

HOLLINGS

The Newsletter of Hollings Cancer Center
Medical University of South Carolina

HORIZONS

Winter 2017/2018

PERSONALIZED MEDICINE



Tumor-Specific Antigens: Cancer's

By Kimberly McGhee, Illustrations by Emma Vought

Checkpoint modulators such as PD-1 and PDL-1 inhibitors have changed the face of cancer care, eliciting long-lasting responses in select patients with solid tumors that have metastasized, or spread from the original tumor. Although a few patients receive great benefit, there is some frustration in the field that these new immunotherapies do not as yet help more patients.

"Checkpoint modulators in lung cancer have had spectacular results in a few cases and responses in about 20 percent of patients but have done little in the other 80 percent," says John M. Wrangle, M.D., a Hollings Cancer Center researcher and oncologist who specializes in immunotherapy to treat lung cancer. "That is disappointing clinically. We want immunotherapy to work for more people."

Combining checkpoint modulators with other immunotherapeutic strategies will likely be necessary if more lung cancer patients are to benefit. Wrangle and his collaborators at the Medical University of South Carolina (MUSC), which include cancer immunologists Mark P. Rubinstein, Ph.D., and Chrystal M.

expanded and manipulated safely before reinfusion, makes a trial of TIL therapy feasible at Hollings.

"The Center for Cellular Therapy is one of the few facilities in the country that is able to move a trial such as that for TILs to clinic with efficiency and safety," says MUSC Health transplant surgeon Satish N. Nadig, M.D., Ph.D., medical director of the center. Shikhar Mehrotra, Ph.D., is the center's co-scientific director for oncology and immunotherapy programs.

The second goal of the team is to identify tumor-specific antigens, which trigger the body to make an immune response. These tumor-specific antigens, or neoantigens can be used to fine-tune their TIL product and, in the longer term, to create custom personalized vaccines that can be used in combination with other immunotherapies to improve outcomes for patients with lung cancer.

Developing TIL therapy for lung cancer

Approval of chimeric antigen receptor (CAR) therapy, a type of ACT, by the FDA in August 2017 for pediatric acute lymphoblastic leukemia has helped ignite enthusiasm about ACT's clinical potential. While the FDA-approved CARs are genetically engineered to target CD19, which is expressed on both healthy and cancerous B cells, TILs are naturally occurring and target the tumor only. "TILs are already within you, and that is one reason they are so good," says Paulos, whose laboratory is growing TILs from patients with lung cancer and other solid tumors, including melanoma and

Cancer, which develops due to mutations, could in fact be made recognizable — and precisely targetable — by the immune system as a result of some of those very mutations. Ironically, the mutations that define cancer and make it such a fearsome foe could become its Achilles heel.

Paulos, Ph.D., thoracic surgeon Chadrick E. Denlinger, M.D., and bioinformatician Jeff Hammerbacher, are currently working on two related strategies that lie at the interface of immunotherapy and genetics.

The first and most immediate goal of the team is to create a tumor-infiltrating T lymphocyte (TIL) product for lung cancer that they hope to bring to clinical trial at the MUSC Hollings Cancer Center, South Carolina's only NCI-designated Cancer Center. In TIL therapy, a type of adoptive cell transfer (ACT) therapy, T cells are harvested from a patient's tumor, expanded outside the body and reinfused into the patient to enhance the immune response against cancer. The availability of a clean room suite registered by the Food & Drug Administration (FDA) in the MUSC Center for Cellular Therapy, where cells harvested from the patient can be

breast cancer. "They are natural and fine-tuned to elicit a specific immune response against a mutated tumor."

Steven A. Rosenberg, M.D., Ph.D., at the National Cancer Institute and others have achieved impressive clinical responses in a substantial subset of patients with metastatic melanoma. A few patients have had such long-lasting responses that they are likely cured. In a pooled analysis of recent clinical trial protocols, the overall response rates and complete response rates for metastatic melanoma were around 50 percent and 20 percent, respectively, with 95 percent of those with complete responses remaining disease free for at least five years.¹

In 2017, Wrangle, Rubinstein and Paulos traveled to M.D. Anderson, a leader in TIL therapy, to learn its protocols for expansion and reinfusion of TILs. They then sought out Denlinger,



Achilles Heel?

who has been providing them with lung tumor tissue removed during surgery.

“We are taking lung cancer specimens and preserving them fresh and sending them straight to the laboratory with the intent of growing out the T cells,” says Denlinger. They have now isolated TILs from about two dozen tumors and have successfully navigated the challenges of expanding them in the laboratory.

Although their initial focus has been on lung tumors, they are also working on isolating and expanding TILs from metastatic tumors in the liver, provided by Nadig, and in the brain, provided by resident neurosurgeon Fraser C. Henderson Jr., M.D. The next steps are to implement the protocols optimized in the laboratory at the Center for Cellular Therapy, to complete an investigational new drug application to the FDA and to find funding for the trial.

