

notes

SPRING 2014

Duke Performs First At-home Bone Marrow Transplant *By Marty Fisher*

When Nelson Chao, MD, visited his bone marrow transplant patient, David Lenat, one recent morning, the scene was not what you'd expect. No sterile hospital room, no awkward gown or face mask. Instead, Lenat sat in his own Raleigh living room in a comfortable leather recliner by a crackling fire, steaming mug of coffee in one hand and a copy of *The News & Observer* open on his lap. His wife, Georgia, returning from her morning run, leaned down to kiss his forehead.

Lenat is one of the first patients in the world to benefit from a new clinical trial of at-home bone marrow transplant led by Chao, chief of the Division of Cellular Therapy and professor of immunology.

Normally, the Lenats would have had to rent an apartment close by Duke University Hospital during the one- to two-month transplant and recovery. Instead, he received outpatient chemotherapy at Duke to treat multiple myeloma, then went home, where nurses and other practitioners came several times a day.

The actual transplant was performed at Duke in the outpatient setting. Lenat's stem cells were harvested from his bone marrow. Next, he received an injection to wipe out his remaining stem cells, leaving him with no immune system. Finally, the harvested stem cells were returned, and he went home to endure the month-long process of waiting for his immune system to regrow.

"I spent a lot of time reclining in a fancy leather chair my wife bought me," says Lenat. "We didn't have any real disruptions, no daily trips back and forth to Durham. [Renting an apartment] doesn't sound so bad, but there are a bazillion little things that you would miss."

Chao, who holds the Donald D. and Elizabeth G. Cooke Cancer Research Professorship, says trying the risky and challenging at-home transplant was motivated in part by listening to patients, who craved the security and comfort of home while undergoing a frightening, difficult procedure and recovery. He also was intrigued by

Continued on page 5

Jared Lazarus, Duke Photography



David Lenat was able to stay in his own home with his wife Georgia during his bone marrow transplant.

The Tisch Family Legacy *By Candace Leeds*

Preston Robert Tisch, the legendary business leader and co-owner of the New York Football Giants, was diagnosed with an aggressive brain tumor called glioblastoma in 2004. After extensive research, he chose Duke for his care. Although he passed away, his legacy lives on through the years of generous support his family has given to brain tumor research and treatment. "When we went to Duke, my husband and I and our children were

gratified to find not only the most advanced care, but also the most dedicated doctors and medical professionals, who soon became an extended part of our family," says Joan Tisch.

In October 2005, the Preston Robert Tisch family made a major gift to benefit the brain tumor center at Duke. In recognition of this significant commitment, the brain tumor center was renamed the Preston Robert Tisch Brain Tumor Center at Duke. Half of this initial gift was designated to support brain tumor clinical trials and to fund basic and translational research into promising new brain tumor therapies. The other half established The Preston Robert Tisch Cancer Investigators' Fund to recruit promising new cancer researchers to Duke.

"While my father was receiving treatment at Duke, we saw the critical connection between scientific discoveries and advanced patient care at Duke,

and we wanted to further the Center's progress in both arenas," says Laurie Tisch.

The Preston Robert Tisch family has continued their transformational support (see *Making a Difference for Brain Tumor Care and Research* on page 2), playing an instrumental role in the critical work being accomplished by the center's committed physicians, nurses, researchers, and staff—all with the goal of caring for patients and their families, improving the quality of patients' everyday life, and ultimately finding a cure for brain tumors. Most recently, they provided a gift to benefit research that uses an altered poliovirus to attack brain tumors, which is showing promise in early studies. (See *New Brain Tumor Treatment Shows Early Promise* on page 2).

"We learned from our parents the importance of using our resources to make life better for others, and we know that our support of Duke's award-winning work has helped extend the lives and comfort of people stricken with the deadly disease," says Jonathan Tisch. ▀



Victor Dzau, Laurie Tisch, Jonathan Tisch, Joan Tisch, Henry Friedman, Lizzie Tisch, and Allan Friedman.



"Throughout his life, my father was an activist who was able to get things done, and when he was diagnosed with a brain tumor, he became a warrior in the fight against cancer. In his honor, we are pleased to support Duke's groundbreaking work in cancer treatment and research, which we hope will lead to the cure."

— Steve Tisch



Shawn Rocco, Duke Medicine

New Brain Tumor Treatment Shows Early Promise

By Angela Spivey

When 22-year-old Stephanie Lipscomb's brain tumor first returned, she was not doing well. She had begun having seizures again. She had trouble concentrating at school.

Then her neuro-oncologist, Annick Desjardins, MD, offered her the chance to enroll in a clinical trial of an experimental treatment created and offered only at the Preston Robert Tisch Brain Tumor Center at Duke.

In November 2013, 18 months after receiving the treatment, which uses a modified form of the poliovirus to help kill tumor cells, Lipscomb had returned to her studies as a nursing student in South Carolina. On a recent visit to Duke, she was excited to tell Desjardins that she had learned how to start an IV on a patient.

Most patients with tumors like Lipscomb's—glioblastoma—live only 14 to 17 months after being diagnosed, and 7.5 to 9 months after the tumor begins to resist treatment and starts growing again. Lipscomb is doing well almost three years after her first diagnosis and almost two years after the tumor recurred.

