$1,340,401
Retention	Fry	Rebecca	Burroughs Wellcome Fund	1023207	8/31/21	5/30/24	Promoting Environmental Justice and Health Equity in Perinatal Health Research	$75,000
Retention	Fry	Rebecca	NIH National Institute of Environmental Health Sciences	5-F30-ES032302-03	4/30/21	4/29/24	Fellow: E Lodge Socioenvironmental Causes of Elevated Toxic Metal Levels and Epigenetic Aging	$43,186
Retention	Fry	Rebecca	NIH National Institute of Environmental Health Sciences	3-P42-ES031007-04S1	2/19/20	1/30/25	The UNC Chapel Hill Superfund Research Program (UNC-SRP)	$2,474,380
Retention	Fry	Rebecca	NIH National Institute of Environmental Health Sciences	5-U01-ES029531-05	8/31/18	5/30/23	Public health priority setting for environmental metals mixtures and birth defects	$289,545
Recruitment	Frye	Stephen	Pharmaceutical Research and Manufacturers of America Foundation	23-2371	12/31/22	12/30/24	Multimodal Approaches for the Development of SETDB1-targeting Cancer Treatment	$120,000
Recruitment	Frye	Stephen	NIH National Institute of General Medical Sciences	5-R35-GM139514-01-03	3/31/21	1/30/26	PROBING ALLOSTERY IN METHYL-LYSINE READER DOMAINS	$425,839

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Retention	Gallagher	Kristalyn	Johns Hopkins University	TBCRC 2022	6/30/22	6/29/23	TBCRC 2022 - Infrastructure Support Task Order	$60,000
Retention	Gallagher	Kristalyn	Duke University	Pro 00103750	1/31/21	9/29/22	Multi-Gene Panel Testing for Germline Mutations in a Contemporary Cohort of Patients with Phyllodes Tumors of the Breast	$1,300
Recruitment	Gershon	Timothy	Curtana Pharmaceuticals		10/10/21	10/10/23	CT-179 scRNA-seq study	$15,000
Recruitment	Gilkey	Melissa	Kaiser Foundation Research Institute	RNG211477-UNC-02	7/14/21	6/29/26	Effectiveness and mechanisms of multilevel implementation strategies to improve provider recommendation and advance HPV vaccination: a cluster randomized trial	$11,509
Recruitment	Gilkey	Melissa	University of Alabama at Birmingham	000526841-SC002	9/17/20	8/30/23	Provider-Focused Multi-Component Intervention for Maximizing HPV Vaccine Uptake in Young Cancer Survivors receiving Follow-Up Care in Pediatric Oncology Practices	$25,830
Investment (HTSF)	Giudice	Jimena	NIH National Institute of General Medica	5-R01-GM130866-01-05	3/1/19	2/29/24	Alternative Splicing Regulation and Membrane Trafficking	$320,991
Theme Investment (HTS)	Giusti	Paola	Swedish Research Council (SRC)	ZZC8ANALMQ C850803103	4/1/20	3/31/24	CNV mouse models and RNA splicing	$52,322
Innovation Award	Goldstein	Bob	NIH National Institute of General Medical Sciences	5-R35-GM134838-01-04	12/31/19	12/30/24	C. elegans gastrulation: A model for understanding apical constriction mechanisms	$377,380
Innovation Award	Goldstein	Robert	National Science Foundation	IOS-2028860	8/14/20	7/30/25	Using Tardigrades and Other Animals to Investigate Adaptations to Extreme Stresses	$215,755
Recruitment	Grant	Shakira	Augusta University	33737-33	12/31/22	12/30/23	Adaptation of Peer Connect: An Intervention to Address Psychosocial Needs Among Socially Disadvantaged Older Adults with Hematological Disorders	$11,500
Investment (Proteomics)	Graves	Lee	American Society for Pharmacology and Experimental Therapeutics		1/1/23	12/30/25	Summer Undergraduate Research Fellowships (SURF)	$27,000
Investment (Proteomics)	Graves	Lee	Duke University	303001421	7/31/22	7/30/23	Elucidating the in vivo interactome of the fusion oncoprotein PAX-FOXO1	$77,750
Investment (Proteomics)	Graves	Lee	NIH National Institute of General Medical Sciences	5-R01-GM138520-01-03	9/14/20	6/29/24	Elucidating the mechanism of action of novel ClpP activators in activation of the mitochondrial unfolded protein response	$314,448
Investment (Chair Package)	Greenberg	Caprice	Agency for Healthcare Research and Quality	7-R01-HS025989-06	8/31/18	6/29/23	Video-based Collaborative Learning to Improve Ventral Hernia Repair	$310,352
Recruitment	Grover	Natalie	Celgene Corporation	JCAR017-EAP-001	1/14/21	12/21/30	Expanded Access Protocol (EAP) for Patients Receiving Lisocabtagene maraleucel that is Nonconforming for Commercial Release	$19,894
Recruitment	Grover	Natalie	Lymphoma Research Foundation of America		6/30/20	6/29/23	CD30-Directed CAR-T Cells Co-Expressing CCR4 in Relapsed/Refractory Hodgkin Lymphoma	$75,000
Retention	Gupta	Gaorav	Fox Chase Cancer Center	1515400 Year 03	7/31/22	7/30/24	Dissecting the role of the BRCA1-PALB2 complex in DNA repair	$48,768
Retention	Gupta	Gaorav	Merck Sharp & Dohme LLC	60963	7/5/22	7/4/24	Correlative Biomarker Analysis of P-RAD: A Randomized Study of Preoperative Pembrolizumab and No, Low or High Dose Radiation in Node-Positive, Triple Negative Breast Cancer	$499,856
Retention	Gupta	Gaorav	Fox Chase Cancer Center	1515100 YEAR 03	1/31/22	1/30/23	The Role of Microhomomology-mediated End Joining in Fanconi Anemia Pathogenesis	$6,699
Retention	Gupta	Gaorav	American Society for Radiation Oncology		9/20/20	9/19/22	Drivers and Vulnerabilities of Genome Instability in Triple Negative Breast Cancer	$100,000
Retention	Gupta	Gaorav	V Foundation for Cancer Research	T2019-010	10/31/19	10/31/22	Overcoming Immunotherapy Resistance with Radiotherapy and PARP Inhibition in Luminal Subtype Metastatic Breast Cancer	$200,000

Category	Last Name	First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Gupta	Gaorav	NIH National Cancer Institute	5-R37-CA227837-01-05	11/30/18	11/29/23	Mre11-Dependent DNA Damage Responses in Breast Cancer Pathogenesis	$413,651
Recruitment	Gupton	Stephanie	NIH National Institute of Neurological Disorders and Stroke	1-R21-NS132364-01	4/14/23	3/30/25	Netrin Glycosylation Influences Chemotaxis and Haptotaxis	$194,375
Recruitment	Gupton	Stephanie	Howard Hughes Medical Institute	GT15781	8/31/22	8/30/25	Kimberly Lukasik Fellowhip Application	$53,000
Recruitment	Gupton	Stephanie	NIH Office of the Director	1-S10-OD030300-01A1	7/31/22	7/30/23	Super Resolution STED Microscopy at UNC	$600,000
Recruitment	Gupton	Stephanie	NIH National Institute on Aging	1-R21-AG077827-01	5/14/22	4/29/24	Exploring The Brain Enriched E3 Ubiquitin Ligase TRIM9 in Alzheimer's Disease	$213,813
Recruitment	Gupton	Stephanie	NIH National Institute of Neurological Disorders and Stroke	5-R01-NS112326-01-05	7/31/19	4/29/24	Exocytosis fuels plasma membrane expansion in developing neurons	$384,007
Recruitment	Gupton	Stephanie	NIH National Institute of General Medical Sciences	5-R35-GM135160-01-04	11/30/19	11/29/24	Coordinated Cytoskeletal Dynamics and Membrane Remodeling in Cellular Shape Change	$396,028
Investment (HTSF)	Hagood	James	The Chan Zuckerberg Initiative	2021-237918(5022)	10/1/21	9/30/24	Mapping the Pediatric Inhalation Interface: Nose, Mouth	$1,166,596
Retention	Hahn	Klaus	American Cancer Society	PF-22-059-01-MM	6/30/22	6/29/24	Investigating how focal adhesions sense extracellular stiffness to guide metastatic cell migration	$21,000
Retention	Hahn	Klaus	University of Texas Southwestern Medical Center	PO 0000002859 GMO 231206	9/16/22	6/29/27	UTSW-UNC Center for Cell Signaling Analysis	$142,065
Retention	Hahn	Klaus	NIH National Institute of General Medical Sciences	5-R35-GM122596-06-07	3/31/17	3/30/27	Dissecting signaling in vivo via precise control and visualization of protein activity	$810,270
Recruitment	Hall	Marissa	NIH National Institute of Child Health and Human Development	5-F31-HD108962-02	3/31/22	3/30/25	Fellow: A Richter Examining Marketing and Parents' Perceptions of Toddler Milk	$37,596
Recruitment	Han	Zongchao	BrightFocus Foundation	M2022001F	7/1/22	6/30/24	Nanoceria-Coated Melanin Nanoparticle as a Novel Antioxidant for Age-Related Macular Degeneration	$200,000
Recruitment	Han	Zongchao	Edward N. & Della L. Thome Memorial Foundation		5/1/19	4/30/23	Developing novel nano antioxidants for the treatment of age-related macular degeneration	$125,000
Innovation Award	Hanson	Laura	University of Pennsylvania	585030	9/30/21	9/29/24	Systematic Identification of NH Residents with 6-month Mortality Risk for Hospice Informational Referral	$23,690
Innovation Award	Hanson	Laura	University of Colorado Denver	FY23.105.004_AMD5 25M9091	6/30/18	6/29/23	Palliative Care Research Cooperative Group (PCRC): Refinement and Expansion	$75,206
Recruitment	Hathaway	Nathaniel	NIH National Institute of General Medical Sciences	1-R35-GM148365-01	5/31/23	5/30/28	Illumination of Chromatin Regulation via Chemical Controlled Proximity	$370,109
Recruitment	Hathaway	Nathaniel	Epigenos Bioscience, Inc.	21-0831	9/15/21	9/14/22	STTR: Site-specific epigenetic activation of TP53 to improve cancer therapy	$210,035
Theme Investment (CC)	Heise	Mark	Moderna Therapeutics	54633	3/6/23	3/5/24	Moderna Scientific Research Agreement: Development of Improved Models for Studying Vaccine Safety and Immunogenicity in the Collaborative Cross	$327,911
Theme Investment (CC)	Heise	Mark	Oregon Health and Science University	COA#4 1022269_UNC	10/31/22	10/30/27	Development of a Novel 2-Pyrimidone (SRI-42718) as a Potent Inhibitor of Chikungya Virus Infection and Disease	$811,407
Theme Investment (CC)	Heise	Mark	NIH National Institute on Aging	1-F99-AG073570-01	9/4/21	8/30/22	Evaluating the role of cytomegalovirus and age on lung immune homeostasis and responses to respiratory infections	$38,871
Theme Investment (CC)	Heise	Mark	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI157253-01-03	9/24/20	8/30/25	Genetic Analysis of COVID-19 Susceptibility and Resistance Determinants in the Collaborative Cross	$766,144
Investment (Training)	Heise	Mark	NIH National Institute of Allergy and Infectious Diseases	5-T32-AI007419-30	8/31/93	8/30/23	Molecular Biology of Viral Diseases Predoctoral Training Grant	$189,753
Retention	Henderson	Louise	University of California at Davis	A22-1534-S008	9/15/22	8/30/27	Advancing Equitable Risk-based Breast Cancer Screening and Surveillance in Community Practice	$358,057
Retention	Henderson	Louise	University of Washington	UWSC13867 PO 67471	6/30/22	6/29/27	Population-Based Evaluation of Artificial Intelligence for Mammography Prior to Widespread Clinical Translation	$45,897

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Retention	Henderson	Louise	Virginia Commonwealth University	FP00015652_SA002	1/31/22	1/30/24	South Eastern Consortium for Lung Cancer Health Equity	$250,000
Retention	Henderson	Louise	University of Washington	UWSC12808 PO56485	5/31/21	5/30/26	Disparities in Breast Cancer Diagnostic Pathways and Outcomes According to Socioeconomic Characteristics	$48,440
Retention	Henderson	Louise	NIH National Cancer Institute	5-R01-CA251686-01-04	7/14/20	6/29/24	Comorbidity and Functional Status in a Population Undergoing Lung Cancer Screening	$403,840
Recruitment	Hingtgen	Shawn	Kids Beating Cancer	23-1303	11/30/22	11/29/23	Stem Cell-delivered Particles for Hyperthermia Therapy to Treat Glioblastoma	$126,200
Recruitment	Hingtgen	Shawn	Cancer Targeted Technology	22-5198	8/21/22	8/20/23	CTT Industry contract to develop the C4-2B Animal Model	$30,382
Recruitment	Hingtgen	Shawn	NIH National Cancer Institute	5-R01-CA269974-01-02	1/31/22	1/30/27	Harnessing Continuous Liquid Interface 3D Printing to Improve Tumor-homing Stem Cell Therapy for Post-surgical Brain Cancer	$427,463
Recruitment	Hingtgen	Shawn	NIH National Center for Advancing Translational Sciences	5-U01-TR003715-02	6/30/21	4/29/25	A consortium effort to translate therapies for neurological diseases via an ex vivo organotypic platform	$1,150,319
Recruitment	Hingtgen	Shawn	NIH National Cancer Institute	5-F30-CA243270-04	7/10/19	7/9/23	Therapeutic Engineered Stem Cells as a New Adjuvant Therapy for Non-Small Cell Lung Cancer Brain Metastases	$51,752
Recruitment	Hirschey	Rachel	NIH National Institute on Minority Health and Health Disparities	5-K23-MD015719-01-03	5/2/21	1/30/26	Physical activity intervention co-created and pilot tested with African American Colorectal Cancer Survivors	$159,155
Recruitment	Hoadley	Katherine	Duke University	383000605	6/7/22	6/6/25	Ancestry-related RNA Splicing and Immune Expression in Metastatic Breast Cancer	$160,816
Recruitment	Hoadley	Katherine	NIH National Cancer Institute	5-U24-CA264021-02	8/31/21	8/30/26	Specialized RNA analysis center for integrative genomic analyses	$355,225
Recruitment	Hoadley	Katherine	Scimentis, LLC	SMS0002267B	5/8/22	9/29/22	Bioinformatics and Computational Biology Subject Matter Expertise in Support of Human Research Program SpaceRadiation Element	$26,170
Recruitment	Hucks	George	Department of Defense	W81XWH2010889	9/14/20	9/13/24	Phase I Study of Autologous Activated T-cells Transduced With a 3rd Generation GD2 Chimeric Antigen Receptor, Co-expression of IL-15 and iCaspase9 Safety Switch	$199,785
Recruitment	Hursting	Stephen	Purdue University	11001401-029	12/27/22	11/29/27	Impact of hypoxia on lipid metabolism in obesity-driven breast cancer progression	$161,331
Recruitment	Hursting	Stephen	Breast Cancer Research Foundation	BCRF-22-073	9/30/22	9/29/23	Combining Intermittent Energy Restriction and Anti-Inflammatory Regimens to Mimic the Anticancer Effects of Bariatric Surgery	$225,000
Investment (CC)	Hursting	Stephen	NIH National Institute of Diabetes and Digestive and Kidney Diseases	5P30DK056350-23	9/30/99	3/31/26	Animal Metabolism Phenotyping Core	$147,109
Recruitment	Hursting	Stephen	University of Utah	10058539-01 U000401998	9/22/21	8/29/26	Adipose tissue-colorectal tumor cross-talk: new targets for breaking the obesity-cancer link	$130,146
Recruitment	Hursting	Stephen	Purdue University	11000823-020	1/31/19	1/30/24	Obesity, Metabolism and Breast Cancer Metastasis	$15,209
Retention	Ibrahim	Joseph	Merck Sharp & Dohme LLC	209047	12/31/22	12/30/24	Biostatistics Collaboration with Merck BARDS	$300,000
Investment (Training)	Ibrahim	Joseph	NIH National Cancer Institute	5-T32-CA106209-17	4/30/04	7/30/26	Biostatistics for Research in Genomics and Cancer	$251,985
Retention	Ibrahim	Joseph	Amgen, Inc.	PO#7300407863	7/30/08	12/30/23	Supported Research Agreement	$249,944
Investment (CC)	Ideraabdullah	F	NIH National Institute of Diabetes and Digestive and Kidney Diseases	5R21DK122242-03	9/15/20	6/30/23	Investigating the Role of Metabolic Programming in Vitamin D Deficiency Induced Adiposity	$186,098
Recruitment	Jackson	Klarissa	American Foundation for Pharmaceutical Education		8/31/22	8/30/23	An In Vitro Investigation of the Metabolism, Pharmacokinetics, and Hepatotoxicity of Cannabidiol	$10,000