The role of neoantigens

Realizing that alternative approaches are likely to be necessary, the Hollings Cancer Center team is also working at the interface of immunotherapy and genetics to help fine-tune TIL therapy and to develop custom, personalized vaccines that could one day be administered in combination regimens to expand the number of people with lung cancer who can benefit. Next-generation genomic sequencing of both healthy and cancerous tissues has enabled identification of cancer-associated mutations known as neoantigens. Because these neoantigens result from mutations that are unique to cancer cells, immunotherapies targeting them should not in principle damage normal tissue.

Cancer, which develops due to mutations, could in fact be made recognizable — and precisely targetable — by the immune system as a result of some of those very mutations. Ironically, the mutations that define cancer and make it such a fearsome foe could become its Achilles heel.

Fine-tuning TIL therapy

TILs have historically shown efficacy in metastatic melanoma, a cancer with a high mutational load and one that has responded well to a variety of immune-based therapies. Because lung cancer has almost as high a mutational load as melanoma and has recently been shown to respond to checkpoint therapy, the MUSC team thinks that TIL therapy could also offer benefit to patients with lung cancer.

Relying on the Center for Genomic Medicine directed by Stephen P. Ethier, Ph.D., the MUSC team is having each of the tumor samples sequenced so that neoantigens can be identified. Sophisticated machine learning and other advances in bioinformatics have enabled predictive algorithms to be developed to identify which of these neoantigens are most likely to trigger an immune response. A predictive algorithm is being used, optimized by Hammerbacher, to identify the neoantigens most likely to provoke an anti-cancer immune response.

“Out of the tens of thousands of mutations a tumor may harbor, maybe only a handful interact with the immune system,” says Wrangle. “The purpose of the algorithm is to separate the wheat from the chaff.”

TUMOR-SPECIFIC ANTIGENS Continued on page 4

HCC Scientist Rallies for Research in D.C.

On September 14, 2017, hundreds of advocates from organizations and institutes across the nation assembled on Capitol Hill for the 5th Annual Rally for Medical Research. The rally brings together researchers, physicians, patients and advocates to meet with members of Congress to convey the importance of research to the eradication of diseases such as cancer. Hollings breast cancer researcher Adam Soloff, Ph.D., joined the ranks as a representative for the Susan G. Komen Foundation to advocate for increased federal funding for the National Institutes of Health. Soloff is currently funded by Komen to study targeted immunotherapy for breast cancer.



Senator Tim Scott and Dr. Adam Soloff



“Participating in the rally allowed me to express to our South Carolina members of Congress the great impact that medical research has on the well-being of our patients and loved ones,” says Soloff. “Medical advancements translate into life-saving interventions.”

TUMOR-SPECIFIC ANTIGENS *Continued from page 3*

It is hoped that one day the team could use that information to identify TILs that target the most reactive neoantigens.

“When we identify a neoantigen, we can match a certain T cell with a certain antigen and that becomes the finely-tuned TIL product that we give back to the patient,” says Denlinger.

However, it is also possible that the appropriate T cells could be found in the blood, pointing the way forward for a much less logistically challenging form of ACT — one which requires a simple blood draw instead of surgery to obtain tumor tissue.

Customizing vaccines

An alternative strategy would be to develop customized vaccines tailored to the neoantigenic profile of a patient’s cancer. Such a vaccine could consist of a mutated protein or peptide (i.e., the neoantigen) administered with an additional cancer therapy, or adjuvant, to optimize the immune response. “If less than one percent of T cells in the blood of a patient are tumor-reactive, and we can use a vaccine to activate and expand these cells to over 20 to 30 percent in circulation, that might have dramatic therapeutic value, particularly when such a vaccine is combined with other newer therapies,” says Rubinstein.

Many pharmaceutical companies — both long-established ones and startups — are conducting clinical trials of these customized vaccines, both as a stand-alone therapy and in combination with other treatment approaches such as checkpoint modulators, radiotherapy and chemotherapy. These trials are in their infancy, with very little actual clinical data reported. The very nature of these vaccines challenges the usual pathway to regulatory approval. Because they are customized to the patient, there is no “one” product that can be tested in clinical trial. The efficacy of the

treatment may need to be judged in part on the sensitivity and accuracy of the predictive algorithm itself.

“If you’ve got a typical FDA-approved drug, it’s been tested in a thousand people and has been given in exactly the same manner to everyone,” says Wrangle. “With a custom vaccine, if it is based on a predictive algorithm, that algorithm is the thing that is critical for the ultimate efficacy of the therapy.”

Wrangle is confident in the predictive algorithm being optimized by Hammerbacher and in the ability of his team to compete in this new pharmaceutical space.

“How will we compete with companies worth hundreds of millions of dollars?” asks Wrangle. “It’s through innovation in terms of the vaccination strategy. That’s where basic science is indispensable. If existing groups had it right already, we would have heard about it.”