The treatment that is helping Lipscomb took more than a decade of work and cooperation to create. Matthias Gromeier, MD, came to work at Duke with the purpose of using poliovirus to combat cancer. Back in 1994, he had altered the poliovirus so that it wouldn't cause disease in animals, in an attempt to understand how the virus causes poliomyelitis. Then, he discovered that the altered poliovirus can suppress tumors. In 2000, Gromeier demonstrated that his altered poliovirus would grow and spread in brain

Stephanie Lipscomb and her mother talk to neuro-oncologist Annick Desjardins.

tumor cells in culture, and that in mice, it would lock onto brain tumor cells and kill them.

Gromeier's lab at Duke spent years conducting animal studies demonstrating the safety and effectiveness of that approach. In 2012, the Preston Robert Tisch Brain Tumor Center at Duke launched the clinical trial to test the treatment in humans.

The trial was made possible by the brain tumor center's encouragement of close collaboration between its basic scientists and its clinicians. With Lipscomb, who was the first patient to be treated, Gromeier reviewed her MRIs with Desjardins, he went to all of the follow-up appointments, he talked to her family. "For 16 to 18 months, I thought about her every day," he says.

Desjardins cautions that these results are preliminary. But she is encouraged to see some of the patients who have received the treatment still doing well more than a year after their tumors had initially returned. "They are not declining, and they are not sick like I see my patients get when their tumors come back," she says. ■

How to Enroll

This clinical trial is enrolling patients. For information, contact the Preston Robert Tisch Brain Tumor Center at 919-684-5301.

Brain Tumor Researchers Win Team Science Award

By Duke Medicine News

A team that includes researchers in the Neuro-oncology Program at the Preston Robert Tisch Brain Tumor Center at Duke has been awarded the 2014 Team Science Award from the American Association of Cancer Research (AACR). The team also included researchers from John Hopkins University and the National Cancer Institute (NCI).

The team was singled out for its contributions to insights into cancer pathogenesis, which includes the discovery of major genetic aberrations in glioblastoma, the most common and lethal type of brain cancer.

The award also recognizes the team's development of novel diagnostic and therapeutic approaches for managing brain tumor patients, including developing a therapeutic vaccine that is currently being tested in an international phase 3 clinical trial; targeted immunotoxins that are in various stages of studies; and a genetically modified poliovirus that has shown promise as a therapy to kill tumor cells in an early clinical trial (see *New Brain Tumor Treatment Shows Early Promise*, above).

One of the AACR's most prestigious awards, the team science award recognizes an outstanding

interdisciplinary research team for its innovative and meritorious scientific work that has advanced or will likely advance cancer research, detection, diagnosis, prevention, or treatment. The award was established by the AACR and Eli Lilly and Company to stimulate change within the traditional cancer research culture by recognizing those individuals and institutions that value and foster interdisciplinary team science.

"This award is especially important in that it recognizes not only the fine work done at Duke, but the long-standing collaboration and success we have enjoyed with two of the best scientists in the country, Dr. Bert Vogelstein at Johns Hopkins and Dr. Ira Pastan at the NCI and their teams," says Darell D. Bigner, MD, PhD, director of the Preston Robert Tisch Brain Tumor Center at Duke. The team included 26 researchers across the three institutions, 19 of them from Duke.

The award was officially presented on Sunday, April 6 at the AACR annual meeting in San Diego and included a \$50,000 honorarium and a commemorative award. The AACR is the largest and most well-known cancer research organization nationally and internationally. ■

MAKING A DIFFERENCE FOR BRAIN TUMOR CARE AND RESEARCH

2005: The family of the late Preston Robert Tisch makes a transformational gift which names the Preston Robert Tisch Brain Tumor Center at Duke.

2009: The Preston Robert Tisch family makes a second major gift to support clinical and laboratory research initiatives focusing on new treatments for brain tumors.

2011: With two additional gifts, the Tisch family continues its generous support of The Preston Robert Tisch Brain Tumor Center.

- A gift toward construction of the new Duke Cancer Center building, which opened its doors in February 2012. The Joan and Bob Tisch & Family Atrium and Reception Area is named in recognition of the Tisch family's generosity.

- A gift to support brain tumor research, including brain tumor clinical trials and basic and translational research of promising new brain tumor treatments.

2013: The Tisch family provides an additional gift to support brain tumor research, including clinical research and clinical trials to study new therapies for brain tumor patients and research into the genomics of brain tumors.

2013: The Tisch family provides a gift supporting research using a genetically engineered poliovirus as a new anti-cancer agent in brain tumors (see *New Brain Tumor Treatment Shows Early Promise*, left). This gift serves as a challenge grant to generate additional philanthropy to support the poliovirus research.



Shawn Rocco, Duke Medicine

The Tisch family's philanthropy has provided vital support for brain tumor research, including Matthias Gromeier's work to use a genetically engineered poliovirus to treat brain tumors.

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Working Together to Defeat Cancer

Cancer is a difficult enemy, so we are happy to get help from wherever or whomever we can. In this issue of DCI Notes, you will learn that even the lowly fruit fly can help teach us new ways to combat this disease and make a difference for a person with cancer. The Duke Cancer Institute (DCI) is all about collaboration—among laboratory scientists, between scientists and clinicians, and between clinicians and patients. This story spans that entire spectrum, where a discovery that a laboratory scientist made in a fruit fly was extended by another scientist into cancer cells in culture and then into mice with tumors and then was brought to the clinic where a novel treatment for patients with melanoma is now being explored.

