RUTGERS
Cancer Institute
of New Jersey

Winter ■ 2015

CANCER Connection

A Strength to Pay Forward:

Having rallied against cancer six times, Subha Barry is 'giving back' and encouraging others to do the same.

Director's Corner

NICK ROMANENKO

Collaboration.

When it comes to fighting cancer, it is a concept that does not only apply to the physician scientists who work in concert with others across industry, academia and other cancer centers and hospitals. At Rutgers Cancer Institute of New Jersey, our collaborators also include our patients, our donors and the greater community.

As you'll learn in our cover story, six-time cancer survivor Subha Barry is part of this collective fabric. Having discussions and collaborating with her physicians, our researchers and other members of our Director's Advisory Board, her generous giving and spirit through the years has helped impact the discoveries coming out of our laboratories – helping us better inform clinical trial design and cancer treatment options.

With the collaboration of our patients on their care, we are able to continue to advance our arsenal of cancer therapies. Ohio resident Carrie Best volunteered to be part of a unique clinical trial at the Cancer Institute of New Jersey aimed at a rare form of skin cancer – possibly being one of the first in the world to participate with the investigative treatment involved. Her perseverance coupled with the expertise of Cancer Institute Associate Director for Clinical Science Dr. Howard Kaufman, are resulting in positive outcomes for this mother of one and providing us with critical data needed in targeting treatments for Merkel cell carcinoma *(page 11)*.

In this issue, you also will learn how we work closely with our Network hospitals across the state. An expansion of Robert Wood Johnson University Hospital and Cancer Institute gynecologic oncology services to Robert Wood Johnson University Hospital Somerset *(page 31)* is providing comprehensive care to patients closer to home.

And thanks to a $1.5 million gift from the Embrace Kids Foundation *(page 23)*, we now have the ability to recruit a world-class expert in pediatric hematology/oncology who will lead our research efforts in this area to benefit the youngest of patients. It is the generosity of entities like Embrace Kids, as well as schools, clubs, and others in the community that contribute greatly to our overall mission – and for that collaborative effort, we are grateful.

Sincerely,

Robert S. DiPaola, MD
Director, Rutgers Cancer Institute of New Jersey

RUTGERS
Cancer Institute of New Jersey

CANCER Connection

Winter ■ 2015

In This Issue ■ Features:

■ Departments:

Forefront

News from the front lines at Rutgers Cancer Institute of New Jersey

200,000 Helping Hands

It's been ten years since IBM's World Community Grid was founded. This global initiative that harnesses donated, unused computer time and enables vast computing power has had a great impact on numerous initiatives – including the cancer research experiments that were supported through the Help Defeat Cancer project. That project aimed to automate the process of examining and characterizing cancer biopsy samples arranged in tissue microarrays.

Typically, pathologists examine such specimens visually, resulting in varied interpretations. As the lead investigator for the Help Defeat Cancer project, **David J. Foran, PhD** *(above right)*, who is also the chief informatics officer and executive director of biomedical informatics and computational imaging at Rutgers Cancer Institute of New Jersey, investigated the use of digital pattern recognition as a means for improving the speed and accuracy with which specimens could be analyzed and assessed across large data sets. At the outset of the project Dr. Foran recalls that while the approach was "pioneering," it was "met with tremendous skepticism" by many investigators throughout the clinical and research communities.

His team partnered with IBM in 2006 to launch Help Defeat Cancer, and with the support of more than 200,000 World Community Grid volunteers from around the world, more than 2,900 years of computing time was generated to enable Foran and colleagues to study more than 100,000 patient tissue samples while searching for cancer signatures.

JODY SOMERS

"The ability to analyze cancer patterns in a very fast, reliable, high-throughput fashion is changing the manner in which cancer is characterized and classified."

— David J. Foran, PhD

The work helped show a new way of classifying cancer specimens and supported the development of a reference library of signatures that can be used to analyze and compare tissue samples across large patient cohorts. As a result of this work and funding support provided by the National Institutes of Health, a clinical decision support system was developed and tools from this system are now being tested and refined so that they can be certified for routine clinical use in stratifying and treating patients.

"The ability to analyze cancer patterns in a very fast, reliable, high-throughput fashion is changing the manner in which cancer is characterized and classified. New technologies and strategies are enabling investigators to systematically search through vast amounts of data and automatically detect and identify computational biomarkers which provide insight as to the underlying changes that occur from disease onset through disease progression which can help guide choices in treatment and therapy planning," notes Foran, who is also chief of the Division of Medical Informatics and a professor of pathology, laboratory medicine and radiology at Rutgers Robert Wood Johnson Medical School. ■

Breast Cancer in African-American Women

A $5.7 million grant from the National Institutes of Health will help investigators at Rutgers Cancer Institute of New Jersey, Rutgers School of Public Health and Roswell Park Cancer Institute (RPCI) expand their research into breast cancer in African-American women by exploring the impact of obesity and other health factors on survival and quality of life.

The work will build upon the Women's Circle of Health Study (WCHS) which is examining risk factors for aggressive breast cancer in African-American women. Compared to Caucasians, African-American women are more likely to develop breast cancer at a younger age and at a later disease stage. The WCHS – led by Cancer Institute of New Jersey epidemiologist **Elisa Bandera, MD, PhD**, and **Christine Ambrosone, PhD**, of RPCI – so far has recruited more than 2,700 African-American women with and without breast cancer. The grant will enable follow-up of recently recruited participants with breast cancer to better understand factors affecting survival.

"Because obesity and related co-morbidities such as diabetes and hypertension are more common in African-Americans, it is imperative to explore their impact on breast cancer treatment as well as survival and quality of life in this population and determine how optimal management of these conditions contributes to these outcomes," notes Dr. Bandera, who is also an associate professor of epidemiology at Rutgers Robert Wood Johnson Medical School and School of Public Health. ■

The grant (R01CA185623) will support the work over the next five years and was awarded to **Elisa Bandera, MD, PhD***, and two other principal investigators: Cancer Institute member* **Kitaw Demissie, MD, PhD***, who is a professor and chair of the Department of Epidemiology at the School of Public Health and the director of the Institute for the Elimination of Health Disparities; and* **Chi-Chen Hong, PhD***, of Roswell Park Cancer Institute.*

Knocking the *Sox* off Lung Cancer

According to the American Cancer Society, lung cancer accounts for more deaths than any other cancer in both men and women. A protein associated with poor survival in lung cancer patients will be further explored by investigators at Rutgers Cancer Institute of New Jersey to uncover its role in lung cancer development and spread. A $1.8 million grant (R01CA190578) from the National Institutes of Health to Cancer Institute of New Jersey researcher **Sharon R. Pine, PhD** *(right)*, will support the work.

DEBBIE VOGEL

Previous research by Dr. Pine and colleagues (presented at the 2014 *American Association for Cancer Research Annual Meeting* and supported by National Cancer Institute Career Development Grant K22CA140719) identified the Sox9 protein as a key transcription factor that controls when genes are turned on and off, which could lead to the development of lung cancer metastasis.

Building on these findings, Pine and colleagues aim to uncover how Sox9 acts as a convergence 'hub' for multiple cancer pathways in lung cancer, eplore the protein's role in lung cancer and develop a novel treatment to inhibit Sox9 in lung cancer.

"Especially with our previous research confirming that Sox9 levels are higher in more than half of non-small cell lung cancers – the most common type of lung cancer – further elucidating the function of this protein and developing ways to inhibit it could be beneficial to patients in the future," notes Pine, who is also an assistant professor of medicine at Rutgers Robert Wood Johnson Medical School. ■

Medical physicist* Ning Jeff Yue, PhD*, is the vice chair and chief of physics in the Department of Radiation Oncology at Rutgers Cancer Institute of New Jersey and Rutgers Robert Wood Johnson Medical School.

Radiotherapy

plays an important role in the management of cancer patients. It is estimated that in industrialized countries 60 to 70 percent of cancer patients receive radiotherapy during their course of treatments and radiotherapy contributes to about 50 percent of cancer patients who are cured. Radiotherapy treats cancers by eliminating cancer cells with radiation particles such as photons, electrons and protons. Advancement of this field relies heavily on the clinical and research efforts of radiation oncologists, medical physicists, as well as radiobiologists. No one knows this better than Dr. Yue.

NICK ROMANENKO

Dr. Yue's scientific and professional contributions to the field of radiation oncology and medical physics have been recognized nationally and internationally.

In 1987, Dr. Yue received his bachelor's degree in physics from the University of Science and Technology of China (USTC) – considered to be the MIT of China and is known for educating many top notch scientists. He came to the U.S. that same year through the prestigious CUSPEA program that enabled China's best physics college students to pursue graduate studies in the U.S. After receiving his PhD in physics from the University of Pennsylvania, Dr. Yue was admitted to the medical physics residency program of Thomas Jefferson University in Philadelphia. Following completion, he joined Yale-New Haven Hospital and Yale University as a radiological physicist and joint faculty member. In 2006, Dr. Yue joined the Department of Radiation Oncology at the Cancer Institute and Robert Wood Johnson Medical School.

Radiotherapy has the ability to accurately and precisely pinpoint and kill cancer cells while preserving the surrounding normal cells as much as possible. Modern technology through which this is achieved is image guided radiotherapy (IGRT). Multi-imaging modality registration and fusion are the key components of IGRT and allow alignment of images acquired with different imaging systems (e.g., PET, MRI, CT) at different forms and times for accurate target identification, delineation and treatment delivery.