The Hollings team is working hard to get it right. They are seeking answers to fundamental questions, such as the number of neoantigens needed for an effective vaccine and the proper cancer treatments to use with it to increase immune response, and are refining the manufacturing process for proteins and the software they will need to interpret their results. “We don’t think custom vaccines will do it by themselves,” says Wrangle. “So it is important to do preclinical work to understand how you fully engender or accomplish an effective immune response and how we can best optimize our vaccine strategies.”

References

¹ Rosenberg SA, et al. *Clin Cancer Res.* 2011;17:4550–4557.

For more stories from Progressnotes, visit MUSChealth.org/pn

Hollings Cancer Center Makes New Advances in Immunotherapy

Overlooked immune cells hold breakthrough

A breakthrough discovery in the laboratory of Dr. Chrystal Paulos published in *Nature Communications* found that a certain type of T cells are excellent cancer fighters and may help advance the use of T cell-based immunotherapies for cancer.

Those T cells were ones with high levels of the CD26 protein on their surface, and were found to be even more effective against aggressive tumors. Paulos and her team hopes to further explore the clinical benefits of this discovery and whether it may improve the effectiveness of other cancer immunotherapies.

Read more at academicdepartments.musc.edu/newscenter/2017/Overlooked-immune-cells-show-promise-in-new-ACT-therapy.



Dr. Stefanie Bailey, co-author on the study in the laboratory

Hollings on track to offer new gene therapy

Two new chimeric antigen receptor (CAR) therapies have recently been approved by the Food & Drug Administration, the first T cell-based therapies to gain approval. The “living drug” helps the body battle cancer. Researchers engineer cells in the laboratory then return them to the patient’s body, where they continue to divide and fight the cancer. Paulos described how the treatment works. “T-cells, which play a key role in the immune system, are genetically altered to produce CARs, or T-cell receptors which recognize and target proteins specifically linked to cancer.”

Read more at academicdepartments.musc.edu/newscenter/2017/car-t-cell-gene-therapy.



Dr. Chrystal Paulos, cancer immunologist at MUSC

Photos by Sarah Pack

Improved Access to Cancer Care

The MUSC Hollings Cancer Center encompasses 11 multidisciplinary care teams and dozens of cancer specialists who are experts in their fields. This breadth of knowledge offers myriad patient benefits, including access to the latest, most effective treatment methods and protocols. One downside to the vast program scope: navigating the system.

“Referring physicians and patients have had a hard time figuring out how to access our system, which tends to be very subspecialized by nature,” says David Mahvi, M.D., a professor of surgery, division chief of surgical oncology and chief of the Oncology Integrated Clinical Center for Excellence. “Finding where to go and how to get in to see the right doctor has been an issue — one that we wanted to fix.”

Through the oncology patient access initiative, Mahvi says patients can more easily receive top-notch, empathetic cancer care — starting with their very first interaction with the MUSC team.

Previously, when patients called the main MUSC number to request an appointment with an oncologist, the system used complex algorithms to direct them to the most appropriate person to field that call. At times the system didn’t work as well as the care team wanted.

“A patient could access the system in many different ways. There were multiple phone numbers a patient could call, and there were different ways to navigate the system. But there wasn’t any particular way that you could push the system along. There was

“We’re committed to making the whole system work *seamlessly* — from patients’ first contact with us. This initiative has made *great strides* toward that goal.”

nobody to help guide each patient through the process after a cancer diagnosis,” says Mahvi.

Some patients might not see an oncologist until two weeks after their initial call, which didn’t sit well with Dr. Mahvi, who appreciates how anxiety-inducing a cancer diagnosis can be.

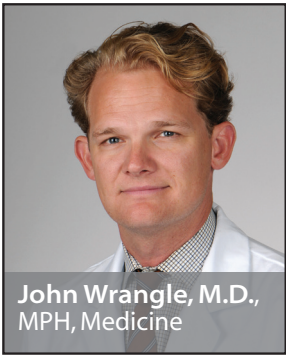
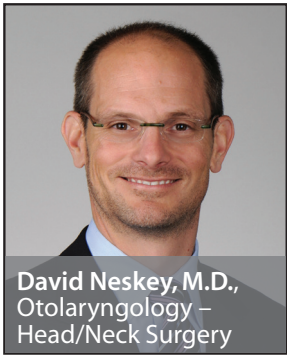
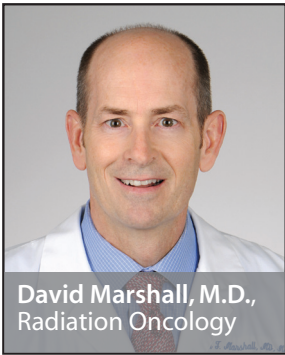
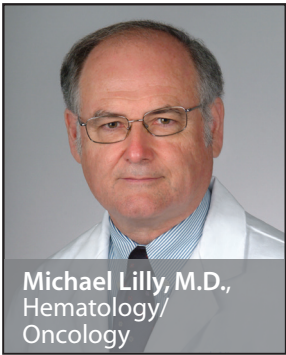
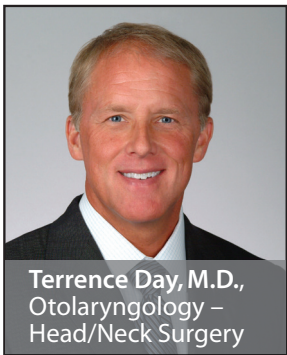
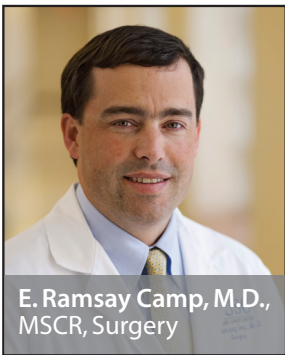
Through this new initiative, the process for cancer patients to access care has been streamlined. By formalizing training of frontline staff responsible for answering phones and engaging nurse navigators with patients during their first appointment, Hollings has been able to expand access for not only newly diagnosed patients, but also for those in remission or with a recurring diagnosis.

