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JOHNS HOPKINS
MEDICINE
THE SIDNEY KIMMEL
COMPREHENSIVE CANCER
CENTER

JOHNS HOPKINS
CONQUEST 2014

An Update from the Sidney Kimmel Comprehensive Cancer Center on its Maryland Cigarette Restitution Funds

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Despite difficult economic times, the Governor and state legislators have worked together to protect the Cigarette Restitution Fund. We are grateful for this support and the efforts to return the CRF to historic funding levels.

While other states involved in the tobacco settlement have abandoned their obligation to their citizens, and tobacco manufacturers have looked for ways to avoid paying their punitive damages, Maryland's elected officials have stayed the course. This commitment has paid off in a huge way.

First and foremost, cancer death rates in our state are plummeting faster than the national average. Maryland went from leading the nation in cancer death rates to leading the nation in decreasing its cancer burden. Rates for all of the cancer types targeted through CRF research are dropping. For colorectal cancer, a CRF-targeted cancer and one of the leading cancer killers, Maryland has the highest rate of decrease in cancer death rates in the U.S. Since 2001, 15 CRF grants focused on smoking cessation strategies or advanced the science of the relationship between smoking and cancer.

CRF research has not only improved the health of Maryland citizens, but it also has improved the health of the Maryland economy. Johns Hopkins researchers have brought millions more back to our state in revenue than they have received through the CRF. They have started companies, hired employees, licensed technologies, and patented inventions.

Without a continued commitment, we must understand that this progress can be quickly undone. Therefore, we urge you to concur with the Governor's budget allocation of $2 million to the Johns Hopkins cancer research program.

Sincerely,

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

John D. Groopman, Ph.D.
Professor of Environmental Health Sciences
Bloomberg School of Public Health

Funding Research, Not Product Development

Research may lead to product development, but product development is not research, explains William Nelson, M.D., Ph.D., co-director of the Johns Hopkins CRF. Johns Hopkins investigators have used CRF funding to decipher the causes of cancer in an effort to improve detection and treatment. In certain cases, thorough, peer reviewed research has led to diagnostic screening tests or research technologies that result in the formation of companies, licensed technologies, and patents. Rather than being financed by the CRF, these fruits of excellent research are a revenue-generating return to the state on its CRF investment.

On the other hand, biotechnology entrepreneurs requesting a share of the CRF monies designated for research at Maryland's academic medical centers are asking the state to bear the risk and serve as guarantor for their business ventures.

"There are resources and money available for product development. This is not what the CRF was set up to do," says Dr. Nelson. "The CRF supports cancer research, and product development and product research are two very different things."

Evaluating our Success - What We Have Accomplished Through the CRF

Revenue Generating

CRF Research Dollars

Yields $420,000,000 + in New Grants and Gifts

FY	Amount Awarded
2001	$2,250,000
2002	$3,000,000
2003	$3,000,000
2004	$2,590,000
2005	$2,409,000
2007	$1,800,000
2008	$2,153,000
2009	$1,614,000
2010	$401,000
2011	$384,000
2012	$393,000
2013	$799,000
2014	$1,310,000
Total	**$24,600,000**

- CRF investigators have formed the Maryland biotech companies Cureveda and Personal Genome Diagnostics

- CRF investigators have leveraged their funding to bring millions of dollars more in research funding to Maryland. For every CRF research dollar spent, $10 has been brought back to the state through business contracts and economic development.

- CRF research has resulted in more than a dozen technologies that have been reported. Four are research tools, and six have been patented or licensed to outside companies.

- Competing for limited research funding is difficult for young investigators just beginning their careers. The availability of CRF faculty recruitment grants helps us bring the best and brightest young researchers from around the country to Maryland.

Plummeting Cancer Death Rates

Maryland cancer death rates were highest in the nation before the CRF was established (1985). Since that time, death rates have steadily declined, and Maryland is now ranked 30th.

Death rates from all of the CRF targeted cancers (lung, prostate, breast, colon, cervix and oral cancers, and melanoma skin cancer) are declining in Maryland and falling more rapidly than the national average.

Smoking and other Environmental Carcinogens

- Maryland smoking rates for adults and youth are below the national average.

- Johns Hopkins clinicians and scientists have been health resources for Maryland's elected officials and have supported anti-smoking and clean air legislation.

