



JOHNS HOPKINS
MEDICINE

THE SIDNEY KIMMEL
COMPREHENSIVE CANCER CENTER



Imagine a world
without cancer.

Prevention and Health Promotion Administration

CONQUEST 2026

A Report on the Maryland Cigarette Restitution Fund

January 2026

The Cigarette Restitution Fund (CRF) stands as one of Maryland's most enduring public health initiatives. For more than 25 years, the CRF has played an important role in reducing the state's cancer burden. This progress is the result of our sustained partnership and a shared commitment to prevention, research, and community health. During these challenging times, with cuts to federal grants, the CRF has become even more essential.

We are deeply grateful for the continued commitment to the CRF, which remains a powerful testament to our elected officials' longstanding dedication to improving the health of Maryland citizens. We recognize the difficult budgetary decisions facing state leaders, and we appreciate that, even in times of constraint, the CRF continues to be viewed as an impactful investment.

Each year, about one in three Marylanders diagnosed with cancer is touched by the care, research, or outreach of the Johns Hopkins Kimmel Cancer Center. CRF support has leveraged substantial additional support, strengthened Maryland's biomedical workforce, and translated scientific discovery into real-world benefit. CRF-supported programs extend well beyond the walls of Johns Hopkins, expanding cancer screening, advancing tobacco cessation, and assuring access to our state-of-the-art care across urban and rural communities throughout Maryland.

We remain committed to directing CRF resources toward programs that demonstrate clear outcomes, measurable impact, and relevance to Maryland's most pressing cancer challenges, ensuring that CRF investments continue to improve the lives of Maryland families.

William G. Nelson, M.D., Ph.D.
Marion I. Knott Professor and Director
Johns Hopkins Kimmel Cancer Center

John D. Groopman, Ph.D.
Edyth H. Schoenrich Professor of Preventive
Medicine and Associate Director of Population
Science

HISTORY AND LEGACY OF THE MARYLAND CRF

In 1998, Maryland joined 46 other states in a class action lawsuit against America's cigarette manufacturers. States were seeking reimbursement for the huge costs associated with cancer and other smoking-related diseases. The states prevailed and split a \$53 billion settlement, known as the Master Settlement Agreement.

CRF 2000 – 2026:

- 7 Cancers Targeted: breast, cervical, colorectal, lung, melanoma, oral and prostate
- Maryland's ranking among the states and DC is now better than half the states and DC in melanoma (41st), oral (39th), lung (36th), colorectal (30th), and cervical (29th)
- A specific focus on minority and underserved populations
- ~475 grants totaling ~\$45 million funded
- More than 5,500 journal articles published
- 107 faculty recruited and retained
- Johns Hopkins investigators leveraged their grants, earning research funding and other support more than 10 times the CRF investment.

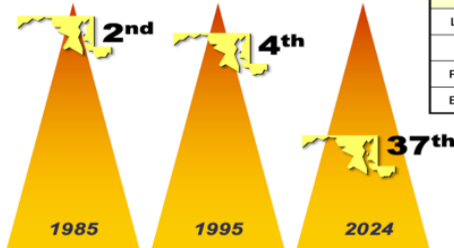


Maryland became the national model when, in 2001, its elected officials opted to use a considerable portion of its award to fight cancer by establishing the Maryland Cigarette Restitution Fund (CRF) to fund cancer research and other projects aimed at reducing the state's cancer burden.

Maryland got to work, investing its settlement funds to fight cancer, and Johns Hopkins investigators leveraged their grants, earning research funding and other support more than ten times the CRF investment.

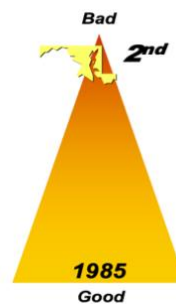
THEN AND NOW – THE HISTORY OF UNPRECEDENTED PROGRESS

All Cancer Mortality Rank Among States and D.C.

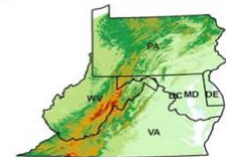


Cancer Site	2018 Rank
Lung/bronchus	31 st
Colon/rectum	26 th
Prostate (male)	15 th
Breast (female)	8 th

All Cancer Mortality Rank Among States and D.C.



