Continued from page 2

Protein expression and cancer risk is the focus of ongoing research at the UVM Cancer Center, led by Thomas Ahern, Ph.D., M.P.H., assistant professor of epidemiology at the UVM College of Medicine and member of the UVM Cancer Center. Ahern was selected by Susan G. Komen for the Cure to carry out a study on exposure to phthalates, synthetic chemicals often found in modern consumer products, and subsequent risk of breast cancer. The $450,000 grant represents significant investment by the national foundation to fund the 3-Year study already underway at the University of Vermont Cancer Center.

Phthalates are used in an abundance of common products including toys, plastic goods, automobiles, baby care products, lotions, and medications. While nearly 85% of

American Cancer Society Grant Awarded to the UVM Cancer Center

Progress in cancer research over the past two decades has been remarkable. Five-year survival rates for cancer types such as prostate and breast have nearly doubled in the last 50 years, and cancer is becoming a survivable disease for many. However, more progress is needed, and the work of early-career researchers is critical in that effort. Junior investigators at the UVM Cancer Center will have a new opportunity to be a part of that progress, thanks to funding from a 2015 American Cancer Society (ACS) Institutional Research Grant (IRG).

At UVM, teams are looking at cancer from all angles, working to find novel ways to identify causes of specific cancers, determine individual risk for certain cancers, target therapy to cancer-type and to individuals, as well as find ways to support and enhance the quality of life for the increasing numbers of cancer survivors. “This competitive grant recognizes the innovative, team approach to cancer research that is taking place here at the UVM Cancer Center,” says UVM Cancer Center Director Gary Stein, Ph.D.

Funding from the prestigious award (only 10 percent of applications are funded) will be aimed at advancing innovative laboratory and behavioral science and translating findings into clinical applications. At the same time, the grant supports rising stars in the field of cancer research here in Vermont.
The UVM Cancer Center:
Advancing Cancer Research and Care

Since its founding in 1974, the University of Vermont (UVM) Cancer Center has been dedicated to advancing the prevention, detection, treatment, and survivorship of cancer. The physicians, scientists, caregivers and staff at the UVM Cancer Center are committed to providing state-of-the-art cancer diagnosis and treatment, delivering compassionate cancer care and support, providing education to patients and the community, and advancing innovative research from the laboratory to the patient. Through a unique partnership between the University of Vermont and the University of Vermont Medical Center, the UVM Cancer Center has built a team dedicated to advancing the prevention, detection, treatment and survivorship of cancer.

Our strength lies in the amazing individuals who work collaboratively at the UVM Cancer Center. Whether in the clinic or in a research laboratory, they strive to provide compassionate, state-of-the-art care to patients and to advance our understanding of this disease that affects so many people. Through a team-based approach to care and research we are improving outcomes for patients, and finding new ways to treat cancer. Each day we learn something new, and through strong partnerships between physicians, other caregivers, and our scientists, those discoveries are being translated to patient care in many ways. This means access to the most advanced cancer care and support services for our patients and their families right here in Vermont.

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Sincerely,
Gary Stein, Ph.D.
Claire Verschraegen, M.D.
Co-Director
Co-Director

P.S. We have changed our name! As of November 12, 2014 the Vermont Cancer Center became the University of Vermont Cancer Center, reflecting the strong partnership between the University of Vermont Medical Center and the University of Vermont.

Letter from the Directors

The University of Vermont Cancer Center is pleased to share with our community, near and far, news of the important progress being made here in cancer research, care, and education. Through this Innovations newsletter, our goal is to bring our many stakeholders, including the patients we serve, examples of how we, and they, are making a difference in advancing the prevention, detection, treatment and survivorship of cancer.

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Risks and Benefits of Supplemental Screening for Women with Dense Breasts

Just how common is dense breast tissue in women, and how effective are screening approaches for women with dense breasts? These are questions being answered by UVM Cancer Center member Brian Sprague, Ph.D.

In a recent study published in the *Annals of Internal Medicine* Sprague concludes that supplemental ultrasound screening for women with dense breasts would substantially increase costs with little improvement in overall outcomes. The research provides needed evidence on the benefits and harms of breast cancer screening options for women with dense breasts, and informs the discussion of national legislation that would mandate the disclosure of breast density information to women.

Mammographically-dense breasts—those that show more glandular and connective tissue versus fat in a mammogram image—are recognized as a risk factor for developing breast cancer and can also diminish an accurate reading of a mammogram. Additional research by Sprague and colleagues, published in the *Journal of the National Cancer Institute*, found that there is a high prevalence of women in the U.S. with mammographically-dense breast tissue, with more than 40 percent of women between the ages of 40 and 74 affected.