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Recruitment	Jackson	Klarissa	NIH National Institute of General Medical Sciences	5-R35-GM143044-01-02	6/30/21	6/29/26	Interindividual Variability in Drug Metabolism in Ethnically Diverse Populations	$381,816
Recruitment	James	Lindsey	NIH National Institute on Drug Abuse	4-R33-DA047023-04	8/14/18	5/30/24	Polycomb Repressive Complexes as Key Regulators of HIV Latency and target for Latency Reversal	$878,498
Recruitment	James	Lindsey	Pinnacle Hill, LLC	WORKPLAN 1 20-2353	12/4/19	12/3/24	Development of NSD2-targeted therapeutics	$339,572
Recruitment	James	Lindsey	NIH National Cancer Institute	5-R01-CA242305-01-04	8/22/19	7/30/24	Discovery of First-In-Class NSD2 Degraders for Cancer Therapy	$327,458
Investment (Protocol)	Jamieson	Katarzyna	Equillium, Inc.	EQ-100-02 - EQUATOR	12/19/22	7/13/27	A Phase 3, Randomized, Double-Blind, Placebo Controlled Multicenter Study of Itolizumab in Combination with Corticosteroids for the Initial Treatment of Acute Graft Versus Host Disease	$28,650
Investment (Protocol)	Jamieson	Katarzyna	National Marrow Donor Program	ACCESS	8/17/21	12/31/27	ACCESS: A Multi-Center, Phase II Trial of HLA-Mismatched Unrelated Donor Hematopoietic Cell Transplantation with Post-Transplantation Cyclophosphamide for Patients with Hematologic Malignancies	$9,000
Investment (Protocol)	Jamieson	Katarzyna	AbbVie, Inc	M19-063	5/25/21	12/1/31	A Randomized, Open Label Phase 3 Study Evaluating Safety and Efficacy of Venetoclax incombination with Azacitidine after allogeneic Stem Cell Transplantation in Subjects with Acute MyeloidLeukemia (AML) (VIALE-T)	$59,448
Investment (Protocol)	Jamieson	Katarzyna	Actinium Pharmaceuticals, Inc.		7/27/20	9/3/29	Iomab-01: A Multicenter, Pivotal Phase 3 Study of Iomab-B Prior to Allogeneic Hematopoietic Cell Transplantation versus Conventional Care in Older Subjects with Active, Relapsed or Refractory Acute Myeloid Leukemia	$90,869
Investment (Protocol)	Jamieson	Katarzyna	NIH National Heart, Lung, and Blood Institute		6/17/19	5/30/24	BMT CTN 1702 - Clinical Transplant-Related Long-term Outcomes of Alternative Donor Allogeneic Transplantation	$5,921
Investment (Protocol)	Jamieson	Katarzyna	National Marrow Donor Program	10020-#1506	5/24/18	2/1/23	A Multi-center, Randomized, Double-blind, Placebo-controlled Phase III Trial of the FLT3 Inhibitor Gilteritinib Administered as Maintenance Therapy Following Allogeneic Transplant for Patients with FLT3/ITD AML	$1,758
Investment (Protocol)	Jamieson	Katarzyna	Washington University in Saint Louis		4/3/17	1/30/23	HRPO #: 201312100 GNOS A Blinded, Prospective Non-Interventional Observational Study for the Evaluation of a GVHD Negative Outcome Score (GNOS) in Matched Unrelated or Haploidentical Hematopoietic Stem Cell Transplant	$1,320
Investment (Protocol)	Jamieson	Katarzyna	Pharmacyclics LLC		3/26/17	3/26/25	PCYC-1140-IM A Randomized, Double-Blind Phase 3 Study of Ibrutinib in Combination With Corticosteroids versus Placebo in Combination With Corticosteroids in Subjects with New Onset Chronic Graft Versus Host Disease (cGVHD)	$2,082
Investment (Protocol)	Jamieson	Katarzyna	Astellas Pharma Global Development, Inc.		9/29/13	9/28/22	A Randomized, Double-Blind, Placebo-Controlled, Phase III Trial to Evaluate the Protective Efficacy and Safety of a Therapeutic Vaccine, ASP0113, in Cytomegalovirus (CMV)-Seropositive Recipients Undergoing Allogenic, Hematopoietic Cell Transplant (HCT)	$12,973
Recruitment	Jiang	Yuchao	NIH National Institute of General Medical Sciences	5-R35-GM138342-01-03	9/4/20	7/30/25	Statistical Methods for Bulk-Tissue and Single-Cell Multi-Omics Integration	$375,209
Investment (Proteomics)	Johnson	Gary	University of Alabama at Birmingham	000531784-SC002	1/11/22	12/30/26	Credentialing next-generation human glioma models for precision therapeutics	$16,657

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Investment (Proteomics)	Johnson	Gary	NIH National Institute of Diabetes and Digestive and Kidney Diseases	5-U24-DK116204-06	8/31/17	8/30/23	Illuminating Function of the Understudied Druggable Kinome	$2,252,146
Recruitment	Jolly	Trevor	Dana Farber Mass General Brigham Cancer Care Inc.		12/27/18	11/17/28	DF-HCC 17-101: Palbociclib After CDK and Endocrine Therapy (PACE): A Randomized Phase II Study of Fulvestrant, Palbociclib, and Avelumab for Endocrine Pre-treated ER+/HER2- Metastatic Breast Cancer (Protocol #: 17-101)	$40,442
Theme Investment (HTS)	Jones	Corbin	National Science Foundation	IOS-2243536	2/28/23	2/27/27	Collaborative Research: Ideas Lab: The Role of Extracellular RNA in Intercellular and Interkingdom Communication	$924,987
Theme Investment (HTS)	Jones	Corbin	Duke University	303-000857	6/14/22	4/29/24	Social experience dependent modification of gene regulation and circuit function	$18,997
Theme Investment (HTS)	Jones	Corbin	NIH National Cancer Institute	75N91019D00033/ 75N91021F00001	9/7/21	9/6/26	Comprehensive total RNA, mRNA, and miRNA sequencing for OCCPR	$184,092
Theme Investment (HTS)	Jones	Corbin	NIH National Cancer Institute	75N91019D00033	8/30/19	8/29/24	Genome Characterization Center for RNA-seq Services	$603,666
Recruitment	Joseph	Sarah	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI176596-01	3/1/23	2/28/28	Identifying Roadblocks to Antigen Expression and Enhancing Killing of HIV-Infected Cells That Are Refractory to Clearance	$1,167,948
Recruitment	Joseph	Sarah	NIH National Institute of Mental Health	5-R01-MH118990-01-04	9/15/19	7/30/24	Development and Use of Novel SHIVs Bearing Clinically Relevant HIV-1 Envs for Examining HIV Persistence and Eradication in the CNS of Nonhuman Primates	$653,159
Investment (HTSF)	Juliano	Jonathan	Johns Hopkins University	2003478036	4/1/22	3/31/23	Parasite Genomics Core (PGC)	$130,231
Investment (HTSF)	Juliano	Jonathan	NIH National Institute of Allergy and Infectious Diseases	2-K24-AI134990-06	1/23/23	12/31/27	Mentoring in Translational Malaria Genomics	$173,221
Investment (HTSF)	Juliano	Jonathan	National Institute for Medical Research	A20-1505-001	5/18/20	10/31/23	Molecular surveillance of malaria in Tanzania	$125,754
Recruitment	Kabanov	Alexander	Flag Bio, Inc.		10/31/22	12/30/23	mRNA immunoadjuvants for mRNA vaccines	$100,000
Recruitment	Kabanov	Alexander	NIH National Cancer Institute	1-F99-CA274702-01	7/31/22	7/30/24	Fellow: J Ramsey Drug Retention and Tumor Distribution of Polymeric Micelles for Cancer Therapy	$39,772
Recruitment	Kabanov	Alexander	NIH National Institute of Neurological Disorders and Stroke	1-K99-NS128716-01	8/31/22	8/30/24	Fibrin-CAR-T cells therapies to enhance efficacy in glioblastoma treatments	$115,503
Recruitment	Kabanov	Alexander	North Carolina Biotechnology Center	2023-BMG-3002	7/31/22	9/29/22	20th Annual Nanomedicine and Drug Delivery Symposium	$6,500
Recruitment	Kabanov	Alexander	NIH National Cancer Institute	3-R01-CA264488-02S1	7/31/21	7/30/25	Toward Translation of Nanoformulated Paclitaxel-Platinum Combination	$718,711
Investment (Training)	Kabanov	Alexander	NIH National Cancer Institute	5-T32-CA196589-08	6/30/15	6/29/25	Carolina Cancer Nanotechnology Training Program (C-CNTP)	$421,267
Recruitment	Kabanov	Alexander	Dainippon Sumitomo Pharma	20-2319	5/31/20	5/30/24	UNC - Sumitomo Collaboration	$30,000
Investment (CC)	Kafri	Tal	Leland Stanford Junior University	63141977-279602	3/31/23	8/30/23	Mechanisms of Angiogenesis in ROP	$30,346
Investment (CC)	Kafri	Tal	University of North Carolina at Greensboro	20200181	8/4/20	7/30/23	Studies examining quantitative in vivo imaging of breast cancer-targeted, therapeutic human mast cells	$31,986
Investment (CC)	Kafri	Tal	NIH National Heart, Lung, and Blood Institute	5R01HL155986-03	9/1/20	8/31/24	The Circadian Rhythm as a Lentiviral Vector Restriction factor	$739,656
Investment (CC)	Kelada	Samir	Genentech, Inc.		12/8/22	12/7/24	Research Collaboration Agreement with Genentech, Inc.	$150,000
Investment (CC)	Kelada	Samir	NIH National Institute of Environmental Health Sciences	5-R01-ES034260-01-02	4/17/22	2/27/27	Regulatory Genomics of Ozone Air Pollution Response in Vitro and In Vivo	$646,914
Investment (CC)	Kelada	Samir	NIH National Institute of Environmental Health Sciences	5-R21-ES032089-01-02	8/1/21	7/31/23	Gene-Environment Interactions with Ozone and Non-atopic Asthma	$197,575

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Recruitment	Kent	Erin	Rosalynn Carter Institute for Caregivers	23-2902	1/31/23	7/30/23	RCI: Caregiver Interventions Systematic Review	$47,877
Recruitment	Kent	Erin	Duke University	383000607	10/31/22	10/30/23	Informing public policy support for family caregivers based on typologies of need	$32,449
Recruitment	Kent	Erin	New America	BLL105-2022	5/31/22	9/29/22	Rural access to health care and the need for paid family and medical leave in rural communities	$6,953
Recruitment	Kent	Erin	North Carolina Institute of Medicine		2/28/22	9/29/22	Caregiver and Covid Project	$13,005
Recruitment	Kent	Erin	Duke Endowment	6997-SP	6/30/21	6/29/24	Rural eSNAP: navigator-assisted ecomaps to support cancer caregivers	$590,000
Retention	Key	Nigel	American Thrombosis and Hemostasis Network	HTC 262	8/31/22	8/30/23	ATHN Data Quality Counts (DQC) Program - Round 14	$13,250
Investment (Training)	Key	Nigel	NIH National Heart, Lung, and Blood Institute	2-T32-HL007149-47	6/30/22	6/29/27	Research Training in Hematology at UNC Chapel Hill, Reissue of PA-18-403 for due dates on or after May 25, 2020	$431,086
Retention	Key	Nigel	Hemophilia of Georgia (HOG)		5/31/22	5/30/27	Regional Hemophilia Network	$91,192
Retention	Key	Nigel	American Thrombosis and Hemostasis Network	MOD00821002--(Pro00035319)	6/8/22	10/14/24	American Thrombosis and Hemostasis Network - ATHN 9, A Natural History Cohort Study of the Safety, Effectiveness, and Practice of Treatment for People with Severe Von Willebrand Disease (VWD)	$3,640
Retention	Key	Nigel	American Thrombosis and Hemostasis Network	HTC 262-ATHN 112	8/31/21	8/30/22	ATHN Data Quality Counts (DQC) Program - Round 13	$6,500
Recruitment	Khagi	Simon	Novocure Ltd.	EF-32	4/27/21	2/15/31	EF-32 (TRIDENT): A Pivotal Randomized, Open-Label Study of Optune® (TTFields, 200khz) Concomitant with Radiation Therapy and Temozolomide for the Treatment of Newly Diagnosed Glioblastoma	$37,544
Recruitment	Khagi	Simon	Head for the Cure Foundation		5/30/19	2/11/24	A randomized, double blind phase II trial of Radiation Therapy plus Temozolomide and Pembrolizumab with and without HSPPC-96 in newly diagnosed Glioblastoma (GBM)	$2,600
Retention	Khairat	Saif	NIH National Library of Medicine	5-R01-LM013606-01-03	5/2/21	1/30/25	Improving Providers' Decision-Making and Reducing Information Overload Using Information Visualization in Electronic Health Records	$331,648
Retention	Kim	William	Bladder Cancer Advocacy Network		7/9/23	7/8/24	Exploring FGFR3 inhibition as a sensitizing agent to Nectin-4 ADC therapy in urothelial carcinoma	$75,000
Retention	Kim	William	Bladder Cancer Advocacy Network		6/30/23	6/29/24	Dissecting the impact of E-cadherin loss on immune microenvironment and response to immune checkpoint blockade in plasmacytoid urothelial carcinoma	$75,000
Retention	Kim	William	American Society of Clinical Oncology		6/30/23	6/29/24	Geospatial transcriptomic characterization of urothelial carcinoma in situ (CIS) to decipher cancer biology and enhance therapy	$50,000
Retention	Kim	William	Vanderbilt University Medical Center	VUMC108453	9/1/22	8/31/25	Academy of Kidney Cancer Investigators Dean Award	$23,588
Retention	Kim	William	Bladder Cancer Advocacy Network	22-4011	8/2/22	8/4/22	Therapeutic implications of the tumor microenvironment in non-muscle invasive bladder cancer	$2,000
Retention	Kim	William	Thomas Jefferson University	080-04000-X18601	9/29/21	9/28/24	Analyzing the therapeutic impact of di-ABZI on PBRM1-deficient ccRCC tumors di-ABZI on PBRM1-deficient tumors	$99,927
Retention	Kim	William	Thomas Jefferson University	080-04000-U26401	10/7/20	10/6/22	Investigating the Therapeutic Impact of a STING Agonist on PBRM1-Deficient ccRCC Tumors	$62,500
Retention	Kim	William	NIH National Cancer Institute	5-R01-CA241810-01-04	7/31/20	4/29/25	Chemotherapy and the Bladder Cancer Immune Microenvironment	$554,816
Retention	Kim	William	NIH National Cancer Institute	5-K12-CA120780-15	9/16/07	6/29/23	UNC Oncology Clinical/Translational Research Training Program (OCT-RTP)	$595,127

Category	Last Name	First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Kistler	Christine	Duke University	303-001083	8/31/22	8/30/23	Preventable	$70,770
Recruitment	Kistler	Christine	NIH National Institute on Aging	1-R56-AG075896-01A1	9/14/22	8/30/23	Improving Primary Care Clinicians' Advance Care Planning for Alzheimer's Disease and Related Dementias	$772,496
Recruitment	Kistler	Christine	Duke University	303-000430	7/1/22	8/1/22	Preventable	$35,140
Investment (HTS)	Knowles	Michael	NIH National Heart, Lung, and Blood Institute	5-R01-HL071798-13-16	8/17/18	4/30/23	Pathogenesis of PCD Lung Disease	$619,179
Investment (Bios/HTS)	Kosorok	Michael	NIH National Institute of Mental Health	1-K99-MH133985-01	6/4/23	5/30/25	What works, for whom? Applying novel precision medicine methods to people with mental illness in the justice system.	$99,896
Investment (Bios/HTS)	Kosorok	Michael	National Science Foundation	DMS-2210659	8/14/22	7/30/25	Collaborative Research: Semiparametric and Reinforcement Learning for Precision Medicine	$260,000
Investment (Bios/HTS)	Kosorok	Michael	Washington University in Saint Louis	23-3154	11/30/21	12/30/23	Non-Clinical Academic Research Collaboration Agreement	$160,697
Investment (Bios/HTS)	Kosorok	Michael	University of California at Berkeley	00011244 20-05236 BB01683600	12/31/21	6/29/23	Impact of Juvenile Justice Fees on Families' Financial Health	$12,245
Investment (Bios/HTS)	Kosorok	Michael	Genentech, Inc.	20-5653	9/30/20	8/30/23	Applying novel statistical approaches to develop a decision framework for hybrid randomized controlled trial designs which combine internal control arms with patients' data from real-world data source	$164,591
Investment (CC)	Kulis	M	GIT		9/22/21	8/31/23	Virus-Like Particle Based Immunization Against Peanut Allergy	$71,060
Investment (CC)	Kulis	M	Department of Defense	W81XWH-22-1-0066	2/1/21	1/31/24	mRNA Vaccine for Peanut Allergy	$143,013
Investment (CC)	Kulis	M	Department of Defense	W81XWH-20-PRMRP-EA	9/30/21	9/29/24	Exploiting Inhibitory Siglecs to Combat Food Allergies	$40,000
Investment (CC)	Kulis	M	University of Penn		7/15/11	8/31/24	Affordable Oral Delivery of Human Therapeutic Proteins Bioencapsulated in Plant Cells	$97,173
Investment (Protocol)	Kuzmiak	Cherie	Ravel Biotechnology, Inc.	RB_AG_PLT_01	11/14/21	11/29/23	Evaluation of Novel Blood-Based Biomarkers for Detection of Breast Cancer (EMBRACE)	$26,969
Investment (Protocol)	Kuzmiak	Cherie	ECOG-ACRIN Cancer Research Group	EA1151	10/19/17	10/18/24	ECOG-ACRIN LAPS: Protocol EA1151, Tomosynthesis Mammographic Imaging Screening Trial (TMIST)	$602,302
Retention	Laederach	Alain	National Science Foundation	DMS-2151859	4/30/22	4/29/26	Collaborative Research: Unraveling structural and mechanistic aspects of RNA viral frameshifting elements by graph theory and molecular modeling	$90,775
Retention	Laederach	Alain	Brigham and Womens Hospital	125948	8/19/21	5/30/25	Using Integrative Genomics To Identify and Characterize Emphysema-Associated eQTL	$90,780
Retention	Laederach	Alain	NIH National Institute of General Medical Sciences	5-R35-GM140844-01-03	5/31/21	5/30/26	Variant induced RNA structure change in human genetic disease	$416,440
Recruitment	Lai	Samuel	NIH National Cancer Institute	1-R21-CA273983-01A1	3/31/23	3/30/25	Engineering Siglec15-targeted bispecific antibodies that modulate the tumor microenvironment and enhances T-cell immunotherapy	$214,931
Recruitment	Lai	Samuel	Lung Cancer Initiative of North Carolina	23-0988	12/31/22	12/30/23	Siglec15 as new targeting combine with CXCL12 modulate antitumor response for lung cancer	$25,000
Recruitment	Lai	Samuel	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI165853-01A1	9/18/22	7/30/27	Engineered muco-trapping antibodies for inhaled therapy of parainfluenza and human metapneumovirus infections	$688,413
Recruitment	Lai	Samuel	NIH National Institute of Child Health and Human Development	5-R01-HD101562-01-04	3/31/20	3/30/24	Engineering bispecific antibodies for non-hormonal contraception	$493,843
Innovation Award	Lawrence	David	NIH National Heart, Lung, and Blood Institute	5-R01-HL153744-01-02	4/30/21	4/29/25	Design and Application of Photoresponsive Modules in Circulating Erythrocytes	$720,847
Recruitment	Lazear	Helen	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI175708-01	3/12/23	2/28/28	Antiviral and immunomodulatory effects of interferon lambda in the skin	$594,722