“We’re here to deliver great cancer care, and we can only do that if our patients are completely satisfied with that care,” says Mahvi. “We’re committed to making the whole system work seamlessly — from patients’ first contact with us. This initiative has made great strides toward that goal.”

New Program to Boost Interest in Cancer Research

HCC announced the first recipients of the Clinical Scholar Program, an exciting new opportunity for MUSC physicians active or interested in cancer-related research. The

program was developed by HCC to foster the careers of junior and senior physician-scientists and to enable cutting-edge cancer research that leads to improved cancer care.

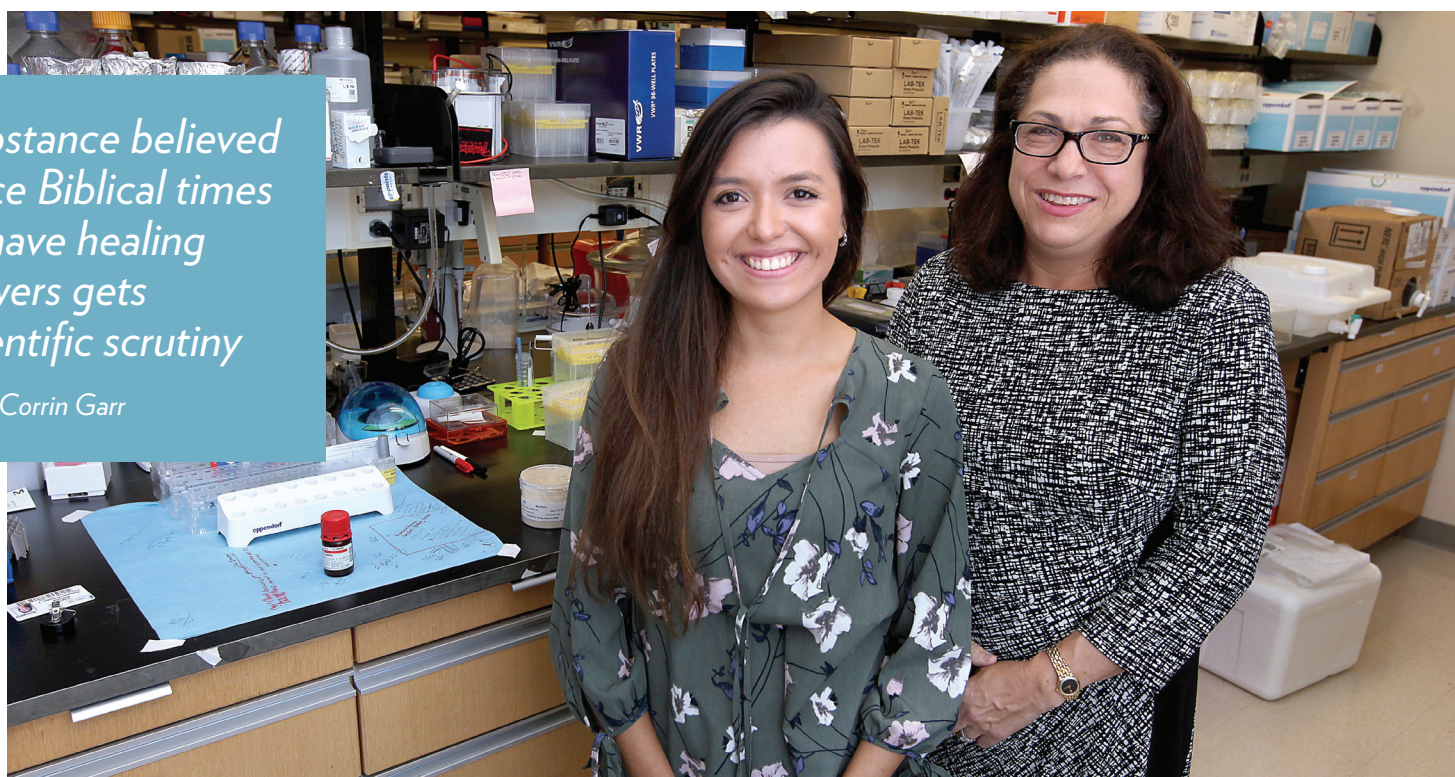


2017
Clinical
Scholar
Recipients

Frankincense Tested as Possible Treatment for Breast and Colon Cancer

Substance believed since Biblical times to have healing powers gets scientific scrutiny