Sprague and his collaborators provide important information for policy makers considering national breast density notification laws.

“The fact that minimal health gains are projected with a substantial increase in biopsies and costs when ultrasound is used in screening underscores the need for further research into effective imaging strategies for women with dense breasts,” says Sprague, who is a cancer epidemiologist and assistant professor of surgery at the University of Vermont and co-director of the Cancer Control and Population Health Sciences research program at the University of Vermont Cancer Center. “This should include the evaluation of new imaging technologies such as digital breast tomosynthesis, which holds promise for increasing cancer detection while also reducing false-positive results.”

Brian Sprague, Ph.D.

Ahern Receives Susan G. Komen Grant

continued from page 1

Americans have detectable levels of these compounds in their bodies, individuals who ingest phthalates through daily medications, or, who have daily exposure through their job/vocation, have dramatically higher exposure.

The chemicals are thought to disrupt hormonal signaling in the body, and may be involved in cancer development, as well as pose other potential health risks. Preliminary studies suggest a link between phthalates and breast cancer risk, but the Institute of Medicine has stressed the need for definitive evidence of this link. Ahern’s project, an epidemiologic study focused on chronic, high-level phthalate exposure through medications in collaboration with Aarhus University in Denmark, will provide strong evidence for whether such a link exists.

“Should we find an association between phthalate exposure and breast cancer risk, our study would motivate a change in clinical practice so that women are treated with phthalate-free versions of the drugs they require,” Ahern said. “It may also motivate a change in pharmaceutical manufacturing so that phthalates are replaced with safe alternatives.”

The local Komen affiliate for Vermont-New Hampshire is enthusiastic about the grant. “It’s an important and very topical project being conducted here in Vermont which may have ramifications on breast cancer thinking and possible prevention the world over,” said Komen Vermont-New Hampshire Affiliate President, Becky Burke. “It’s also a very tangible example of what becomes of some of the funds raised through Races for the Cure and other events nationwide.”

Ahern, who is a Vermont native, is thrilled to have his research recognized through Komen, and to be carrying a promising line of research here in Vermont that could have a world-wide impact on breast cancer prevention.
The fundamental understanding of the role that genes and genetic material play in cancer development is evolving, and researchers at the UVM Cancer Center are at the forefront of investigating epigenetics—a new area of cancer research focus, which looks at those factors that influence gene expression rather than the genetic code itself.

Marie Wood, M.D., professor of medicine, hematologist/oncologist at the UVM Medical Center and director of the UVM Cancer Center’s Familial Cancer Program, is leading new epigenetic research focused on early detection of breast and prostate cancer. Wood’s recent publication, "Epigenetics and Cancer" in the Journal of Cellular Biochemistry, partnering with Drs. Jane Lian, Janet Stein, Gary Stein, Nicholas Farina, Chris Francklyn, Scott Perrapato, Mark Plante and Steven Ades, all of the UVM Cancer Center, her work looks at noncoding RNAs as biomarkers for risk assessment and early detection of cancer as well as risk for recurrence of cancer. This work is the next generation of early screening capabilities, indicating that someday soon a simple blood test may reveal early biomarkers for cancer risk.

Kaleem Zaidi, Ph.D., assistant professor of biochemistry and UVM Cancer Center member is a cancer biologist whose work focuses on understanding epigenetic mechanisms that are compromised in human leukemia. He is currently principal investigator for an NCI-funded grant to study the role of microRNAs in human leukemia. Partnering with UVM Cancer Center collaborators such as Karen Glass, Ph.D., assistant professor of pharmaceutical sciences at the Albany College of Pharmacy and Health Sciences and adjunct assistant professor of biochemistry at UVM, Zaidi’s current research has far-reaching implications for devising safe and specific therapeutics for treatment of human leukemia.

A $2.1 million grant from Pfizer Pharmaceuticals to establish epigenetic signatures for risk assessments of drug-related induction of cancer and tumor progression is driving a major initiative in the Stein Lab. Led by UVM Cancer Center members Jane Lian, Ph.D., Janet Stein, Ph.D. and Gary Stein, Ph.D., the research is harnessing state-of-the-art genomic analysis capabilities at the Cancer Center’s Advanced Genome Technologies Core to investigate cancer treatment-related alterations in epigenetic control. With these highly sensitive analyses the Stein Lab aims to develop epigenetic signatures that will inform the next generation of options to treat tumors that do not respond well to conventional approaches.

