

Innovations

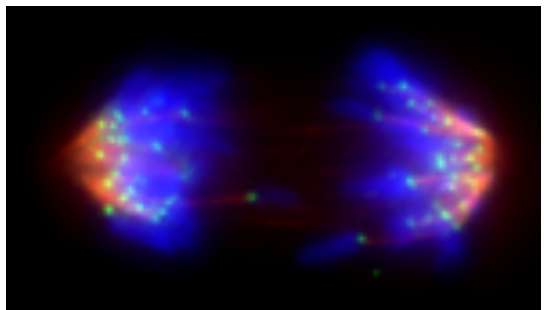
NEWS & HIGHLIGHTS 2017

Novel Approach to Treating Aggressive Breast Cancers

A surprising observation led UVM Cancer Center scientist and Assistant Professor of Molecular Physiology and Biophysics **Jason Stumpff, PhD**, to pursue investigation of the mechanisms involved in cell division to create new treatment options for hard-to-treat breast and colon cancers. Initially funded through small philanthropic grants and UVM Cancer Center pilot funding, the project has since received national recognition and research funding, and continues to advance.

In 2016, the Susan G. Komen Foundation announced nearly \$33 million in new research awards for investigators across the country whose research will contribute to Komen's goal of reducing breast cancer deaths by 50 percent over the next decade. Stumpff and his team earned one of the highly competitive Komen grants, totaling nearly \$500,000, to advance research focused on developing a targeted intervention for triple negative breast cancer—a particularly aggressive form of breast cancer.

It is now understood that there are many subtypes of breast cancer, each requiring specific treatment to optimize outcomes for a patient. Three subtypes are known to be fueled by the hormones estrogen or progesterone, or by the human epidermal growth factor receptor 2 (HER2). While researchers have successfully developed treatments that target these subtypes, reducing side effects and improving outcomes for patients, there are currently no target drugs or treatments available for patients whose breast cancers are found not to be fueled by one of these three factors. Referred to as triple negative breast cancer (TNBC), this aggressive type of cancer is currently treated with drugs that kill both



Mitotic division as captured by the Stumpff Lab

tumor and non-tumor cells, which results in unwanted side effects caused by toxicity to normal cells. What's needed are targeted TNBC therapies that can reduce tumor growth and recurrence, inhibit the spread of cancer cells, and work specifically enough to limit negative side effects.

Stumpff and his team are already on the case; their preliminary research suggests that these goals can be achieved by focusing on inhibiting specific mechanisms that help cancer cells divide. Initial results indicate this approach would have minimal impact on normal cells, therefore reducing negative side effects for patients. Stumpff's research team is using real-time information from breast cancer patients to inform, in a responsive way, the outcomes of their research.

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Philanthropic support helped to make this research possible. Seed funding to get great research ideas off the ground is crucial—thanks to UVM Cancer Center donors for being part of the research team!

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FAST FACT

UVM Cancer Center researchers
come from 4 colleges at UVM and 14
academic and clinical departments.



*UVM Cancer Center
members gather for a
2017 research meeting*

**ABOUT THE UNIVERSITY OF VERMONT
CANCER CENTER**

The University of Vermont (UVM) Cancer Center is a national leader in cancer research. Our members, considered reknowned experts in many fields, work collaboratively with partners around the world to improve the lives of cancer patients here in Vermont and beyond.

The UVM Cancer Center brings together more than 200 scientists, clinician-researchers, nurses, staff and community members dedicated to advancing knowledge to reduce the burden of cancer for individuals, families and communities. Research fuels discovery and allows us to bring the latest advances in cancer care to our community.

20TH ANNUAL



**WOMEN'S
HEALTH
& CANCER
CONFERENCE**

**FRIDAY, OCTOBER 6, 2017
THE SHERATON CONFERENCE CENTER
BURLINGTON, VT**

3rd ANNUAL



**MEN'S
HEALTH
& CANCER
CONFERENCE**

**FRIDAY, NOVEMBER 3, 2017
UVM DAVIS CENTER
BURLINGTON, VT**

**Women's and Men's Health and
Cancer Conferences**

The UVM Cancer Center is proud to continue its longstanding commitment to education around the prevention, detection, treatment and survivorship of cancer through two free events open to the public. This year marks the 20th anniversary of the Women's Health and Cancer Conference. The day-long event is the largest of its kind in the region—bringing together patients, families, and the public with health care professionals to learn about a range of topics relevant to women's health and cancer.

The Third Annual Men's Health and Cancer Conference is a half-day event focused on increasing education and awareness of men's health issues and the cancers which most often affect men.

Both events are **free** and open to the public. For more information, or to register, visit www.vermontcancer.org or contact Jacqueline Lawler at (802) 656-2176 or jacqueline.lawler@uvm.edu.