Cancer Site	1985 Rank
Lung/bronchus	8 th
Colon/rectum	10 th
Prostate (male)	9 th
Breast (female)	10 th



Cancer Mortality Change in Maryland 1989-93 to 1999-2001

	Rank Among States and DC	Average Annual % Change	Lives NOT Lost to Cancer
All Cancers	5 th to 16 th	-1.4%	6,730
Lung/bronchus	13 th to 18 th	-1.1%	1,510
Colon/rectum	4 th to 8 th	-2.2%	1,190
Prostate (male)	6 th to 11 th	-3.7%	1,520
Breast (female)	11 th	-2.2%	770

All Cancers in MD is now 138% of US's rate (compared to 210% in 1989-93) Source: <http://cancerdc.org> Kanarek, 2004

CRF support helped change the trajectory of cancer in Maryland, reducing cancer death rates from among the worst in the nation to the among the best, saving the lives of thousands of Marylanders and illustrating what can be accomplished with continued funding.

CRF INVESTIGATORS IN ACTION

These investigators presented progress made with their grants at the CRF FY25 Maryland Department of Health site visit on June 12.



Panagis Galiatsatos, M.D., is advancing a community-first model that brings lung cancer screening and tobacco treatment directly to vulnerable populations often missed by traditional health systems. Beginning with a tobacco cessation clinic in 2018, his work expanded to include lung cancer screening and outreach to residents of urban housing, socially isolated individuals, and patients enrolled in psychiatric day programs—groups facing barriers such as mistrust, isolation, and inconsistent care. By partnering with community-based organizations, including tenant leaders, adult day programs, and peer support networks, Dr. Galiatsatos' team developed tailored strategies that met people where they were. Over six months, 76% of eligible housing residents and 61% of socially isolated individuals completed lung cancer screening, while 100% of eligible psychiatric patients followed through—a result that coincided with the center reporting no lung cancer deaths for the first time in May 2025. The team is now working to expand this approach across Maryland, emphasizing close collaboration with psychiatrists to ensure smoking cessation is safely integrated into mental health care. This work reflects the goals of Johns Hopkins' Medicine for the Greater Good program, using trust, cultural understanding, and partnership to help Marylanders in need by delivering prevention in ways that feel personal, accessible, and humane.



Kirsten Koehler, Ph.D., is asking a vital and often overlooked question: how does the air we breathe affect people after they are diagnosed with cancer? Although air pollution is well known to increase cancer risk, far less is understood about its impact on survival, particularly for patients living in communities burdened by environmental and socioeconomic disadvantages. To close that gap, Dr. Koehler and her team combined a broad review of North American research with an in-depth analysis of nearly 176,000 adult cancer patients and more than 3,000 children treated across 10 states, including Maryland, linking patients' home addresses to EPA air-monitoring data. Their findings were striking. Among adults, even small increases in fine particulate air pollution were associated with a more than 20% higher risk of cancer-related death, regardless of cancer stage or treatment. While similar patterns were not seen in children, the results point to air pollution as a hidden factor shaping cancer outcomes for adults. Dr. Koehler's work is helping reframe air quality as a matter of prevention and cancer survival by laying the groundwork for stronger protections and for identifying patients who may need added safeguards in polluted environments.



Chintan Pandya, Ph.D., is taking a close, data-driven look at who benefits from some of today's most powerful cancer treatments, and who may be left behind. Immune checkpoint inhibitors have transformed care for many advanced cancers, but they are costly, complex, and can cause serious side effects. By linking electronic health records with insurance claims from across the Johns Hopkins health system, Dr. Pandya studied more than 2,800 patients with six different

cancers to better understand how access and outcomes vary by insurance coverage. His findings reveal important disparities. Only a small fraction of patients received these therapies, and patterns of use differed by race, gender, insurance type, and overall health. Patients who received immunotherapy were more likely to require emergency care, often weeks after treatment began, underscoring the need for closer monitoring and better support. Just as concerning were differences in how side effects were documented and managed, suggesting that some patients' symptoms may go unrecognized or undertreated. As immunotherapy becomes an ever larger part of cancer care, Dr. Pandya's work highlights the urgent need to ensure that cutting-edge cancer therapies are delivered equally and safely. His team is now expanding this research to better capture clinical details that can help support research progress.



Kala Visvanathan, M.D., is leading an innovative effort to address one of breast cancer outcomes among younger women, particularly Black women, in Maryland. Although breastfeeding is one of the few known, modifiable factors shown to reduce breast cancer risk in women under 50, it has been understudied in across communities and populations and rarely examined at the state level. Dr.