Dr. Yue, collaborating with faculty members of the Department of Radiation Oncology as well as researchers from other departments and institutions, has conducted extensive research in this area and has published more than 100 scientific papers and book chapters. With the technologies and algorithms developed by Dr. Yue's group, cancer targets can be tracked dynamically and registration and fusion can be performed between 2D and 3D images, and 3D and 4D images.

Dr. Yue's research interests also include biomedical mathematical modeling and brachytherapy. His research in prostate permanent seed implants (working with Dr. Frank Waterman) was the first to introduce this dynamic change of treatment consideration and has led to the current standard of prostate

implant dose estimation and prescription.

Under the leadership of **Dr. Bruce Haffty**, chair of radiation oncology at the Cancer Institute, Robert Wood Johnson Medical School and New Jersey Medical School, Dr. Yue has established the medical physics residency program at the Cancer Institute, the only such accredited program in the state. His professional and scientific contributions to the field of radiation oncology and medical physics have been recognized nationally and internationally. For many years, Dr. Yue has served as a grant reviewer of Department of Defense Congressionally Directed Medical Research Programs and other programs and has served on many committees of various professional societies. Currently, Dr. Yue is a member of the Board of Directors and fellow of the American Association of Physicists in Medicine, a member of the Board of Directors of the Commission on Accreditation of Medical Physics Education Programs, and the President of the Sino-American Network of Therapeutic Radiology and Oncology.

As Rutgers Cancer Institute of New Jersey and the Department of Radiation Oncology continue to pursue excellence in cancer treatment and research, the medical physics team will continue to contribute to this mission and make every effort to go beyond. ■

CANCER Connection is published by Rutgers Cancer Institute of New Jersey's Office of Communications and Public Affairs

195 Little Albany Street • New Brunswick
New Jersey • 08903

Phone: 732-235-7940 • **cinj.org**

Director of Communications and Public Affairs / Executive Editor: Candace E. Botnick, MS

Managing Editor / Writer: Michele Fisher

Contributing Writers: Maryann Brinley • Eve Jacobs

Cover Photo: Nick Romanenko

Design: Barbara Walsh Graphic Design

Clinical Trials Corner:

A Closer Look at 'Chemo Brain'

When receiving treatment for breast cancer, patients sometimes experience side effects that can make it harder for them to concentrate, remember things or do tasks requiring rapid or precise hand movements. Referred to as "chemo brain," these changes can affect a patient's quality of life. Rutgers Cancer Institute of New Jersey is referring breast cancer patients to a clinical trial examining the side effects of chemotherapy and hormonal therapy on the brain.

The study, sponsored by the National Institutes of Health and conducted by the Kessler Foundation in cooperation with the Cancer Institute of New Jersey, will look at the side effects of these medicines on breast cancer patients by looking at changes that occur inside the brain. Investigators also will look at how these changes affect hand movements.

Post-menopausal, right-handed women between 50 and 70 years old who have had or are scheduled to have surgery for breast cancer or are scheduled to receive or are currently receiving chemotherapy or hormone treatment are eligible to take part in the trial, although other criteria must also be met. Healthy post-menopausal women with no evidence of breast cancer also are being sought for comparison.

Serena Wong, MD, medical oncologist at the Cancer Institute and assistant professor of medicine at Rutgers Robert Wood Johnson Medical School, is the referring physician for the study at the Cancer Institute, who also will be screening participants. "The brain typically recovers from these cognitive side effects over time, but subtle changes can sometimes persist for years. This study will enable investigators to better understand the relationship between cancer treatments and brain function.

Our goal is to find ways to minimize or even prevent the effects of 'chemo brain,' thus helping to improve the patient's quality of life," she said. ■

For more information on this trial, individuals can call the research team at 800-248-3221 extension 3525 or e-mail dallexandre@kesslerfoundation.org. For information on other clinical trials offered at Rutgers Cancer Institute of New Jersey, visit cinj.org/clinical-trials.

A Strength to Pay Forward:

In hearing that someone has battled cancer more than once, a typical reaction might be one of pity or sadness. In the case of Subha Barry, who has fought the disease six times over a 15 year period, the reaction is jaw dropping. But this is not a story about fear, sorrow, shutting down or feeling sorry for oneself. According to Barry, hers is a story of success and survival, as well as one of embracing life and giving back. It is a story she hopes will inspire others to do the same.

Subha Barry is the embodiment of a successful career woman. The 53-year-old Barry found herself breaking through barriers even before she established herself in the corporate world of finance. In her native India, tradition dictates that a young woman go from her parents' home directly to her husband's home. In 1983 – 21 years old and unmarried – she left her family home in India to attend Rice University in Texas on a scholarship. There she met her future husband, Jim Barry, and earned two master's degrees – one in business and one in accounting.

BY MICHELE FISHER

PHOTOS BY NICK ROMANENKO

For more than a decade, Subha Barry and her family have been "giving back" to the Cancer Insitute of New Jersey. "It's a sentiment that I grew up with…If you're given a great gift of intellect and good living, you have an obligation to give back and establish a sense of purpose. In my case, it is an opportunity for me to make the most out of a crisis."

She quickly rose through the ranks at different financial institutions with a 21-year career at Merrill Lynch. As a wealth advisor who managed 401(k) plans, stock options and similar products for individuals, she soon became a manager and was asked to build a multicultural business development unit targeting diverse communities who were typically underserved by large financial companies. Constantly on the go in 1997 – even with two young children at home (8-year-old Tara and 18-month-old Jay at the time) – it was early that year that something felt terribly wrong.

"Looking back, I didn't realize that I was constantly sick for nearly the entire year before – fevers, joint aches, pain, infections. I just kept treating the symptoms," Barry recalls. She worked through it all. Unusual vaginal bleeding prior to a meeting at work one day was alarming to Barry, but just as she had the entire year before, she treated the symptoms and carried on with her schedule. Still not feeling right the next day, she went to see her gynecologist, who immediately sent her to the hospital for more tests. Her platelet count was extremely low – 6,000 versus the average 150,000 to 450,000 – meaning her ability for her blood to clot was extremely compromised. She was on the verge of bleeding out.

Doctors were able to stop the bleeding, but they were unable to diagnose her condition at that point. She improved with medication, and after five days in the hospital, she went home – and immediately back to work. But in weaning off the medicine, the symptoms returned. Within two months she was back at the hospital, where a CT scan showed abnormally large lymph nodes in her chest and abdomen. Her spleen was removed and within a week, she started on a chemotherapy regimen at what is now known as the Abramson Cancer Center of the University of Pennsylvania. She had stage IIIB Hodgkin's lymphoma – a type of cancer of the lymphatic system. Upon hearing the diagnosis, Barry "knew that I had to conquer this challenge. I had felt that my whole life up until that point prepared me to beat cancer. I always had this ability to shake things off, but I didn't know how sick I was."

Strike Two, Three…

Six cycles of treatment helped put the disease in remission, but in March 2000 she had a recurrence. Five cycles of a different

treatment helped keep the monster at bay for another two years. When it came back in 2002, a different form of chemotherapy treatment was followed by a stem cell transplant utilizing her own stem cells (autologous). By 2004 when the cancer surfaced for a fourth time, Barry was nearly out of options. She was unable to find a matched donor for a potential allogeneic stem cell transplant. "I thought about what would happen to my children. I had a desire and a need to keep surviving, but I also knew that I must accept that my best efforts may not be good enough," she says.

Looking to find treatment closer to her Princeton home, Barry used her broad network of contacts to inquire about options in New Jersey. It was then she was introduced to Rutgers Cancer Institute of New Jersey and Chief of Hematologic Malignancies and Blood and Marrow Transplantation Roger Strair, MD, PhD. Under his care, she further learned that her form of Hodgkin's lymphoma was Epstein-Barr positive, in part caused by the mutated Epstein-Barr virus in her body. The concern was that while "the mutation doesn't cause harm on its own, it acts as a host to cloak cancer and let it grow," recalls Barry.

Despite this concern, she felt comfortable her new doctor was able to address this challenge. "Dr. Strair has the intellectual heft and 'radar' of sorts to know what is going on worldwide," says Barry. Given the Epstein-Barr sensitivity, Dr. Strair knew of a clinical trial tackling that genetic mutation being offered in Houston as part of a consortium effort of Baylor College of Medicine, Houston Methodist Hospital and Texas Children's Hospital and encouraged Barry to enroll.

"Ms. Barry has incredible strength, determination and courage. She traveled to Houston to participate in a clinical trial designed to specifically treat her type of tumor in a highly unique fashion that stimulated her immune system to target the Hodgkin's lymphoma. That same determination has her supporting multiple avenues of research designed to help patients across a broad spectrum. She understands and is motivated by the fact that each bit of research adds to the knowledge that drives the development of new therapies, like the one she benefitted from. She also knows that what is done in New Jersey helps patients locally, nationally and internationally," notes Strair, who is also a professor of medicine at Rutgers Robert Wood Johnson Medical School.

Barry flew to Texas once every three months for a total of six treatments. The gene therapy worked and Barry was in remission once again. A recurrence two years later was again treated with the next generation of her prior gene therapy and her Hodgkin's lymphoma has remained in remission since then. She credits Strair's "generosity of spirit" in referring her elsewhere. "His ability to put the patient first was mind-boggling for me," she remembers thinking.