In addition to the lessons learned from that fly that are now helping patients, you can also read here about other examples of how bringing different disciplines together can make such a

big difference in the battle to prevent and treat cancer. You can read about the recent discovery of how obesity can lead to breast and other cancers and how this discovery suggests a simple way to reduce cancer risk. You can also read about how a 10-year study of the poliovirus has turned into a novel treatment for a lethal brain tumor that looks like it is dramatically extending life.

Also in these pages, you can read about the creative ways in which some of our friends have used their talents to benefit DCI in its efforts to transform cancer care.

DCI is one of the few places where findings such as these can make their full journey, from initial lab discovery to an early clinical trial to improving care for all patients with cancer. Why is DCI different? Not only do we have some of the world's best scientists working closely with our outstanding physicians and surgeons and thinking about our patients every day, but we also have enthusiastic supporters like you.



Thank you for all that you do.

Michael Kastan

Michael B. Kastan, MD, PhD
Executive Director, Duke Cancer Institute
William W. Shingleton Professor of
Pharmacology and Cancer Biology

DCI Celebrates Third Anniversary *By Angela Spivey*

Duke Cancer Institute (DCI) held its third annual anniversary celebration on November 1, 2013. “Each faculty or staff member is a critical member of the DCI family,” says Michael Kastan, MD, PhD, executive director of DCI. “Our annual anniversary celebration gives us a chance to recognize their achievements.”

After remarks from Kastan and Chancellor Victor J. Dzau, Kastan presented the inaugural DCI Superstar Awards to three staff members. These awards are given annually to faculty and staff to recognize the contributions they make every day.

RECIPIENTS OF THE AWARD FOR 2013 WERE:

Bonnie Vernarelli, research practice manager for the Oncology Clinical Research Unit, received the **DCI Superstar Colleague Award**, recognizing an employee who has demonstrated extraordinary effort through interaction with colleagues. Vernarelli has worked tirelessly during the last two years to lead the Oncology CRU through opening the cancer center facility and going live with Maestro Care (Duke's new medical record technology). To help prepare for implementing Maestro Care, she worked most nights until 10 or 11 p.m. and most weekends. “Her load was enormous, but the most striking aspects that stood out to all of us were her amazing sense of humor and her tireless dedication. She expected nothing from her group that she wasn't willing to do herself,” her nominator wrote.

The **DCI Superstar Lifetime Achievement Award**, recognizing someone who has demonstrated excellence throughout their career, went

John Hillson, Bonnie Vernarelli, and Aultney Cozart won the 2013 DCI Superstar Awards.

to **Aultney Cozart**, receptionist in the division of Gynecologic Oncology. Cozart worked in the division for 20 years before retiring in November 2013. “She is highly effective, efficient and competent while always projecting kindness and caring. She is blessed with amazing equanimity and never gets impatient while handling the phones all day and interacting with the full range of folks—from referring physicians to the general public,” her nominator wrote.

The **DCI Superstar Patient Award**, recognizing an employee who has demonstrated extraordinary effort through interaction with patients, went to **John Hillson**, Clinical Nurse II in Radiation Oncology. In addition to his regular duties, Hillson has launched special projects to improve life for patients, such as organizing and teaching a class in “Internal Arts for Health” to help reduce stress and improve balance. His class is now taught weekly and has become one of the most popular “Rest, Relax, Renew” classes offered at the cancer center. “He truly creates an environment of caring,” Hillson's nominator wrote.



Jared Lazarus, Duke Photography

Abbruzzese Joins Duke Cancer Institute, Will Lead Medical Oncology Division

By Duke Medicine News

James Abbruzzese, MD, a leading expert in the clinical study and treatment of pancreatic cancer, has been named chief of the Division of Medical Oncology and associate director for clinical research and training at Duke Cancer Institute (DCI).

Abbruzzese, formerly chairman of the Department of Gastrointestinal Medical Oncology and Digestive Diseases at the University of Texas MD Anderson Cancer Center in Houston, assumed his new roles at Duke in November 2013.

Among his many accomplishments, Abbruzzese is a fellow of the American

College of Physicians and a fellow of the American Society of Clinical Oncology. He has co-authored more than 400 research publications and currently serves as chair of the Clinical Trials and Translational Research Advisory Committee of the National Cancer Institute. He has spent most of his professional career at MD Anderson, where he rose through the ranks to leadership positions as the Waun Ki Hong Distinguished Chair in Translational Oncology, chairman of the Department of Gastrointestinal Medical Oncology, and associate vice-provost for clinical research.

As associate director for clinical

research at DCI, Abbruzzese will guide and direct DCI's 13 oncology disease-based clinical research groups. He will be responsible

for the clinical trials operation that encompasses more than 1,000 open trials with an average annual accrual of 6,000 patients.

Abbruzzese will also lead the Division of Medical Oncology, a major partner of DCI.



Duke Photography

New Clinical Trial Developed at Duke Aims to Improve Melanoma Treatment

By Angela Spivey

Jared Lazarus, Duke Photography

Some types of cancer cells soak up copper like a sponge. Scientists have tried to use that knowledge to create better cancer treatments, but they have largely come away disappointed. Until now.

Starting with a clue found in fruit flies, DCI scientists and physicians have found a potential new treatment for melanoma that turns the cancer's love of copper against it. Cancer biologist Chris Counter, PhD, is an expert in a signaling pathway that involves a protein called B-Raf, which plays a role in 60 percent of melanomas. "B-Raf keeps the gas pedal pressed to tell melanoma cells to keep growing," Counter says. To work, B-Raf must "talk" to another protein called Mek1.