Genomics and Cancer: New Expertise in Personalized Medicine

Under the leadership of UVM Cancer Center members **Debra Leonard, MD, PhD**, and **Nikoletta Sidiropoulos, MD**, the University of Vermont Medical Center opened its first Genomic Medicine Laboratory in 2017 to expand use of advanced genetic testing and enable care teams to tailor treatments to individual patients. By pinpointing genetic variations related to a patient's disease or disease risk, genomic testing leads to a more accurate diagnosis, which may allow providers to choose a therapy targeted to the underlying cause of a specific patient's illness.

Since early 2016, patients of the UVM Health Network with solid tumor cancers—such as lung, colon and melanoma—have benefitted from genomic testing, which is only available at a limited number of academic medical centers in the United States. The new Genomic Medicine Laboratory will soon expand testing capabilities to other cancer types.

“What was once thought of as lung cancer is now known to be many types of a disease that react differently to varying treatments,” said Debra Leonard, MD, PhD, UVM Professor and Chair of Pathology and Laboratory Medicine. “With the precision treatments made possible by genome sequencing, some of our patients have had their tumors decrease in size.”

The Genomic Medicine Program is designed not only to offer the highest quality clinical laboratory testing, but is taking a leadership role in genomic education and cancer research. The program created a new collaborative group, the Genomic Oncology Tumor Board, bringing together clinicians, researchers and students to advance genomic research impacting cancer.

FAST FACT

The UVM Cancer Center is 1 of 97 leading cancer research centers in North America comprising the Association of American Cancer Institutes (AACI).



Debra Leonard, MD, PhD, and Nikoletta Sidiropoulos, MD

Topics are explored in a transdisciplinary fashion, providing cross-education among the group in genomic medicine and facilitating clinically-relevant research efforts that can most positively and immediately impact clinical care for oncology patients. Nikoletta Sidiropoulos, MD, the program's medical director, shared at the lab's opening, “Personalized therapy and prevention informed by genomics will become a significant part of medical care in the coming years, and we are determined that our patients will fully benefit from the promise of Genomic Medicine.”

For more information, visit the Genomic Medicine website www.uvmhealth.org/medcenter/Pages/Departments-and-Programs/Genomic-Medicine. ■



UVM Cancer Center Director Gary Stein, PhD, joins former Vice President Joe Biden during his fall 2016 visit to the University of Vermont to discuss Biden's Cancer Moonshot initiative and to highlight the UVM Cancer Center's role in advancing cancer research.

UVM Leaders in National Cancer Prevention Efforts

The Alliance for Clinical Trials in Oncology is a network of more than 10,000 cancer specialists from across the country that work together to advance discovery and strategy for the prevention and treatment of cancer through development of clinical trials and advancement of scientific discovery. Five members of the University of Vermont Cancer Center now serve in leadership roles for the Alliance—all helping to drive national efforts aimed at providing optimal treatment strategies to enhance quality of life for patients.

Marie Wood, MD, serves as co-chair for the prevention committee at Alliance and colleagues **Scott Perrapato, DO**, and **Matthew Kinsey, MPH, MD**, have both been appointed to the same committee. **Ruth Heimann, MD, PhD**, has been elected to the board of directors for Alliance and **Steven Ades, MD**, has been appointed as a Principal Investigator at UVM for Alliance representing the UVM Cancer Center—one of 40 top-accruing Alliance institutions nationally.



Scott Perrapato, DO



Marie Wood, MD

Childhood Leukemia, Brain Cancer and High-Risk Smokers Targeted in New Research

The UVM Cancer Center is investing in collaborative research teams of basic scientists and physicians to tackle big questions in cancer research. This approach harnesses the power of academic medicine—to take real challenges in treating patients, develop critical questions and investigations in the laboratory and bring findings as quickly as possible back to the clinic to positively impact patient care. Three teams at the UVM Cancer Center were recently awarded new funding through a highly competitive American Cancer Society Institutional Research Grant to spark just such impact.



While a majority of childhood leukemias are treatable, there still exists great risk for a number of patients, like those who experience relapsed leukemia or who carry high-risk genetic mutations. **Seth Fritze, PhD**, UVM Assistant Professor of Medical Laboratory Science, and **Jessica Health, MD**, UVM Assistant Professor of Pediatrics and Biochemistry, are a pair who do not accept the status quo in treatment of childhood leukemia as acceptable. Fritze and Heath are looking to better understand the building blocks of these high-risk childhood

leukemias in order to develop targeted approaches to interrupting cancer development and recurrence in these types of childhood cancers.