Barry says she felt that same generosity of spirit once again when she turned to the Cancer Institute in 2012 when diagnosed with breast cancer. It was then that members of the Stacy Goldstein Breast Cancer Center (including its director Deborah L. Toppmeyer, MD, and surgical oncologist Laurie Kirstein, MD, FACS, both faculty at Robert Wood Johnson Medical School) along with Strair successfully managed her care.

Giving Back

Her relationship with the Cancer Institute deepened in those early years. It was around the time she was flying to Texas for the clinical trial that center leaders met with her and asked her to serve as part of the leadership of the fundraising arm for the Cancer Institute. "They wanted to have my perspective of having gone through such a unique situation with my cancer," says Barry. "That personal experience brings value in educating others about the world-class oncologists and brilliant research at the Cancer Institute." She is currently the chair of the Director's Advisory Board for the Cancer Institute and has been serving as a member of the Rutgers University Foundation's Board of Overseers since 2013.

And for more than a decade, Barry and her family have been "giving back" to the Cancer Institute. "It's a sentiment I grew up with in watching my parents and grandparents," she says. Her grandfather was wealthy but lived modestly – "simple living, high thinking. He used the experiences in his life to serve a broader community," she notes. "If you're given a great gift of intellect and good living, you have an obligation to give back and establish a sense of purpose. In my case, it is an opportunity for me to make the most out of a crisis."

While Barry and her family have donated nearly $1 million over time to the Cancer Institute, she is quick to point out that "the giving of one's time is just as important as giving a check." Along with her role in educating prospective donors, she also provides guidance to newly diagnosed cancer patients, especially when it comes to work/life balance. "When I first started my cancer journey, a mentor of mine from Merrill Lynch said that I needed to learn to lean on people, because when you lean on others, you also give them permission to lean back on you." Barry chose to be open about her diagnosis from the start, and as a result she received the kind of help she needed when she needed it.

"I had chemo on Thursdays, took off Fridays and had that day and the weekend to recover. I napped on the couch at work when needed. By choosing to be open about my diagnosis, it gave me an opportunity to maintain a sense of normalcy in my life. It also allowed me to build

Subha Barry encourages patients to acknowledge the tough part of their cancer journey. "They have the ability to choose what part of the journey to take with them – making a great sum of all the good moments they choose."

a rich relationship with my boss, colleagues and subordinates and allowed all of us to be a bit more human," she recalls. Others were there too. "My mother lived with us during that time and was a source of amazing support. Our family also benefited from the generosity of the children's teachers, neighbors and so many others." She shares this lesson of "leaning on others" with those she coaches, reminding them "not to sweat the small stuff."

"I feel that I'm a better wife, mother and daughter for having gone through my cancer," Barry strongly emphasizes. But she acknowledges every cancer patient is different and handles the aftermath of diagnosis, treatment and recovery in different ways. "Some just want to go back to their old lives and not remember the cancer, while others feel gratitude but don't know how to express it," she says. "I try to engage these patients to become advocates – to acknowledge the tough part of their journey by supporting their physician and the place where they were treated. They have the ability to choose what part of the journey to take with them – making a great sum of all the good moments they choose." On her own wish list, Barry notes she would love to find a way to support gene therapy collaboration between Strair and her doctors in Texas, whether leveraging gifts she has given or through others.

Bottom line, she says if you feel deep gratitude, "Find some way to funnel your interest for those who cared for you. Get engaged. Become a part of this." And for all the philanthropic support that physicians like Strair and others at the Cancer Institute have received over the past 20 years to conduct ground-breaking research and make breakthroughs in treatment discoveries, Strair can personally attest that "gratitude is felt both ways." ■

Along with reading biographies, cooking Mediterranean and Indian food and enjoying good wine, Barry – who is now the general manager at Working Mother Media and Magazine and Diversity Best Practices – also teaches a gender policy course at Columbia University, continues to advocate for health/wellness and education issues and finds the most enjoyment in spending time with husband Jim and children Tara and Jay (now 26 and 19 respectively). To learn more about giving opportunities at the Cancer Institute, visit cinj.org/giving.

It is the Best *of* Times

She's a force of nature—fiery, smart, forceful, bold, funny. Her fierce energy drives life—hers and others—forward on a focused and dynamic path. A natural redhead, her once long, straight hair is re-growing now in springy, unmanageable waves.

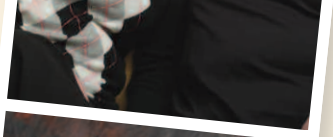
She pulls off her cap and shakes her head a few times to show how much has grown back and how unruly and indomitable it's become. She says her husband and young son laugh at her new, wild hair, evidently sharing her joy as her life regenerates.

With persistence, courage and good humor, Carrie Best has spent most of nearly the last year-and-a-half wielding her way through a rapidly changing medical system mired in complexity. Only in the last few months has her path become clear. She now flies into Teterboro Airport in Bergen County, New Jersey from Columbus, Ohio every other Thursday morning like clockwork.

BY EVE JACOBS

PHOTOS BY NICK ROMANENKO

Carrie Best and her 'traveling buddy' Jean Beach *(aka: Mom)*. Daughter and mother are very close and have shared in the good times and the bad with Best's journey.



"My mom and I were giddy," says Carrie Best, of the day that she received the news that she was a candidate for the clinical trial... and after treatment when her scans came back clear.

Her destination is Rutgers Cancer Institute of New Jersey in New Brunswick, the only National Cancer Institute-designated Comprehensive Cancer Center in the state. Her reason for traveling is to participate in a clinical trial, one of more than 250 taking place right now at the Cancer Institute. The trial affords her the opportunity to receive a groundbreaking therapy as part of an experimental protocol before it is available more generally and makes her a pioneer in the world of cancer therapeutics.

Best is helping to test a new drug that targets a protein called programmed death ligand one or PD-L1. "This drug is a form of immunotherapy, a different approach for treating cancer," explains her physician Howard L. Kaufman, MD, FACS, associate director for clinical science and chief surgical officer at the Cancer Institute. "The drug works by activating the immune system to fight the cancer rather than directly killing cancer cells, as occurs with chemotherapy or radiation therapy." Best, who has been diagnosed with an aggressive form of skin cancer called Merkel cell carcinoma, is thriving under the experimental regimen.

Dr. Kaufman, a leading figure in the research and treatment of melanoma and other skin cancers, says immunotherapy has been "successful against a large number of cancers in clinical trials, including melanoma, kidney cancer, lung cancer, bladder cancer and Hodgkin's lymphoma."

Traveling to New Jersey twice each month is no easy feat for Best. In Ohio, she leaves her job as a school psychologist for special needs students, her 7-year-old son Dylan, and husband Bill, who tries valiantly to preserve all family routines in her absence. She also leaves the comfort of the new home she and Bill built and which she designed during some of her worst times. "I wanted this house to be a comfort to my boys when I was gone. I wanted it to keep them safe," she says, wiping away the tears that seem to spring from a deep well. Her heart and soul went into designing their family home and she herself has derived enormous pleasure and peace there. It is her haven and also her foundation for a future that she hopes desperately to be a part of.

Best's mother, Jean Beach, is her travel buddy in more ways than the obvious ones. She has stayed closely by her daughter's side through doctors' visits, treatments and now bi-monthly airplane flights. Beach is a breast cancer survivor. Twenty years ago, she did it all—surgery, radiation, six months of harsh chemotherapy—and here she sits, solid, smiling, looking good. Her positive attitude, her survivorship and emotional strength have helped to sustain her daughter through this trying ordeal.

The Beginning

What would you do if you woke up one morning and found a tender, grape-size lump under your arm? Well, for Best, always on the alert for cancer (She had participated in a study of daughters of women with breast cancer at the Ohio State University Comprehensive Cancer Center — The James in Columbus.), it sounded a harsh warning. She jumped out of bed and "went directly to the telephone to call The James. I hoped it wasn't cancer but I knew it was," she says.

Seven days of tests, tests and more tests confirmed that, in fact, the lump was malignant, even though the site of the original cancer could not be determined. She found herself on day number eight sitting in "the chemotherapy chair." And that is where and when Best's "incredible journey" began.

"I don't belong here," she remembers thinking. "This is for sick people. I don't think it will ever really sink in—how completely my life has changed."

Best, a determined and action-oriented person, was a 911-police dispatcher for 13 years, working 12- to 16-hour days, reacting quickly and decisively to other people's emergencies. In 2005, she and Bill, an undercover police officer, married and in 2007, Dylan, their IVF baby, was born. In the meantime, Best was shifting gears professionally, laying the groundwork for a life without shift-work, ongoing crises and constant exhaustion, a life where she could "be there" for their child. She stayed on the job and in her off hours studied school psychology — all while pregnant with Dylan. The process was "brutal," she says, but she earned her master's degree in 2008 and subsequently began a job working with special needs children, a job she loves.

Springing into action was very much a part of Best's training and is still an important aspect of her personality. Deeply distressed by the lack of a definitive diagnosis, she jumped onto the Internet, pounding away at her online research "two, three, sometimes four hours night after night, while Dylan slept." She was intent on finding out what was happening to her body and understanding the technicalities of scientific research in the field. "I knew my cancer was really bad and that my chances were slim from the get-go," she says.

Narrowing Down the Culprit

Merkel cell carcinoma seemed the most likely diagnosis and it is not a good one. Best has fair, freckled skin and in her younger years loved lying in the sun. In her 20s and 30s, she had a series of questionable skin growths removed. Merkel cell carcinoma is a rare cancer, often linked to sun exposure. About 2,000 cases were diagnosed in the U.S. in 2014, compared with more than 70,000 new cases of melanoma.