By S. Corrin Garr



Dr. Nancy DeMore and Ingrid Bonilla (left) in the laboratory at MUSC

Photo by Sarah Pack

Cancer surgeon and researcher Nancy DeMore, M.D. is leading a clinical trial using frankincense to try to treat breast and colon cancer at the Medical University of South Carolina. The study was inspired by a research specialist in DeMore's laboratory.

Ingrid Bonilla had researched frankincense as a treatment on breast cancer cells as an undergraduate student at Charleston Southern University. "Seeing encouraging results in our lab, I did my research on clinical studies with frankincense. I contacted the author of the only published breast cancer clinical case study to find out more."

DeMore, who has done extensive research on new treatments for breast cancer, was willing to put it to the test. "It's nice to see doctors like her who think outside the box," Bonilla says. "Out of all the physicians that I talked to about this, Dr. DeMore was the only one who was interested in moving this forward."

DeMore says boswellic acid, the extract from Indian frankincense, may help patients by reducing inflammation. The chemical structure of boswellic acid is similar to other anti-inflammatory drugs such as ibuprofen. Bonilla and DeMore wrote the current clinical trial with data from clinical trials of the extract in Europe.

DeMore says their study is "window of opportunity" trial that takes advantage of the window of time between the initial diagnosis of breast or colon cancer and surgery to remove the cancer. The patient will take boswellia while waiting for surgery.

"Tumor from the biopsy that was taken to make the diagnosis of cancer before treatment will be compared to the tumor taken at surgery after treatment," DeMore said. "This will allow us to assess whether taking boswellia changes the biology of the tumor."

Frankincense would not be the only plant-based treatment for illness. For example, digoxin, from the foxglove plant, is used to treat cardiac arrhythmias. DeMore says it's important to put

potential treatments through rigorous testing. "A lot of herbs and alternative therapies haven't been studied scientifically, so it's really important to know, in a well-designed clinical trial, these natural products work."

DeMore started her research into natural products with curcumin in the 1990s. Extracted from turmeric, curcumin inhibits blood vessel growth in tumors. Slowing the growth of new blood vessels in tumors is a common approach to treating many cancers.

She then set out to test medicinal uses of other natural products. "What we are really committed to doing is to study natural products in a well-designed clinical trial to prove whether or not there is a benefit. We don't know if it's going to work."

The MUSC Hollings Cancer Center is funding the trial. DeMore wants to recruit 40 breast cancer and 20 colon cancer patients over the next one to two years. "I would just encourage patients, if they do get diagnosed with cancer, to really be open to clinical trials. They're the only way to make new discoveries and to move the field forward."

While the preclinical evidence for boswellic acid seems promising, it's important not to replace standard treatment with natural therapies that haven't been studied well, DeMore says. "The traditional treatments that we advise for patients have been through extensive, rigorous clinical trials where the benefits of treatment are well-known, as are the side effects."

She says therapies that aren't based on clinical trial results could have unexpected side effects, or even harmful effects. She also says people should be aware that over-the-counter frankincense may not contain the dosage or quality of the extract being tested in this study.

Bonilla is just grateful that DeMore took her idea seriously, "I never pictured myself five years ago sitting here and being involved in anything like this. I consider myself very blessed."

HCC Launches Fellowship Program

Interview: Mike Ostrowski, Ph.D.

Hollings Cancer Center recently launched the HCC Fellowship Program for Graduate, Postdoctoral and Clinical Fellows. Here, Michael Ostrowski, Ph.D., shares the mission and significance of the Center's newest initiative.

● **You were recruited to MUSC from the Ohio State University (OSU) Comprehensive Cancer Center. What was your role there?**

I focused on the review process for their fellowship program. Their fellowship program launched in 2010, following the success of OSU's largest fundraising event, Pelotonia. The event now funds the fellowship program in its entirety. I also served as program leader of the Molecular Biology Research Program.

● **How will your new role at Hollings be integrated into research and training at HCC?**

I will oversee the fellowship program with David Long, Ph.D., and Elizabeth Yeh, Ph.D., who will head up the Graduate Fellowship Program and the Postdoctoral and Clinical Fellowship Program, respectively. I am also involved in the development of the new cancer focus teams that are designed to facilitate translational research. These aren't directly related to the Fellowship Program, but any opportunity to bring together basic and population scientists with physician-scientists while mentoring junior investigators is a win-win for the center.