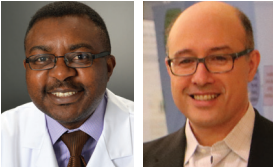


Glioblastoma, a fast-growing brain tumor (the most common in adults) is aggressive and, despite available therapies, continues to have a five-year survival rate of less than three percent. UVM Cancer Center researchers **Alissa Thomas, MD**, UVM Assistant Professor of Neurological Sciences and **Delphine Quenet, PhD**,

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UVM Assistant Professor of Biochemistry, are combining their expertise in molecular and cellular biology and neuro-oncology to advance treatment of glioblastoma and to improve life expectancy rates for patients facing a glioblastoma diagnosis.



How do we encourage smokers most at risk for lung cancer to quit? That is a question that **Edmund**

Folefac, MD, Assistant Professor of Medicine, and

Antonio Cepeda-Benito, PhD, Assistant Professor of Psychiatry, hope to address with their new funding. They aim to create smoking interventions for smokers who come to the UVM Cancer Center for screening. Smoking contributes to 90% of lung cancers in the United States alone. Research has shown that screening high-risk smokers for lung cancer may not influence quitting. The pair, who have assembled an interdisciplinary team to develop smoking interventions, hopes that through their work they will be able to add an evidence-based smoking cessation component to the standard of care for smokers who are seen for lung cancer screening. ■

Blood Clot Prevention Research Update

Thanks to a new research and prevention program at the UVM Cancer Center, the number of cancer outpatients developing blood clots, an often life-threatening complication of cancer and cancer therapy, has been reduced from **12%** to **3.8%**.



Not just lung cancer!

Did you know that smoking also causes cancers of the esophagus, larynx, mouth, throat, kidney, bladder, liver, pancreas, stomach, cervix, colon, and rectum, as well as acute myeloid leukemia? Not to mention risks for heart and respiratory diseases. Quitting can reduce your risk!



Get free help quitting at 802Quits.org or by calling **1-800-QUIT NOW**



Jason Stumpff, PhD

Continued from page 1

Stumpff hopes that his collaborative research approach will contribute to the development of a new class of therapeutics for TNBC patients. "It's an honor to receive this generous award from the Susan G. Komen Foundation that will allow us to apply our findings in the lab to the development of improved patient care," said Stumpff.

In addition to recognition by Komen, Stumpff and his team have successfully competed for federal funding to help advance their novel approach to treating cancer. Stumpff credits the unique collaborations he has built with physicians, other basic scientists and patients, with helping to advance understanding of the problems the team seeks to tackle. ■

Breast Density Q&A with Sally Herschorn, MD

In 2016 the Vermont Legislature passed a law requiring health care providers to notify women directly about their breast density, becoming one of now 31 states to require such notification. The law is aimed at decreasing the rate of diagnosis of advanced breast cancer in women with dense breasts by providing information about the limitations of mammography and risks of cancer associated with having dense breasts.

Ongoing research at the UVM Cancer Center has helped to inform the debate around breast density notification laws, guide new screening recommendations nationally and to push for more research around optimizing screening for breast cancers, especially for women with dense breasts. UVM Cancer Center member **Sally Herschorn, MD**, Associate Professor of Radiology at The UVM Larner College of Medicine and Medical Director of Breast Imaging at The UVM Medical Center, answers some key questions about breast density.



Sally Herschorn, MD

Q. What exactly does “dense breasts” mean?

A. Breast density refers to the relative amount of glandular and fibrous tissue that each woman has in her breasts compared with the amount of fatty tissue present. Each woman has a different breast density. You cannot know your breast density by a physical exam, it is only determined on a mammogram. Women with mostly fatty tissue do not have dense breasts and women with more fibrous or glandular tissue have dense breasts. Dense breasts are normal (not a disease) and are found in 40-50% of women.

Dense breasts appear more white on mammography. Because cancers usually appear white on mammograms, they are more difficult to detect the more white the mammogram appears.

Q. Why is it important to understand breast density?

A. Breast density is the most common reason for missing a cancer on a mammogram and women with dense breast tissue are at slightly increased risk for breast cancer. Mammograms are still good at detecting breast cancer, but the denser your breasts are, the less accurate they will be at detecting breast cancer. One of our own researchers, **Brian Sprague, PhD**, found in his research that nationally, more than 40% of women have dense breasts. So, it is very common and worth understanding more. These two things combined make it important for women to understand their breast density and to be sure to discuss the screening that is right for them with their provider.

Q. Is having dense breasts something I should worry about?

A. No—having dense breasts is normal, as I mentioned almost half of women have dense breast tissue. We may just need to recognize the limitations of regular mammography in looking at denser breast tissue and the slightly increased risk for breast cancer that women with dense breasts have. To improve detection of breast cancer in women with dense breasts, we can add additional screening options. There are many options for additional testing but the most common are whole breast ultrasound and breast MRI.