"The number of new cases has doubled in the last decade. The reason is not clear but may be related to excessive sun exposure since many Merkel cell cancers begin in areas exposed to the sun and occur within sun-damaged skin," explains Kaufman, who is also a professor of surgery at Rutgers Robert Wood Johnson Medical School.

Turning her care over to Howard L. Kaufman, MD, FACS *(left)*, associate director for clinical science and chief surgical officer at the Cancer Institute and his team. Carrie Best can clearly remember him saying: "...Let's go make some history."

"The Merkel cell polyoma virus was discovered in the last decade and appears to be present in 80 percent of Merkel cell cancers and may also be contributing to the disease," he continues. "Pathologists may also have become better at diagnosing the disease."

Best not only did an enormous amount of online research but contacted physicians and researchers worldwide who are working in this field, and traveled to The University of Texas MD Anderson Cancer Center for a consult. She read everything available on pertinent clinical trials, consulted with a genetic oncologist, looked into gene therapy. She was desperate to find a life-saver and time was running out. "I kept thinking, 'If only I knew what the primary site was, if only I knew,'" she says.

Best participated in a clinical trial at The James in Ohio. When the first set of scans showed her cancer had progressed, Best voiced her discouragement over not knowing the primary site of the cancer. She had been told that information would open doors to other clinical trials. She was advised that a new test—with the capability of delineating an individual's particular cancer molecular ID—could pinpoint the cancer's origin with 96 percent certainty. However, she was told the test was very expensive. Fighting for her life, Best decided on the spot that she needed to have this test in order to move forward. And, indeed, it gave her that vital piece of information—and her insurance ended up paying for the test. Not only did it confirm that Merkel cell carcinoma was what she was dealing with (malignant cells most likely traveled from her upper arm to a lymph node in her armpit), but it detailed the specific mutations of her tumors.

Best now had the information she needed to proceed. She sent hundreds of emails to clinical and laboratory researchers, oncologists and other physician-specialists, and even a robot-builder working on cancer, saying, "These are my genetic mutations. I'm fighting for my life. Can you provide me with any information?"

Most of her emails were not answered, but her plea for help elicited responses from several pivotal sources. And lo and behold, she hit pay dirt. It was the friend of a friend of a friend process, but it got her to the right place.

One respondent wrote back: "My research is not relevant, but I have a friend at Memorial Sloan Kettering whose work is relevant, and I am forwarding your email to him." The following Monday, Best and her husband were on their way to Memorial Sloan Kettering Cancer Center in New York to meet with a team led by a physician-scientist

PHOTO BY: KIM SOKOLOFF

focused on the identification of novel mechanisms of resistance to current cancer therapies. It turned out to be one of the most meaningful steps in Best's journey. The group advised her that she needed to get into an anti-PD-L1 trial *(see more on page 16)*. "Our trial won't open for about two weeks," she was told, "but you don't have two weeks to wait."

Pioneering Volunteer

Creating, testing and proving the next generation of cancer drugs is what this story is largely about. Best was told some good news, for once. She was referred by the Sloan Kettering team to Rutgers Cancer Institute of New Jersey and specifically to Dr. Howard Kaufman, whose anti-PD-L1 clinical trial was already up and running.

"My lab has looked at PD-L1 expression in Merkel cell carcinoma tumors and found nearly 100 percent of these cancers overproduce PD-L1, suggesting they might be very responsive to treatment with agents that block PD-1 or PD-L1. In this study we are using a new PD-L1 antibody [a blood protein produced in response to and counteracting a specific substance that the body recognizes as alien, such as bacteria and viruses] in patients with metastatic Merkel cell cancer who have failed standard chemotherapy," he explains. "Patients are treated until they fully respond, clearly do not respond or develop side effects that prevent further treatment."

Flying into New Jersey bright and early on the following Monday, Best was full of renewed hope. But she had to take one small step backward before she could proceed with a giant step forward. Testing was required to determine if she was eligible for the PD-L1 trial.

Requirements for inclusion in the trial are stringent, she was informed. She would have to have at least one of three biomarkers most frequently associated with Merkel cell carcinoma. After her blood was drawn and she had been counseled about the trial, Best went back home to wait a week for her test results. She was "on pins and needles." If this opportunity fell through, she knew the realities of terminal illness—little time and no real possibilities left—would come crashing down on her.

Best had been there before. While undergoing chemotherapy early in her journey, she was told it was no longer working, and her odds of recovery were less than one percent. "At the time, I was camping, hiking, working every day. I had lots of energy," Best remembers. She thought about her son. "Dylan is such a happy little boy. I wasn't ready to yank his childhood away from him."

"That was the worst day of my journey," she continues, adding her hope was taken away. At the time, Best and her husband were building their new house and living with her parents. She remembers crying all weekend, but her mother's advice snapped her out of her despair. "You need to get over this," she said.

Green Light

Now Best was waiting for the news that she hoped would jumpstart her recovery. She had been having migraine headaches, which she attributes to her enormous stress, and had gone for a massage, leaving her cell phone in the car. When she returned to the car, "I had a hundred million messages," she says.

She has Bill's message committed to memory: "Rutgers called," he said. "You have the biomarkers and you are in."

"It was a huge moment for me," she says, tearing up. In less than one week, she was a patient of the Cancer Institute of New Jersey in New Brunswick and the country's (and possibly the world's) first participant in a clinical trial of a drug targeting PD-L1 for Merkel cell carcinoma.

Kaufman explained to her that she had tested positive for all three biomarkers for the disease, and was a good candidate for treatment with the drug. She clearly remembers him saying: "I'll see you in the morning. Let's go make some history."

The New-New Cancer Therapies

For Carrie Best, and others, immunotherapy is a lifesaver. However, it doesn't work for everyone and researchers do not yet know why. It's often used when the standard treatment regimens have failed but is becoming the standard for some types of cancer. **Howard L. Kaufman, MD, FACS**, is a physician-researcher with renown expertise in the treatment of melanoma and other skin cancers and a pioneer in the immunotherapy field. He answers our questions.

Q: What is immunotherapy?

A: It is an approach to treating cancer that works by activating an individual's immune system to fight the cancer—rather than directly killing the cancer cells, as occurs with radiation and/or chemotherapy.

Q: What is PD-L1 and what is its role in the spread of cancer?

A: One of our current clinical trials evaluates a new drug that targets a protein called programmed death ligand one, or PD-L1 for short. PD-L1 is a cell receptor that has been found on the surface of many cancer cells where it functions to shut off T cells. Cancer cells can be killed by T cells, which make up part of the white blood cells that normally circulate through the body. T cells can be turned on and off as a way to regulate their function. The normal function of T cells can be turned off by a receptor found on the surface of the T cell called programmed death one (or PD-1). The normal function of PD-L1 is to bind to PD-1 on the T cell and turn it off. Antibodies that block this interaction have been shown to keep T cells active and result in cancer cell death. This approach has been very useful against a large number of cancers in clinical trials.

Q: How is the immunotherapy described above different from what has been available before to treat Merkel cell carcinoma?

A: In general, we have treated primary Merkel cell carcinoma with surgery and radiation therapy. Once the cancer spreads, the standard has been chemotherapy. Initially, the response is usually good, but few patients have responses that last longer than six months. This is the first study to evaluate an immunotherapy using PD-L1 as an alternative approach. About 80 percent of Merkel cell cancers are associated with a virus called Merkel cell polyoma virus. So, it is logical that a treatment that boosts immune response might be especially useful in managing this disease.

Q: Was Rutgers Cancer Institute of New Jersey the first site worldwide to offer this clinical trial? Why?

A: Yes. We were able to lead this clinical trial because my laboratory had contributed to the identification of PD-L1 expression in Merkel cell cancer samples. The Cancer Institute is the ideal place for such a study because we have a large patient population with skin cancer; we have a comprehensive team of physicians, nurses and pharmacists with an interest in advanced skin cancer treatment; and we have the research infrastructure to support important clinical trials, such as this one.

Q: How many people are enrolled in this clinical trial? Is the trial still recruiting participants?

A: We have enrolled six subjects at Rutgers and the trial is still open to recruitment. The total goal is 84 patients and the study will be open internationally throughout the U.S., Europe, Japan and Australia.

Q: What data exist supporting the effectiveness of the therapy? What do you think about this approach?

A: There have been major advances in the use of immunotherapy to treat cancer. This is an exciting area of research because immunotherapy appears to induce durable, long-lasting responses in patients when it works. Interleukin-2, another immunotherapy that has been used since 1992 to treat patients with metastatic melanoma and kidney cancer, has been highly successful in treating metastatic disease in some patients. Whether the newer agents, such as anti-PD-1 and anti-PD-L1, will have similar types of responses remains to be seen. The melanoma trials, however, are suggesting that a similar long-term benefit may be possible. This represents a very important new type of treatment for patients with cancer.

Q: Are there other drugs in the pipeline for Merkel cell and other skin cancers? When will they be available in clinical trials?

A: Yes. Based on the exciting initial data, another study using an anti-PD-1 antibody is being planned. If we continue to see positive results, I hope that other immunotherapy drugs, alone or in combination, may be considered high priority for evaluation in patients with advanced Merkel cell carcinoma. ■

PHOTO BY: DEBBIE VOGEL

She and her mother exchange looks, each with a private memory of that moment. "My mom and I were giddy," Best says. "My mind-blowing panic attacks and drowning fear" zoomed south to a slow simmer — as she turned her care over to Kaufman and his team. "We're moving into a new age of cancer treatment," she says. "You need to know your genetic mutations to get proper treatment and you need to advocate for yourself."