Visvanathan and her team forged a first-of-its-kind collaboration linking the Johns Hopkins Kimmel Cancer Center, the Maryland Cancer Registry, and the Maryland WIC Program, which serves low-income women across the state and collects rich data on breastfeeding behaviors and health history. Working together, researchers are able to explore how breastfeeding duration and exclusivity relate to breast cancer risk and survival, while also revealing striking gaps. Only about 62% of eligible Maryland women participate in WIC, and fewer than 8% exclusively breastfeed for six months, the level associated with protective benefit. By grounding prevention research in real-world data from Maryland women, Dr. Visvanathan's work lays the foundation for targeted education, new interventions, and future studies that could help reduce breast cancer risk.



Peng Huang, Ph.D., is bringing clarity to one of lung cancer screening's most difficult dilemmas: what to do when a scan reveals a tiny lung nodule that is unlikely to be cancer but impossible to ignore. Nodules are uncovered in about one in four people screened, and the vast majority are benign. Still, the uncertainty can lead to repeated scans, invasive procedures, anxiety, and added cost. Dr. Huang is

addressing this challenge with an artificial intelligence tool, called DeepLR, designed to estimate cancer risk and guide next steps in care. Trained on tens of thousands of CT scans and validated internationally, DeepLR helps distinguish who truly needs urgent follow-up from those who can safely wait, outperforming current guidelines by finding more cancers while significantly reducing unnecessary repeat imaging.

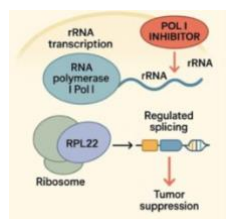


Valsamo "Elsa" Anagnostou, M.D., Ph.D., is helping redefine how lung cancer is monitored and treated using a simple blood draw to reveal what scans alone can miss. Her work centers on liquid biopsy, which detects fragments of tumor DNA circulating in the bloodstream and offers a powerful new way to track cancer in real time. By measuring this circulating tumor DNA, Dr. Anagnostou is focused on

identifying minimal residual disease—the microscopic cancer that can remain after treatment even when imaging appears clear. This information may help determine who needs more intensive therapy and who can safely avoid it. In early-stage lung cancer, repeated blood testing over time is showing promise as an early signal of whether treatments, such as immunotherapy

or chemotherapy, are working. In a recent clinical trial, patients whose tumor DNA levels dropped after treatment lived longer, even when scans showed little change. Dr. Anagnostou and her team are now building on these insights to develop adaptive clinical trials that use real-time molecular information to guide care.

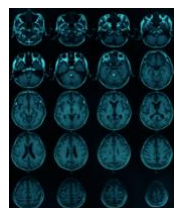
MARYLAND CRF RESEARCH IN THE NEWS



New Cancer Target Discovered: CRF researchers uncovered a promising new way to slow the growth of hard-to-treat tumors by targeting a fundamental cellular process. Their study showed that drugs blocking RNA Polymerase 1 — the enzyme responsible for making ribosomal RNA, a building block for protein factories in cells — suppress tumor growth. In laboratory models, tumors with specific genetic features were especially

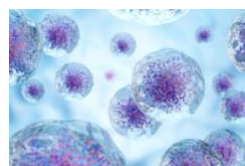
sensitive to these inhibitors, and a new compound reduced tumor growth by as much as 77% in melanoma and colorectal cancer models. The work also suggests that altering this pathway may make tumors more visible to the immune system, raising the possibility of combining these agents with immunotherapies for even greater impact.

[Read the full news release.](#)



Understanding Cells That Drive Brain Cancer: Research led by Drew Pardoll, M.D., Ph.D., revealed a surprising partnership inside some of the most treatment-resistant brain tumors, offering a fresh window into why these cancers are so lethal. In glioblastoma, a highly aggressive form of brain cancer, Dr. Pardoll and team found that rare stem-like tumor cells are working side by side with a specific set of immune cells called myeloid-derived suppressor cells (MDSCs), and the

two populations feed each other in ways that help the tumor grow and evade the immune system. The tumor cells release signals that attract and activate the MDSCs, and in return, the MDSCs produce factors that fuel the cancer stem cells, creating a symbiotic cycle of support. This cellular partnership helps explain the resilience of glioblastoma brain cancer and its ability to thwart immune-based therapies. The identification of these co-located cells and the molecules they use to communicate, lays vital groundwork for new therapeutic strategies that might disrupt these interactions. [Read the full news release.](#)