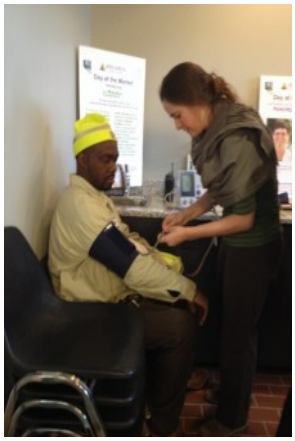
- Researchers studied the association between traffic-related air pollution and exposures and cancer in Maryland.

- Researchers have uncovered arsenic and other environmental carcinogens in Maryland's ecosystem.

Screening and Prevention

Johns Hopkins physicians have collaborated with the Baltimore City Health Department to provide free colorectal cancer screening to uninsured residents.

Maryland colorectal cancer death rates have the highest rate of decrease in the U.S.



A CRF grant has allowed Johns Hopkins to broaden and evaluate its participation in the Day at the Market program, a bimonthly event that brings nurses and other clinicians, safety experts, and various caregivers to the Northeast Market on Monument Street in East Baltimore to meet face to face with citizens of Baltimore. The program, which has received recognition from the Maryland Department of Health and Mental Hygiene, fosters dialog about prevention and detection of cancer and other diseases and ways to achieve a healthier lifestyle.

The Centers for Disease Control and Prevention reported that Maryland was among the best in *all* cancer screening.

Studies of natural products, including broccoli sprouts and pomegranate extract, have shown promise as safe and inexpensive ways to prevent cancer.

From infancy to adulthood: a lifestyle approach to reducing cancer-related dietary risk in low-income families was established.

Eliminating Racial Disparities

Partnerships developed through the CRF Public Health Grant have been expanded with new programs aimed at eliminating disparities in cancer death rates in the state's African American population.

Cancer death disparities between African Americans and Caucasians have declined by 50 percent in Maryland, falling more rapidly than the national average.

CRF research uncovered a potential connection between diabetes and racial disparities in cancer survival.

Researchers explored barriers to participation of under-represented populations in cancer-related clinical trials and developed programs to improve minority participation in clinical trials.

A Catalyst for Research Advances

101 investigators have received grants through the CRF since 2001.

Stephen Baylin, M.D., and James Herman, M.D., conducted pioneering research in cancer epigenetics, considered one of the most promising fields of study. Their research has resulted in some of the first uses of epigenetic abnormalities as cancer biomarkers for diagnosis and predictors of response to treatment, and more recently in new personalized therapies for lung, breast, and colon cancer.

Shyam Biswal, Ph.D., constructed a cigarette exposure facility to study smoking-induced lung cancer. Through this work, he identified a gene pathway involved in detoxifying cells of carcinogens such as cigarette smoke that is altered in cancer. He is now investigating drugs that block the altered gene pathway.

Michael Carducci, M.D., has overseen a drug discovery pipeline at the Kimmel Cancer Center that has played a key role in advancing the treatment of prostate cancer.

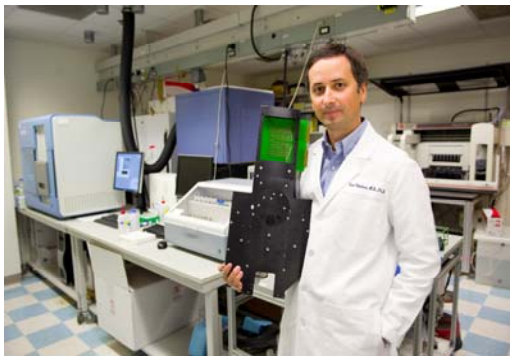
Luis Diaz, M.D., developed the PapGene test for uterine and ovarian cancers.

Charles Drake, M.D., is studying a first-of-its-kind prostate cancer combined therapy that will make surgery possible for many men who are currently not surgical candidates.

Christine Hann, M.D., Ph.D., is developing novel therapeutics for lung cancer, particularly small cell lung cancer, the most lethal type of the disease.

Hans Hammers, M.D., deciphered the mechanisms of antiangiogenesis treatment-resistance, therapies that cut off the critical blood supply to tumors. He used this research to develop novel treatments for prostate and kidney cancers.

Elizabeth Platz, Sc.D., William Nelson, M.D., Ph.D., and **Vasan Yegnasubramanian, M.D., Ph.D.** used a novel combined laboratory research/population science approach to reveal evidence that the commonly-used heart drug digoxin halted prostate cancer cell growth.