Heady as the news of her new treatment was, Best still had to worry about the practicalities of paying for her flights to and from New Jersey twice each month and the hotel room needed for an overnight stay every two weeks. Luckily, her online research led her to the Corporate Angel Network, an organization of 500 U.S. corporations, which arranges for cancer patients, and bone marrow donors and recipients who are ambulatory, to fly free for medical care in empty seats on corporate jets. The Network, which has no limits on use for flights within the U.S., arranges more than 3,000 flights a year. In addition, Best has relied on the American Cancer Society's service that arranges free or very low cost hotel rooms for those needing medical treatment far from home.

Best, whose cancer was so aggressive that her tumors had doubled in size and spread even after long and aggressive chemotherapy, is now hoping for a lifetime of remission. "I have chased this remission all over the country," she states, "and on the way, I've learned to be persistent, dogged, aggressive."

Carrie Best's message for those with cancer is: "There's always hope. Be your own advocate. This is the dawn of a new era of cancer treatment. It is the best of times."

"Don't be passive," she warns. "Ask hard questions. If your doctor doesn't like that, move on to another doctor."

Kaufman says immunotherapy is "such an exciting area of research because it appears to induce durable, long-lasting responses in patients when it works." Why it works sometimes and not others is still not known.

He explains that interleukin-2, another immunotherapy in use since 1992 for patients with metastatic melanoma or kidney cancer, "has been associated with responses in 17 to 20 percent of patients. Long-term follow-up of the patients indicates that a subset may be free of disease for as long as 20 years after treatment." In other words, these patients may have been cured of their metastatic cancer.

After just three treatments with PD-L1, Best's scans were clear—no tumors visible. She was not expecting such a quick, positive response. The day that Kaufman gave her the good news "was another giddy day," she says smiling. Her gratitude, she says, is overwhelming, both for the drug that has turned her life around and for the empathy, kindness and good care given by Kaufman and his team.

As part of a 900-member Google group of people with a diagnosis of Merkel cell carcinoma, Best frequently sees postings about those who have died. The information affects her strongly—almost as if she actually had met them and become friends.

Her blog—posted on CaringBridge.org—gives an informative and passionate account of what she has encountered on her "travels." While her husband and friends find it "too raw, too real," more than 6,000 readers wait for Best's posts. She has become a leader among patients battling metastatic cancer.

In fact, as we walk together out of the Cancer Institute room where several patients sit with friends and relatives while receiving treatment, a man calls out to say hi to Best. "I'll be back in a couple of minutes to chat," she calls to him. To me, she says happily, "He's in this clinical trial because of information I posted on a cancer blog."

And she has been writing a chronicle of her journey. "It's for my son," she says, "who was so little when I got sick. I wanted him to know how hard I have fought to stay here with him."

Simply put, her message for those with cancer is: "There's always hope. Be your own advocate. This is the dawn of a new era of cancer treatment. It is the best of times." ■

The Surgical Mystery Tour

The Beatles may have sung about a magical mystery tour but at Rutgers Cancer Institute of New Jersey's new Center for Minimally Invasive Surgery, the rides are real and cures are possible with the Xi robot.

Debbie Jacobs, a vibrant 56-year-old real estate agent and single mother of two sons, was treated at the new Center for Minimally Invasive Surgery at the Cancer Institute, and was nearly back to normal within two weeks. "It is amazing," she says. "I have been doing everything but driving a car. Recovery has been great."

Imagine a futuristic amusement-park ride through the human body. The real kind, not a virtual trip. Now forget the future. This almost-unimaginable ride is here for surgeons and patients at Rutgers Cancer Institute of New Jersey and Robert Wood Johnson University Hospital (the Flagship Hospital of the Cancer Institute of New Jersey).

"Seven hours? Yes, correct," recalls gynecologic oncologist and surgeon Mira Hellmann, MD, describing the day she spent inside Debbie Jacobs' abdomen using a Xi robot with infrared imaging, high-definition magnification, and small, thin arms that allowed her to go places that would have been impossible with traditional laparoscopic surgery. "To be able to do this surgery

BY MARYANN BRINLEY

PHOTO BY: NICK ROMANENKO

robotically is phenomenal," says Dr. Hellmann, who is director of the new Center for Minimally Invasive Surgery at the Cancer Institute.

On November 17, 2014, her patient needed only five small abdominal incisions, not the old-fashioned "huge, up and down, open kind," Hellmann explains. "With a big incision, you really don't have the camera reach to get all the way around the four quadrants of the belly. Essentially, after performing a hysterectomy and removing scar tissue, we explored every single part of her abdominal contents to make sure there were no signs of residual cancer. The great thing is: this machine enables us to have complete access to the pelvis, the upper abdomen, the bowels, and even behind her stomach which is usually hard to get to during surgery. We were able to check everything and she is completely cancer-free at this point."

"I find it a privilege and honor to be able to help women with gynecologic malignancies," says Mira Hellmann, MD, director of the Center for Minimally Invasive Surgery at the Cancer Insitute of New Jersey, whose surgical exptertise is helping Debbie Jacobs get back on track. "It's about improved quality of life."

"This was really great news!" says Jacobs, a vibrant 56-year-old real estate agent and single mother of two sons. Diagnosed with primary peritoneal gynecologic cancer, which looks and acts like ovarian cancer, Jacobs spent two nights at Robert Wood Johnson University Hospital and was nearly back to normal within two weeks. "It is amazing. I've been doing everything but driving a car. Recovery has been great."

A Red Flag

It started with bloating. "I had zero other symptoms but my abdomen was getting big." In good shape physically, she has been exercising for years and goes to the gym every day. Still, "At first, I thought I needed to lose some weight but my belly kept getting bigger," she recalls. The cause of the bloating could not be immediately determined, but Jacobs knew it was "not normal" and kept pressing for answers. She recommends that other women with suspicious symptoms do the same.

A CAT scan was ordered and the test results indicated a malignancy. "That was August 5, 2014, my diagnosis day," she says. "So it's only been a short journey." But those few months from a diagnosis to a cure can offer other patients tips for how to manage a cancer diagnosis.

"You really have to take charge of your own care if you can," says Jacobs. "It's extremely important." She did research and got very good at following up. Jacobs is familiar with taking control. A top real estate agent in New Jersey, she now works for Berkshire Hathaway, "Warren Buffet's company," she says proudly. She also had her own real estate firm for years and is considering the idea of becoming a patient advocate now for people who need help managing their health care.

One Stop

Finding the right care is critical – multidisciplinary care. The Cancer Institute's Center for Minimally Invasive Surgery, which her doctor recommended first, offers the most advanced surgical options available. Specially trained and board certified in performing minimally-invasive and robotic procedures, the surgeons are among the region's leading experts and most experienced in the field. "The Center is relatively new," Hellmann explains. "This is a centralized place that includes all of the minimally invasive surgeons at Rutgers Cancer Institute of New Jersey and many from Rutgers Robert Wood Johnson Medical School." Patients can access help for the treatment of multiple cancers. With a phone call or email, anyone — patients, gynecologists, medical oncologists and physicians — can talk to someone about any minimally invasive procedure as opposed to just getting names of surgeons. "This kind of knowledge is empowering for a doctor or a patient," Hellmann says.

Even though her doctor had referred her to the Cancer Institute, "I asked all around as well," Jacobs adds. "Cancer is all too common. Somebody always knows somebody who has had it." She knew a nurse at Robert Wood Johnson University Hospital who asked the doctor she works for to recommend a surgeon. "This is the best kind of referral," Jacobs insists. The referral was for Dr. Hellmann.

"I find it a privilege and honor to be able to help women with gynecologic malignancies," Hellmann says. She has advanced training in traditional, laparoscopic and robotic surgery for a wide range of conditions, including uterine, ovarian, cervical, vaginal and vulvar cancers.

PHOTO BY: ALAN SCHINDLER PHOTOGRAPHY

Debbie Jacobs, at home with her younger son Brandon, feels lucky. "Three of my best friends have passed away from cancer. People ask me now, 'What do you want to do with the rest of your life?' But I have to answer: Nothing different. The same things I am doing now: spending time with my kids, my family and my friends. I have the best support and I don't feel like I have missed out on anything."

"It's about improved quality of life," explains Hellmann, who has been at the Cancer Institute since 2009. An assistant professor of obstetrics, gynecology and reproductive sciences at Rutgers Robert Wood Johnson Medical School, she is "pleased to offer women increased access to the next generation of innovative robotic surgical techniques." Hellmann chose her specialty not only because the care is specific to women but also because it "encompasses all areas, one of the few fields in medicine to do this." She practices as part of a group, but handles all aspects of care for her patients. "We treat all in one. There is just no replacement for my being in the operating room, seeing what the cancer looks like, and then administering chemotherapy."

Pinpointing

Jacobs had a "diagnosis that looked like probable ovarian cancer," Hellman explains. It was actually peritoneal cancer of the epithelial cells inside the abdomen. The ovary surface is made up of epithelial cells but peritoneal cancer can occur anywhere inside the abdomen. Peritoneal cancer is closely related to epithelial ovarian cancer and treated similarly.