Category	Last Name	First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Lazear	Helen	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI170625-01	8/4/22	7/30/26	Host Factors Controlling Neuroinvasive Flavivirus Pathogenesis	$388,750
Recruitment	Lazear	Helen	NIH National Institute of Allergy and Infectious Diseases	1-F31-AI167502-01A1	8/31/22	8/30/25	Fellow: D Philip Temporal Functions of Interferon Lambda Signaling During Acute and Recurrent Herpes Simplex Virus Type 1 Skin Infection	$35,552
Recruitment	Lazear	Helen	NIH National Institute of Allergy and Infectious Diseases	5-F32-AI161786-02	2/28/22	2/27/25	Fellow: B Jasperse Host genetic determinants of neuroinvasive flavivirus pathogenesis	$71,792
Recruitment	Lazear	Helen	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI139512-01-05	12/31/18	12/30/23	The Role of Interferon Lambda signaling in flavivirus transmission and pathogenesis at the maternal-fetal interface	$388,750
Investment (HTSF)	Lazear	Helen	Burroughs Wellcome Fund	1021339	7/1/21	7/1/26	Host Range Determinants of Emerging Flaviviruses	$83,333
Investment (Protocol)/Retention	Lee	Carrie	V Foundation for Cancer Research	DM2023-003	3/31/23	3/31/24	Use of Multimedia Educational Tools to Advance Equity in Cancer Clinical Trial Participation	$50,000
Investment (Protocol)/Retention	Lee	Carrie	ECOG-ACRIN Cancer Research Group		5/9/17	11/17/22	Adjuvant Nivolumab in Resected Lung Cancers (ANVIL) - A Randomized Phase III Study of Nivolumab AfterSurgical Resection and Adjuvant Chemotherapy in Non Small Cell Lung Cancers	$16,526
Recruitment	Lee	Yueh	NIH National Institute of Neurological Disorders and Stroke	3-R21-NS125369-02S1	9/29/21	8/30/23	Arterial input function Independent Measures of Perfusion with Physics Driven Models	$426,827
Recruitment	Lee	Yueh	NIH National Institute of Biomedical Imaging and Bioengineering	5-R01-EB028283-01-04	9/14/19	2/28/24	Stationary Digital Tomosynthesis for Transbronchial Biopsy Guidance	$711,589
Retention	Leeman	Jennifer	Johns Hopkins University	2005771180	4/9/22	5/30/23	A Safer Assisted Living: Creating a Toolkit for Person and Family Engagement	$102,988
Recruitment	Legant	Wesley	Silicon Valley Community Foundation	2023-321164	2/28/23	8/30/25	Molecules in Context with 4Pi Lattice Light Sheet Nanoscopy	$746,443
Recruitment	Legant	Wesley	David and Lucile Packard Foundation	2019-69652	10/14/19	10/13/24	AI-enhanced microscopy	$175,000
Recruitment	Legant	Wesley	NIH National Institute of General Medical Sciences	1-DP2-GM136653-01	9/29/19	5/30/24	Connecting the dots between single molecule dynamics and cell differentiation	$457,902
Recruitment	Legant	Wesley	Arnold and Mabel Beckman Foundation	19-2609	8/31/19	8/30/23	Intelligent Microscopes to Observe and Interact With Dynamic Biological Specimens	$150,000
Recruitment	Lemon	Stanley	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI150095-01-04	12/11/19	11/29/24	Critical Lipid Species in the Hepatovirus Lifecycle	$516,845
Recruitment	Li	Zibo	AccuNovo Biotechnologies Inc	22-0986	4/4/22	3/30/23	SBIR: Theranostic NTSR1-targeting Agents for Complementary Management of PSMA-negative Prostate Cancer	$100,000
Recruitment	Li	Zibo	University of Georgia Board of Regents	SUB00002554	5/31/21	5/30/25	Development of a novel biodegradable inorganic nanoparticle therapeutic for cancer	$248,091
Recruitment	Li	Zibo	NIH National Cancer Institute	5-R01-CA247769-01-03	7/14/20	6/29/25	The development of novel radiation-sensitizer based on ultra-small carbon dots	$489,570
Recruitment	Li	Zibo	NIH National Institute of Biomedical Imaging and Bioengineering	5-R01-EB029451-01-04	4/30/20	1/30/24	Novel Catalytic Methods for Efficient Radiolabeling of Un-activated Arene Compounds	$504,127
Recruitment	Li	Zibo	NIH National Cancer Institute	5-R01-CA233904-01-05	12/6/18	11/29/23	Development of IDO PET agents for immunotherapy	$396,007
Recruitment	Lichtman	Eben	Sanofi US Services, Inc.	TED16132	1/14/21	2/13/31	An Open-Label, First-in-Human, Single Agent, Dose Escalation and Expansion Study for the Evaluation of Safety, Pharmacokinetics, Pharmacodynamics and Antitumor Activity of SAR442085 in Patients with Relapsed or Refractory Multiple Myeloma (RRMM).	$63,632
Theme Investment (BRIC)	Lin	Weili	University of California at San Diego	705059	9/30/21	6/29/23	The Healthy Brain and Child Development National Consortium Administrative Core	$47,374

Category	Last Name	First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Theme Investment (BRIC)	Lin	Weili	NIH National Institute on Drug Abuse	5-U01-DA055344-02	9/29/21	6/29/26	5/6 HBCD Prenatal Experiences and Longitudinal Development (PRELUDE) Consortium	$1,553,195
Retention	Linnan	Laura	The Center for Construction Research and Training	3001-1406-15	2/28/23	8/30/23	Improving safety culture for Latinx construction workers: an industry - academic partnership	$97,856
Retention	Linnan	Laura	DHHS Centers for Disease Control and Prevention	5-U19-OH012303-01-02	8/31/21	8/30/26	Carolina Center for Total Worker Health and Well-Being	$1,172,377
Recruitment	Liu	Pengda	The Andrew McDonough B+ Foundation	73893	12/31/21	12/30/23	Targeting ATR/SPOP Signaling to Overcome Chemotherapy Resistance in Ewing Sarcoma	$75,000
Recruitment	Liu	Pengda	NIH National Cancer Institute	1-R21-CA270967-01	4/30/22	4/29/24	Cancer Hijacks Enzyme Substrate Mutations to Facilitate Tumorigenesis	$90,871
Recruitment	Liu	Pengda	Department of Defense	W81XWH2110419	6/30/21	6/29/24	Non-canonical function of STING in ccRCC	$311,000
Recruitment	Liu	Pengda	NIH National Cancer Institute	5-R01-CA244825-01-03	7/6/20	6/29/25	Elucidating novel functions of cGAS in breast cancer	$355,706
Recruitment	Liu	Pengda	Gabrielle's Angel Foundation for Cancer Research	124	8/31/20	8/30/23	Targeting the Innate Immunity-Independent Function of STING in treating AML	$75,000
Retention	Long	Jason	Delfi Diagnostics, Inc.	DELFI-L201	11/18/22	3/30/25	CASCADE LUNG: Cancer Screening Assay using DELFI: A Clinical Validation Study in Lung (DELFI-L201Study)	$29,215
Retention	Long	Jason	Nucleix Ltd.	Lung-RND-003	6/5/22	2/29/24	Determination and Validation of Lung EpiCheck a Multianalyte Assay for Lung Cancer Prediction. A Case-ControlStudy	$51,460
Recruitment	Lund	Jennifer	F. Hoffmann-La Roche Ltd.	21-2645	3/24/21	3/30/23	WAYFIND-R	$8,775
Investment (CC)	Lynch	R	Income to SGCF for CC mice from external users	Multiple sources	7/1/17	6/30/23	Income to SGCF for CC mice from external users	$631,172
Investment (CC)	Magnuson	Terry	NIH National Institute of General Medical Sciences		11/30/89	3/30/24	Albino Deletion Complex and Early Mouse Development	$431,645
Investment (CC)	Magnuson	Terry	NIH Office of the Director	5-U42-OD010924-24	9/29/99	2/27/25	A Carolina Center to Characterize and Maintain Mutant Mice	$1,460,926
Investment (Bios/HTS)	Marron	JS	National Science Foundation	DMS-2113404	8/31/21	8/30/24	Data Integration Via Analysis of Subspaces (DIVAS)	$166,667
Innovation Award	Matera	Arnold	NIH National Institute of General Medical Sciences	5-R35-GM136435-01-04	3/31/20	3/30/25	Ribonucleoprotein Biogenesis and Epigenetic Gene Regulation	$717,561
Theme Investment (CC)	Mayer-Davis	Elizabeth	NIH National Institute of Child Health and Human Development	5-UG1-HD107692-02	12/9/21	11/29/26	Nutrition for Precision Health: The University of North Carolina at Chapel Hill Clinical Center	$2,747,944
Theme Investment (CC)	Mayer-Davis	Elizabeth	NIH National Institute of Diabetes and Digestive and Kidney Diseases	5-P30-DK056350-21-23	3/31/21	3/30/26	UNC Nutrition Obesity Research Center	$1,124,054
Investment (HTSF)	Mccown	Thomas	NIH National Institute on Neurological Disorders and Stroke	5-R01-NS116019-01-03	12/15/20	11/30/25	AAV capsid-promoter interactions determines CNS cell sel	$349,875
Recruitment	McGinty	Robert	NIH National Institute of General Medical Sciences	5-R35-GM133498-01-04	7/31/19	7/30/24	Molecular Mechanisms of Chromatin Recognition	$382,895
Recruitment	McGinty	Robert	Pew Charitable Trusts	30551	7/31/17	7/30/22	Deciphering the nucleosome interactome	$60,000
Theme Investment (HTS, CBCS, MP1U)	Merker	Jason	NIH National Cancer Institute	5-UG1-CA233333-05	3/12/19	2/27/25	UNITS: The UNC / UT National Clinical Trials Network Group Integrated Translational Science Production and Consultation Center	$728,371
Recruitment	Miller	Brian	NIH National Cancer Institute	5-K08-CA248960-03-05	6/30/20	6/29/25	Targeting Unique Meyloid Populations to Overcome Anti-PD-1 Resistance Conferred by Specific Cancer Mutations	$286,658
Recruitment	Mills	Sarah	NIH National Cancer Institute	5-K01-CA242530-04	8/6/19	7/30/24	Modeling the public health impact of a national menthol cigarette ban.	$154,650
Recruitment	Milner	John	V Foundation for Cancer Research	V2022-019	9/30/22	9/30/24	Reprogramming T cells for effective and durable responses against pancreatic cancer	$200,000

Category	Last Name	First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Milner	John	American Association of Immunologists		1/16/22	1/15/23	Driving T cell Residency and Functionality in Pancreatic Ductal Adenocarcinoma	$54,144
Recruitment	Milner	John	NIH National Cancer Institute	5-R00-CA234430-03-05	8/31/20	8/30/23	Molecular Programming of CD8+ T Cell Accumulation and Activity in Tumors	$248,997
Recruitment	Milowsky	Matthew	G1 Therapeutics	G1T28-209	3/13/22	2/26/32	A Phase 2, Randomized, Open-Label Study of Trilaciclib Administered with First-Line Platinum-Based Chemotherapy and Avelumab Maintenance Therapy in Patients with Untreated, Locally Advanced or Metastatic Urothelial Carcinoma (PRESERVE 3)	$83,890
Recruitment	Milowsky	Matthew	Mirati Therapeutics, Inc		3/31/19	7/11/23	A Phase 2 Study of Sitravatinib in Combination with Nivolumab in Patients with Advanced or Metastatic Urothelial Carcinoma	$213,487
Recruitment	Milowsky	Matthew	Seattle Genetics, Inc		4/19/18	4/29/28	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	$256,622
Recruitment	Milowsky	Matthew	Astellas Pharma Global Development, Inc.		6/21/17	7/1/22	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	$47,111
Recruitment	Milowsky	Matthew	Bristol-Myers Squibb Company		12/21/16	2/27/25	A Phase 3 Randomized, Double-blind, Multi-center Study of Adjuvant Nivolumab versus Placebo in Subjects with High Risk Invasive Urothelial Carcinoma	$79,989
Recruitment	Milowsky	Matthew	Genentech, Inc.		7/11/16	4/11/24	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	$3,040
Recruitment	Milowsky	Matthew	Hoosier Cancer Research Network		12/1/15	12/26/22	UC-GENOME: Urothelial Cancer-GENOnomic analysis to iMprove patient outcomes and rEsearch	$774
Recruitment	Mody	Gita	NIH National Heart, Lung, and Blood Institute	5-K23-HL157765-01-02	12/31/21	12/30/26	Improving Thoracic Surgical Care using electronic Patient-Reported Outcomes (ePROs)	$202,157
Recruitment	Mody	Gita	Sivan Innovation, Ltd.		10/22/20	10/21/24	Feasibility and Acceptability of Remote Monitoring of Lung Cancer Patient-Reported Outcomes Using Moovcare	$119,731
Investment (HTS)	Mohlke	Karen	Foundation for the National Institutes of Health		3/2/23	9/2/25	Single nucleus-RNA and metabolomics in subcutaneous adipose tissue	$977,760
Investment (HTS)	Mohlke	Karen	University of California at Los Angeles	1440 G ZB003	4/30/22	4/29/26	Genetics of adipose cell-type expression and cardiometabolic traits	$137,384
Investment (HTS)	Mohlke	Karen	American Heart Association	903990	12/31/21	12/30/23	Genetic effects on hepatic lipid metabolism and cardiovascular disease	$138,384
Investment (HTS)	Mohlke	Karen	NIH National Heart, Lung, and Blood Institute	5-F31-HL154730-03	1/31/21	1/30/24	Fellow: Sarah Brotman Analyzing gene expression in adipose tissue to identify candidate genes at cardiometabolic trait GWAS loci	$39,208
Investment (HTS)	Mohlke	Karen	NIH National Institute of Diabetes and Digestive and Kidney Diseases	5-UM1-DK126185-03	8/19/20	6/29/25	Bridging the gap between type 2 diabetes GWAS and therapeutic targets	$1,899,761
Investment (HTS)	Mohlke	Karen	NIH National Institute of Diabetes and Digestive and Kidney Diseases	5-R01-DK072193-14-16	8/31/05	7/30/25	Targeted Genetic Analysis of T2D and Quantitative Traits	$617,198

Category	Last Name	First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Moody	Cary	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI173039-01A1	5/17/23	4/29/28	Interplay between the cellular DNA damage response and the HPV life cycle	$421,067
Recruitment	Moody	Cary	NIH National Cancer Institute	5-R01-CA226523-01-05	12/5/18	11/29/23	Epigenetic Regulation During the HPV Life Cycle	$348,592
Recruitment	Moon	Andrew	American Association for the Study of Liver Diseases	CTORA22-158537	6/30/22	6/29/24	Incorporating the Patient Voice into Hepatocellular Carcinoma Treatment Models	$200,000
Recruitment	Moorman	Nathaniel	Research Triangle Institute	66818L	3/31/22	3/30/27	Rapidly Emerging Antiviral Drug Development Initiative	$700,000
Recruitment	Moorman	Nathaniel	Chimerix, Inc.	WP101995	12/19/21	12/30/22	Chimerix Research Agreement for CHX-521 Testing	$300,000
Recruitment	Moorman	Nathaniel	University of Arizona	492004	9/23/18	8/30/23	Molecular switch regulating human cytomegalovirus replicative and latent states	$195,964
Recruitment	Moorman	Nathaniel	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI103311-06-10	11/30/12	6/29/23	The role of host and viral translation factors during HCMV infection	$384,607
Investment (HTSF)	Moran	Timothy	NIH National Institute of Environmental	5-R01-ES032544-01-02	12/22/21	11/30/26	Role of the indoor exposome in peanut allergy developmen	$482,445
Recruitment	Morris	John	National Pancreas Foundation	22.2952	5/31/21	5/30/23	Leveraging Evolutionary Lineage Tracing To Dissect Heterogeneity In Pancreatic Ductal Adenocarcinoma Initiation And Therapeutic Response	$25,000
Recruitment	Morris	John	Pancreatic Cancer Action Network	21-20-MORR	6/30/21	6/29/23	Dissecting Malignant Evolution Unleashed by p53 Loss in Pancreatic Cancer	$100,000
Recruitment	Moschos	Stergios	Pfizer Inc. (Connecticut)	C4471001	6/30/21	6/29/31	A Two-Part, Phase 1A/B, Open-Label, Multicenter Trial Evaluating Pharmacokinetics, Safety and Efficacy of PF-07284890 (ARRY-461) in Participants With BRAF V600-Mutant Solid Tumors With and Without Brain Involvement	$20,251
Recruitment	Moschos	Stergios	University of California at Los Angeles	1554 G XB980	4/30/20	4/29/25	Metastatic Clonal Heterogeneity and its Impact on Melanoma Therapeutic Resistance	$101,787
Recruitment	Moschos	Stergios	Merck Sharp and Dohme Corp.		5/5/19	5/13/29	A Multicenter, Open label, Phase III Extension Trial to Study the Long-term Safety and Efficacy in Participants with Advanced Tumors Who Are Currently on Treatment or in Follow-up in a Pembrolizumab Trial	$25,081
Recruitment	Moschos	Stergios	Amgen, Inc.		2/12/18	3/30/28	Phase 2 Study of Denosumab in Combination with Pembrolizumab in Patients with Stage IV Cutaneous Melanoma	$19,950
Recruitment	Moschos	Stergios	Syndax Pharmaceuticals, Inc.		5/10/17	11/29/22	A Phase 1b/2, Open-label, Dose Escalation Study of Entinostat in Combination with Pembrolizumab in Patients with Non-small Cell Lung Cancer, with Expansion Cohorts in Patients with Non-small Cell Lung Cancer and Melanoma	$160,246
Recruitment	Moschos	Stergios	Merck Sharp and Dohme Corp.		6/2/16	6/12/23	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	$123,958
Investment (HTSF)	Moschos	Stergios	Leidos Biomedical Research	17X011	1/9/18	6/30/25	A Phase 2 Study of Ibrutinib (PCI-32765) in Refractory D	$399,603
Recruitment	Mungo	Chemtai	Gilead Sciences, Inc.	23-0814	1/29/23	1/28/25	Feasibility of Artemisinin as neoadjuvant or adjuvant topical therapy for cervical precancer treatment in among women living with HIV in low- and middle-income countries (LMICs)	$180,000
Recruitment	Mungo	Chemtai	American Association for Cancer Research	22-20-73-MUNG	8/31/22	8/30/24	Feasibility of adjuvant topical therapy for cervical precancer treatment	$206,000