Counter works in a research building tucked behind the cancer center, just downstairs from Dennis Thiele, PhD, a biologist who studies how the body uses copper. One day, Thiele told Counter that in studies in fruit flies, he's found that Mek-1 requires copper. Counter was intrigued. It's known that melanoma cells take up copper. And, he had been thinking more about melanoma than usual; his mother-in-law, Linda, had been treated for the disease. She would eventually die from it. Donita Brady, a postdoctoral fellow in Counter's lab, conducted a pilot study with then-graduate student Michelle Turski in Thiele's lab that looked promising. Then Brady took the project and ran with it.

In mice in which human melanoma tumors had been implanted, Brady used a drug that removes copper. Their tumors stopped growing.

Then she conducted other work in mice who naturally get a cancer similar to melanoma that's driven by B-Raf. Those animals survived longer when given a drug that removes copper.

"Every experiment built on the last one and strengthened the idea that, what Dennis found in flies might actually be extremely valuable in human cancers," Counter says. The work has been published in the journal *Nature*.

The story could have stopped there. But because these scientists work yards away from cancer physicians at DCI, they partnered with them to develop a clinical trial to test the copper-removing drug in patients with melanoma. When they needed funds to launch the trial, executive director Michael Kastan, MD, PhD, stepped in with a pilot grant.

The trial, which has just begun enrolling patients, will use a copper-removing drug that is already approved by the Food and Drug Administration for use in another disease, so it's known that the drug is safe in people. That drug will be paired with a drug already in use to treat patients with melanomas that involve a B-Raf mutation (vemurafenib).

"Vemurafenib has provided a lot of hope and benefit for patients, but it doesn't result in a cure," says April Salama MD, associate director of melanoma clinical research at DCI, who is leading the clinical trial. "Most tumors

become resistant to it after six to seven months. We hope that adding a copper chelator will increase that time before resistance develops and improve response."

This idea could have stalled at any of those steps before making it to a clinical trial. Counter says that DCI is one of the few places where it could have made it this far. "I have never come this close to seeing something leave the lab bench," Counter says. "That's part of the magic of Duke; this is really happening here." ▀

HOW TO ENROLL

For information about enrolling in the clinical trial, visit clinicaltrials.gov and search for trial number NCT02068079.



Chris Counter and Donita Brady (left to right) conducted research that led to a new clinical trial led by April Salama.

Oncology Nursing Center of Excellence: Improving Care Through Research

By Angela Spivey

Nurses at DCI are helping to improve care for the patients they see every day, with help from the Oncology Nursing Center of Excellence (ONCE).

"The center is funding nursing research that will fill gaps in the evidence that is needed so we can provide better care, at Duke and nationwide," says Tracy Gosselin, PhD, RN, AOCN, assistant vice president and associate chief nursing officer at DCI, and a co-chair of

the center. The other co-chair of the center is Marilyn Hockenberry, PhD, RN, FAAN, the Bessie Baker Professor of Nursing at Duke University School of Nursing.

ONCE was formed to build on the strengths of DCI and Duke University School of Nursing to improve care delivery for patients with a diagnosis of cancer. "We wanted to create a bridge," Gosselin says. "You need the nursing staff providing care day in and day out to raise questions, and you need the faculty in the School of Nursing as well as in other schools who can partner with staff to help answer those questions."

In April 2013, the center awarded its first series of small research grants to do just that. DCI nurse practitioner Kara Penne, RN, MSN, ANP, AOCNP, is using a ONCE grant to improve outcomes for patients with pancreatic cancer who have had a complex surgery called the Whipple procedure. After efforts were put into place to help these patients recover, Penne recognized that patients were readmitted to the hospital at a high rate, often for malnutrition or infection. Penne is working to change that. In her study, these patients will receive personalized nutrition education with a dedicated DCI

dietitian. They will take a high protein, immunonutritional supplement before and after surgery, and return for earlier and more frequent follow up visits after surgery. "Patients who have had this procedure get full very quickly. They need to eat small meals that are packed full of protein and calories," Penne says. "Our goal is to reduce infections for these patients and reduce their nutrition-related complications, and secondarily, to reduce their readmission rates." Penne will compare the study group outcomes to a group of patients who did not receive this intervention.

OTHER FUNDED STUDIES:

- Duke pediatric bone marrow transplant nurse practitioner Susan Wood, MN, CPNP, is conducting focus groups with children, parents, teachers, and pediatric bone marrow transplant providers to learn about the challenges facing children returning to school after a bone marrow transplant.
- Alicia Johnson, Duke Raleigh Oncology nurse clinician, is studying how a home-based exercise program during chemotherapy treatment can reduce fatigue and improve quality of life for women with gynecological cancers. ▀

DCI nurse practitioner Kara Penne is conducting research to improve care for patients who have a complex pancreatic cancer surgery.



Jared Lazarus, Duke Photography

Researchers Reveal How Cholesterol May Fuel Breast Cancer *By Angela Spivey*

Could lowering your cholesterol also reduce your breast cancer risk? It's likely, according to a study from DCI member Donald McDonnell, PhD, chair of the Department of Pharmacology and Cancer Biology at Duke.

Some previous studies had suggested that obesity as well as high cholesterol are linked to breast cancer, but no one knew exactly why. McDonnell and colleagues in his lab have shown how it works, and that the culprit is not cholesterol itself, but one of its metabolites (a compound produced when the body breaks down cholesterol).