Q. What happens if I get a letter from my doctor telling me I have dense breasts?

A. Don't panic! This notification is meant to empower women and providers to have all the information available when making decisions about screening for breast cancer. It is important to note that density is a continuum, but that categorization will better help all of us determine cancer risk and screening. Talk to your primary care doctor about your breast density and which screening options are best for you. There are no medical guidelines for additional screening for women with dense breasts but some women may prefer to add additional testing to help detect breast cancer. Each additional test may add additional cost, anxiety and chances to detect abnormalities that are not cancer (false positives). It is a personal decision about how much screening you are willing to do in order to detect cancer as early as possible. ■

Feel free to ask us questions at mammoinfo@uvmhealth.org. For much more information on this topic visit www.uvmhealth.org and search “breast density”.

Waldron Fund Boosts Childhood Leukemia Research

A new research project at the UVM Cancer Center is moving forward with the support of the Sean Patrick Waldron Hematologic Malignancies Fund, started by Donna and Marty Waldron of Burlington, Vermont in honor of their son who passed away from childhood leukemia. There has been tremendous progress in treating childhood leukemia over the last 20 years, but there remain aggressive forms of the disease for which cure rates are still unacceptably low. UVM Cancer Center researchers **Seth Freitze, PhD**, and **Jessica Heath, MD**, are collaborating on a new project that looks to find targeted therapies for Acute Myeloid Leukemia (AML), one of the aggressive forms of childhood leukemia. The Waldron Fund is helping to make this novel research idea a reality.



Marty and Donna Waldron

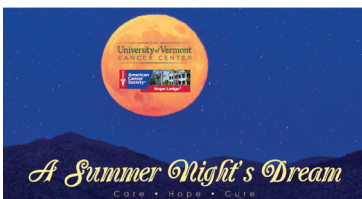
Donna and Marty Waldron have long supported research, education and patients at the UVM Cancer Center—both through direct giving as well as inspiring the giving of others. The pair, now retired from many years of service in local public schools, have volunteered at the UVM Medical Center for years, further extending the impact of their generosity. ■

UVM Athletics, with support from sponsor Otter Creek Awnings and Vermont Custom Closets, once again hosted a series of Rally Against Cancer events in 2017, raising funds and awareness for cancer research at the UVM Cancer Center. Pictured are scientists and physician-researchers along with UVM Athletics' director Jeff Shulman (third from left) and owners of Otter Creek Awnings and Vermont Custom Closets Beth and Todd Warren (fourth and sixth from left, respectively).



YOUR SUPPORT MATTERS!

For more information about how you or your organization can support cancer research happening at the UVM Cancer Center, please contact **Manon O'Connor**, Director of Development: manon.o'connor@uvm.edu or (802) 656-4471.



On June 24th, 2017 a group of community volunteers outdid themselves in hosting an evening celebration that raised \$195,000 for cancer research at the UVM Cancer Center and for the Lois McClure/Bee Tabakin Hope Lodge, which provides accommodations for cancer patients traveling from afar for treatment at the UVM Cancer Center. The UVM Cancer Center would like to offer its sincere appreciation for the amazing contributions of its caring community members who helped to make this event possible as well as to those who donated generously in support of the evening's mission. ■

Clinical Trials Highlights

The UVM Cancer Center brings clinical trials to patients in our region who would otherwise have to seek this level of care far from home. Clinical trials improve cancer care across the spectrum—from prevention through survivorship. While access to clinical trials benefits patients in our region they also lead to better cancer care around the world. Here are some recent news highlights that demonstrate the larger impact of this significant part of cancer research and care happening at the UVM Cancer Center.

Late Breaking News from the American Society of Clinical Oncology

The American Society of Clinical Oncology (ASCO) recently reported late breaking news on two trials offered to patients at the UVM Cancer Center as part of national studies.

“Olaparib Improves Outcomes in BRCA-Mutated Metastatic Breast Cancer,” is the headline for the phase III Olympiad trial. Results showed that Olaparib tablet monotherapy yielded **improved, progression-free survival** compared with standard-of-care chemotherapy among women with HER2-negative metastatic breast cancer and a germline BRCA mutation.

The second ASCO highlight, “Risk-Based Approach to Chemotherapy Duration Recommended for Stage III Colon Cancer,” looked at reducing

toxicity for patients, and showed evidence that a **3-month chemotherapy course was almost as effective as a 6-month course**, and was even more appropriate for low-risk patients.

FDA Approval for New Treatment for Acute Myeloid Leukemia (AML)

The FDA recently approved a new combination treatment for Acute Myeloid Leukemia (AML), based on the RATIFY trial, a national phase III study offered to patients through the UVM Cancer Center. The national trial showed “**significant advancement for newly diagnosed AML patients** with the FLT3 mutation,” according to Dr. Richard Stone, Chief of Staff and Director of the Adult Leukemia Program at Dana-Farber Cancer Institute.