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Recruitment	Muscatell	Keely	American Psychological Association		12/31/22	12/30/23	Utilizing Inclusive Mentorship Practices to Enhance Equity in Graduate Education in Psychology	$2,500
Recruitment	Muscatell	Keely	Johns Hopkins University	7	10/31/22	10/30/23	Neuroinflammatory Mechanisms Linking Chronic Stress to Motivational Deficits	$10,000
Recruitment	Muscatell	Keely	Robert Wood Johnson Foundation	79936	8/31/22	8/30/26	Health Policy Research Scholars Cohort Six - 2022	$124,000
Recruitment	Muscatell	Keely	NIH National Heart, Lung, and Blood Institute	3-R01-HL157422-03S1	4/30/21	4/29/26	Neural and Molecular Mechanisms Underlying Stress-Induced Inflammatory Responses	$702,426
Recruitment	Muscatell	Keely	National Science Foundation	BCS-2047344	4/30/21	4/29/26	CAREER: Bidirectional Links Between Social Experiences and the Immune System	$137,731
Recruitment	Muss	Hyman	Breast Cancer Research Foundation	BCRF-22-114	9/30/22	9/29/23	p16INK4a Expression, Chemotherapy Toxicity, and Aging in Women with Breast Cancer	$225,000
Recruitment	Muss	Hyman	Sapere Bio, Inc	2101	8/31/22	8/30/24	SBIR: Measuring cellular senescence to predict and prevent peripheral neuropathy	$49,560
Recruitment	Muss	Hyman	Sapere Bio, Inc	2101	2/28/22	8/30/24	SBIR: Measuring cellular senescence to predict and prevent peripheral neuropathy	$163,966
Recruitment	Muss	Hyman	Breast Cancer Research Foundation	BCRF-21-114	9/30/21	9/29/22	p16INK4a Expression, Chemotherapy Toxicity, and Aging in Women with Breast Cancer	$190,000
Investment (Training)	Muss	Hyman	NIH National Cancer Institute	5-T32-CA233419-05	12/31/18	12/30/23	UNC Geriatric Oncology Training Grant (UNC-GO)	$129,991
Investment (Chair Package)	Neal-Perry	Genevieve	NIH National Institute on Aging	33320A PO 908042	9/29/20	8/30/23	The Study of Women's Health Across the Nation (SWAN): The Impact of Midlife and the Menopause Transition on Health and Functioning in Early Old Age	$7,545
Investment (Chair Package)	Neal-Perry	Genevieve	NIH National Institute of Child Health and Human Development	5-K12-HD103085-03	7/22/20	6/29/25	Advancing women's health through research: the UNC WRHR Career Development Program	$250,871
Recruitment	Nichols	Hazel	NIH National Cancer Institute	1-F31-CA275332-01A1	5/14/23	5/13/25	Fellow: B Hoover Incidence and Time on Onset of Cardiovascular Risk Factors and Cardiovascular Disease in Adult Survivors of Adolescent and Young Adult Cancer and Association with Exercise	$40,570
Recruitment	Nichols	Hazel	NIH National Cancer Institute	1-R03-CA267327-01A1	1/18/23	12/30/24	Claims-based measures of care coordination and long-term health among older women with endometrial cancer	$77,750
Recruitment	Nichols	Hazel	The Institute of Cancer Research	22-0715	8/31/21	8/30/22	Harmonization and validation of exposure data and assay measurements for collaborative pooling analyses.	$24,100
Recruitment	Nichols	Hazel	NIH National Institute of Environmental Health Sciences	1-F31-ES033062-01	7/31/21	7/30/23	Fellow: M Sweeney Joint effect of indoor and outdoor light at night on sleep and breast cancer	$38,062
Recruitment	Nichols	Hazel	Kaiser Permanente Division of Research	RNG211062-UNC-01	9/14/20	6/29/25	CORE C Clinical Care Gaps and Unmet Needs in Adolescent and Young Adult (AYA) Cancers	$13,698
Recruitment	Nichols	Hazel	Kaiser Permanente Division of Research	RNG211061-UNC-01	9/14/20	6/29/25	CORES A & B Clinical Care Gaps and Unmet Needs in Adolescent and Young Adult (AYA) Cancers	$98,890
Recruitment	Nichols	Hazel	Kaiser Permanente Division of Research	RNG211063-UNC-01	9/14/20	6/29/25	PROJECT 1 Clinical Care Gaps and Unmet Needs in Adolescent and Young Adult (AYA) Cancers	$63,155
Recruitment	Nichols	Hazel	Kaiser Permanente Division of Research	RNG211064-UNC-01	9/14/20	6/29/25	Clinical Care Gaps and Unmet Needs in Adolescent and Young Adult (AYA) Cancers	$41,565
Recruitment	Nichols	Hazel	NIH National Cancer Institute	5-R01-CA211093-01-04	8/4/19	7/30/24	In vitro fertilization outcomes after cancer	$445,880
Recruitment	Nielsen	Matthew	University of Kansas Medical Center Research Institute, Inc.	Q125EP20	10/31/19	10/29/23	North Carolina Prospective Prostate Cancer Cohort Study	$115,511
Theme Investment	Niethammer	Marc	Kitware, Inc.	K003082-00-S01	7/14/21	6/29/24	A Computational Framework for Distributed Registration of Massive Neuroscience Images	$169,433

Category	Last Name	First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Theme Investment	Niethammer	Marc	NIH National Heart, Lung, and Blood Institute	122937	3/14/20	2/28/24	Prognostic Markers of Emphysema Progression	$124,423
Recruitment	Noar	Seth	NIH National Institute on Drug Abuse	5-R01-DA049155-04	5/31/20	5/30/25	Impact of e-cigarette prevention messages on adolescents	$679,264
Recruitment	Noar	Seth	Wake Forest University Health Sciences	555-45117-100000555115	3/31/20	3/30/24	Communicating Waterpipe Tobacco Harms To Reduce Use among Young Adults	$23,896
Theme Investment	Nobel	Andrew	National Science Foundation	DMS-2113676	6/30/21	6/29/24	Inference for Stationary Processes: Optimal Transport and Generalized Bayes	$99,981
Retention	North	Kari	The University of Texas Health Science Center at Houston	AGT008103-01	12/31/22	12/30/23	Sharma Service Agreement	$65,294
Investment (Training)	North	Kari	NIH National Heart, Lung, and Blood Institute	5-T32-HL129982-08	5/31/16	5/30/26	The Genetic Epidemiology of Heart, Lung, and Blood Traits Training Grant (GenHLB)	$427,344
Retention	North	Kari	The University of Texas Health Science Center at Houston	AGT008103	1/1/22	12/31/22	Sharma Service Agreement	$81,472
Retention	North	Kari	American Heart Association	903805	1/1/22	12/31/23	Developing and evaluating globally relevant and metabolic risk accounted polygenic risk scores for obesity	$64,072
Retention	North	Kari	NIH National Institute on Aging	5-F99-AG073565-02	8/31/21	8/30/23	Genetic and Environmental Drivers of Cognitive Resilience in Aging Populations	$46,752
Retention	North	Kari	NIH National Heart, Lung, and Blood Institute	5-F31-HL159910-02	8/17/21	12/30/22	Fellow: L Glover Methylome-wide association study of socioeconomic status, incident type 2 diabetes, and cardiovascular disease events among African Americans	$13,683
Retention	North	Kari	Washington University in Saint Louis	WU-23-0610 ST00015275	4/26/21	3/30/25	A Multi-Ancestry Study of Gene-Lifestyle Interactions and Multi-Omics in Cardiometabolic Traits	$135,409
Retention	North	Kari	NIH National Institute of Diabetes and Digestive and Kidney Diseases	5-R01-DK122503-01-04	9/21/20	7/30/25	Integrative Approaches to Identifying Function and Clinical Significance of Adiposity Susceptibility Genes	$672,571
Retention	North	Kari	NIH National Institute of Diabetes and Digestive and Kidney Diseases	637-45102-10000550024	3/31/19	1/30/24	Genetic and Epidemiological Predictors of Glucose Homeostasis Measures	$20,742
Investment (CBCS)	Nyante	Sarah	NIH National Cancer Institute	1-R21-CA270625-01	3/9/22	2/28/24	Breast cancer neoadjuvant endocrine therapy during the Covid-19 pandemic: Opportunity for a new treatment paradigm?	$181,741
Investment (CBCS)	Nyante	Sarah	NIH National Cancer Institute	5-R03-CA267469-01-02	12/31/21	12/30/23	Impact of the COVID-19 pandemic on newly-diagnosed breast cancer	$77,750
Investment (CBCS)	Nyante	Sarah	NIH National Cancer Institute	5-R01-CA237129-01-04	8/31/19	8/30/24	Understanding the biological basis for the association between parenchymal texture features and breast cancer risk	$503,066
Innovation Award	Oldenberg	Amy	NIH National Institute of Environmental Health Sciences	5-R01-ES032730-01-03	9/27/20	6/29/25	Developing an in vitro to in vivo pipeline of mammary gland exposure-response relationships to per- and poly-fluoroalkyl substances (PFAS)	$499,609
Innovation Award	Oldenberg	Amy	NIH National Heart, Lung, and Blood Institute	5-R01-HL154429-01-03	8/31/20	7/30/25	Predicting the Need for Surgery in Pediatric Subglottic Stenosis using Airway Elastography derived from Endoscopic OCT and Intraluminal Pressure Measurement	$821,057
Investment (CBCS)	Olshan	Andrew	Baylor College of Medicine	PO 7000001303	8/14/20	8/13/23	Identifying Novel Cancer Predisposition Syndromes: An Integrative Epidemiologic and Genomic Approach	$15,413
Investment (CBCS)	Olshan	Andrew	DHHS Centers for Disease Control and Prevention	5-U01DD001231-05	8/31/18	8/30/23	Component A: BD-STEPS II Core at North Carolina Center for Birth Defects Research and Prevention (NC BDSTEPS II Core)	$800,000
Recruitment	Painschab	Matthew	NIH Fogarty International Center	5-K01-TW011470-01-05	9/15/19	6/29/24	Safety, efficacy, and cost-effectiveness of rituximab for multicentric Castleman disease in Malawi	$143,933

Category	Last Name	First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Palmer	Adam	V Foundation for Cancer Research	V2020-010	11/30/20	11/30/22	Understanding and optimizing curative combination therapy for Non-Hodgkin Lymphomas	$100,000
Investment (CC)	Pardo Manuel de Villena	Fernando	Columbia University Trustees	1(GG014746-29)	7/31/21	7/30/25	Center for High-Throughput Minimally-Invasive Radiation Biodosimetry	$56,633
Investment (CC)	Pardo Manuel de Villena	Fernando	Neogen Corporation		5/19/20	5/18/23	Service Agreement for miniMUGA inbred mouse Background Analysis Report	$25,000
Investment (CC)	Pardo Manuel de Villena	Fernando	NIH National Institute of Environmental Health Sciences	5-R01-ES029925-01-05	1/31/19	1/30/24	Genetic underpinning of diabetes associated with arsenic exposure	$645,813
Recruitment	Park	Eliza	Foundation of Hope for Research and Treatment of Mental Illness		9/27/20	9/26/23	A web-based intervention to improve mental health outcomes among newly diagnosed parents with cancer	$39,997
Recruitment	Park	Eliza	NIH National Cancer Institute	5-K07-CA218167-01-05	7/31/17	7/30/22	A Psychosocial Intervention to Improve Outcomes for Parents with Advanced Cancer	$176,839
Recruitment	Patel	Shetal	MacroGenics, Inc.	CP-MGA271-06	9/14/21	8/29/31	MGA271-06: A Phase 2 Open-Label Trial to Evaluate Enoblituzumab in Combination with Retifanlimab or Tebotelimab in the First-Line Treatment of Patients with Recurrent or Metastatic Squamous Cell Carcinoma of the Head and Neck	$43,538
Recruitment	Patel	Shetal	Dracen Pharmaceuticals, Inc.	DRA-104-001	5/3/21	5/9/31	Phase 1 and Phase 2a, First-in-human Study of DRP-104, a Glutamine Antagonist, in Adult Patients with Advanced Solid Tumors	$133,655
Investment (HTSF)	Pattenden	Samantha	NIH National Institute of General Medica	5-R01-GM138912-01-03	4/1/21	2/28/25	Development of a cavitation enhancement technology to ac	$400,726
Retention	Pecot	Chad	NIH National Cancer Institute	1-R01-CA279532-01	4/3/23	3/30/28	Circle RNA Regulation of Lung Cancer Metastasis	$328,960
Retention	Pecot	Chad	Lung Cancer Initiative of North Carolina	23-1594	12/31/22	12/30/23	Mechanistic and Therapeutic Implications of Co-Targeting KRAS and MYC in Lung Cancer	$100,000
Retention	Pecot	Chad	H Lee Moffitt Cancer and Research Institute	11-18754-99-01-G1	3/31/21	3/30/24	Investigating the Prognostic Role of Intrinsic Immune Evasion Mechanisms in HNSCC	$12,337
Retention	Pecot	Chad	Jazz Pharmaceuticals, Inc.		6/4/21	12/30/23	Evaluation of the Efficacy and Immune Microenvironmental Effects of Lurbinectedin alone and in combination with immune checkpoint inhibitors in Squamous Carcinoma Models	$140,790
Retention	Pecot	Chad	NIH National Cancer Institute	5-R01-CA258451-01-03	2/28/21	2/27/26	Tumor Endothelial Cell Regulation of Pro-Metastatic Fibrin Matrices	$568,496
Retention	Pecot	Chad	Duke University	303000955	9/13/20	8/30/23	Duke Cancer Health Disparities P20 SPORE	$25,794
Retention	Pecot	Chad	NIH National Cancer Institute	5-F30-CA250189-04	3/31/20	3/30/25	Fellow: N Sengottuvel The Role of SPON1 Expressing Inflammatory Monocytes in Promoting Lung Cancer Metastasis.	$52,694
Theme Investment (HTS)	Peifer	Mark	NIH National Institute of General Medical Sciences	5-R35-GM118096-06-07	7/15/16	8/30/26	Regulating cell fate and shaping the body plan during morphogenesis and their alteration during oncogenesis	$595,169
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Breast Cancer Research Foundation	BCRF-22-127	9/30/22	9/29/23	Molecular Therapeutic for Luminal Tumor Subtypes	$225,000
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	5-R01-CA148761-11-13	3/16/10	3/30/26	Therapeutic Targeting of Breast Cancer Tumor Initiating Cells	$405,031
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Breast Cancer Research Foundation	DRC-20-004	1/14/21	1/13/24	Disentangling the anti-tumor effects from the immune effects of Abemaciclib using RB- proficient and RB-deficient breast cancer mouse models.	$400,000

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Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	5-F31-CA257166-02	4/30/21	4/29/23	Fellow: C Glodowskic Intratumoral Heterogeneity and Plasticity in Basal-Like Breast Cancers	$716
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Johns Hopkins University	2004285639	7/28/19	12/30/23	AURORA US: Prospective Genomic Characterization Center in Metastatic Breast Cancer RELATED 4101005	$152,933
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	5-U01-CA238475-05	5/31/19	5/30/24	Predictive Modeling of the EGFR-MAPK pathway for Triple Negative Breast Cancer Patients	$557,886
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	NIH National Cancer Institute	5-P50-CA058223-28	8/4/97	8/30/23	SPORE in Breast Cancer	$2,324,485
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Johns Hopkins University	2003125644	8/22/16	12/30/23	TBCRC: AURORA GENOME CHARACTERIZATION CENTER	$152,933
Theme Investment (HTS, CBCS, MP1U)	Perou	Charles	Susan G Komen for the Cure	SAC160074	7/14/16	1/14/26	Identification of the Genetic Drivers of HER2-Enriched Subtype Breast Cancers	$600,000
Recruitment	Pfaff	Emily	Harvard Pilgrim Health Care	WO1036 PH000714T	5/31/22	9/29/24	Sentinel Initiative TEP: Making Medicaid Data More Accessible Through Common Data Models and FHIR APIs	$32,500
Recruitment	Pfaff	Emily	Mayo Clinic	THE-282677 PO 69392817	7/11/21	1/30/25	Subcontract with Mayo Clinic School of Medicine Jiang R01 - FHIRCat: Enabling the Semantics of FHIR and Terminologies for Clinical and Translational Research	$164,276
Recruitment	Pfaff	Emily	University of Colorado Denver	FY22.1126.001	8/14/21	6/29/23	Subcontract with University of Denver Colorado Year 5 CD2H N3C Data Harmonization	$172,000
Recruitment	Phanstiel	Douglas	NIH National Institute of Arthritis and Musculoskeletal and Skin Diseases	1-R01-AR079538-01A1	9/19/22	8/30/27	Identifying novel osteoarthritis risk genes using GWAS, chondrocyte genomics, and genome editing	$508,492
Recruitment	Phanstiel	Douglas	NIH National Institute on Aging	5-R01-AG066871-01-04	4/14/20	3/30/25	Identifying Alzheimer's Disease Causal Variants and Target Genes Using iPSC-derived Microglia	$722,261
Recruitment	Phanstiel	Douglas	NIH National Institute of General Medical Sciences	5-R35-GM128645-01-05	7/18/18	6/29/23	Mechanisms of Dynamic Chromatin Looping During Differentiation	$383,163
Recruitment	Pinton	Gianmarco	NIH National Institute of Biomedical Imaging and Bioengineering	1-R21-EB033150-01	7/31/22	5/30/24	Lung-specific ultrasound beamforming for diagnostic imaging	$217,430
Recruitment	Pinton	Gianmarco	NIH National Institute of Biomedical Imaging and Bioengineering	5-R21-EB033150-01-02	7/31/22	5/30/24	Lung-specific ultrasound beamforming for diagnostic imaging	$190,329
Recruitment	Pinton	Gianmarco	NIH National Institute of Biomedical Imaging and Bioengineering	5-R01-EB029419-01-03	6/30/21	3/30/25	A machine learning ultrasound beamformer based on realistic wave physics for high body mass index imaging	$448,555
Investment (HTSF)	Polacheck	William	NIH National Institute of General Medical Sciences	5-R35-GM142944-01-03	9/23/21	7/31/26	Integrative Approaches for the Study of the Fluidic Cell	$375,264
Retention	Poteat	Tonia	Brigham and Womens Hospital	127906	8/18/22	6/29/27	Strategies to Prevent HIV Acquisition Among Transgender MSM in the United States	$33,233
Retention	Poteat	Tonia	Johns Hopkins University	2005709107	8/8/22	7/30/27	Enhanced COhort methods for HIV Research and Epidemiology (ENCORE) among transgender women in the United States.	$46,538
Retention	Poteat	Tonia	NIH National Institute on Minority Health and Health Disparities	5-R01-MD016755-01-02	7/20/22	3/30/27	Creating Access to Resources and Economic Support	$638,544