Though this patient experienced no symptoms except for bloating, other signs for peritoneal cancer can include: abdominal pain, indigestion, pressure, or cramping; a feeling of fullness even after a light meal; nausea or diarrhea; constipation; frequent urination; loss of appetite; unexplained weight loss or gain; abnormal vaginal bleeding; or rectal bleeding. Risk for peritoneal cancer is the same as ovarian cancer but is more likely if a woman has the BRCA1 or BRCA2 genetic mutation. Older age is also a factor.

At first Jacobs' surgery was scheduled for late August. In preparation, Hellmann sent her patient for a PET scan that indicated the cancer had metastasized and was in her lung. "The imaging showed extensive disease to the point where it would not be completely surgically receptive, including that lesion in her lung," the doctor explains.

PHOTO BY: NICK ROMANENKO

"There were clusters of cancer cells on my stomach and on other organs but it wasn't invasive. But because of the spread, I was classified as a stage four and scheduled for chemotherapy before any surgery could be done," Jacobs recalls. Three chemotherapy sessions, three weeks apart, destroyed the cancer in her lung and almost wiped out the rest in her abdomen. Jacobs takes a bold approach to her looks and prefers not to hide her baldness. It's liberating and makes a statement about cancer awareness. "Why should I cover up? Everybody knows somebody with cancer."

Taking a bold approach to her looks after treatment, Debbie Jacobs, prefers not to hide her baldness. "Why should I cover up? Everybody knows somebody with cancer. It's liberating and makes a statement about cancer awareness."

The good news: Her response to chemotherapy was phenomenal, Hellmann says. In fact, "her disease was then confined to a point where she could really benefit from minimally invasive surgery. Robotic surgery, especially with the Xi robot, has given me the tools to perform a lot more minimally invasive procedures."

Incisions can extend just millimeters. In fact, Hellmann was the first surgeon in the region to perform what is now known as a single incision robotic hysterectomy in February 2014. Through a tiny opening with the aid of a viewing scope or endoscopic camera, 3-D images are projected onto monitors in the operating room for clear, magnified views of the surgical area. In addition to gynecologic cancers, Cancer Institute surgeons are using minimally invasive robotic surgery for prostate and other urologic cancers, colorectal, lung and liver cancers. "The camera can look all around and your instruments can reach all around," Hellmann explains. This type of surgery results in shorter stays, faster recovery times, less blood loss, and reduced scarring and pain.

"I have five small incisions across my abdomen in the upper part. And I feel good," Jacobs says. "I reacted so well to the chemotherapy that even with this diagnosis Dr. Hellmann's prediction is that I have more than five years before this cancer comes back. Essentially, I'm cured at the moment but peritoneal/ovarian cancer usually returns within 18 months to four-and-a-half years." Starting this past December, she underwent three additional rounds of post-surgical chemotherapy, a protocol designed to prevent any further cancer cell growth.

Actually, she feels lucky. "Three of my best friends have passed away from cancer. People ask me now, 'What do you want to do with the rest of your life?' But I have to answer: Nothing different. The same things I am doing now: spending time with my kids, my family and my friends. I have the best support and I don't feel like I have missed out on anything. I've traveled and my career has been great. This is what I enjoy doing."

In truth, she would like to take her sons on a safari that she experienced eight years ago. Currently, both young men are living with her after successful musical careers with their band, Mutiny Within. "They toured for years, with nightly venues, had a contract with Roadrunner Records and still have a crazy fan following on social media," says this proud mother. "But they don't see a future in music living on the road." Andrew is 27 and working for Warner Brothers Music Group while Brandon, 24, is studying forensic accounting. The safari to South Africa, Zambia and Victoria Falls was a high point. She's been to Russia, Japan, and Croatia, but says, "Oh my gosh, the safari was the best thing in the world, unlike anything else. Really incredible."

A 1982 graduate of Rutgers College, she even chose her career path for its flexibility because she was a single parent. The boys were young when she started. "As a mother, real estate is kind of a double-edged sword because you never know when you are going to be home," she admits. Yet, looking honestly at her life, she can say, "I've raised great kids. How can you do better than that?"

Maybe the answer to that question is a seven-hour journey, a real life magical mystery tour, on a Xi surgical robot that has given her the gift of time to enjoy her life. ■

For more information about the Center for Minimally Invasive Surgery at Rutgers Cancer Institute of New Jersey, visit cinj.org/MinimallyInvasiveSurgery or call 732-235-2465.

PHOTO BY: NICK ROMANENKO

Big Hope for the Smallest Patients

A $1.5 million gift from the Embrace Kids Foundation to Rutgers Cancer Institute of New Jersey brings great promise for the treatment of children with cancer.

PHOTO BY: DOUGLAS BENEDICT

Children receiving care at Rutgers Cancer Institute of New Jersey will benefit from cutting-edge research and treatment initiatives led by the holder of a recently established endowed chair in pediatric hematology/oncology.

There is an excruciating vulnerability that comes with your child's cancer diagnosis. You are powerless to stop the disease, and you are looking to the person in the white coat to inspire hope, to perform miracles, to save your child—to be nothing short of everything.

Kris McDonald recalls the day in 1999 when a tumor the size of a man's fist was discovered in her daughter's abdomen. Eight-year-old Sammy had stage IV Burkitt's lymphoma—one of the fastest-spreading pediatric cancers—and the doctors needed to operate and start chemotherapy immediately. Sammy's doctor at the time was Barton Kamen, MD, PhD, pediatric hematology/oncology chief at the Cancer Institute of New Jersey. After delivering the news, Dr. Kamen pulled out a bag of magic tricks, performed for Sammy, and explained how he would melt the tumor with medicine. "She looked at him, and she looked back at her dad and me, and said, 'I can beat this,'" Kris says.

Sammy did beat it, and her friendship with Kamen took root during six months of grueling treatment, lasted well beyond remission at age nine, and continued into her adult years. "You don't find those kinds of doctors all the time, but you can't trust your child to anyone of a lesser caliber," says Kris. "There's probably no one more important in your world than your doctor and team of nurses when your child gets a harsh diagnosis."

Kris is on the advisory board of the Embrace Kids Foundation, which recently made a $1.5 million gift—matched by another $1.5 million from an anonymous donor—to establish an endowed chair at the Cancer Institute of New Jersey. The Embrace Kids Foundation Endowed Chair in Pediatric Hematology/Oncology will enable the Cancer Institute to recruit an internationally distinguished specialist to lead cutting-edge research and treatment initiatives benefitting children seeking care at the center. For families battling a diagnosis, the endowed chair also represents a dual commitment to compassion in practice and excellence in treatment—the very combination that helped

PHOTO BY: DOUGLAS BENEDICT

PHOTO BY: DEBBIE VOGEL

Embrace Kids and Rutgers Dance Marathon students and advisors were invited on-field for a Rutgers football halftime presentation. The special guest was Lanaya Booker *(fourth from left)* who lost her battle with Wilms' tumor in late September 2014.

Sammy grow into a healthy adult.

"The kids and families deserve top-tier medical care and research. Embrace Kids is a thriving and passionate community with a calling to provide every resource and support possible. This endowed chair is funded in memory of an outstanding doctor and beautiful soul, Dr. Barton Kamen, who would agree the Embrace Kids community is proud of this great accomplishment…but the fight continues," notes Embrace Kids Foundation Executive Director Glenn Jenkins. For the Cancer Institute, the endowed chair will go a long way toward attracting the best doctors and ensuring ongoing financial support in this area.

Because pediatric cancers are less common, percentage-wise, than adult cancers overall, there tend to be fewer resources dedicated to them, says Robert S. DiPaola, MD, director of the Cancer Institute. But for the New Jersey families who face pediatric cancer diagnoses each year, the Embrace Kids chair brings new hope. In addition to providing an ongoing source of funding specifically for the Cancer Institute's pediatric center, the designation of a new chair will enable recruitment of a leader who can apply all of the institute's latest research to the pediatric population.

"It's about treating the 'whole' patient and improving their quality of life. The programs and services offered through Embrace Kids are complementary to what we at Rutgers Cancer Institute of New Jersey do in identifying and developing next-generation therapies for these children," Dr. DiPaola says.

The chair will have a particular focus on researching and implementing precision medicine, a relatively new field that involves analyzing and treating tumors on a genetic level. Through detailed analyses of cancer-causing genetic mutations, precision medicine allows oncologists to prescribe custom therapies for better outcomes. Personalization can also yield fewer side effects, increasing comfort during treatment and keeping growing bodies as healthy as possible.

This $1.5 million gift is the largest commitment to date for Embrace Kids Foundation. The Foundation has a long history of 'giving,' as its mission since its inception in 1991 has been to provide support services for families whose children have cancer or a blood disorder. These patients – treated at the Cancer Institute and Bristol-Myers Squibb Children's Hospital at Robert Wood Johnson University Hospital – benefit from varied programs and family support services including financial and educational assistance, as well as palliative care. Prior to the funding of the endowed chair, Embrace Kids Foundation has made gifts totaling more than $2.5 million to various departments now part of Rutgers Biomedical and Health Sciences in support of research, faculty development and support staff including Pediatric Hematology/Oncology at the Cancer Institute. The gift also comes full circle, as one of the main supporters of the Embrace Kids Foundation is the Rutgers University Dance Marathon, which over the past 15 years has raised $4.2 million dollars for the organization.