The hormone estrogen fuels about two thirds of breast cancers, and the increased estrogen produced by fat cells is thought to be part of the reason why obesity is linked to breast cancer. McDonnell's lab studies estrogen receptors—the proteins in the body to which estrogen binds. McDonnell became interested in a cholesterol metabolite called 27 hydroxycholesterol (27HC) when a graduate student in his lab showed that it can activate estrogen receptors. That is, it behaves like estrogen does.

This molecule, 27HC, is created when the body breaks down cholesterol, and levels of cholesterol and 27HC mirror each other—the higher your cholesterol, the higher 27HC rises.

To learn more about 27HC, McDonnell's team, led by Erik Nelson, PhD, fed mice high-cholesterol diets. The mice developed breast cancer. Then the scientists showed that the cancer wasn't caused by the cholesterol itself, but by 27HC. When the scientists removed 27HC from these mice, their cancer incidence

plummeted, despite their high cholesterol diets.

Then the researchers confirmed the importance of these findings using human breast cancer tissue. Specifically, they found that the more aggressive tumors had higher levels of an enzyme that converts cholesterol to 27HC. So, essentially, these more aggressive tumors could make 27HC and use it as an alternative fuel source, just as they would use estrogen.

McDonnell said the findings suggest that a simple way to reduce the risk of breast cancer may be to keep cholesterol in check, either with statins or a healthy diet. "This data suggests that in the near term, we should be advocating for lowering cholesterol, not just for heart disease but for cancer," he says.

Reducing cholesterol levels may be especially important for women who already have breast cancer. "If you've got a breast tumor, this molecule, 27HC, is likely to reduce the effectiveness of common therapies, such as tamoxifen," McDonnell says. If further studies confirm these findings, then adding statins, which are already approved for general use, to treatment regimens for women with breast cancer may make sense, he says.

Kimberly Blackwell, MD, director of the breast cancer program at DCI, has plans to explore these findings in clinical studies with breast cancer patients. "The promising thing about what Donald found is that it suggests we can take currently available agents and apply them right away to breast cancer patients. Statins are already available, and we know they're safe," she says.

Blackwell is planning to conduct a clinical study

Jared Lazarus, Duke Photography



Donald McDonnell's work suggests a simple way to reduce breast cancer risk.

to determine if patients who take cholesterol-lowering drugs show decreased levels of the cancer-fueling metabolite in their tumors and in surrounding breast tissue, and if the drugs work to reduce tumor growth. "If we could demonstrate that what Donald saw in the lab works for people, that would be a major breakthrough for breast cancer patients," she says. ▀

Creative Idea Boosts Todd M. Sullivan Endowment *By Angela Spivey*

A creative idea enabled the family of former Duke melanoma patient Todd Sullivan to give a big boost to the endowment that bears his name.

Gretchen McDuffie, Sullivan's sister, and her husband Tripp operate McDuffie Custom Homes. They built a custom home in the Hawthorne community in Creedmoor, N.C., and named it "The Sullivan." The home sold in January 2014, and the McDuffies donated

\$20,000 of the proceeds to the Todd M. Sullivan Endowment, which benefits research at DCI.

Counting that donation, the endowment has grown to \$93,000, just shy of its \$100,000 goal.

"Supporting the endowment is going to be a lifelong effort for us," McDuffie says. "We're a small builder. But we wanted to try to do as much as we could. How can we not? This was my brother."

Sullivan's wife Jennifer started the endowment

after discussing it with Todd just before his death. "He and Jennifer wanted to do something lasting for Duke because he got such great treatment and support there," McDuffie says. ▀

HOW TO HELP

To find out more about the Todd Sullivan Endowment, visit bit.ly/1m7XMvq.

At-Home Bone Marrow Transplant *Continued from page 1*

a study in Stockholm, Sweden, in which patients were allowed to stay at home post-transplant. Those patients experienced fewer infections and a lower incidence of graft versus host disease. He hypothesized that patients who stayed at home kept their microbiome—the collection of microorganisms living in our guts and on our skin that help maintain health and immunity—intact. He believed patients would also benefit from eating their normal diet and being in familiar, comfortable surroundings.

"In the hospital they wake you up at 6:00 a.m. to have your blood drawn and weight checked. It's a cold, sterile environment, and there are bugs lurking all over the place. I absolutely feel the

home is a safer environment for patients," says Chao.

As part of the trial, patient samples will be tested to evaluate their microbiome status. The treatment protocol, which requires two home visits from an advanced practice nurse and a daily online chat with a physician, will also be evaluated for cost effectiveness. If patients have fewer infections or complications, the hope is that in-home transplant will be a viable option for some patients.

Jared Lazarus, Duke Photography



So far, fewer than 10 patients have participated in the trial, but all have done well.

A year and a half post-transplant, Lenat's myeloma is in remission. He's no longer able to run with his wife, due to spinal damage from the cancer. But, he's taken to cycling and looks forward to his 15th year of riding in a fundraiser for multiple sclerosis. ▀

David Lenat on his bike.



Climbing to the Top for Cancer Research *By Dave Hart*

For a guy who has spent most of his life at sea level, Barrett Whitten has an unusual affinity for altitude.