Category	Last Name	First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Retention	Poteat	Tonia	Johns Hopkins University	2005487027	9/22/20	7/30/22	Enhanced COhort methods for HIV Research and Epidemiology (ENCORE) among transgender women in the United States.	$69,750
Retention	Poteat	Tonia	NIH National Institute of Mental Health	5-R01-MH130277-01-02	4/14/22	2/27/27	Transgender-Specific Differentiated HIV Care: An Implementation Science Study	$535,156
Retention	Poteat	Tonia	Northwestern University	60060439 UNC	9/30/21	8/30/23	Project Recognize: Improving Measurement of Alcohol Use and Other Disparities by Sex, Sexual Orientation, and Gender Identity through Community Engagement	$52,018
Retention	Poteat	Tonia	NIH National Heart, Lung, and Blood Institute	5-R01-HL149778-01-04	3/3/20	2/27/25	Cardiovascular Health of Sexual and Gender Minorities in the Hispanic Community Health Study/Study of Latinos (SGM HCHS/SOL)	$638,095
Retention	Poteat	Tonia	Family Health International (FHI 360)	PO 19000834	11/30/18	11/29/23	HPTN 091 Leadership	$100,711
Retention	Poteat	Tonia	NIH National Institute on Minority Health and Health Disparities	3-R01-MD013498-06S1	8/31/18	3/30/23	Biopsychosocial Mechanisms Linking Gender Minority Stress to HIV Comorbidities	$40,073
Recruitment	Purvis	Jeremy	National Science Foundation	MCB-2242980	2/28/23	2/27/27	Quantitative models of reversible and irreversible cell cycle arrest	$300,000
Recruitment	Purvis	Jeremy	NIH National Heart, Lung, and Blood Institute	5-F31-HL156433-03	4/1/21	3/31/24	Fellow: J Ranek Inferring Gene Regulatory Networks Governing Definitive Endoderm Differentiation from Single CellRNA Velocity Measurements	$39,208
Recruitment	Purvis	Jeremy	NIH National Institute of General Medical Sciences	3-R01-GM138834-03S2	9/10/20	7/30/24	Computational Models of the Human Cell Cycle to Reveal Disease Mechanism and Inform Treatment	$522,129
Retention	Pylayeva-Gupta	Yuliya	American Cancer Society	RSG-21-103-01 IBCD	12/31/21	12/30/25	B cells as mediators of tumor eradication in pancreatic cancer	$198,000
Retention	Pylayeva-Gupta	Yuliya	The Mark Foundation for Cancer Research		12/31/21	12/30/24	Reprogramming B cell fate and function in cancer	$250,000
Retention	Pylayeva-Gupta	Yuliya	DOD DA Army Medical Research Acquisition Activity	W81XWH1910597/0011349040	8/31/19	8/30/22	Role of IL-23 in epithelial-to-mesenchymal conversion in pancreatic cancer.	$186,600
Retention	Pylayeva-Gupta	Yuliya	NIH National Cancer Institute	5-R37-CA230786-01-05	3/31/19	3/30/24	Function of IL35+ B cells in pancreatic cancer	$394,032
Recruitment	Raab	Jesse	NIH National Institute of General Medical Sciences	1-R35-GM147286-01	8/14/22	7/30/27	Mechanisms of SWI/SNF complex assembly and function	$388,750
Recruitment	Raab	Jesse	Department of Defense	W81XWH2010636	7/31/20	7/30/22	Identification of new therapeutic strategies for targeting liver fibrosis	$155,500
Recruitment	Rauf	Yasmeen	Orbus Therapeutics, Inc.		6/5/17	9/29/27	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	$13,401
Recruitment	Ray	Emily	Lung Cancer Initiative of North Carolina	22-1942	12/31/21	12/30/23	Development of an enhanced risk stratification system for patients with hospital-diagnosed advanced lung cancer	$75,000
Recruitment	Ray	Emily	Conquer Cancer Foundation		6/30/21	6/29/24	Validation and usability testing in an academic comprehensive cancer center of a prognostic calculator for 30-day mortality in patients with metastatic breast cancer	$66,667
Innovation Award	Redinbo	Matthew	Boston Children's Hospital	GENFD0002231816	7/31/22	5/30/25	Microbial reactivation of sex steroids and visceral pain	$125,458
Innovation Award	Redinbo	Matthew	University of Pennsylvania Board of Trustees	581896 PO# 4678788	4/30/21	4/29/23	The Ultra Processed Western Diet, the Gut Microbiome	$78,071
Innovation Award	Redinbo	Matthew	NIH National Institute of General Medical Sciences	5-R01-GM137286-01-04	4/30/20	4/29/24	Understanding and Controlling Drug Metabolism by the Gut Microbiota to Improve Human Health	$304,654

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Innovation Award	Redinbo	Matthew	NIH National Institute of General Medical Sciences	5-R01-GM135218-01-04	9/19/19	6/29/23	Structural Basis for Hormone and Neurotransmitter Processing by Gut Microbial Enzymes	$364,583
Innovation Award	Redinbo	Matthew	Albert Einstein College of Medicine	311392 / PO744148	8/13/18	7/30/23	Microbial Metabolite Mimics, PXR and Colitis-Induced Colorectal Cancer	$23,478
Recruitment	Reeder-Hayes	Katie	Pfizer International, LLC	69375471	1/3/22	12/30/22	Impact of Social Determinants on Treatment Access and Outcomes of Metastatic Breast Cancer Among Black Women	$150,000
Recruitment	Reeder-Hayes	Katie	Pfizer International, LLC	63633669 21-0928	12/9/20	12/30/22	Racial Disparities Hot-spotting to Improve Breast Cancer Outcomes In North Carolina	$199,444
Recruitment	Reeves	Brandi	Hemostasis and Thrombosis Research Society	HTRS MRA 2022 REEVES 02	7/1/22	6/30/24	Hypoxia Inducible Factors in Myeloproliferative Neoplasm Associated Thrombosis	$165,000
Recruitment	Reeves	Brandi	Incyte Corporation		9/15/20	10/21/30	A Phase 1, Open-Label, Safety and Tolerability Study of INCB057643 in Participants with Myelofibrosis	$6,830
Recruitment	Reeves	Brandi	Janssen Research & Development, LLC		8/28/19	2/27/24	A Randomized Study of Daratumumab Plus Lenalidomide Versus Lenalidomide Alone as Maintenance Treatment in Patients with Newly Diagnosed Multiple Myeloma Who Are Minimal Residual Disease Positive After Frontline Autologous Stem Cell Transplant.	$34,407
Recruitment	Reeves	Brandi	Janssen Research & Development, LLC	54767414SMM3001	9/5/18	6/15/26	A Phase 3 Randomized, Multicenter Study of Subcutaneous Daratumumab Versus Active Monitoring in Subjects with High-risk Smoldering Multiple Myeloma	$6,275
Recruitment	Reeves	Brandi	Janssen Research & Development, LLC		10/22/15	4/21/23	A Randomized Phase 2 Trial to Evaluate Three Daratumumab Dose Schedules in Smoldering Multiple Myeloma	$216
Recruitment	Reeves	Brandi	Dana-Farber Cancer Institute		2/16/11	2/15/23	DFCI 10-106 A Randomized Phase III Study Comparing Conventional Dose Treatment Using a Combination of Lenalidomide, Bortezomib and Dexamethasone (RVD) to High-Dose Treatment with Peripheral Stem Cell Transplant in the Initial Management of Myeloma in Pati	$3,984
Retention	Reuland	Daniel	Wake Forest University	497-32751-10000550124	12/31/19	12/30/24	A Personalized Digital Outreach Intervention for Lung Cancer Screening	$190,696
Retention	Reuland	Daniel	NIH National Cancer Institute	5-UH3-CA233251-05	9/29/18	8/30/24	Scaling Colorectal Cancer Screening Through Outreach, Referral, and Engagement (SCORE): A State-Level Program to Reduce Colorectal Cancer Burden in Vulnerable Populations	$1,049,242
Retention	Ribisl	Kurt	University of Oklahoma Health Sciences Center	RS20222177-02	4/30/23	4/29/25	Investigating the impact of local land use and zoning policies on equitably reducing tobacco retailer availability	$20,669
Retention	Ribisl	Kurt	University of California at San Francisco	13816sc	8/31/22	8/30/23	Tobacco retail policy innovation to reduce health disparities	$184,944
Investment (Training)	Ribisl	Kurt	NIH National Cancer Institute	2-T32-CA057726-31	6/30/17	6/29/27	Cancer Control Education Program	$298,020
Retention	Ribisl	Kurt	Cumberland County Department of Health	2023456 PO 23000910	6/30/22	6/29/23	Fort Bragg Tobacco Control: Military Health and Readiness Initiative	$31,077
Retention	Ribisl	Kurt	NIH National Cancer Institute	5-P01-CA225597-01-05	8/31/18	8/30/23	ASPiRE: Advancing Science & Practice in the Retail Environment	$2,031,697
Retention	Ribisl	Kurt	University of Virginia	GB10546.PO #2126807	4/30/18	2/27/23	The Determinants of Tobacco Relapse and Initiation Following a Period of Forced Abstinence in the U.S. Military: A Social Ecological Approach	$24,633
Recruitment	Richardson	Daniel	American Society of Hematology		6/30/23	6/29/26	Developing a patient-reported measure to identify treatment priorities of patients with advanced blood cancers	$50,000
Recruitment	Richardson	Daniel	Southeastern Brain Tumor Foundation		11/30/22	12/30/23	Eliciting Patient Treatment Preferences Through Best-Worst Scaling to Inform Treatment Decisions In A Cohort Of Glioblastoma Patients	$10,000

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Recruitment	Roberson	Mya	American Association for Cancer Research	22-20-73-ROBE	3/1/23	8/31/24	Centering Equity in HBOC Genetic Testing: A Mixed Methods Study	$195,467
Recruitment	Roberts	Megan	NIH National Human Genome Research Institute	1-R21-HG012672-01	8/31/22	8/30/24	Implementing and Evaluating Genetic Screening in Healthy Adults for Precision Public Health	$229,873
Recruitment	Roberts	Megan	Duke University	303000044	9/21/21	8/30/23	Implementing Pharmacogenomics In Diverse Health Care Systems	$42,063
Recruitment	Roberts	Megan	University of Texas Southwestern Medical Center	0000002723 220726	8/14/21	8/13/25	Familial hypercholesterolemia in the United States: evaluating a centralized cascade screening model to improve early diagnosis	$183,797
Recruitment	Rose	Tracy	Fox Chase Cancer Center	GU-176	5/24/22	3/28/32	A Phase II Trial of Risk Enabled Therapy After Neoadjuvant Immunochemotherapy for Bladder Cancer	$20,000
Recruitment	Rose	Tracy	Merck Sharp and Dohme Corp.		4/1/20	4/15/30	:An Open-label, Randomized Phase 3 Study of MK-6482 Versus Everolimus in Participants with Advanced Renal Cell Carcinoma That Has Progressed After Prior PD1/L1 and VEGF-Targeted Therapies	$114,226
Recruitment	Rose	Tracy	Syndax Pharmaceuticals, Inc.		3/24/19	4/13/29	Window of Opportunity Platform Study to Define Immunogenomic Changes with Pembrolizumab Alone and in Rational Combinations in Muscle-Invasive Bladder Cancer	$216,454
Recruitment	Rose	Tracy	Genentech, Inc.		6/8/17	2/27/23	A Phase III, Multicenter, Randomized, Placebo-controlled, double-blind study of Atezolizumab (Anti-PD-L1 Antibody) as Adjuvant Therapy in Patients with Renal cell Carcinoma at High Risk of Developing Metastasis Following Nephrectomy	$2,749
Recruitment	Rosenstein	Donald	American Cancer Society	89780	3/31/23	3/30/24	2023 Patient Transportation Grant	$40,000
Recruitment	Rosenstein	Donald	American Cancer Society	89751	3/31/23	3/30/24	2023 Patient Lodging Grant	$75,000
Recruitment	Rosenstein	Donald	American Cancer Society	81777	3/31/22	3/30/23	2022 Patient Transportation Grant	$30,000
Recruitment	Rosenstein	Donald	American Cancer Society		11/30/21	9/29/22	2021 Patient Lodging Grant	$75,000
Investment (HTSF)	Rubin	Janet	NIH National Institute of Arthritis and	5-R01-AR075803-01-04	5/1/20	4/30/25	Role of force regulated nuclear structure in expression	$457,823
Recruitment	Rubinstein	Samuel	American Society of Hematology	D0983564-2	6/30/22	6/29/23	ASH Research Collaborative Data Hub Protocol: A multicenter data hub of individuals living with hematologic disease	$35,000
Recruitment	Rubinstein	Samuel	Rhode Island Hospital	7137836	9/14/22	8/30/27	Enhancing the HemOnc Knowledgebase of Chemotherapy Drugs and Regimens	$20,400
Recruitment	Rubinsteyn	Alexander	American Association for Cancer Research	19-20-62-RUBI	5/31/20	5/30/23	Impact of Tumor Treating Fields on Neoantigen Burden and T cell function	$75,000
Investment (CC)	Samulski	R	AskBio, Inc. 22-5401		8/2/22	8/1/27	AAV Gene Delivery in Collaborative Cross Mice	$400,000
Investment (HTS)	Sancar	Aziz	NIH National Institute of Environmental Health Sciences	5-R01-ES033414-01-02	9/16/21	6/29/26	DNA Adduct Detection and Repair in Mammalian Cells	$556,623
Investment (HTS)	Sancar	Aziz	NIH National Institute of General Medical Sciences	5-R35-GM118102-06-07	3/31/16	8/30/26	Molecular Mechanism of Mammalian DNA Excision Repair and the Circadian Clock	$1,002,711
Investment (Protocol)	Sanoff	Hanna	University of Iowa	S02645-01	6/30/21	7/30/25	Comparative Effectiveness Research for Neuroendocrine Tumors	$94,517
Investment (Protocol)	Sanoff	Hanna	Rgenix, Inc.		10/24/18	11/19/28	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	$23,398
Investment (HTSF)	Sartor	Ryan	Leona M and Harry B Helmsley Charitable	2105-04679	12/1/20	11/30/23	Genomic and Microbial Signatures Predict Post-Operative	$778,250

Category	Last Name	First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Investment (HTSF)	Sartor	Ryan	NIH National Institute of Diabetes and Digestive and Kidney Diseases	5-P01-DK094779-06-09-10	7/1/19	6/30/24	Identifying Microbial, Epithelial and Immune Cell Intera	$1,859,752
Recruitment	Savoldo	Barbara	DOD DA Army Medical Research Acquisition Activity	W81XWH2211111 0011753836	9/29/22	9/28/25	GD2 CASRT for Lung Cancer	$421,945
Recruitment	Savoldo	Barbara	NIH National Cancer Institute	5-R01-CA247497-01-04	6/30/20	6/29/25	Tailoring CAR T cell therapy for Hodgkin Lymphoma	$619,470
Recruitment	Savoldo	Barbara	Department of Defense	W81XWH2010890 0011479913	9/14/20	9/13/24	Phase I Study of Autologous Activated T-cells Transduced With a 3rd Generation GD2 Chimeric Antigen Receptor, Co-expression of IL-15 and iCaspase9 Safety Switch.	$202,315
Recruitment	Savoldo	Barbara	Childrens Research Institute	30004929-02	9/29/18	8/30/23	Enhancing Cell Therapy for Brain Tumors	$228,841
Retention	Schoenfisch	Mark	NIH National Institute of Dental and Craniofacial Research	1-R01-DE032060-01A1	4/30/23	4/29/28	Nitric oxide-releasing hyaluronic acid therapeutics for treating periodontal disease	$463,849
Retention	Schoenfisch	Mark	The Eastman Foundation		5/31/23	12/30/23	Development of physiologically relevant tissue and tumor architectures to assess drug efficacy and elucidate the origins of drug resistance	$8,000
Retention	Schoenfisch	Mark	NIH National Institute of Diabetes and Digestive and Kidney Diseases	1-R01-DK132778-01A1	12/31/22	12/30/26	Nitric Oxide-Releasing Glycosaminoglycans for Treating Complex Wounds	$381,427
Retention	Schoenfisch	Mark	Cystic Fibrosis Foundation	SCHOEN22P0	8/31/22	8/30/23	Correlating in vitro and in vivo antibacterial and mucolytic activities of small molecule versus macromolecular nitric oxide donors	$125,000
Retention	Schoenfisch	Mark	NIH National Institute of Diabetes and Digestive and Kidney Diseases	5-R01-DK108318-05-07	11/30/15	6/29/24	Role of diabetes and nitric oxide release duration on analytical performance of in vivo glucose biosensors	$617,473
Recruitment	Schrank	Travis	NIH National Institute		9/1/20	8/31/25	Mechanisms Determining Dysregulation of the NRF2 Oxidative Stress Response in Head and Neck Squamous Cell Carcinoma	$173,993
Investment (HTSF)	Sena-Soberano	Arlene	Bill and Melinda Gates Foundation	INV-036560	11/2/21	10/31/23	Genomic epidemiology of Treponema pallidum strains infe	$779,678
Investment (HTSF)	Sena-Soberano	Arlene	University of Connecticut Health Center	UCHC7-161908983-A5	5/1/22	4/30/23	A global syphilis vaccine targeting outer membrane prote	$451,491
Innovation Award	Sekelsky	Jeff	NIH National Institute on Aging	1-F31-AG079626-01	8/31/22	8/30/25	Fellow: N Pazhayam Preventing Age-Associated Oocyte Aneuploidy: Mechanisms Behind the Drosophila melanogaster Centromere Effect	$38,055
Innovation Award	Sekelsky	Jeff	NIH National Institute on Aging	5-F31-AG074637-02	8/31/21	8/30/24	Fellow: C Turcotte Mechanisms and regulation of meiotic recombination	$38,029
Innovation Award	Sekelsky	Jeff	NIH National Institute of General Medical Sciences	3-R35-GM118127-08S1	5/31/16	3/30/26	Mechanisms of meiotic and mitotic recombination	$630,882
Investment (Training)	Sekelsky	Jeff	NIH National Institute of General Medical Sciences	5-T32-GM135128-04	6/30/20	6/29/25	NRSA in Genetics	$742,749
Retention	Serody	Jonathan	American Society of Clinical Oncology		6/30/23	6/29/24	Characterization of a STING mediated metabolic switch to fuel anti-tumor immunity of CAR T cells	$50,000
Retention	Serody	Jonathan	Ohio State University	SPC-1000007163/ GR129684	8/31/21	8/30/23	Pilot Study of Anti-PD-1 Therapy Following CD30 Directed CAR-T Cell Therapy	$51,771
Retention	Serody	Jonathan	NIH National Heart, Lung, and Blood Institute	5-R01-HL155098-01-02	8/31/21	6/29/25	Enhancing Innate Immune Reconstitution Post Allogeneic HSCT.	$655,949
Retention	Serody	Jonathan	Carisma Therapeutics, Inc		1/13/21	1/12/23	Single Cell & Correlative Evaluations After Monocyte-derived Macrophage CAR Therapy Targeting HER-2/neu	$117,495
Retention	Serody	Jonathan	Merck Sharp and Dohme Corp.	58116	1/29/19	1/29/23	OTSP: Evaluating the Function of B cells in the Activity of Anti-PD-1 mAb Therapy in Patients with Metastatic Breast Cancer.	$320,847