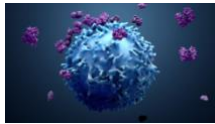


Virtual Cell Lab is Testing Ground for Future Research With Live Cells: In research funded by the CRF and the Maryland Cancer Moonshot grant, a powerful new tool was built to accelerate biomedical discovery. Creating what they call a *virtual cell lab*, researchers produced a detailed computational model of living cells that can predict how those cells will

respond to treatment. Traditional experiments in dishes or animals are slow, costly, and often fail to fully reflect human biology. By integrating vast amounts of data about how real cells behave, grow, and interact, this virtual platform could allow scientists to test hypotheses, screen potential drugs, and explore disease mechanisms in computer simulations before moving to physical experiments. The work brings together expertise in biology, computer science, and engineering, and is already showing promise in modeling processes like cell growth, gene regulation, and response to environmental stressors. The cutting edge work is forging a bridge between high-

performance computing and live-cell biology, with the potential to streamline research, reduce animal testing, and ultimately shorten the time it takes for discoveries to move from the lab to the clinic. [Read the full news release.](#)

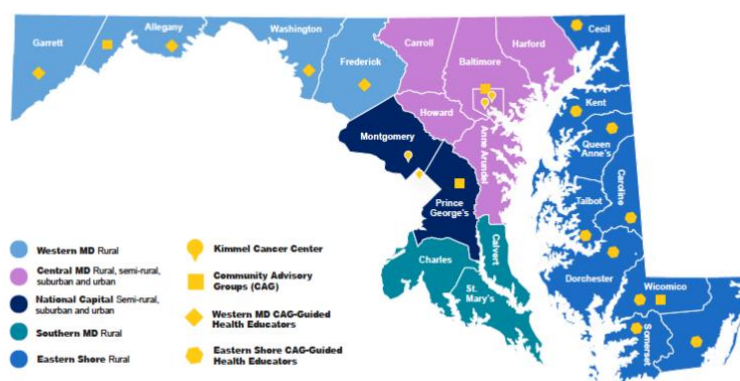
MARYLAND MOONSHOT RESEARCH IN THE NEWS



A Maryland Moonshot-supported study by researchers at the Johns Hopkins Kimmel Cancer Center and its Bloomberg-Kimmel Institute for Cancer Immunotherapy and Convergence Institute found that immunotherapies, known as immune checkpoint inhibitors, are just as effective in patients ages 65 and older as they are in younger individuals. Despite well-recognized age-related changes in the immune system, older patients experienced similar benefits from these treatments, sometimes even outperforming younger counterparts. The researchers analyzed immune cells and proteins in the blood of roughly 100 people receiving these therapies and uncovered differences in how older immune systems respond — clues that may help clinicians tailor future treatments — while reinforcing that age alone shouldn't limit access to these powerful drugs. Moving forward, the researchers plan to explore how immune cells within tumors behave across age groups, a step that could lead to more individualized cancer care and help ensure that advances in immunotherapy benefit all patients. [Read the full news release.](#)

IN THE COMMUNITY – COMMUNITY ADVISORY GROUPS AND OUTREACH

Urban and Rural Communities in Maryland



Community Advisory Groups: Representatives from our urban and rural communities help our doctors and researchers better understand the health needs and priorities in these communities. Cancer initiatives focus on education in cancer prevention, including beneficial lifestyle changes, screening and detection and best practices in clinical care, including clinical trials.

Community Outreach Program: Our health educators

identify community needs, develop health promotion and educational resources, and work to improve health literacy for Marylanders most in need. By expanding community collaborations with Community Advisory Groups, civic organizations, schools, churches, and businesses, we

are building upon existing outreach and education services and delivering cancer related education and resources to our Maryland communities most in need.



CUPID - Cancer in the Under-Privileged, Indigent, or Disadvantaged: This unique, laboratory-based summer fellowship program promotes interest in caring for underserved cancer patients. Kimmel Cancer Center experts mentor students throughout the seven-week program, which includes laboratory-based research, a lecture series, clinician shadowing in medical, surgical and radiation oncology clinics, and a visit to the National Cancer Institute to meet researchers addressing cancer problems in underserved populations.



MERIT Health Leadership Academy: This non-profit, started by two Johns Hopkins medical students in 2011, provides support and opportunities to Baltimore City students from 10th to 12th grade who are interested in health careers. MERIT Scholars receive intensive college and career mentoring, academic enrichment classes during the school year, internships in hospitals, clinics and research laboratories over the summer, and academic classes every Saturday during the school year. The program serves over 200 scholars a year.