"This (gift) is for the child and family who have not yet been diagnosed," says Kris. "You never know who may need it next. I certainly would have never guessed it would be me." ■

– Portions reprinted courtesy of Rutgers Magazine 2015

PHOTO BY: RUTGERS ATHLETICS

Making A Difference

A Sea of Pink

This past summer, the ladies of the **Machestic Dragons** boating team paddled their way to raising $4,000 for breast cancer research and prevention efforts at Rutgers Cancer Institute of New Jersey, bringing their two-year total for the Cancer Institute to $9,000. The aim of the Machestic Dragons – New Jersey's first breast cancer survivor's dragon boat team – is to promote breast cancer awareness and provide funds raised through the annual Paddle for Pink Dragon Boat Festival to entities that conduct breast cancer research and provide rehabilitation and education for breast cancer patients. ■

The 2015 Paddle for Pink Dragon Boat Festival is scheduled for June 13. For more information, visit PaddleForPink.org.

Machestic Dragon participants (from left): Board President Carol Watchler; Rutgers School of Nursing Assistant Professor Rita Musanti, PhD, ANP-BC, AOCNP; and Board Members Linda Cannon and Judith Arnold.

Giving in More Ways than One

It It was a spectacular evening at the **Rutgers Cancer Institute of New Jersey's 19th Annual Award of Hope Gala** this past fall, where numerous pillars of the cancer community were honored for their support and scientific/academic contributions.

Below: Honored with the **Award of Hope for Corporate Leadership** was the international law firm **Reed Smith** for its long-standing partnership and generous philanthropic support over the last decade. The firm was represented by partner **John Martini, Esq**. *(below left)*, who accepted the award from Cancer Institute Director's Advisory Board member **Richard C. Rosenzweig, Esq** *(below right)*.

Above: Recognized with the **Award of Hope for Leadership in Research and Patient Care** was Associate Director for Translational Science **Shridar Ganesan, MD, PhD** *(above right)*, who received the honor from Chief Scientific Officer and colleague, **Joseph R. Bertino, MD** *(above left)*. Dr. Ganesan cares for breast cancer patients and has a research focus in cancer genomics.

Above: Receiving the **Award of Hope for Philanthropic Leadership** was the **Elizabeth and Barets O. Benjamin Foundation**. **Mary Lasser** *(above center)* is the niece of the late Mr. and Mrs. Benjamin and serves as a trustee to the foundation established by her aunt. For years, the Benjamin Foundation has provided generous support to the Cancer Institute of New Jersey, especially to the Melanoma and Soft Tissue Oncology Program and research undertaken by the program's director **James S. Goydos, MD, FACS** – a physician to Lasser's adult son Tom, who lost his battle to a recurrence of melanoma in 1999. Joining Lasser in the evening's events were Rutgers University President **Robert L. Barchi, MD, PhD** *(above, second from left)*, and his wife **Francis Barchi, PhD** *(above, far left)*, assistant professor in the Rutgers School of Social Work, as well as Cancer Institute Director **Robert S. DiPaola, MD** *(above, second from right)*, and Rutgers University Senior Vice President of Research and Economic Development **Christopher J. Molloy, PhD, RPh** *(above, far right)*.

Above: The **Young Philanthropist Award** was bestowed upon high school senior **Stephen Susan** *(above right)* for creating the 'Game on!' initiative. Susan started the campaign – in which he collects old video games to turn in for cash for the Cancer Institute – following his father's battle with sarcoma. Along with his award, Susan was given a Rutgers football helmet autographed by members of this year's team by medical oncologist **Janice Mehnert, MD** *(above left)*, who is a member of the Melanoma and Soft Tissue Oncology Program and interim director of the Phase I and Investigational Therapeutics Program. ■

To learn more about how you can make a difference, visit cinj.org/giving

Connect with Us on Social Media!

Find us on Facebook

facebook.com/TheCINJ

twitter.com/RutgersCancer

LinkedIn

linkedin.com/company/the-cancer-institute-of-new-jersey

YouTube

youtube.com/user/CancerInstNJ

Making A Difference

Everyday Community Heroes

A special thanks to friends, schools, and community-based organizations throughout the state whose dedicated fundraising efforts have supported cancer research, patient care, community outreach and patient and family services.

Gifts up to $90,000

- **Stephen A. Cox Foundation** *Newton*

Gifts up to $30,000

- **Gutter Master, LLC**, *Jackson*
- **Eleanor's Fight Against Pancreatic Cancer**, *Russo and Mayewski Families, Golf & Tennis Outing, Skillman*

Gifts up to $20,000

- **Westlake Men's Golf Association** *Jackson*
- **Game On Campaign** *Stephen Susan, Edison*

Gifts up to $10,000

- **The Charitable and Cultural Club of Somerset Run**, *Somerset*
- **Stitch Fore Time**, *Deal*
- **SanMar**, *Employee fundraising events with corporate match, Robbinsville*
- **Affinity Federal Credit Union** *No-Shave Movember*

Gifts up to $5,000

- **Red Bank Special Improvement District**, *Oysterfest, Red Bank*
- **Nutley High School Football Alumni**, *Golf for a Cure, Nutley*
- **inVentiv Health**, *Employee fundraising events, Somerset*

Gifts up to $4,000

- **Machestic Dragons**, *Princeton Breast Cancer Survivor Dragon Boat Racing Team, Mercer*
- **Middlesex County Softball Tournament**, *Middlesex County Office of Health Services and Middlesex Board of Chosen Freeholders, New Brunswick*
- **East Brunswick Public Schools** *Denim Day, East Brunswick*
- **ERT eResearch Technology, Inc** *Bridgewater*
- **Ivy Tavern & Liquor Store and Michael McGrath's Hair Port Salon**, *Trenton*
- **Shark River Beach & Yacht Club**, *Neptune*
- **Strikes for a Cure** *Sean Lewandoski, Wayne*
- **Samhita's Rangapravesha** *Samhita Murthy*

Gifts up to $2,000

- **Raritan Valley Road Runners**, *Towpath "Train"ing Run*
- **Panera Bread**, *Pink Ribbon Bagel Campaign*
- **Sayreville War Memorial High School**, *Kick Ovarian Cancer, Sayreville*
- **Chrise's Dare to Dream** *Princeton*
- **Sayreville Bombers Girls Soccer**, *Sayreville*
- **North Jersey Gymnastics League** *Member High Schools: Butler, Clifton, Indian Hills, Montclair, Pascack Regional, Passaic Valley, Ramapo, Randolph, Ridgewood, Wayne Hills, Wayne Valley and West Milford*
- **Rutgers Center for Integrative and Proteomics Research** *Piscataway*
- **ATAC (Assertive Teens Against Cancer)**, *Edison High School, Edison*

Gifts Up to $1,000

- **Raising Hope for Others** *Manalapan*
- **Jessica Foundation**, *Metuchen*
- **Brown Moskowitz & Kallen, P.C.**, *Warren*
- **Athleta, Shop for a Cause In the Pink**, *MarketFair at Princeton*
- **Freehold Borough PBA 159** *Movember, Freehold Borough*
- **Montgomery High School Gymnastics Team** *Montgomery*
- **Tattoos for a Cure**, *Charu Vyas, Marlboro*
- **SCF Design Company** *Eatonton, Georgia*
- **J.P. Stevens High School Football** *Edison*
- **Carbone Training Systems** *Thanksgiving Charity Event, Ocean Township*
- **BNI-Business Builders** *Sussex County Chapter*

Special Gifts

- **Hess Corporation** *Hess toy truck delivery*
- **Bayonne Community Cancer Support Group**, *Holiday toy delivery*
- **Middlesex County Association of Realtors**, *Teddy bear delivery*
- **David's Touch Foundation** Holiday toy delivery
- **New Brunswick Police Department** Holiday toy delivery
- **Bridgewater PBA Local 174** Holiday toy delivery
- **Carly Loves Kids** Holiday toy delivery

Hope and Thanks:

A big 'thank you' to the Russo and Mayewski families for hosting the 2nd Annual Eleanor's Hope Golf and Tennis Outing. More than $45,000 raised over two years will support pancreatic research at Rutgers Cancer Institute of New Jersey.

Celebrating

the life of their friend Steven A. Cox, who passed away from cancer at age 32 in 1991, supporters of the **25th Annual Cox Classic** golf event took to the links this past fall to support efforts at Rutgers Cancer Institute of New Jersey. The $85,000 raised this year will benefit prostate cancer research, the LIFE (LPGA Pros in the Fight to Eradicate breast cancer) Center, and the Steven A. Cox Scholarship in Cancer Research at the Cancer Institute. Longtime supporter of both the Cancer Institute and the **Steven A. Cox Foundation**, retired LPGA pro **Val Skinner** *(center)*, attended the anniversary event along with *(from left)* supporters **Jack Ciamillo**, AT&T marketing communications manager; **Chris Thedinga**, Steven A. Cox Foundation trustee and senior account director at RR Donnelley; **Donald Dalgauer**, senior account director at RR Donnelley; and **Bill Coney**, senior account executive at RR Donnelley. ■

SHERB NAULTY

The 2015 Cox Classic golf event will support the Cancer Institute and be held October 5 at New Jersey National Golf Club. For more information visit coxcharityclassic.com

Rutgers Cancer Institute of New Jersey
Network Spotlight

The Rutgers Cancer Institute of New Jersey Network of hospitals spans the state. Network hospitals offer their patients access to the latest cutting-edge cancer therapies and state-of-the-art cancer care available only at NCI-designated Cancer Centers and their networks, while helping patients remain close to home. For more information, visit cinj.org/network.