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Investment (Training)	Serody	Jonathan	NIH National Cancer Institute	5-T32-CA211056-05	7/31/17	7/30/22	Duke UNC-Chapel Hill Immunotherapy Training Grant	$27,000
Retention	Serody	Jonathan	Merck Sharp and Dohme Corp.	58116	12/14/16	12/14/23	Correlative study of the activity of pembrolizumab in combination with gemcitabine and cisplatin as neoadjuvant therapy prior to radical cystectomy in patients with muscle-invasive urothelial carcinoma of the bladder	$113,294
Retention	Serody	Jonathan	Merck Sharp and Dohme Corp.	58116	12/14/16	12/14/23	Immune Biomarker Analysis of Pembrolizumab in Triple Negative Breast Cancer	$129,045
Retention	Serody	Jonathan	GlaxoSmithKline Biologicals S.A.	456005	11/30/15	12/30/22	GSK Task Order 8	$64,996
Retention	Shaheen	Nicholas	Case Western Reserve University	RES600952	9/21/22	8/30/27	Validation of biomarkers for predicting Barrett's esophagus that will or will not: i) progress toward cancer, or ii) recur after ablation.	$77,516
Retention	Shaheen	Nicholas	GIE Medical, Inc.	PR2052	1/22/23	2/27/29	PATENT-E : Paclitaxel Coated balloon for the Treatment of chronic bEnigN sTricture-Esophagus	$27,938
Retention	Shaheen	Nicholas	University of Colorado Denver	FY22.1035.015	5/14/22	4/29/23	A Multicenter Randomized Controlled Trial of Surveillance vs. Endoscopic Therapy for Barrett's Esophagus with Low-grade Dysplasia: The SURVENT Trial	$142,132
Retention	Shaheen	Nicholas	Case Western Reserve University	RES600237	4/30/22	4/29/23	Genetic Determinants of Barrett's Esophagus and Esophageal Adenocarcinoma	$32,251
Retention	Shaheen	Nicholas	Phathom Pharmaceuticals	NERD-301	3/10/22	4/29/27	A Phase 3, Randomized, Double-Blind, Multicenter Study to Evaluate the Efficacy and Safety of Vonoprazan 10 and 20 mg Compared to Placebo for Relief of Heartburn in Subjects with Symptomatic Non-Erosive Gastroesophageal Reflux Disease (NERD) After 4 Weeks	$36,218
Retention	Shaheen	Nicholas	Lucid Diagnostics		5/4/20	7/30/25	A Multicenter Case-Control Study of the Efficacy of EsoGuard on Samples Collected Using EsoCheck, versus Esophagogastroduodenoscopy, for the Diagnosis of Barrett's Esophagus with and without Dysplasia, and for Esophageal Adenocarcinoma (EG-CL-102)	$22,244
Retention	Shaheen	Nicholas	Lucid Diagnostics		3/29/20	7/30/25	A Multicenter, Single-Arm Study of the Efficacy of EsoGuard on Samples Collected Using EsoCheck versus Esophagogastroduodenoscopy for the Diagnosis of Barrett's Esophagus in an At-Risk Screening Population (EG-CL-101)	$8,033
Retention	Shaheen	Nicholas	C2 Therapeutics		12/28/17	12/30/26	Safety and Efficacy of the CryoBalloon Ablation for Treatment of Patients with Resistant Barrett's Esophagus (BE) - The Resistant BE Trial (ReBET)	$183,880
Retention	Shaheen	Nicholas	CDx Diagnostics, Inc.		10/13/16	10/12/30	The WATS3D (Wide Area Transepithelial Sample Biopsy with 3-Dimensional Computer-Assisted Analysis) U.S. Registry	$23,424
Retention	Shaheen	Nicholas	C2 Therapeutics		1/26/16	1/25/25	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	$11,520
Recruitment	Shea	Thomas	Alliance for Clinical Trials in Oncology		9/10/13	3/4/30	Alliance Prime eIPF	$57,033
Recruitment	Shea	Thomas	ECOG-ACRIN Cancer Research Group		3/29/15	4/29/25	ECOG - ACRIN Master (LAPS Clinical Trials)	$89,810
Recruitment	Sheeran	Paschal	NIH National Cancer Institute	5-R01-CA242746-01-02	6/30/21	6/29/24	State-of-the-Art Synthesis of Interventions to Promote Quit Intentions and Smoking Cessation	$313,734

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Recruitment	Shen	Colette	University of Michigan	SUBK00014248	7/31/21	7/30/26	A clinical tool for automated detection and delineation of intracranial metastases from MRI	$4,028
Recruitment	Shen	Colette	Hoosier Cancer Research Network	BRE18-360	4/1/21	4/11/31	BRE18-360: Phase I/II Study of Stereotactic Radiosurgery with Concurrent Administration of DNA Damage Response (DDR) Inhibitor (Olaparib) Followed by Adjuvant Combination of Durvalumab (MEDI4736) and Physician s Choice Systemic Therapy in Subjects with Brain Metastases	$19,204
Recruitment	Shen	Colette	GT Medical Technologies, Inc.	GT-101	10/27/20	10/26/25	GTM-101: A Multicenter Observational Study of GammaTile Surgically Targeted Radiation Therapy (STaRT) in Intracranial Brain Neoplasms	$6,268
Recruitment	Sheth	Sid	Merck Sharp and Dohme Corp.	LCCC 2047	8/9/21	4/11/32	A Phase II Trial of Induction and Maintenance Pembrolizumab and Olaparib in Locally-Advanced Head and Neck Squamous Cell Carcinoma (HNSCC)	$250,000
Recruitment	Sheth	Sid	Beigene, Ltd.	BGB-900-102	6/21/21	7/20/31	Phase 1-2 Study Investigating Safety, Tolerability, Pharmacokinetics and Preliminary Antitumor Activity of Anti-TIM-3 MonoclonalAntibody BGB-A425 in Combination with Anti-PD-1 Monoclonal Antibody Tislelizumab in Patients with Advanced Solid Tumors	$178,342
Recruitment	Sheth	Sid	Inovio Pharmaceuticals, Inc.	PO# 0002106-1	8/9/21	8/8/22	cfHPVDNA as a Biomarker of Treatment Response in RRP-001	$22,923
Recruitment	Sheth	Sid	MedImmune, Inc.		3/30/20	3/17/30	An Open-label Phase 1 Study to Assess the Safety, Tolerability, Pharmacokinetics, Pharmacodynamics and Preliminary Efficacy of MEDI5395 in Combination with Durvalumab in Subjects with Select Advanced Solid Tumors	$100,537
Recruitment	Sheth	Sid	Merck Sharp and Dohme Corp.		4/14/20	4/25/30	A Phase 3, randomized, placebo-controlled, double-blind clinical study of pembrolizumab (MK-3475) with or without lenvatinib (E7080/MK-7902) to evaluate the safety and efficacy of pembrolizumab and lenvatinib as 1L intervention in a PD-L1 selected populat	$99,923
Recruitment	Sheth	Sid	Seagen, Inc.		4/8/15	4/7/23	SGNS40-001 - A phase 1, open-label, dose-escalation study of SEA-CD40 in adult patients with advanced malignancies	$49,722
Retention	Shih	Yen-Yu	Leland Stanford Junior University	62680095-115866	8/14/21	7/30/24	Methods for Dynamic Causal Interactions in Human Brain Aging and AD/ADRD	$97,637
Retention	Shih	Yen-Yu	NIH National Institute of Mental Health	5-R01-MH126518-01-03	3/31/21	3/30/26	Neural circuit mechanisms governing default mode network dynamics	$763,950
Retention	Shih	Yen-Yu	NIH National Institute of Mental Health	1-S10-MH124745-01	9/11/20	9/10/22	AVANCE NEO upgrade for the BioSpec 9.4T/30cm MRI system at UNC	$300,000
Retention	Shih	Yen-Yu	NIH Office of the Director	1-S10-OD026796-01A1	8/22/18	8/21/22	9 4T Small Animal MRI scanner at UNC	$500,000
Investment (CC)	Smeekens	J	TTSA	2103P1	9/1/22	8/31/23	Early-life Th2-skewing as a Risk Factor for Allergic Sensitization	$50,000
Recruitment	Smith	Angela	RTI Health Solutions	PO 5147 1-415-020610	4/15/21	12/30/22	Patient Preferences for Treatments in Non-Muscle Invasive and Muscle Invasive Bladder Cancer	$85,130
Recruitment	Smith	Angela	University of Washington	PO#BPO38451	1/31/19	1/30/24	Comparison of Intravesical Therapy and Surgery as Treatment Options (CISTO) for Recurrent Bladder Cancer	$101,345
Investment (CC)	Smith	C	Duke University		7/1/21	4/30/26	Metabolic Determinants of Mtb Virulence, Vulnerability, and Variation, Animal Model Core E	$192,715
Investment (CC)	Smith	C	Duke University		9/20/21	8/31/24	Dissecting the Genetic Basis of Protective Immunity to Tuberculosis in Diverse Hosts	$483,000
Recruitment	Smith	Jennifer	NIH National Cancer Institute	1-UG1-CA275403-01	9/1/22	5/30/27	UNC CASCADE Network Research Base	$615,441

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Recruitment	Smith	Jennifer	Cleveland Clinic Lerner College of Medicine	CCF23209065	8/31/22	3/30/27	SCALE: Single Visit Clinical Validation of Ampfire, a Low Cost HPV Test: Efficacy and Cost Effectiveness	$18,461
Recruitment	Smith	Jennifer	NIH National Cancer Institute	5-F30-CA257181-03	1/31/21	6/29/25	Fellow: A Bukowski The effect of epigenetic DNA methylation on the progression of HPV-associated precancerous cervical lesions	$39,720
Recruitment	Smith	Jennifer	DL Analytics, LLC		4/30/22	8/30/22	SBIR: Validation of a low-cost lab-free screening test for prevention of cervical cancer: automatic visual evaluation	$35,418
Recruitment	Smitherman	Andrew	Georgetown University	425038_GR424901-UNC	9/20/21	8/30/23	Randomized Trial of a Multilevel Intervention to Improve Adherence to Childhood Cancer Survivorship Guidelines	$88,436
Recruitment	Smitherman	Andrew	University of Alabama at Birmingham	000527577-SC008	3/23/21	2/27/23	Predictors of Systemic Exposure to Oral 6MP During Maintenance in Adolescents and Young Adults with Acute Lymphoblastic Leukemia	$1,361
Investment (HTSF)	Sokolsky-Papkov	Marina	Emory University	A23-0433-001	6/18/22	11/30/22	Gershon's Cooperative Research Agreement	$253,522
Theme Investment (Cores)	Sondek	John	NIH National Institute of General Medical Sciences	1-R35-GM149299-01	4/30/23	3/30/28	Phospholipase C Isozymes	$427,684
Theme Investment (Cores)	Sondek	John	Gilead Sciences, Inc.	801612106	8/4/22	8/3/23	Metabolite analyses downstream of PLCs	$124,400
Recruitment	Song	Lixin	DOD DA Army Medical Research Acquisition Activity	W81XWH2110263	7/31/21	7/30/24	Development and pilot testing of the interactive Prostate Cancer Information, Communication and Support program (iPICS)	$384,026
Recruitment	Song	Lixin	Mayo Clinic	NCC-259713/PO#67040568	10/17/19	7/30/25	Feasibility Testing of Patient Reported Outcomes-informed Caregiving Education and Symptom management System (PROCESS):	$15,018
Recruitment	Spanheimer	Phil	Society of Surgical Oncology		3/31/23	3/30/24	RET Reprograms ER Activity in Endocrine Resistant Breast Cancer	$25,000
Recruitment	Spees	Lisa	NIH National Institute on Minority Health and Health Disparities	1-K01-MD016989-01A1	9/24/22	12/30/26	Patient Navigation in Gynecologic Oncology: Improving Care among Rural Endometrial Cancer Patients	$134,828
Investment (CC)	Staats	H	Duke University		9/1/22	8/31/27	Adjuvant Comparison and Characterization	$1,100,000
Recruitment	Starbird	Chrystal	NIH National Institute of General Medical Sciences	4-R00-GM144683-02	2/23/23	1/30/26	The Structural Basis of TAM Receptor Oligomerization and Co-receptor Interactions	$249,000
Investment (HTSF)	Stein	Jason	NIH National Institute of Mental Health	5-U01-MH122509-02	5/1/22	4/30/23	Discovery and validation of genetic variation impacting	$571,954
Recruitment	Stover	Angela	Pfizer Inc. (Connecticut)	73592487	12/11/22	6/9/23	Oncology pharmacist-facilitated PROM monitoring at UNC cancer clinics	$150,000
Recruitment	Stover	Angela	UroGen Pharma Ltd.	22.2019	11/30/21	11/29/23	A mixed methods study of side effects and adverse events in a phase 3 trial of a medication gel for bladder cancer	$267,002
Recruitment	Stover	Angela	Cancer and Aging Research Group	60254.2005087.669306	2/28/22	2/27/23	Developing and pilot testing the Patient-centered Pharmacy Pathway for Oral Chemotherapy (P3OC)for older adults	$20,000
Innovation Award	Strahl	Brian	NIH National Institute of General Medical Sciences	2-R35-GM126900-06	4/30/18	4/29/28	Mechanisms of chromatin and transcriptional regulation	$586,513
Innovation Award	Strahl	Brian	EpiCypher, Inc.	R44GM145007	1/19/22	12/30/23	SBIR: Engineered super-affinity reagents for detection of histone post-translational modifications	$120,000
Innovation Award	Strahl	Brian	American Cancer Society	PF-22-008-01-DMC	10/31/22	10/30/25	Fellow: N Burkholder Deciphering the histone interactions and reader functions of ASH1L in biology and leukemia	$39,667
Innovation Award	Strahl	Brian	Ultraloop Technologies, Inc.	210043	9/22/21	9/21/23	Effectiveness of UVC light to reduce microorganism growth	$7,397
Innovation Award	Strahl	Brian	American Cancer Society	PF-20-149-01-DMC	7/31/21	7/30/24	The role of PHD readers and PHRF1 in chromatin and cancer biology	$22,167
Innovation Award	Strahl	Brian	NIH National Institute of General Medical Sciences	3-R35-GM126900-05S1	4/30/18	4/29/23	Mechanisms of chromatin and transcriptional regulation	$89,938

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Investment (Chair Package)	Stürmer	Til	American Diabetes Association	4-22-PDFPM-06	3/31/22	3/30/25	Precision medicine analysis for subgroups identification and optimal treatment selection in older adults with type 2 diabetes initiating SGLT2 inhibitors or GLP-1 receptor agonists	$64,144
Investment (Chair Package)	Stürmer	Til	NIH National Institute on Aging	2-R01-AG056479-05A1	9/14/17	5/30/27	Propensity scores and preventative drug use in the elderly	$647,862
Investment (Chair Package)	Stürmer	Til	Duke University	303000923	9/6/21	6/19/23	Racial Differences in Treatment with Hysterectomy: a Multilevel Investigation	$178,656
Investment (Chair Package)	Stürmer	Til	Duke University	4412293	8/15/21	8/13/23	Outside Service Agreement for Graduate Research Assistant - Whitney Robinson	$45,012
Investment (HTS)	Sullivan	Patrick	NIH National Institute of Mental Health	1-R01-MH130671-01	8/31/22	8/30/27	1/3 Sequencing and Trans-Diagnostic Phenotyping of Severe Mental Illness in Diverse Populations	$758,664
Investment (HTS)	Sullivan	Patrick	Duke University	A034582	3/31/21	1/30/24	Beyond GWAS: High Throughput Functional Genomics & Epigenome Editing to Elucidate the Effects of Genetic Associations for Schizophrenia	$363,208
Investment (HTS)	Sullivan	Patrick	NIH National Institute of Mental Health	5-R01-MH124871-01-03	4/13/21	2/27/26	1/7 PGC: Advancing Discovery and Impact	$647,208
Investment (HTS)	Sullivan	Patrick	Duke University	A034195	10/18/20	6/29/23	Duke FUNCTION Center: Pioneering the comprehensive identification of combinational noncoding causes of	$70,924
Investment (HTS)	Sullivan	Patrick	NIH National Institute of Mental Health	5-R01-MH123724-01-04	6/9/20	3/30/25	A Trans-Nordic Study of Extreme Major Depression	$795,198
Investment (HTS)	Sullivan	Patrick	NIH National Institute of Mental Health	5-R01-MH121545-01-04	9/23/19	7/31/24	2/2-Genetics at an extreme: an efficient genomic study of individuals with clinically severe major depression receiving ECT	$439,067
Investment (HTS)	Sullivan	Patrick	Duke University	283-2497	9/1/18	8/31/24	To support research on the development CRISPR-based epigenome editing tools to refine genome wide association studies	$93,488
Investment (HTS)	Sullivan	Patrick	Karolinska Institute	ZZC8ANALMQ	11/1/15	12/31/24	An International Effort to Advance Knowledge of Schizophrenia	$137,802
Investment (HTS)	Swanstrom	Ronald	University of Michigan	3007537321/ SUBK00016306	6/8/22	3/30/27	Center for Structural Biology of HIV RNA	$81,782
Investment (HTS)	Swanstrom	Ronald	NIH National Institute of Allergy and Infectious Diseases	5-P30-AI050410-24-26	8/19/01	5/30/26	The University of North Carolina Center for AIDS Research	$3,637,824
Investment (HTS)	Swanstrom	Ronald	University of Massachusetts Medical School	OSP32239-02 WA01036197	9/9/20	6/29/24	Integration of Evolution to Avoid Resistance in Structure Based Drug Design	$41,694
Investment (HTS)	Swanstrom	Ronald	NIH National Institute on Drug Abuse	5-R01-DA051890-01-04	6/30/20	3/30/25	Intersection of HIV, Opiods, and Amyloid Fibrils in a CNS Organoid Model	$325,549
Investment (HTS)	Swanstrom	Ronald	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI147849-01-04	2/12/20	1/30/25	Formation of the HIV-1 Latent Reservoir	$574,155
Investment (HTSF)	Tamayo	Rita	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI107029-06-10	9/18/18	8/31/24	Phase variation of virulence factors in Clostridium diff	$415,492
Recruitment	Tan	Hung-Jui	Department of Defense	W81XWH2110775 0011654672	8/31/21	8/30/24	Personalizing kidney cancer communication to support patient-centered decision-making	$309,873
Recruitment	Tan	Hung-Jui	American Cancer Society	MRSG-18-193-01	12/31/18	12/30/23	Designing visual tools to enhance cancer surgeon decision-making	$245,667
Theme Investment (CC)	Tarantino	Lisa	Jackson Laboratory	210247-0623-07	8/31/22	6/29/27	Center for Systems Neurogenetics of Addiction	$196,794
Investment (CHAI Core)	Tate	Deborah	Academy of Nutrition and Dietetics	23-3579	4/30/23	4/29/25	PATH to Health: A Pilot and Feasibility Study to Explore Different Digital Behavioral Weight Loss Approaches	$5,000
Investment (CHAI Core)	Tate	Deborah	University of Connecticut	160009447/KFS#5673160	5/14/22	4/29/27	Optimizing a couples-based behavioral intervention for weight management	$326,057
Investment (CHAI Core)	Tate	Deborah	NIH National Heart, Lung, and Blood Institute	1-R01-HL161836-01	6/9/22	5/30/27	Preventing weight gain in U.S. Air Force personnel using a novel mobile health intervention	$652,615