THE PROMISE OF AI – SEE CANCER SOONER, TREAT IT SMARTER, CURE IT FASTER

Right now, more than 50 years of advancements in computer processing power is intersecting with the data and discovery of more than 50 years of cancer research. The result, which we call artificial intelligence, or AI, has given rise to a learning health care system that incorporates innovation in real time to glean all of the insights into cancer and its treatments, assess the impact seamlessly, and transform cancer medicine.

AI is the realization of the ultimate collaboration. It is the compilation of the real brainpower of thousands of cancer clinicians and researchers around the globe. Securely accessing all of the available data on cancer, we will finally gain a full understanding of this complex disease, we will screen and detect cancers earlier and more accurately, treatments will be more precise, with shorter courses and fewer side effects, and most importantly, cures will become common.

Through our partnership with the State and collaborations with the Cancer AI Alliance, of which our Cancer Center is a founding member, our Convergence Institute, Johns Hopkins inHealth Precision Medicine, Johns Hopkins Data Science and AI Institute, the Institute for Data Intensive Science and more, we are positioned to make revolutionary advances against cancer.



“If today we have surpassed what could be accomplished only a decade ago, just imagine what the promise the next decade holds.” --William Nelson, M.D., Ph.D., Director of the Kimmel Cancer Center and Co-Chair of the Johns Hopkins Cigarette Restitution Fund

HEALTH AND SOCIAL SERVICES SUBCOMMITTEE VISITS JOHNS HOPKINS



From left: Annie Coble, Otis Brawley, Michael Huber, William Nelson, Aletheia McCaskill, Emily Shetty, Dana Jones, Zack Foda, Dina Lansey, John Groopman

On October 2, Delegates Emily Shetty, Chair of Health and Social Services Subcommittee of the House Appropriations Committee, Dana Jones, Vice Chair of Health and Social Service Subcommittee, and Aletheia McCaskill, member of the Health and Human Services Subcommittee, visited the Kimmel Cancer Center to hear from Kimmel Cancer Center Director William Nelson, M.D., Ph.D., and CRF Co-Chair

John Groopman, Ph.D., Otis Brawley, M.D., Associate Director of Community Outreach and Engagement, Dina Lansey, Assistant Director for Clinical Research and Population Sciences, Michael Huber, Director of Maryland Government Affairs, and Annie Coble, Assistant Director of Maryland Government Affairs, about the historical progress made with CRF support. Zack Foda, M.D., Ph.D., shared an update on his CRF-supported research on how tiny fragments of DNA circulating in the bloodstream can offer early clues that cancer is developing, often before symptoms appear. He is learning how these DNA fragments differ in people with and without cancer, so simple blood tests that could detect cancer at its earliest, most treatable stage can be developed.

2026 AWARDS

FY26 CRF Awards

\$2,133,335

Grants:	All	New	FY Target
Translational Research	16	9	16
Faculty Recruitment	7	4	9
Faculty Retention	2	2	0
TOTAL	25	15	25

Tanya Alderate, Ph.D.: *Integrating PFAS Exposure, Metabolomics, and Genetics to Address Colorectal Cancer Risk*, **FACULTY RECRUITMENT, NEW**

Rebkha Atnafou, Ph.D.: *Raising the Standard: HPV Vaccine Awareness and Uptake Campaign at Morgan State University*, **FACULTY RETENTION, NEW**

Avonne Connor, M.P.H., Ph.D., and Kassandra Alcaraz, Ph.D.: *Social Determinants of Health and Cancer Survivorship in Maryland*, **TRANSLATIONAL RESEARCH, NEW**

2026 AWARDS – CONT.

Dulce Cruz-Olivier, M.D.: *A Telenovela Intervention to Improve Self-Efficacy and Anxiety in Hospice Family Caregivers of Minoritized Cancer Patients*, **TRANSLATIONAL RESEARCH, CONTINUATION**

Michael Desjardins, Ph.D.: *Spatial Disparities in Clinical Trial Accrual for Breast, Prostate, and Pancreatic Cancer: Insights from SKCCC Patients*, **TRANSLATIONAL RESEARCH, CONTINUATION**

Roy Elias, M.D.: *Defining Genomic and Epigenomic Drivers of Consensus Transcriptomic Patterns in Prostate Cancer*, **FACULTY RECRUITMENT, NEW**