Born in the port city of Wilmington, N.C., and raised in another port city, Charleston, S.C., where he still lives, Whitten was one of those sun-bronzed kids who practically grow up on the beach. So it's hardly surprising that he has made the sea his career; he's worked as an ocean-going mariner for the past 13 years, originally on cruise ships and for the past three years as first officer aboard a seismic research ship gathering data about potential oil reserves underneath the sea floor.

So how does a lifelong seadog like Whitten wind up standing atop Mount Kilimanjaro, at 19,340 feet the highest mountain in Africa and the highest free-standing mountain in the world? And, with Kilimanjaro under his boots, how does he wind up then dedicating himself to climbing the highest mountain on each of the remaining six continents, up to and including Mount Everest?

Turns out he's doing it for his mom.

Whitten's plan to try to reach the highest point on each continent—a collection of peaks known to mountaineers as the Seven Summits—is the centerpiece of a project he has launched, in conjunction with Duke Cancer Institute (DCI), called Summit for Cancer.

The project is designed to raise awareness and money for cancer research at DCI. He began the effort as an expression of support and appreciation for the care his mother has received at Duke, primarily from oncologist Michael Morse, MD, MHS, since she was diagnosed with colon cancer during a routine colonoscopy two years ago.

"That's what really changed my focus," Whitten says. "She's been under Dr. Morse's care and became involved in some of his research designed to maximize the effectiveness and minimize the side effects of chemotherapy. It made a huge difference for her, and she's doing great. I thank Duke for that."

In spite of his seafaring life, Whitten didn't come to mountain climbing completely out of the blue.

Barrett Whitten plans to try to reach the summit of the highest mountain on every continent in order to raise cancer awareness and research funding.

As a child he did a fair amount of backpacking from his family's vacation home in the North Carolina mountains, and he has always had wilderness as well as the open ocean in his blood. An extended backpacking excursion on the Inca Trail in the Peruvian Andes four years ago took him above 11,000 feet for the first time and sparked an interest in going even higher.

His shipboard rotation—five weeks on followed by five weeks off—gave him ample time to begin high-altitude training in the Cascade Range in Washington State, gaining knowledge and experience in technical ice and snow techniques, crevasse rescue, navigation, and the other skills necessary for expedition-style climbing.

He set his sights on Kilimanjaro, and along the way it occurred to him that climbing might offer a novel way to raise money for DCI.

"I was interested in climbing some of the larger mountains, but up to that point I wasn't really thinking about the Seven Summits," Whitten says. "I also wanted to find some way to support Dr. Morse's research. It dawned on me that if I combine these two interests I might be able to do a lot more to help."

Last September, he and his team of fellow climbers took a challenging route up Kilimanjaro, an ancient volcano that rises majestically above the surrounding plains in Tanzania. The climb ascends through five climate zones, from tropical rain forest to arctic conditions on the icy summit. Whitten and his team moved fast, shaving a day off the usual eight-day round trip up and down, and they spent a night inside the volcanic crater near the top, an otherworldly landscape of ash and glaciation.

"It was a fantastic experience," says Whitten. "We had spectacular views of the summit on our approach, and I was so excited I jogged the last 100 yards to the top. I was completely worn out,

Continued next page

Embracing Life by Going Airborne *By Angela Spivey*

As he was about to turn 80, Bob Norris of New Bern, N.C., looked back over the past decade. He had lost his wife and one of his sons to cancer, and he had survived two lung cancer diagnoses himself.

"The whole ten years has been one kind of battle with cancer after another," Norris says. "Bad things happen, but good things happen too; you meet so many nice people who are concerned."

To celebrate his 80th birthday, Norris decided to cross off one item on his "bucket list" by taking a skydive and dedicating it to raising funds for Duke Cancer Institute (DCI).

Norris thinks of his doctors at DCI as a second family. David H. Harpole Jr., MD, was almost as happy as Norris was when his second cancer required surgery, but no chemotherapy or radiation. "Dr. Harpole came in the room and said, 'We got every bit of it.' I've never seen him smile as big as that," Norris says.

Thanks to his treatment, Norris got to witness his great-grandchild being born, complete with

cutting the umbilical cord himself.

In November 2012, he made his first jump, in tandem with an instructor. "The plane goes away almost instantly. You're just there, in the wind," he says. He loved the silence after his instructor pulled the parachute cord. "It was such a contrast to the free fall. We landed perfectly." He raised \$1,135.00 with that seven-minute skydive.

Now Norris has made skydiving to raise money for cancer research an annual event. In November 2013, he jumped again, to celebrate his 11th year as a cancer survivor, his 81st birthday, and the birth of his sixth grandchild. This time he allocated the donation to support the Department of Pediatric Oncology at Duke Children's Hospital and Health Center.

Norris is already making plans for his November 2014 jump. This time, he will raise funds for DCI by selling space on his jump suit to sponsors. "Just like NASCAR," he says.

"My family, my friends, and Duke give me a purpose for the years when so many don't have one," he adds. ■

HOW TO HELP

To donate to Norris' "Skydiving for Duke," call 919-385-3120 or visit dcc.convio.net/skydivingforduke.



Bob Norris during his first skydive.

exhausted, but so happy and excited to be there.”

One down, six to go. Next on the list is 18,510-foot Mount Elbrus in Russia, the highest point in Europe. Whitten plans to make that attempt later this year. After that, he says, he’ll go to Aconcagua in the Argentinian Andes, at 22,837 feet the highest mountain in South America and the world’s tallest peak outside of Asia.