● **How will the program position HCC as a top center for up-and-coming cancer scientists?**

A program like this is an important component of the cancer education pipeline and the entire structure of an academic medical center. The idea is to boost productivity among young



scientists. A strong training program with reputable mentors that creates time to conduct research will allow these fellows to lead their fields and play a critical role in the future of cancer research. The program also will help attract top students from all over the country, boosting recruitment and increasing retention of faculty and physicians. We need to support and facilitate discoveries at MUSC and help investigators develop those findings into clinical and population-based studies that can be integrated into the community.

● **Does the program support researchers and clinicians?**

The Postdoctoral Fellowship supports Ph.D. or M.D./Ph.D. candidates from all disciplines through the 2-year program. For clinical fellows, the award supports additional time for physician-scientists to focus on scientific research. Both the Graduate Fellowship and Postdoctoral Fellowship programs are open to domestic and international trainees who are interested in cancer-related research.

● **How is this program being supported?**

Cancer center funds support the first two years. In 2018, HCC is launching an annual bike ride that will fund the program subsequently. The goal of the bike ride is to rally the community around not just cancer research, but the concept of creating a movement and setting in motion the efforts it takes to find a cure.

● **What about the program do you find most exciting?**

Training the next generation of cancer researchers. Funding is tight and young investigators need an environment in which they can discover and learn. They need a forum to succeed, and we have all of the resources to deliver that here at MUSC.



Research in the Spotlight: Recent Publications

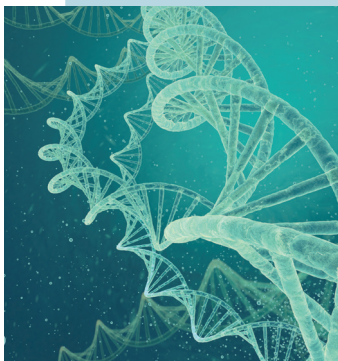


Can e-cigarettes help smokers quit? Published in *Cancer Epi., Biomarkers & Prevention*

As e-cigarettes become more popular, fewer people are taking up smoking traditional cigarettes. **Matthew Carpenter, Ph.D.**, a tobacco control and addiction expert at the Hollings Cancer Center found that smokers who are willing to use e-cigarettes tend to smoke less and have increased quit attempts.

For young smokers, e-cigarettes can be seen as a gateway to conventional cigarettes, which are the most harmful form of nicotine delivery. Studies have shown that e-cigarettes in general offer significantly less exposure to harmful toxicants, as compared to traditional cigarettes, however Carpenter advises, “we know e-cigarettes are safer than traditional cigarettes, but that doesn’t mean e-cigarettes are completely safe.”

Read more at academicdepartments.musc.edu/newscenter/2017/ecigarettes-smoking.

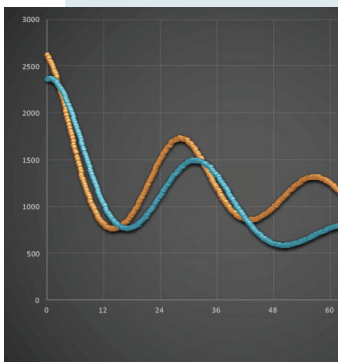


The RNA family Published in *Nature Cell Biology*

Hollings researchers have found that different types of ribonucleic acids (RNAs) that do not encode protein are key players in cancer. These regulatory RNAs can either keep cancer in check or promote its development, depending on the presence of other pro-tumor molecules.

“Metastasis, or the spread of cancer from a primary site to other tissues and organs, accounts for over 90 percent of cancer-related mortalities, yet it is probably the least understood process of cancer progression,” says **Phillip Howe, Ph.D.**, RNA expert and co-author on the study. “To better understand it, we need to find each RNA’s functional significance and mechanism of action. Then, long term, we need to consider whether these could be therapeutic targets.”

Read more at muschealth.org/pn/2017/fall/features/rna.



Cancer overrides the circadian clock to survive Published in *Nature Cell Biology*

Tumor cells use the unfolded protein response to alter circadian rhythm, which contributes to more tumor growth, Hollings Cancer Center researchers find. A key part of the circadian clock opposes this process, which helps cancer cells survive in conditions that would kill normal cells. A recent study by **J. Alan Diehl, Ph.D.**, examines ways to restore cancer cell’s biological clock.

“Every single normal cell in our body has circadian oscillation,” said Yiwen Bu, postdoctoral student and first author on the paper. “We showed that resetting the circadian rhythms in cancer cells slows down their proliferation.”

Read more at academicdepartments.musc.edu/newscenter/2017/diehl-circadian.