Victor Velculescu, M.D., Ph.D., and team deciphered the unique genetic blueprint for colon cancer and developed a simple blood test that can detect these genetic changes in circulating blood.

Spotlight on a CRF Investigator

Corrine Joshu, Ph.D.

Corinne Joshu is an example of a junior faculty member who was able to pursue a novel area of cancer research and expand her collaborations through CRF support.

Dr. Joshu, earned distinction as the Martin D. Abeloff Cancer Prevention and Control Scholar-in Training. Her research is focused on straightforward lifestyle remedies that could decrease the risk of recurrence in men who had surgery for prostate cancer and whose cancer had not spread. She found that men who were smoking one year after surgery doubled their risk of their prostate cancer coming back. Former smokers and nonsmokers had no increased risk. Dr. Joshu says that smoking causes cell damage that triggers the growth of new cells to replace damaged cells. It's possible that this process sets in motion genetic changes that facilitate the return of the prostate cancer.

Dr. Joshu also looked at weight change from five years before surgery to one year after. She found men who gained five on more pounds (10-11 pounds on average), after surgery also doubled their risk of cancer recurrence when compared to men who maintained their weight. It didn't matter if they were normal weight or overweight to begin with. It was the act of gaining weight that seemed problematic. Dr. Joshu is working with researchers to figure out why. "If you're gaining weight, you are in the process of active growing. Perhaps this growth-promoting environment allows evasive tumor cells to set up shop and cause a cancer recurrence down the road," she says.

"On a day to day basis, our bodies are trying to fight the outside world," explains CRF investigator Michael Carducci, M.D., who is collaborating with Dr. Joshu on the study. "Internally things are getting turned on to combat these exposures. The more you can limit these forces by not smoking and maintaining a healthy weight and diet, the easier you make it on your body."

CRF on the Web

BLOG

Go to http://cancer-matters.blogs.hopkinsmedicine.org to read our blog series

Cancer-Free Mondays: Maryland and Johns Hopkins, A Partnership that Works for Maryland Citizens.

The four part series reports on how the Maryland Cigarette Restitution Fund is helping Maryland Citizens.

FY14 AWARDS as of February 5, 2014

$1,793,103

Grants:	All	New	MFR*
Translational Research	7	5	15
Faculty Recruitment	6	6	2
Faculty Retention	2	2	0
TOTAL	15	14	17

Faculty Recruitment:

- **Christopher Heaphey, Ph.D.:** Telomere length alterations as biomarkers for breast and ovarian cancer risk and progression.
- **Sandy H. Fang, Ph.D.:** A Pilot Study - Surveillance of anal dysplasia and cancer in a predominantly underserved urban population.
- **Ana Ponce Kiess, M.D.:** Targeted molecular radiotherapy for micro-metastatic prostate cancer.
- **Yi Ning, M.D.:** Delineating the roles of a novel protein (ZDHHC14 palmitoyl-transferase) in initiating cancer.
- **Channing Paller, Ph.D.:** A Sentinel Event Case Series - Race as a factor for metastatic prostate cancer.
- **John M. Wrangle, Ph.D.:** Epigenetic therapy clinical trials and biomarker development in nonsmall lung cancer.

Faculty Retention:

- **Lori Erby, Sc.M., Ph.D., C.G.C.:** Piloting a Group Consent Model - Enrolling African Americans for a cancer-related biospecimen bank.
- **Claire Snyder, Ph.D.:** Developing a strategic plan for a cancer outcomes and health services research program at Johns Hopkins.

Translational Research Grants:

- **Robert H. Brown, M.D., M.P.H.:** The burden of environmental pollutants – deposition of environmental toxins in fat cells.
- **Marie Diener-West, Ph.D.:** Timely cancer research to improve the burden of cancer in Maryland.
- **Corrine Joshu, Ph.D.:** Establishing a tissue repository in Washington County, Maryland for translational research on cancer and benign conditions.

- **Craig E. Pollack, M.D.:** Incorporating life expectancy calculators into cancer screening decisions.

- **Gregg L. Semenza, Ph.D.:** Improving outcome in triple negative breast cancer by therapeutically targeting the HIF-1 gene.

- **Michael Trush, Ph.D.:** Cancer education and services outreach effectiveness in Baltimore City's Northeast Market.

- **Richard Zellars, M.D.:** Patient support interventional study.