All high-altitude mountaineering is dangerous; Mount Elbrus, for example, while not regarded as a particularly technically challenging peak, still claims 15 to 30 lives every year. And because Whitten spends so much time at sea level, he has to be especially careful to acclimate to high

elevations before attempting a summit.

“So far I haven’t had any altitude sickness,” he says. “But I am very cautious. I always arrive days early so I can give my body enough time to acclimate. The keys are hydration, nutrition, general fitness, and good preparation.”

Whitten plans to save the greatest challenge, Everest, for last. With each climb, he will gain experience and expertise—and, he hopes, raise ever more money for cancer research.

“That’s what it’s all about,” he says. “We’re off to a good start, and I think the project will gain momentum as we go.”

HOW TO HELP

To follow Barrett Whitten’s attempts to climb the highest peaks on all seven continents, and for links to donate to cancer research at DCI, visit dccc.convio.net/summitforcancer or Whitten’s facebook page, facebook.com/summit4cancer.

Pedaling for Hope

Diagnosis Motivates Patient to Bike from N.C. to Florida for Brain Tumor Research

By Bernadette Gillis

On a sunny fall afternoon outside the entrance to the Duke Cancer Center, cycling enthusiast Greg Sousa waved good-bye to a crowd of cheering family, friends, and news reporters. Outfitted with nothing more than his bike, a helmet, and a backpack, he set out on a two-week, 700-mile bike ride from Durham to Ormond Beach, Fla.

Anyone whizzing by him later on down the road probably assumed he was simply a man on a solo journey. Granted, Sousa was by himself for most of the trip, but he was far from alone. What passersby were witnessing was the embodiment of the efforts of a community of brain cancer survivors and supporters from across several states hoping to save lives through research.

Sousa, a 44-year-old brain cancer survivor and Duke patient, made the trip, which he called the “Badousa Brain Bike Bonanza,” to raise funds for the Preston Robert Tisch Brain Tumor Center at Duke. Badousa Brain has raised \$33,000 so far.

He says it was the least he could do for both the medical team that saved his life and the countless others who have raised money for cancer research over the years, long before he was diagnosed.

Sousa says, “A friend put it this way: ‘Ten years ago someone was doing fundraising efforts that went into the research, and you’re here now likely benefiting from some of the advancements made. Now it is your turn to raise funds for research for the future.’”

A water resource engineer, Sousa first learned he had brain cancer while on a business trip to Montgomery, Ala., in June 2012. Without warning, he lost consciousness during a meeting with a client. He was rushed to a nearby hospital, where he learned he had had a grand mal seizure. A CAT scan revealed a two-inch diameter mass near the front of his skull. The mass had been there for years, and he never knew it.

“I’m nine hours away from my wife,” he recalls thinking to himself. “It was unnerving.”

Understandably, he was devastated, but fortunately when the Durham resident returned home,



Greg Sousa raised \$33,000 for research at Duke.

he didn’t have to look far for help. He and his wife Sara, a registered nurse, took comfort in knowing they lived close to Duke.

On Father’s Day, just four days before the seizure, the father of two had taken a 25-mile bike ride to Jordan Lake for a one-mile competitive swim. Initially, after his diagnosis, he couldn’t help but wonder what would have happened had the seizure occurred that day.

“I stopped playing that ‘what if’ game pretty quickly,” Sousa says.

Doctors surgically removed Sousa’s tumor, and he endured a year of oral chemotherapy. An active runner, cyclist, and swimmer, Sousa was eager to get back to his active lifestyle. But he didn’t rush, instead taking it one step at a time, telling himself: “Let’s just start walking. Let’s run a little and walk a little. Let’s get on the bike. When it’s OK, let’s get back in the pool.” Then just 16 weeks after surgery, he completed a 19-mile trail run in Asheville, N.C. He was back and ready to give back.

To help raise funds for the Tisch Brain Tumor Center, Sousa entered the Kona Inspired 2013 competition, in which contestants submit videos to tell their story in the hope of receiving entry into Ironman Hawaii. He didn’t win, but that didn’t deter him from finding another way to raise money. The significant media coverage he garnered from the Kona Inspired bid helped propel his next “crazy idea.”

Shawn Rocco, Duke Medicine

Inspired in part by his friend and fellow Tisch Brain Tumor Center patient, Tony McEachern, who walked from Durham to his home in Sarasota, Fla., in 2009, Sousa decided to bike from Durham to Ormond Beach. From there, he’d join the annual fundraiser for McEachern’s foundation, a bike ride across Florida.

Sousa and his wife Sara had high hopes for the Badousa Brain Bike Bonanza, originally setting a goal to raise \$10,000 for brain tumor research. But they were astounded by the amount of support they quickly garnered, not just financially but also in other unexpected ways that made traveling an average of 90 miles a day by bike less of an uphill battle.

Another Tisch patient, Carol Fisher, who received treatment in Myrtle Beach, S.C., saw a news story about Sousa’s plans and quickly offered to generate support and media attention there. Then, church friends connected Sousa with an individual who was willing to give him free lodging for two nights at his Savannah home.

One of Sousa’s friends volunteered to use vacation time to “leapfrog” Sousa in his car for three days, driving ahead 10 or 15 miles and waiting until Sousa caught up so he could refresh his water bottles or rest in the car as needed. Another friend shadowed him from his car for another few days.

Of all the support he received during his bike ride, it was his wife’s sacrifices that Sousa says meant the most to him. Sara, who came up with the “Badousa” name—a mash-up of her maiden name and his last name—took on more responsibilities at home while he was on the road for two weeks, just as she had done during his cancer treatment.