Faculty Awards & Recognition

Dr. Marvella Ford Named SmartState Endowed Chair in Prostate Cancer Disparities

The most recent addition to the SmartState Center of Economic Excellence is **Marvella E. Ford, Ph.D.**, who has been appointed the SmartState endowed chair in prostate cancer disparities in tandem with a newly established faculty appointment at South Carolina State University. Since her recruitment to MUSC in 2005, Ford has been awarded more than \$27.5 million in extramural grants as principal or co-investigator and has implemented a triad of training programs supporting underrepresented minorities interested in careers in cancer research or health disparities.



Dr. Chanita Hughes-Halbert Elected into the National Academy of Medicine

Chanita Hughes-Halbert, Ph.D., Distinguished AT&T Endowed Chair in Cancer Equity at MUSC, was recently elected into the National Academy of Medicine. She is the first woman and first African-American from South Carolina to attain this distinction. Considered as one of the highest honors in health and medicine, National Academy of Medicine membership reflects individuals who have demonstrated outstanding professional achievements and commitment to service. Her work has led to numerous advances in the fields of cancer control, minority health and health disparities.



Cancer Patient's Spirit Inspires Others

PLAN. FIGHT. LIVE.

These are the words that came to John Saber's mind when he was diagnosed with late-stage pancreatic cancer in 2016. As John, his wife, Vicki, and their four daughters learned, this cancer often goes undetected and spreads quickly, offering little hope for a cure.

But John was determined to fight. He and his family made treatment plans and consulted doctors throughout the country. When they realized they had access to top treatments and clinical trials right in their own backyard, their search for the best care led them to Hollings Cancer Center.

In 2016, the Sabers attended the Talbot Pancreatic Cancer Awareness Reception for pancreatic cancer survivors and patients at Hollings. The event was supported by the generosity of the Talbot family in memory of the Honorable Francis F. Talbot, who was a Federal Administrative Law Judge of Mount Pleasant, SC. The event shares the latest findings in research, diagnosis and treatments.

Judge Talbot's wife and event founder Jane Talbot says, "Our family gained time and a kernel of hope from a clinical trial. When Frank died, we established an endowment to support research on earlier diagnosis and treatment of pancreatic cancer. Later we began this event to educate others on pancreatic cancer and bring hope to those walking through treatment."



John and Vicki Saber, their daughters and son-in-law, on a trip to the Wizarding World of Harry Potter together in 2016.

The event inspired the Sabers to support research at Hollings.

Vicki said it was an eye-opening experience. "We had no idea this amazing research was being done here," she says. "After John was diagnosed, we began supporting a national organization. When we heard what was happening at Hollings, we thought, why not here? Why can't a breakthrough happen in Charleston, in our community?"

As a family, the Sabers made plans to make a difference. They began with peer-to-peer online fundraising. They posted their story, used email and social media to

explain the difference research can make, and the donations began arriving. Friends and family from near and far joined the fight for answers. Wanting to do more, John's daughters made and sold bracelets, with proceeds supporting Hollings.

John's daughter Emma says it felt good to get involved. "We know with more research, the outlook for this type of cancer can dramatically improve. Let's increase what we know about pancreatic cancer to provide more hope to patients and families like ours, who need hope so badly."

John was committed to making the most of every day. Cancer didn't stop him from gathering with those he loved including making a family trip to Orlando and taking a vacation to Montana with his brothers. In May 2017, John lost his fight to cancer. His family continues John's legacy of "plan, fight, live." They remain dedicated to supporting research and discovery so fewer families will face the hopeless diagnosis they received.

Vicki says pancreatic cancer can hit anyone. "It's devastating to realize we couldn't be given hope because answers haven't been found yet. We're on a mission to spread the word and make a difference so others can live. We learned from John and use his strength to never stop fighting, never stop living, never stop spreading the word, in hopes that one day answers will be found. Research has to come further, and we believe it can happen at Hollings."

Dr. Andrea Abbott Earns Hidden Scar™ Breast Cancer Surgery Certification

Andrea Abbott, M.D., MSCR, a surgical oncologist at Hollings, earned her certification as a Hidden Scar™ Trained Surgeon for Breast Cancer Surgery. Abbott is among the first in South Carolina to perform this minimally invasive procedure which reduces visible scarring without compromising outcomes for breast cancer patients. The MUSC Hollings Cancer Center continues to expand options for women in the Charleston area by offering a procedure that effectively treats the cancer while optimizing cosmetic results.



U.S. WORLD NEWS & REPORT

U.S. News & World Report unveiled its 28th "Best Hospitals" edition in August. For the second consecutive year, MUSC was among the coveted "top 50" hospitals for cancer treatment. The report, which helps patients identify hospitals that excel in treating the most difficult cases, evaluates over 4,000 medical centers nationwide in 25 specialties. This honor reflects the exceptional physicians, faculty and staff who have helped position HCC among the nation's top facilities.