Category	Last Name	First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Investment (CHAI Core)	Tate	Deborah	NIH National Institute of Diabetes and Digestive and Kidney Diseases	5-R01-DK125779-01-03	7/9/20	6/29/25	Optimization of a mHealth Behavioral Weight Loss Intervention	$652,301
Investment (CHAI Core)	Tate	Deborah	University of Virginia	GB10826 PO 2265647	4/21/20	12/30/24	iSIPsmarter: An RCT to evaluate the efficacy, reach, and engagement of a technology-based behavioral and health literacy intervention to reduce sugary beverages among rural Appalachian adults	$1,623
Investment (CHAI Core)	Tate	Deborah	University of Connecticut	378777 5656810	9/22/19	6/29/24	Using Behavioral Economics Strategies to Address Obesity in Economically Disadvantaged Adults	$37,581
Investment (Training)	Tate	Deborah	NIH National Cancer Institute	5-T32-CA128582-14	8/31/09	8/30/24	Cancer Health Disparities Training Program	$454,279
Investment (HTSF)	Taylor	Joan	NIH National Heart, Lung, and Blood Institute	5-R01-HL165786-01-02	8/1/22	7/31/26	Atheroprotection by smooth muscle selective RhoGAPs	$737,806
Recruitment	Thaxton	Jessica	NIH National Cancer Institute	7-R01-CA244361-03	6/30/20	6/29/25	Targeting Chronic ER Stress in T Cells to Improve Cancer Immunotherapy	$190,375
Recruitment	Thaxton	Jessica	Brigham and Womens Hospital	127349	6/30/22	6/29/27	Immunometabolic pathways enabled by PARP inhibition in breast cancer	$28,761
Recruitment	Thaxton	Jessica	NIH National Cancer Institute	5-R01-CA248359-03-04	3/31/20	3/30/25	Exploitation of ER Stress Induced Immune Dysfunction to Improve Immunotherapy	$467,277
Retention	Thomas	Nancy	NIH National Cancer Institute	5-R01-CA233524-01-04	3/31/20	3/30/25	Identification of Lethal Melanomas at the Time of Diagnosis	$888,702
Recruitment	Thompson	Caroline	Baylor College of Medicine	11505/PO# P700000311	7/21/22	12/30/23	Measuring Missed Opportunities in the Diagnosis of Gastrointestinal Cancers	$146,479
Recruitment	Thompson	Caroline	University of California at San Diego	705361	8/31/21	8/30/22	Innovative Infrastructure to Enhance and Sustain the California Teachers Study Cohort	$35,000
Recruitment	Thompson	Caroline	University of California at San Francisco	13498SC	7/31/21	7/30/24	Understanding the Multilevel Drivers of Liver Cancer Disparities	$61,791
Recruitment	Thompson	Caroline	NIH National Cancer Institute	5-R01-CA264176-02-03	6/30/21	6/29/26	Diagnosis of Cancer in the Emergency Room - Explaining Persistent Disparities (Grant Transfer)	$342,530
Recruitment	Thompson	Patrick	H Lee Moffitt Cancer and Research Institute	MCC20320	4/8/21	4/7/25	Blood based biomarkers for minimal residual disease detection in pediatric sarcomas	$1,755
Retention	Ting	Jenny	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI158314-01-02	7/14/22	6/29/27	Role and Mitigation of Inflammasomes and Inflammation During COVID-19	$620,359
Retention	Ting	Jenny	Duke University	303001011	7/31/20	7/30/23	Innate Immune Receptor Ligand and the Microbiota as Countermeasures for Radiation	$344,179
Retention	Ting	Jenny	NIH National Cancer Institute	5-R35-CA232109-04	9/16/19	8/30/26	Intracellular Innate Immune Receptors in Cancer Suppression and Immunotherapy	$905,500
Retention	Ting	Jenny	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI029564-26-30	6/30/91	5/30/23	Molecular and Functional Analysis of NLR Family Members	$502,378
Retention	Troester	Melissa	Department of Defense	HT94252310235 0011903639	9/14/23	9/13/27	Integrating Molecular Pathology, Radiology and Genetics to Improve Breast Cancer Risk Prediction	$965,973
Retention	Troester	Melissa	Susan G Komen for the Cure	OG22873776	5/17/22	5/16/25	Integrating Biology and Access to Understand Metastatic Breast Cancer Disparities	$500,000
Retention	Troester	Melissa	North Carolina State University	2021-2154-03	9/20/21	8/30/23	Southern Liver Health Cohort	$166,734
Retention	Troester	Melissa	Susan G Komen for the Cure	SAC210102	12/22/21	12/21/24	Impact of spatial heterogeneity in tumor and microenvironment on recurrence	$200,000
Retention	Troester	Melissa	Susan G Komen for the Cure	TREND21686258	12/2/21	12/1/24	Breast Cancer Mortality Disparities: Integrating Biology and Access	$405,000
Retention	Troester	Melissa	NIH National Cancer Institute	5-R01-CA253450-01-03	4/5/21	3/30/26	P53, DNA Repair, and Immune Response in Breast Cancer Mortality Disparities	$591,606
Retention	Troester	Melissa	NIH National Institute of Environmental Health Sciences	5-P30-ES-010126-22	3/31/21	2/27/26	UNC Center for Environmental Health and Susceptibility	$1,548,545
Retention	Troester	Melissa	ECOG-ACRIN Medical Research Foundation	2UG1CA189828-06-UNC1	7/31/18	7/30/23	ECOG-ACRIN NCORP Research Base	$150,000

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Retention	Troester	Melissa	Mayo Clinic in Jacksonville	THE-242677-03/ 68881318	7/4/19	6/29/23	Predicting Breast Cancer Risk after Benign Percutaneous Biopsy	$23,515
Retention	Troester	Melissa	American Cancer Society	48195	8/22/17	12/30/22	Gene Expression Profiling of Breast Tumors from Cancer Prevention Study 3	$109,106
Recruitment	Tsagaratou	Ageliki	NIH National Institute of General Medical Sciences	5-R35-GM138289-01-04	6/30/20	6/29/25	Epigenetic Regulation of Lineage Specification	$378,288
Recruitment	Tuchman	Sascha	Celgene Corporation	bb2121-EAP-001	4/29/21	6/29/31	Expanded Access Protocol (EAP) for Subjects Receiving Idecabtagene Vicleucel that is Nonconforming for Commercial Release	$1,944
Recruitment	Tuchman	Sascha	TeneoBio, Inc	TNB383B-0001	5/31/21	6/29/31	A Multicenter, Phase 1, Open-label, Dose-escalation and Expansion Study of TNB-383B, a Bispecific Antibody Targeting BCMA in Subjects with Relapsed or Refractory Multiple Myeloma	$229,578
Recruitment	Tuchman	Sascha	Alliance Foundation Trials, LLC	AFT-41	1/21/21	11/29/30	A Phase II Study of Lenalidomide, Ixazomib, Dexamethasone, and Daratumumab in Transplant-Ineligible Patients with Newly Diagnosed Multiple Myeloma.	$1,320
Recruitment	Tuchman	Sascha	Caelum Biosciences, Inc.	CAEL 101-302	1/10/21	1/18/31	A Phase 3, Double-Blind, Multicenter Study to Evaluate the Efficacy and Safety of CAEL-101 and Plasma Cell Dyscrasia Treatment Versus Placebo and Plasma Cell Dyscrasia Treatment in Plasma Cell Dyscrasia Treatment-Naïve Patients with Mayo Stage IIIa AL Amy	$134,506
Recruitment	Tuchman	Sascha	Sanofi US Services, Inc.		8/23/18	9/8/28	SAR650984 TCD14079 isatuximab A Phase 1b Study of SAR650984 (isatuximab) in Combination with Pomalidomide and Dexamethasone for the Treatment of Relapsed/Refractory Multiple Myeloma	$1,920
Recruitment	Tuchman	Sascha	Karyopharm Therapeutics Inc		7/24/18	8/16/28	A Phase 1b/2 Study of Selinexor (KPT-330) in Combination with Backbone Treatments for Relapsed/Refractory Multiple Myeloma	$26,114
Recruitment	Valdar	William	Texas A and M AgriLife	M2102712	6/30/21	3/30/25	Foundational studies for precision nutrition	$129,403
Investment (Training)	Valdar	William	NIH National Institute of General Medical Sciences	5-T32-GM135123-03	6/30/21	6/29/26	Predoctoral Training Program in Bioinformatics and Computational Biology	$265,268
Recruitment	Valdar	William	NIH National Institute of General Medical Sciences	5-R35-GM127000-01-05	3/31/18	3/30/23	Statistical Modeling of Multiparental and Genetic Reference Populations	$33,647
Recruitment	Valle	Carmina	NIH National Cancer Institute	1-R01-CA270111-01A1	3/31/23	3/30/28	Using Tailored mHealth Strategies to Promote Weight Management among Adolescent and Young Adult Cancer Survivors	$647,947
Recruitment	Valle	Carmina	NIH National Heart, Lung, and Blood Institute	5-R01-HL161373-01-02	1/14/22	12/30/25	A micro-randomized trial of JITAI messaging to improve adherence to multiple weight loss behaviors in young adults	$733,116
Recruitment	van Duin	David	Houston Methodist Research Institute	AGMT00008429	7/31/22	7/30/23	Dynamics of Colonization and Infection by Multidrug-Resistant Pathogens in Immunocompromised and Critically Ill Patients (DYNAMITE)	$14,993
Recruitment	van Duin	David	Houston Methodist Research Institute	AGMT00008232	5/31/22	5/30/23	VENOUS: A translational study of enterococcal bacteremia	$10,000
Recruitment	van Duin	David	University of Queensland		10/31/21	10/30/22	Risks of bacterial and fungal superinfection in patients with COVID-19 stratified by new and pre-existing immunosuppression: a retrospective, observational, multisite, multinational cohort study	$75,000
Recruitment	van Duin	David	Duke University	A032960	8/31/20	11/29/26	Screening for Colonization with Resistant Enterobacterales in Neutropenic Patients with Hemtologic Malignancies (SCENE)	$21,000

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Recruitment	van Duin	David	Duke University	303001656	11/30/20	11/29/23	Antibacterial Resistance Leadership Group COC	$107,460
Recruitment	van Duin	David	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI143910-01-05	2/12/19	1/30/24	Bacterial Characteristics of Community-associated Carbapenem-Resistant Enterobacteriaceae	$381,209
Recruitment	Vaziri	Cyrus	NIH National Cancer Institute	5-R01-CA229530-01-05	4/1/19	3/30/24	Establishing MAGE-A4/RAD18 as a novel cancer-specific chemotherapeutic target	$373,574
Recruitment	Vaziri	Cyrus	NIH National Institute of Environmental Health Sciences	5-R01-ES029079-01-05	1/31/19	11/29/23	Pathological Reprogramming of DNA Damage Signaling in Neoplastic Cells	$463,301
Recruitment	Vincent	Benjamin	American Society of Clinical Oncology		6/30/23	6/29/24	Human Endogenous Retrovirus (hERV) expression and immunogenic signatures in Mantle Cell Lymphoma.	$50,000
Recruitment	Vincent	Benjamin	Sage Bionetworks	22-4992	6/30/22	6/29/24	CRI iAtlas Development	$167,000
Recruitment	Vincent	Benjamin	NIH National Cancer Institute	1-F30-CA268748-01A1	7/31/22	7/30/26	Fellow: K Olsen Minor Histocompatibility Antigen T Cell Targeting in Acute Myeloid Leukemia	$51,752
Recruitment	Vincent	Benjamin	American Society of Hematology	22-3314	6/30/22	6/29/23	Improving predictions of minor histocompatibility antigens in Acute Myeloid Leukemia and characterizing their role in clinical outcomes	$42,000
Recruitment	Vincent	Benjamin	Duke University	383000603	5/15/22	5/14/25	Personalized T-cell immunity against metastatic TNBC using MAVS immunostimulation.	$82,708
Recruitment	Vincent	Benjamin	GeneCentric Therapeutics, Inc.		7/31/20	6/29/23	GeneCentric Development of LENS.	$216,667
Recruitment	Vincent	Benjamin	NIH National Cancer Institute	5-R37-CA247676-01-03	6/30/20	6/29/25	Gvl mHA Specific T Cell Responses Prevent AML Relapse Following Allogeneic Stem Cell Transplantation.	$525,246
Recruitment	Vincent	Benjamin	Vanderbilt University Medical Center	VUMC65676	3/31/18	3/30/23	Metabolic Barriers to T Cell Activation in Clear Cell Renal Cell Carcinoma	$34,988
Recruitment	Virkud	Yamini	NIH National Institute of Allergy and Infectious Diseases	5-K23-AI130408-05-06	8/31/18	8/30/23	Endophenotypes of food allergy in response to oral immunotherapy.	$200,880
Investment (HTSF)	Vora	Neeta	Columbia University	3(GG014633-01)	9/1/18	8/31/23	Prenatal Genetic Diagnosis by Genomic Sequencing: A Pro	$130,889
Investment (HTSF)	Vora	Neeta	NIHNational Institute of Child Health and Human Development	5-R01-HD105868-01-02	8/12/21	6/302026	Genomics and functional dissection of fetal brain abnorm	$813,314
Recruitment	Wan	Yisong	Novabio Therapeutics, Limited		10/18/22	10/17/25	Adoptive cell therapy (ACT) using genetic manipulated Treg cells to mitigate autoimmunity using mouse models	$233,250
Recruitment	Wan	Yisong	NIH National Institute of Allergy and Infectious Diseases	1-R01-AI123193-06	12/11/16	6/29/27	Functional protein networks underlying T cell growth, proliferation and differentiation	$385,482
Recruitment	Wan	Yisong	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI160774-01-03	1/15/21	12/30/25	TGF-b superfamily signaling in controlling Th17 cell function in autoimmune neuroinflammation	$383,009
Retention	Wang	Gang	NIH National Cancer Institute	1-R01-CA271603-01A1	6/30/22	6/29/27	The role for phase separation in oncogenesis and aberrant chromatin looping formation	$577,786
Retention	Wang	Gang	Icahn School of Medicine at Mount Sinai	0255-G341-4609	4/30/22	4/29/27	Discovery of First-in-class WDR5 PROTACs as a Novel Therapeutic Strategy for MLL-rearranged Leukemias	$298,244
Retention	Wang	Gang	NIH National Cancer Institute	5-F32-CA261118-02	2/28/22	2/27/25	Fellow: Kim A-Rum Targeting histone methyltransferase EZH2 for the treatment of hematological cancer	$77,328
Retention	Wang	Gang	NIH National Cancer Institute	5-R01-CA268519-01-02	12/31/21	12/30/26	Dissecting and targeting canonical and non-canonical oncogenic functions of EZH2 in cancer	$617,485
Retention	Wang	Gang	Leukemia and Lymphoma Society	1363-19	6/30/18	6/29/23	Decipher and Target AML Cell Dependency on Epigenetic Mutations	$18,933
Innovation Award	Waters	Marcey	NIH National Institute of General Medical Sciences	1-R35-GM145227-01	8/31/22	6/29/27	Mechanistic Investigation and Engineering of Histone Reader Proteins	$487,159
Innovation Award	Waters	Marcey	NIH National Institute of General Medical Sciences	3-R01-GM118499-05S1	9/1/21	8/31/25	Mechanistic Studies and Engineering of Histone PTM Reader Proteins	$58,460

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Innovation Award	Waters	Marcey	National Science Foundation	CHE-2107685	7/1/21	6/30/24	Cooperativity Driven Communication through Noncovalent Networks in Biomimetic Systems	$160,000
Recruitment	Weiner	Ashley	AstraZeneca Pharmaceuticals LP		7/16/20	5/30/23	A Phase III, Randomized, Placebo-controlled, Double-blind, Multi-center, International Study of Durvalumab Following Stereotactic Body Radiation Therapy (SBRT) for the Treatment of Patients with Stage I/II Non-small Cell Lung Cancer (PACIFIC-4/RTOG-3515)	$21,736
Retention	Weiss	Jared	Lung Cancer Initiative of North Carolina		6/30/23	6/29/24	Genomic deletion of fusion proteins in NUT carcinoma of the lung	$25,000
Retention	Weiss	Jared	G1 Therapeutics	LCCC 2117	5/2/22	5/30/24	Phase II Study of Trilaciclib and Lurbinectedin in Small Cell Lung Cancer	$401,162
Retention	Weiss	Jared	Department of Defense	W81XWH2211110 0011753834	9/29/22	9/28/25	GD2 CASRT for Lung Cancer	$583,652
Retention	Weiss	Jared	Iovance Biotherapeutics, Inc.	IOV-LUN-202	8/31/21	8/28/31	A Phase 2 Multicenter Study of Autologous Tumor Infiltrating Lymphocytes (LN-145) in Patients with Metastatic Non-Small-Cell Lung Cancer.	$8,543
Retention	Weiss	Jared	Genmab	GCT1046-01	1/12/21	11/29/30	GCT1046-01: First-in-Human, Open-Label, Dose-Escalation Trial with Expansion Cohorts to Evaluate Safety of GEN1046 in Subjects with Malignant Solid Tumors	$4,488
Retention	Weiss	Jared	PDS Biotechnology Corporation	VERSATILE-002	1/18/21	1/18/31	Versatile-002: A Phase II, Open-Label, Multi-Center Study of PDS0101 (ImmunoMAPK - RDOTAP/HPV-16 E6 & E7 Peptides) and Pembrolizumab (KEYTRUDA®) Combination Immunotherapy as a First Line Treatment in Subjects with Recurrent and/or Metastatic Head and Neck	$120,333
Retention	Weiss	Jared	Boehringer Ingelheim Pharmaceuticals, Inc.	1426-0001	12/13/20	12/19/30	Phase I, first in human trial evaluating BI 1387446 alone and incombination with BI 754091 in solid tumors	$4,488
Retention	Weiss	Jared	MedImmune, Inc.		5/13/20	6/2/30	A Phase 1, Open-label, Dose-escalation and Dose-expansion Study to Evaluate the Safety, Tolerability Pharmacokinetics Immunogenicity, and Antitumor Activity of MEDI5752 in Subjects with Advanced Solid Tumors	$44,667
Retention	Weiss	Jared	AstraZeneca Pharmaceuticals LP		1/12/20	3/21/30	An Open-Label, Multi-Center, Global Study to Evaluate Long Term Safety and Efficacy in Patients Who are Receiving or Who Previously Received Durvalumab in Other Protocols (WAVE)	$472
Retention	Weiss	Jared	Bluebird bio, Inc.	BBB47141US MAGE-A4-TCR	11/30/19	11/29/29	Phase 1 Study of the Administration of Autologous MAGE-A4 TCR T-cells for Relapsed/Refractory Solid Tumors	$309,532
Retention	Weiss	Jared	Immunicum AB.		2/27/19	3/4/29	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	$5,533
Retention	Weiss	Jared	Boston Biomedical, Inc.		2/5/19	5/29/23	A First-in-Human Phase I Trial to Determine the Safety and the Pharmacokinetic Profile of DSP-0509, a Synthetic Toll-Like Receptor 7 (TLR-7) Agonist, in Adult Patients with Advanced Solid Tumors	$154,150
Retention	Weiss	Jared	Loxo Oncology, Inc.		5/28/18	6/13/28	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	$147,079