Alejandra Ellison-Barnes, M.D., M.P.H., and Heidi Hutton, Ph.D.: *C-Raven: Pilot of an Avatar-Delivered Computerized Intervention for Tobacco Cessation with Community Health Worker Linkage to Lung Cancer Screening in an Internal Medicine Resident Continuity Clinic*, **TRANSLATIONAL RESEARCH, CONTINUATION**

Panagis Galiatsatos, M.D.: *Tobacco Free Community: Community Health Workers and Smoking Cessation in Rural and Underserved Regions of Maryland*, **TRANSLATIONAL RESEARCH, NEW**

Yasser Ged, M.B.B.S.: *A Pilot Study of Low versus High Intensity Patient Navigation Program to Improve the Enrollment on Clinical Trials Among Cancer Patients*, **FACULTY RETENTION, NEW**

Joel Gittelsohn, Ph.D.: *Developing an Agent-Based Model to Inform Programs and Policies Aimed at Improving Healthy Food Access and Reducing Cancer Risk in Baltimore City*, **TRANSLATIONAL RESEARCH, CONTINUATION**

Jacky Jennings, Ph.D. and Cyd Eaton, Ph.D.: *Improving Patient Care and Population Health for Cancer Patients through a Patient-Reported Outcomes (PROs) Service Line*, **TRANSLATIONAL RESEARCH, CONTINUATION**

Alison Klein, Ph.D., M.H.S., and Zachariah Foda, M.D., Ph.D.: *Pilot Study of Targeted Community-Based Colorectal Cancer Screening Tailored to Low-Uptake Communities in Baltimore City and Western Maryland*, **TRANSLATIONAL RESEARCH, CONTINUATION**

Dina Lansey, M.S.N., and Panagis Galiatsatos, M.D.: *Tobacco Free Community: Implementation of Tobacco Prevention and Management Strategies for Socioeconomically Disadvantaged Neighborhoods Through Collaborations with Local Schools*, **TRANSLATIONAL RESEARCH, NEW**

Kimberly Levinson, M.D., M.P.H.: *HPV-related Anogenital Cancer Prevention in Immune-compromised Patients: Developing a Comprehensive List of HPV Genotypes in Multifocal Disease*, **TRANSLATIONAL RESEARCH, NEW**

2026 AWARDS - CONT.

Adel Mandl, M.D.: *Expanding Access to Metastatic Prostate Cancer Clinical Trials Through Digital Patient Navigation*, **FACULTY RECRUITMENT, NEW**

Aliyah Pabani, M.D., M.P.H.: *Improving Access for Expert Management of Immunotherapy-Related Adverse Events*, **FACULTY RECRUITMENT, CONTINUATION**

Craig Pollack, M.D., M.H.S.: *The Association Between Cancer Diagnosis and the Loss of Federal Housing Assistance*, **TRANSLATIONAL RESEARCH, NEW**

Ana Rule, Ph.D., and Michelle Vaz, M.S., Ph.D.: *Characterizing Lung Cancer Risk Associated with Chronic Exposure to Electronic Cigarettes (Vaping) in Maryland Youth*, **TRANSLATIONAL RESEARCH, NEW**

Laura Sena, M.D., Ph.D.: *The Effect of Ketosis on Prostate Cancer Immunity*, **FACULTY RECRUITMENT, NEW**

Wendy Shields, Ph.D.: *Improving Tobacco Screening and Cessation Referral in Pediatric Settings*, **TRANSLATIONAL RESEARCH, NEW**

Johannes Thrul, Ph.D., M.S.: *Adaptive Mobile Interventions to Reduce Cancer Risk Behaviors*, **TRANSLATIONAL RESEARCH, NEW**

Govind Warriar, M.D., M.P.H.: *Innovating Inclusion: Implementing a Digital Patient Navigation Platform to Improve Access to Expert Melanoma Care and Clinical Trials*, **FACULTY RECRUITMENT, CONTINUATION**

H. Catherine Wilbur, M.D.: *Characterization of the Molecular Landscape of Sarcoma to Inform Cancer Risk and Treatment*, **FACULTY RECRUITMENT, CONTINUATION**

Kala Visvanathan, M.D, M.H.S.: *Improving Survival Rates Among Second Time Breast Cancer Survivors in Maryland and Nationwide*, **TRANSLATIONAL RESEARCH, NEW**

Jessica Yeh, Ph.D.: *Scaling up Behavioral Weight Loss Opportunities for Cancer Survivors with Overweight or Obesity in Maryland: A Randomized Trial with Adaptive Interventions (Helpline for Weight Loss)*, **TRANSLATIONAL RESEARCH, CONTINUATION**