This body of epigenetic research at the UVM Cancer Center is leading to new collaborations, clinical trials, and key information critical to advancing new therapeutics, public health approaches to cancer prevention, and enhancing quality of life after cancer.

Farina Receives Federal Grant to Study Prostate Cancer Biomarkers

According to the National Cancer Institute (NCI), prostate cancer is the second most common cancer and second leading cause of cancer-related death in the United States. The NCI estimates more than 230,000 men will be diagnosed with prostate cancer in 2014, and nearly 30,000 men will die from the disease this year. Nicholas Farina, Ph.D., a post-doctoral associate in the University of Vermont Department of Biochemistry and member of the University of Vermont (UVM) Cancer Center, is looking to impact these statistics with new research funded by a United States Department of Defense (DoD) Prostate Cancer Research Program (PCRP) grant. His research is aimed at identifying novel biomarkers in the blood to more effectively diagnose the most aggressive forms of prostate cancer. The aim of the study is to facilitate the development of a simple blood test to ensure earlier and earlier detection of the disease and improve prostate cancer diagnosis and outcomes for patients. Farina was one of 22 investigators out of an international field of 104 to be awarded a 2014 Post-Doctoral Training Award by the Prostate Cancer Research Program at the Congressionally Directed Medical Research Programs. The two-year, $115,000 award recognizes Farina as one of the “next generation of prostate cancer investigators” as presented by the PCRP in its program announcement.
Enhancing Survivorship: Oncology Rehabilitation at the UVM Cancer Center

A cancer diagnosis—not to mention the treatments that follow—is physically and emotionally draining, and ideally, patients rely on a support team to get them through the process. Helping cancer survivors regain strength and energy after treatment requires a team effort, too. At the UVM Cancer Center that team includes physicians, physical therapists, nutritionists and others who provide a comprehensive approach to hematology/oncology rehabilitation, much like that provided for cardiac patients. Together, this team works with patients to improve strength, endurance, diet and mental health in an effort to mitigate the impact cancer and cancer treatment has on overall wellness.

“Cancer patients go through so much and cancer therapy can be physically and emotionally challenging. Yet rehabilitation services to support this population are not in place,” says Kim Dittus, M.D., Ph.D., UVM assistant professor of medicine and medical director of Steps to Wellness, the oncology rehabilitation program at the UVM Cancer Center. Dittus adds that while more research is needed to measure the impact of rehabilitation on cancer survivorship, she, and others in the field, believe it could positively impact risk of cancer recurrence and reduce risks for other health concerns associated with cancer and cancer treatment—such as increased risk for cardiovascular disease.

In 2012, the program, which was launched in 2011 with support from the Victoria Buffum Fund at the UVM Medical Center and a lead gift from Eric Lande, gained a new set of teammates and along with them, a welcome stream of funding. Now, for a third year, the UVM College of Medicine Running and Marathon Team will be raising funds for oncology rehabilitation services and research at the UVM Cancer Center. This student-led effort will be bolstered this year as the UVM Medical Center joins the College of Medicine student team effort in raising funds and awareness. To date, the running and marathon team, whose members participate annually in the Vermont City Marathon and Relay, has raised more than $50,000 for the program. They aim to add to that total again this year.

Oncology rehab patients are encouraged to join the students in raising funds, awareness—and, even running.

Supporting the Mission

Perelman Family Philanthropy Creates Two Endowed Funds at the UVM Cancer Center

Arthur J. Perelman, M.D./’52, of Summit, N.J., sons Robert, Jon and Carl and their children have added to their philanthropic legacy at the UVM Cancer Center by establishing the Arthur Jason Perelman, M.D./’52 Endowed Professorship. In establishing this fund the family wishes to both recognize and support, in an ongoing way, the invaluable work of cancer research happening at the UVM Cancer Center. The Perelman family celebrated the new gift with UVM Cancer Center leadership in February, and looks forward to the naming, in the coming year, of the first Perelman Professor.

In 2012 the family’s generous support created the Charlotte E. Perelman Cancer Research Fund, also known as the “Charlotte Fund,” at the UVM Cancer Center in honor of their late wife, mother, and grandmother. The Perelman family’s investments in supporting cancer research here in Vermont have been extraordinary and will have a lasting impact on patients in Vermont, Northern New York and beyond.