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Recruitment	Wheeler	Stephanie	University of Alabama at Birmingham	000528180-SC003	5/1/22	1/30/23	Impact of financial barriers to care on adverse healthcare events among cancer patients and survivors	$2,500
Recruitment	Wheeler	Stephanie	Duke University		6/2/21	6/2/23	Population-level incidence, treatment, and outcomes of patients with HER2 indeterminate breast cancer	$69,066
Recruitment	Wheeler	Stephanie	Yale University	CON-80002965 (GR112429)	12/31/20	12/30/23	Disparities in the Use of Oral Anticancer Agents in Kidney Cancer	$36,194
Recruitment	Wheeler	Stephanie	Alliance for Clinical Trials in Oncology	202010116	8/31/20	7/30/23	Optimizing Endocrine Therapy Adherence - Pillsy Cap Shipping	$99,438
Recruitment	Wheeler	Stephanie	NIH National Cancer Institute	3-R01-CA240092-04S1	8/14/19	7/30/23	Addressing Cancer-Related Financial Toxicity In Rural Oncology Care Settings	$620,321
Recruitment	Wheeler	Stephanie	NIH National Cancer Institute	5-R01-CA237357-01-04	8/31/19	8/30/24	Optimizing Endocrine Therapy Adherence through Motivational Interviewing and Text Interventions	$608,944
Recruitment	Wheeler	Stephanie	Duke University	A031031	12/31/18	12/30/23	Disparities in the Use of Oral Anticancer Agents in Kidney Cancer	$31,980
Investment (HTSF)	Whitmire	Jason	Department of Defense	W81XWH2110919	9/29/21	9/28/25	Pathogenic T cells in Guillain Barre Syndrome	$300,118
Investment (HTSF)	Whitmire	Jason	University of California at Los Angeles	2301 G XG379	2/14/20	1/30/24	Epigenetic Mechanisms in Type 1 Diabetes	$82,277
Investment (HTSF)	Whitmire	Jason	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI143894-01-05	1/31/19	1/30/24	Regulation of CD8+ T cell responses to chronic virus infection	$500,892
Investment (HTSF)	Whitmire	Jason	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI138337-01-05	8/31/18	8/30/23	Obesity associated viral pathogenesis	$388,750
Recruitment	Williams	Scott	NIH National Institute of Arthritis and Musculoskeletal and Skin Diseases	5-R01-AR077591-01-03	2/28/21	1/30/26	Intrinsic and extrinsic spindle orientation mechanisms in mammalian epidermis	$339,454
Recruitment	Williams	Scott	US-Israel Binational Science Foundation	2019230	9/30/20	9/29/24	Exploring the involvement of the actin cytoskeleton and its associated adhesion structures in spindle orientation	$38,400
Recruitment	Williams	David	NIH National Institute of Diabetes and Digestive and Kidney Diseases	FP00007299_SA001	7/31/18	6/29/23	The role of the MBD2-NuRD complex in globin gene silencing	$328,069
Recruitment	Willson	Tim	University of Toronto	513954 SUBGRANT 1	3/21/22	2/27/27	Targeting the casein kinase 1 (CK1)-like kinase Yck2 in fungal pathogenesis	$310,737
Recruitment	Willson	Tim	Structural Genomics Consortium	2021-UNC-2-BMGF	9/28/21	8/31/24	Non-Hormonal Contraceptive Target-Enabling Packages (TEPs) for Drug Discovery	#REF!
Recruitment	Willson	Tim	NIH National Institute of Allergy and Infectious Diseases	12492SUB	9/21/20	8/30/23	Dual targeting of Mtb resistance mechanisms	$155,500
Recruitment	Willson	Tim	Structural Genomics Consortium		6/30/21	6/29/25	Structural Genomics Consortium (	#REF!
Investment (HTSF)	Won	Hyejung	NIH National Institute of Mental Health	1-DP2-MH122403-01	9/1/19	5/31/24	Deciphering Cell-type Specific Regulatory Landscape in H	$466,500
Investment (HTSF)	Won	Hyejung	NIH National Human Genome Research Institute	5-UM1-HG012003-02	6/1/22	5/31/23	Systematic in vivo characterization of disease-associate	$1,848,628
Recruitment	Wood	William	National Marrow Donor Program		8/5/19	7/30/22	BMT CTN 1704 - Composite Health Assessment Model for Older Adults: Applying Pre-transplant Comorbidity, Geriatric Assessment, and Biomarkers to Predict Non-Relapse Mortality after Allogeneic Transplantation (CHARM)	$5,580
Recruitment	Yarbrough	Wendell	NIH National Institute of Dental and Craniofacial Research	1-R01-DE031297-01A1	2/28/23	12/30/27	Dissecting NF-kB pathway in HPV-associated head and neck cancer	$488,746
Recruitment	Yarbrough	Wendell	NIH National Institute of Dental and Craniofacial Research	5-U01-DE029754-03	6/30/20	4/29/25	Observational study to validate HPV DNA genotyping and prognostic genomic biomarkers for diagnosis and treatment of HPV-associated HNSCC	$735,619
Recruitment	Yarbrough	Wendell	Yale University		6/30/20	6/29/25	Yale SPORE in HN Cancer	$157,138

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Recruitment	Yarbrough	Wendell	NIH National Institute of Dental and Craniofacial Research	5-R01-DE027942-01-04	5/31/19	7/30/24	Exploring mechanisms of therapeutic demethylation effects in HPV-associated head and neck cancer	$400,632
Retention	Yeh	Jen Jen	NIH National Cancer Institute	1-P50-CA257911-01A1	9/15/22	8/30/27	Selective Targeting of Pancreatic Cancer SPORE	$2,120,012
Retention	Yeh	Jen Jen	NIH National Cancer Institute	1-U01-CA274298-01	8/31/22	8/30/27	Integrating tumor and stroma to understand and predict treatment response	$945,906
Retention	Yeh	Jen Jen	University of North Carolina at Charlotte	20220451-01-UNC	7/31/22	7/30/27	Stimuli-responsive mucin1-specific nanoparticles for efficacious combinatorial chemotherapy of pancreatic ductal adenocarcinoma	$117,211
Retention	Yeh	Jen Jen	Lustgarten Foundation		1/1/23	12/31/25	PROmoting CLinicAl TrIal EngageMent for Pancreatic Cancer App Study (PROCLAIM Study)	$450,000
Retention	Yeh	Jen Jen	NIH National Cancer Institute	5-K99-CA267561-02	6/30/22	7/1/23	Characterization of regulatory landscape of pancreatic cancer subtypes.	$104,603
Retention	Yeh	Jen Jen	University of Cincinnati		11/29/21	11/28/23	Preclinical development of a first-in-class humanized antibody targeting alternatively spliced tissue factor	$14,148
Retention	Yeh	Jen Jen	Princeton University	SUB0000542	9/21/21	8/30/26	Pathway, Network and Spatiotemporal Integration of Cancer Genomics Data	$90,000
Retention	Yeh	Jen Jen	NIH National Cancer Institute	2-R01-CA199064-06A1	8/31/16	7/30/26	Tumor Subtypes and Therapy Response in Pancreatic Cancer	$806,124
Retention	Yeh	Jen Jen	NIH National Cancer Institute	5-F31-CA257224-03	1/31/21	1/30/24	Fellow: S Zarmer Identifying targets for combination therapy with FOLFIRINOX and investigating cell polarity loss as a potential driver of invasion in basal-like PDAC	$36,112
Retention	Yeh	Jen Jen	University of Rochester	SUB00000039/ UR FAO GR530	12/31/20	12/30/23	Modulating innate immune cells in the tumor microenvironment of pancreas cancer to enhance anti-tumor immunity	$21,228
Theme Investment	Zaharoff	David	North Carolina State University	500262	8/31/22	8/30/27	Intravesical Immunotherapy of Spontaneous Canine Invasive Urothelial Carcinoma	$10,926
Recruitment	Zamboni	William	Deep Creek Pharma, LLC		4/30/23	4/29/25	STTR: Phase II: Improved Treatment of Colorectal Cancer with CF10	$185,323
Recruitment	Zamboni	William	North Carolina Biotechnology Center	2022-IIG-6501	5/30/22	5/29/23	A Triple Quadrupole LC-MS/MS System for Bioanalytical Studies Supporting the Translational Development of Complex and Small Molecule Agents	$150,000
Recruitment	Zamboni	William	Deep Creek Pharma, LLC		8/16/21	8/15/22	STTR_Phase I: Advanced pre-clinical development of CF10 to improve treatment of metastatic colorectal cancer	$45,124
Recruitment	Zamboni	William	NIH National Cancer Institute	5-R01-CA247652-01-03	3/31/21	3/30/26	Minibeam Radiation Therapy Enhanced Delivery of Nanoparticle Anticancer Agents to Pancreatic Cancer Tumors	$544,735
Recruitment	Zeidner	Joshua	Gilead Sciences, Inc.	GS-US-546-5857	11/1/21	7/30/31	A Phase 3, Randomized, -Open-Label Study Evaluating the Safety and Efficacy of Magrolimab in Combination With Azacitidine versus Physician s Choice of Venetoclax plus Azacitidine or Intensive Chemotherapy in Previously Untreated Patients with TP53 MutantA	$296,564
Recruitment	Zeidner	Joshua	Hoosier Cancer Research Network	BTCRC-HEM17-092	12/1/20	11/30/30	Phase I/II study augmenting TAK-659 action in relapsed/refractory AML by addition of the proteasome inhibitor Ixazomib.	$20,532
Recruitment	Zeidner	Joshua	Astex Pharmaceuticals	ASTX660-02	8/17/20	8/30/30	A Phase 1, Parallel, Open-Label Study of the Safety and Tolerability, Pharmacokinetics, and Antileukemic Activity of ASTX660 as a Single Agent and in Combination with ASTX727 in Subjects with Acute Myeloid Leukemia.	$122,039

Category	Last Name	First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Zeidner	Joshua	Takeda Development Center Americas, Inc.	Pevonedistat-2002	1/25/21	1/30/31	A Randomized, Open-label, Controlled, Phase 2 Study of Pevonedistat, Venetoclax, and Azacitidine Versus Venetoclax Plus Azacitidine in Adults With Newly Diagnosed Acute Myeloid Leukemia Who Are Unfit for Intensive Chemotherapy.	$75,121
Recruitment	Zeidner	Joshua	Forty Seven Inc.	5F9009	10/26/20	10/30/25	A Randomized, Double-blind, Multicenter Study Comparing Magrolimab in Combination With Azacitidine Versus Azacitidine Plus Placebo in Treatment-naïve Patients With Higher Risk Myelodysplastic Syndrome	$54,016
Recruitment	Zeidner	Joshua	Forty Seven Inc.		2/27/20	3/2/30	A Phase 1b Trial of Hu5F9-G4 Monotherapy or Hu5F9-G4 in Combination with Azacitidine in Patients with Hematological Malignancies	$62,387
Recruitment	Zeidner	Joshua	Sumitomo Pharma Oncology, Inc.		12/10/19	11/19/29	A Phase 2, Open-label, Randomized, Two-stage Clinical Study of Alvocidib in Patients with Relapsed/Refractory Acute Myeloid Leukemia Following Treatment with Venetoclax Combination Therapy.	$63,336
Recruitment	Zeidner	Joshua	Millennium Pharmaceuticals, Inc.		9/30/19	10/30/31	A Phase 1 Study of Pevonedistat in Combination With Azacitidine in Patients With Higher-Risk Myelodysplastic Syndromes, Chronic Myelomonocytic Leukemia, or Relapsed/Refractory Acute Myelogenous Leukemia With Severe Renal Impairment or Mild Hepatic Impairm	$104,002
Recruitment	Zeidner	Joshua	Arog Pharmaceuticals, Inc.		2/26/19	1/30/29	ARO-021- Phase III Randomized Study of Crenolanib versus Midostaurin Administered Following Inducation Chemotherapy and Consolidation Therapy in Newly Diagnosed Subjects with FLT3 Mutated Acute Myeloid Leukemia	$21,726
Recruitment	Zeidner	Joshua	Millennium Pharmaceuticals, Inc.	218558	8/21/16	12/15/22	A Ph 2, Random, Control Opn-Lbl, Clinical Stdy of the Efficacy & Safety of Pevonedistat Plus Azacitidine Versus Single-Agent Azacitidine in Patients With Higher-Risk Myelodysplastic Syndromes, Chronic Myelomonocytic Leukemia, and Low-Blast Acute Myelogeno	$2,991
Recruitment	Zeidner	Joshua	Merck Sharp and Dohme Corp.		12/17/15	1/12/23	Phase 2 Study of High Dose Cytarabine Followed by Pembrolizumab in Relapsed and Refractory Acute Myeloid Leukemia	$0
Investment (CC)	Zhang	H	NIH National Institute of Neurological Disorders and Stroke	R01NS083633-10	7/1/13	3/31/24	Targeting the Pial Collateral Circulation for Mitigation of Cerebral Ischemia	$462,314
Recruitment	Zhang	Qi	National Institutes of Health	5-R01-GM114432-06-08	4/30/15	1/30/25	Riboswitch Dynamics at Atomic Resolution	$373,291
Theme Investment	Zhou	Otto	NIH National Institute of Biomedical Imaging and Bioengineering	5-R21-EB032919-01-02	4/30/22	2/28/24	Developing a dual energy x-ray source for low-cost spectral CT	$187,441
Theme Investment	Zhou	Otto	NIH National Heart, Lung, and Blood Institute	5-R61-HL161819-01-02	2/15/22	1/30/24	Bedside 3D diagnostic imaging in ICU	$358,264
Theme Investment	Zhou	Otto	North Carolina Biotechnology Center	2021-TRG-6725	8/14/21	2/13/23	A dental CT with enhanced performance, reduced radiation exposure, and expanded clinical utility	$84,362
Theme Investment (Biostatistics)	Zou	Fei	Fred Hutchinson Cancer Center	1130403	3/31/22	12/30/22	Statistical Methods for RNA-seq Data Analysis	$87,060
Theme Investment (Biostatistics)	Zou	Fei	Vanderbilt University Medical Center	23-3298	12/9/21	5/30/23	Vanderbilt University: Biostatistics Fellowship	$16,177
Theme Investment (Biostatistics)	Zou	Fei	University of California at San Diego	117381028 / PO# S9002317	3/14/19	2/28/24	Neurocognitive aging, MCI and Alzheimer's disease DNA methylation among diverse Latinos	$110,459

Category	Last Name	First Name	Sponsor	Award Number	Begin	End	Title	Total Cost
Recruitment	Abdou	Yara	METAvivor Research and Support, Inc.		11/22/22	11/21/24	Investigating Survivin as a Novel Target for Immunotherapy in Black Women with Breast Cancer	$100,000
Recruitment	Abdou	Yara	University of Arizona		11/23/20	3/11/30	Palbo T-DM1: A randomized phase II study to evaluate efficacy of T-DM1 with or without Palbociclib in the treatment of patients with metastatic HER2 positive breast cancer	$3,210
Recruitment	Akulian	Jason	Bard Peripheral Vascular, Inc.		7/27/21	5/31/26	A comprehensive serial evaluation of tumor-immune interaction heterogeneity in malignant pleural disease.	$110,000
Recruitment	Akulian	Jason	NanOlogy, LLC	NANOPAC-2020-01	7/7/21	10/7/22	Phase 2 Trial Evaluating the Safety and Tolerability of Intratumoral Injections of NanoPac® with Standard of Care Therapy in Subjects with Lung Cancer	$108,674
Recruitment	Akulian	Jason	Biodesix		10/23/19	10/30/22	(INSIGHT): An Observational Study Assessing the Clinical Effectiveness of VeriStrat® and Validating Immunotherapy Tests in Subjects with Non-Small Cell Lung Cancer BDX00146	$31,771
Recruitment	Alexander	Thomas	NIH National Cancer Institute	1-R21-CA259926-01A1	6/30/22	6/29/24	Novel Sequencing Based Diagnostics for Leukemia in Low Resource Settings	$109,045
Recruitment	Andermann	Tessa	NIH National Institute of Allergy and Infectious Diseases	5-K23-AI163365-01-02	9/9/21	8/30/26	Precision characterization of antimicrobial resistance gene dynamics in bloodstream infection risk after hematopoietic stem cell transplantation	$202,619
Recruitment	Andermann	Tessa	National Marrow Donor Program	32979	7/31/19	12/30/23	Modulation of CAR-T Cell Therapy Efficacy by the Intestinal Microbiome in Patients with Leukemia and Lymphoma	$100,000
Theme Investment	Anton	Eva	NIH National Institute of Mental Health	5-R01-MH132710-01-02	8/18/22	5/30/27	Primary Cilia: A Novel Signaling Gateway To Neural Circuit Modulation	$1,094,968
Recruitment	Arthur	Janelle	NIH National Institute of Allergy and Infectious Diseases	5-R21-AI159786-01-02	2/12/21	1/30/23	Novel high-throughput in vivo approach to define pathobionts driving colitis	$194,375
Recruitment	Arthur	Janelle	NIH National Institute of Diabetes and Digestive and Kidney Diseases	5-R01-DK124617-01-04	5/31/20	5/30/25	Microbiota-mediated fibrotic remodeling in the inflamed intestine	$379,517
Recruitment	Atkins	Hannah	Pennsylvania State University	UNCCHCA274265	3/31/23	3/30/24	A co-infection model for papillomavirus associated infections and cancers	$13,883
Recruitment	Atkins	Hannah	Pennsylvania State University	UNCCHCA271069	2/28/22	2/28/24	The role of bacterial vaginosis-associated bacteria in papillomavirus persistence and cancers	$5,212
Recruitment	Aubé	Jeffrey	NIH National Institute of Allergy and Infectious Diseases	5-R01-AI155510-01-02	7/12/21	6/29/25	Discovery of Phospopantetheinyl Transferse Inhibitors Against Mycobacterium tuberculosis	$779,927
Investment (Training)	Aubé	Jeffrey	NIH National Institute of General Medical Sciences	5-T32-GM135122-02	6/30/21	6/29/26	UNC Chemical Biology Interface Training Program	$263,965
Retention	Bae-Jump	Victoria	NIH National Cancer Institute	4-R37-CA226969-06	3/13/18	2/27/25	Obesity-driven Metabolic and Molecular Biomarkers of Metformin Response in Endometrial Cancer	$348,592
Retention	Bae-Jump	Victoria	NIH National Cancer Institute	1-R21-CA267584-01	7/31/22	7/30/24	Impact of Obesity on Immuno-Oncology Agents in Endometrial Cancer	$218,089
Retention	Bae-Jump	Victoria	University of Washington	UWSC12682/PO#55965	3/31/21	3/30/25	Social Interventions for Support during Treatment for Endometrial Cancer and Recurrence: SISTER Study	$25,200
Theme Investment	Baric	Ralph	NIH National Cancer Institute	4-U54-CA260543-02	9/29/20	8/30/25	North Carolina Seronet Center for Excellence	$2,018,073
Theme Investment (CC)	Baric	Ralph	NIH National Cancer Institute	4-U54-CA260543-02S1	9/29/20	11/30/24	North Carolina Seronet Center for Excellence	$1,475,028
Theme Investment (CC)	Baric	Ralph	University of Washington		9/15/20	8/31/25	Human Antibody-Based Countermeasures Against the Wuhan Coronavirus SARS-CoV-2	$371,363
Investment (HTSF)	Baric	Ralph	University of Alabama at Birmingham	000520254-SC002	3/1/22	2/28/23	Antiviral Drug Discovery and Development Center	$575,994
Theme Investment	Baric	Ralph	Janssen Pharmaceutica NV	C2022016830	10/3/22	6/29/25	Janssen Service Agreeement	$162,936

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