10th Annual Jerry Zucker Ride for Hope

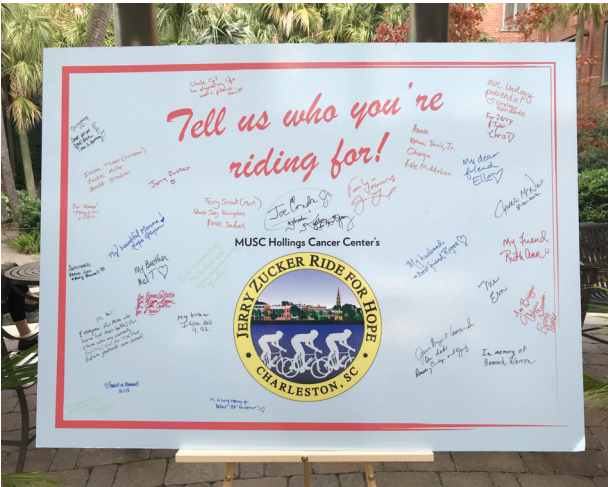
On October 26, 2008, cyclists set out from Blackbaud Stadium for a 30-mile bike ride to support the fight against cancer. The Charleston Ride for Hope, organized by Dawson Cherry, had begun. Little did these cyclists know they would go on to raise nearly a million dollars for cancer research over the next 10 years.

Since that first ride, the Charleston Ride for Hope has evolved. In 2009, Cherry partnered with the InterTech Group and renamed the event the “Jerry Zucker Ride for Hope.” While the ride later moved to the Sewee Outpost in Awendaw, the commitment to local organizations actively supporting cancer research and care has remained constant.

A proud partner of the ride since the beginning, Hollings Cancer Center led the ride in 2017 as the event’s organizer. Due to recent hurricanes and floods, the 2017 ride called for a creative twist. On

November 5, more than 120 supporters of cancer research joined forces to raise funds for the 10th Annual Jerry Zucker Ride for Hope, benefiting HCC, during a series of four, 45-minute indoor cycling classes at the MUSC Wellness Center.

Each rider had a minimum fundraising goal to reach with 100 percent of the \$96,377 rider-raised dollars directly supporting cancer research at the Hollings Cancer Center.



Clockwise from top: MUSC Wellness Instructor Dana Mitchel and George Hincapie kick off the first of three classes during the Jerry Zucker Ride for Hope; MUSC first lady Kathy Cole, MUSC President Dr. David Cole, Suzie Waters, and Anita Zucker; Cyclists dedicated their ride to loved ones; Sponsors of the 2017 Jerry Zucker Ride for Hope; Participants of the 2017 Ride for Hope at the MUSC Wellness Center.



A Toast to the 10th Annual

Gourmet & Grapes

February 1-4, 2018



www.gourmetandgrapes.com

Gourmet & Grain
A Bourbon and BBQ Mashup

An Epicurean Affair
Black Tie, 5-course Dinner

Gourmet Culinary Luncheon
Lively Cooking Demonstration

Fireside Chat
Making an Impact in
Cancer Research

Wine Odyssey Gala
Chef & Wine Tastings with
Live & Silent Auctions

Farewell Brunch
Pop the Bubbly in
The Ocean Room

For more information, visit
gourmetandgrapes.com or
call us at 843-792-1669.





Hollings Cancer Center
An NCI-Designated Cancer Center

86 Jonathan Lucas Street • MSC 955
Charleston, South Carolina 29425

Non-Profit
Organization
U.S. Postage
PAID
Charleston, S.C.
Permit #254

Connect with Hollings

Find out the latest news, innovative research and clinical updates on our News Center at hollingscancercenter.org/news.

To subscribe to our newsletter or suggest a story, please contact Dawn Brazell at brazell@musc.edu.

NEW FACULTY

Donna Berrier, MPA

Associate Director, Administration
Hollings Cancer Center
From VCU Massey Cancer Center

Barry Gibney, DO

Assistant Professor,
Department of Surgery
From Brigham and Women's Hospital/Harvard Medical School

Evan Michael Graboyes, M.D.

Assistant Professor,
Department of Otolaryngology
From Washington University, School of Medicine

Mahsa Javid, M.D., Ph.D.

Assistant Professor,
Department of Surgery
*From Yale University
School of Medicine*

John M. Kaczmar, M.D.

Assistant Professor,
Department of Medicine
From Fox Chase Cancer Center

Carsten Krieg, Ph.D.

Assistant Professor,
Department of Microbiology & Immunology
From University of Zurich

Tara Lock, MHA

Administrator, Oncology ICCE
MUSC Health
From Cape Cod Healthcare

John O'Bryan, Ph.D.

Professor, Department of Pathology &
Laboratory Medicine
From University of Illinois

Michael Ostrowski, Ph.D.

Professor, Department of
Biochemistry & Molecular Biology
From Ohio State University

Cynthia Timmers, Ph.D.

Assistant Professor,
Department of Medicine
From Ohio State University

Follow us on social media



Facebook:
facebook.com/muschollings



Twitter:
twitter.com/muschollings

www.hollingscancercenter.org
843-792-9300