“The Perelman Family has provided this Cancer Center, the community it serves and the larger scientific community dedicated to cancer research with a tremendous investment,” shared UVM Cancer Center Co-Director, Gary Stein, Ph.D., at an event to honor the Perelman’s recent gift. “Their gift recognizes the importance of cancer research and we are incredibly grateful.”

A Community Behind Us

Local businesses throughout Vermont and New York have made it a part of their mission to support the mission of the UVM Cancer Center. Below, we recognize some of the many local businesses who have demonstrated a significant commitment to the UVM Cancer Center.

*Designated American College of Radiology Lung Cancer Screening Center*

UVM Cancer Center Recognized as National Lung Cancer Screening Center

Lung cancer remains the leading cause of cancer-related death in the United States for both women and men. Unlike breast or colorectal cancer, a screening test for lung cancer has not been available until recently. In 2011, a large study called the National Lung Cancer Screening Trial (NLST) was published. This study demonstrated that a yearly low-radiation CT scan of the chest in people at increased risk for lung cancer can significantly reduce the number of people dying from the disease. As a result, lung cancer screening has been recommended by the US Preventive Services Task Force (USPSTF) for people in the following group:

- Age 55-80 years
- History of smoking at least 30 pack-years (average of 1 pack per day for 30 years)
- Actively smoking or quit within the last 15 years

The American College of Radiology (ACR) recently designated the UVM Cancer Center a national lung screening center. The screening program is one of only a handful of sites in the United States currently accredited by the ACR to perform and interpret the results of the lung cancer screening test. Individuals who meet the above criteria, can speak with a health care provider about lung cancer screening.

The most important risk factor for developing lung cancer remains a history of tobacco smoking. If you are smoking and looking to quit, contact the Vermont Quit Line at (802) QUIT-NOW or online at 802quits.org.

From left: Jon Perelman, Arthur J. Perelman, M.D. ’52, and Robert Perelman, M.D.

Perelman native Keegan Bradley, the 2011 PGA Tour Rookie of the year and a star of the 2012 U.S. Ryder Cup team, returned to the Woodstock Inn & Resort in Woodstock, Vermont, on Aug. 25, 2015 with fellow PGA Tour winner Brendan Steele to host the third annual Keegan Bradley Charity Golf Classic.

The event, benefiting the Pediatric Cancer Research Foundation in its support of the University of Vermont Cancer Center and University of Vermont Children’s Hospital, raised more than $60,000 in net proceeds for pediatric cancer research.

“We’re proud to support Vermont causes and children’s cancer is an important one,” said Bradley, “Our outing last year was a great success and we hope to have as much fun and raise even more money for children’s cancer research this year.”

Keegan Bradley Charity Golf Classic Benefits UVM Cancer Center and UVM Children’s Hospital

SD Ireland • Leunig’s Bistro • Windows and Doors by Brownell Farrell Distributing • The Vermont Agency • Green Mountain Landscaping Newman’s Own • Hornet’s Nest Pub • Pebbles Ticonderoga

To learn more about making a philanthropic contribution to benefit the UVM Cancer Center, please contact Manon O’Connor, Sr. Director of Development, at (802) 656-4471 or by email at Manon.OConnor@uvm.edu.
Clinical Trials at the UVM Cancer Center

The UVM Cancer Center provides patients with the opportunity to enroll in clinical trials across all types of cancer. Clinical trials are controlled research studies that test new ways to treat cancer, enhance quality of life for cancer patients, and mitigate side-effects of cancer treatment and more. Successful cancer treatments in use today are the result of clinical trials work.

**HIGHLIGHT**
A multi-site clinical trial at the UVM Cancer Center, led by Steven Ades, M.D., M.Sc., UVM associate professor of medicine, tested a supportive care drug combination aimed at reducing vomiting and nausea in patients undergoing cancer treatment. Clinical site partners on the trial included Mayo Clinic in Arizona, Wake Forest University in North Carolina, Norris Cotton Cancer Center at Dartmouth in New Hampshire, and UMass Medical Center in Massachusetts. Patients here in Vermont had local access to a promising new therapeutic, and also had the chance to help physician-investigators advance treatment options and improve quality of life for future cancer patients.

**MYTH**
Clinical studies are not safe, I’d be gambling with my health if I signed up.

**FACT**
New treatments are tested on human subjects only after there is valid scientific evidence that the treatments are likely to be effective and safe. If you take part in a phase III clinical trial, the drug or treatment has already been tested on small groups of patients for both safety and effectiveness.