“My wife is carrying everything but the cancer,” he says, “but I would argue she carries more.”

Sousa is off chemotherapy now. But as is common with his type of cancer, his doctors are still keeping an eye on him with frequent MRI scans.

For updates on Team Badousa Brain’s fundraising progress, visit badousabrain.com.

If you prefer to receive this newsletter by e-mail, please visit dukecancerinstitute.org/notes.

ask the expert

A New Generation of Therapies for Prostate Cancer

Dan George, MD is a medical oncologist and director of Duke Cancer Institute Genitourinary Oncology. He and his colleagues at Duke are continually working to offer better treatment options to men with prostate cancer.

WHAT IS THE OUTLOOK FOR MEN WITH PROSTATE CANCER?

Today we are able to help men continue to live with prostate cancer for years beyond what we've historically been able to do. Even for patients with metastatic disease, we can offer a sequence of therapies that in many cases can stop the cancer from progressing and can maintain quality of life for years.

Prostate cancer is different from many other cancers in its dependency on testosterone. Traditionally, therapies that suppress testosterone production by the testicles have been a mainstay of treatment for advanced disease. But recently it has been shown that prostate cancer can progress despite low testicular testosterone because the tumor is either able to make its own testosterone or turn on the testosterone receptor in the tumor.

Now we have this new generation of therapies that target testosterone production anywhere in the body, particularly in the tumor itself. One of those therapies is **abiraterone acetate**, which was approved in 2011 by the Food and Drug Administration for use in men with what we now term metastatic, castration-resistant prostate cancer. In addition, we have a unique androgen receptor antagonist, **enzalutamide**, approved in 2012, that blocks the testosterone receptor in a way that no other drug has been able to; it blocks not only the receptor's ability to bind testosterone but also prevents further activation steps. These drugs have drastically improved the survival of men with metastatic, castration-resistant prostate cancer.

CAN THESE NEW TREATMENTS HELP MEN WITH EARLIER-STAGE DISEASE?

Right now these drugs are approved for use in metastatic, castration-resistant disease, but at Duke we are studying these new therapies to understand how well they will work in men with earlier stage-disease, how they work in combination with other therapies, and whether some patients will benefit more than others.

Patients at Duke can participate now or in the near future in five different clinical trials of these new therapies. These trials will enable patients, including men with early-stage disease, to get early access to new combinations of these therapies. These trials will also improve our understanding of how best to use these drugs to help prevent relapse in a wider group of men.

PLEASE DESCRIBE THE TRIALS THAT WILL OFFER ENZALUTAMIDE TO A WIDER RANGE OF MEN.

Two trials will look at different ways of using enzalutamide in men with early stage prostate cancer. One of these has just opened at Duke, and it pairs **enzalutamide** with **traditional hormonal therapy** and **radiation therapy**, to test if this combination can induce a complete remission in men who have already had their prostate removed and who have residual cancer (detected by a rising PSA, or prostate specific antigen level). This trial is led by Andrew Armstrong, MD, at Duke and is offered only to patients at Duke and at MD Anderson Cancer Center.

Another study combines **enzalutamide** with **traditional hormonal therapy** in men who have had either surgery or radiation therapy to treat prostate cancer and have recurrent cancer (detected by a rising PSA level). We hypothesize that the combination will delay the time before patients become resistant to traditional hormonal therapy alone, which is the standard of care for these men. This study will test a **rigorous exercise** regimen for some men, to find out if we can improve cardiopulmonary fitness and quality of life by maximizing muscle strength and endurance. When this study opens in the second half of 2014, it will provide an opportunity for our patients to get early access to this combination of enzalutamide and traditional hormone therapy. This trial is led by Michael Harrison, MD at Duke and will be open to patients only at Duke and at Memorial Sloan Kettering Cancer Center.



Jon Gardiner, Duke Photography

WHAT SORTS OF TRIALS AT DUKE INVOLVE ABIRATERONE?

For men with newly diagnosed prostate cancer who have selected a radiation and hormonal therapy approach, we are testing a combination of **abiraterone** with **radiation therapy** and **traditional hormonal therapy**. Our study tests a more potent combination of hormonal therapy but for a shorter period of time than the standard of care hormones. Led by Bridget Koontz, MD, at Duke, this trial is available only to patients at Duke and at MD Anderson Cancer Center.

We are also participating in a national phase 3 trial that studies the **combination of enzalutamide, abiraterone, and prednisone** compared to **enzalutamide alone** to find out if the combination improves survival in patients with castration-resistant, metastatic prostate cancer. This study is available across the country and led by the Alliance Cooperative Group. Andrew Armstrong, MD, from Duke is the correlative science leader, and Susan Halabi, MD, from Duke is the statistical chair.

Finally, we are examining differences in men's responses to **abiraterone** according to their **race and genetics**. There is some evidence that African-American men may respond better to this drug than the general population. We're looking to test this hypothesis and will evaluate the response to this drug in 50 African-American men and 50 Caucasian men with metastatic, castration-resistant prostate cancer. Through this study, we will explore genetic markers that may explain any differences in response. I am the lead investigator for this study, and it is enrolling patients at Duke and at some of our partners in the Duke Cancer Network. ▀

HOW TO ENROLL

For more information about these trials, including how to enroll, please visit cancer.dukemedicine.org/cancer/clinical-trials.