Teamwork at Meridian Health

"I am thankful to my entire team of doctors at Meridian. They would not rest until they figured out what was wrong with my lung – and I am glad they didn't."
— Paul Mandica

For 30 years, Paul Mandica suffered from scoliosis and horrible back pain. He got to the point in the fall of 2014 where the pain was so severe he had to see a doctor. "I said to my wife, I can't take this pain anymore. It's not a way to live," said the 67-year old Mandica.

Mandica scheduled an appointment with Meridian physician **Bruce Rosenblum, MD**, who sent him for a CT scan and MRI to determine what options there were regarding his back pain. The scan showed a suspicious nodule on his lung, and he was referred to a specialist immediately. **Eric Costanzo, DO**, a pulmonologist at **Meridian Health**, did a PET scan and determined the 2.2 centimeter nodule to be malignant. The lesion was deemed suspicious for lung cancer and needed to be operated on quickly.

CHRIS GAHLER

Dr. Costanzo referred Mandica to specialists at **Meridian Cancer Care**. Director of Minimally Invasive Surgery **Ghulam Abbas, MD, MHCM, FACS**, and Chief of Thoracic Surgery **Thomas L. Bauer, II, MD**, at Meridian Health saw Mandica that same week. "Paul had a nodule on his right lung that we were able to remove in its early stages," noted Dr. Abbas.

Two days after surgery, Mandica was

recovering well. The surgery was effective and no chemotherapy and radiation were needed. "Meridian Cancer Care is committed to offering minimally invasive procedures that are effective and allow for easy recovery. This story is one that we are proud of. In Mr. Mandica's case, his team of physicians worked together to detect and solve something that could have gone unnoticed," said Dr. Bauer.

"I am thankful to my entire team of doctors at Meridian," said Mandica. "They would not rest until they figured out what was wrong with my lung – and I am glad they didn't." Mandica is now looking forward to going back to Dr. Rosenblum to finally address his back pain, cancer free. ■

For more information, visit meridianhealth.com or call 1-800-DOCTORS for a Meridian Cancer Care physician near you.

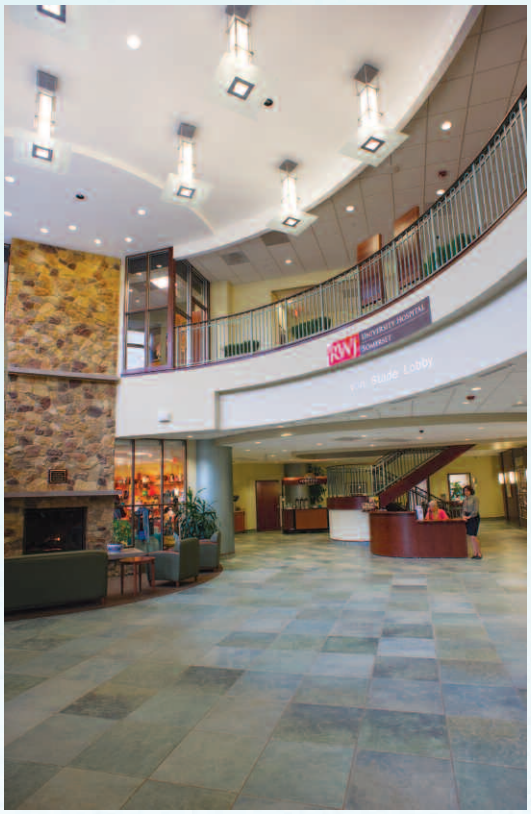
Gynecologic Oncology Program Established at RWJ Somerset

Nearly 84,000 women each year are diagnosed with a gynecologic cancer, and 29,000 die from the disease, according to the Centers for Disease Control and Prevention. In an effort to increase access to specialized cancer care for Central New Jersey residents who may be diagnosed with this disease, **Robert Wood Johnson University Hospital** and **Rutgers Cancer Institute of New Jersey** have expanded their Gynecologic Oncology Program to the Somerset Campus at the **Steeplechase Cancer Center**.

The Gynecologic Oncology Program at Robert Wood Johnson University Hospital Somerset takes a multidisciplinary approach to the treatment of and clinical research on cancers of the female reproductive system, including cervical, ovarian, uterine, vaginal, vulvar, fallopian tube, primary peritoneal, and endometrial cancers, in addition to gestational trophoblastic disease, vulvar, vaginal or cervical dysplasia and complex benign surgical conditions.

The program, under the direction of Cancer Institute of New Jersey Gynecologic Oncology Chief **Darlene G. Gibbon, MD**, brings an experienced team of four specialized physicians who can provide a full range of treatments utilizing state-of-the-art techniques.

The Gynecologic Oncology Program offers a full spectrum of care, including diagnosis, surgery, radiation oncology, chemotherapy, psychosocial services, genetic testing, palliative medicine, hospice care, educational programming and support and counseling each step of the way, in order to provide the highest quality and most efficient care for the patient. Steeplechase Cancer Center patients will now have access to highly-specialized treatment techniques offered through RWJUH's Cancer Program and the Cancer Institute, including brachytherapy, an advanced cancer treatment also known as internal radiotherapy, minimally-invasive and robotic techniques for faster recovery times, access to the latest in clinical trials and translational research, and precision medicine to customize individualized treatment plans and cancer therapies for patients with gynecologic malignancies.


JOHN EMERSON

The lobby of the Steeplechase Cancer Center at RWJUH Somerset.

"The Gynecologic Oncology program is a perfect addition to the already robust scope of care we provide at the Steeplechase Cancer Center, and increases the quality of care provided to our patients battling gynecologic cancers," added **Kathleen Toomey, MD**, medical director of the Steeplechase Cancer Center. "Having the program in Somerville allows for ease of access to some of the best gynecologic oncology physicians in the country and the latest clinical trials and treatment options available, bringing quality care and support closer to home." ■

For more information, visit rwjuh.edu or call the Steeplechase Cancer Center 1-800-443-4605.

Survivors' CORNER

Elizabeth 'Liz' Caloza

For a majority of her years, cancer has been part of **Elizabeth 'Liz' Caloza**'s life. Having battled Hodgkin's lymphoma at age 16, thyroid cancer in her 30s, and a bout of ductal carcinoma *in situ* (a non-invasive form of breast cancer) in 2004, Caloza has been on quite the journey. And throughout, she has been fortunate to have her husband Mark, family and friends by her side and – for the past ten years – **the social work team at Rutgers Cancer Institute of New Jersey** *(below)*. That support system includes social worker **Deborah Leif, MSW, LCSW**, who facilitates the **Breast Cancer Support Group** that meets twice a month. It is a meeting Caloza still attends a decade after being first diagnosed with this form of the disease.

Q: *How has the support group helped or made a difference in your experience with breast cancer as compared to your first two bouts of cancer?*

A: When I was a teen, there were no support groups available and it's not something I thought of with my thyroid cancer. With the breast cancer diagnosis though, I needed to really understand it from both a medical aspect and an emotional one. To that regard, the group provides such an incredible bonding experience. I knew I needed to talk to women who were on that same path. I have learned from the group and made friends. I also feel good that someone else may benefit from the experiences that I've had.

Q: *How important was it to have access to the support group during your time of treatment?*

A: Very important, as there was so much happening with testing and trying to accept the diagnosis emotionally. I learned from the other women in the group about what questions to ask my healthcare team. I needed to make some difficult decisions about my surgical options, but when I finally did, I was able to talk to different women in the group about their individual experiences and learn more about what to expect, as everyone's situation is unique.

Q: *How important were these services to your initial transition into survivorship and even today?*

A: Transitioning into survivorship is a different perspective, and everyone goes about it in their own way. I don't think people realize cancer is a chronic illness. Even though I am years beyond treatment, I still have concerns. As compared to when I was first diagnosed and concerned about treatment and side effects, I have more quality of life questions that pertain to this stage of my journey, like "why do I feel this way…is it normal to feel this way?"

Q: *Tell us something you think the average patient doesn't realize about our social work team and patient service offerings like the Breast Cancer Support Group?*

A: It truly is a team effort. Working directly with the doctors and nurses, the social workers align their services to an individual's needs. It's more than just support groups. There's assistance with numerous resources including transportation and financial services, help in understanding billing aspects and even one-on-one emotional support. I remember Deb recognized I was having a down day. She asked, "Are you okay? You're not your usual self. You can talk to me privately anytime." That simple "I'm thinking of you" is the kind of amazing support that is available and can really make a difference.

Caloza is grateful to serve as a resource to others – she has taken part in an education program for physicians in training, where she talks with new doctors about how to talk and listen to patients. While she is always aware that she is a three-time cancer survivor, she doesn't let the disease define her. She notes there are good days and bad days to the journey, but she uses faith, family, friends and laughter to get through, as well as lessons learned from her support group and those from the social work team at the Cancer Institute. ■

To learn more about our Social Work team and Patient Support Services, visit: cinj.org/PatientSupportServices or call 732-235-6792.

DEBBIE VOGEL

Homefront

A close up look at the lives of faculty and staff members at Rutgers Cancer Institute of New Jersey and what is important and of interest to them outside of work.

Expanding Their Horizons

Whether in action, mugging for the camera or the subject of a 'selfie', a few Rutgers Cancer Institute of New Jersey faculty members have taken the opportunity to capture the world around them.

Associate Director for Cancer Prevention, Control and Population Science **Sharon Manne, PhD**, *scratched an item off her 'bucket list' by going on an African safari to Nairobi, Mount Kenya and the Masai Mara game reserve in Kenya in 2013. While there she witnessed the crossing of wildebeests and zebras over the Mara River and had an opportunity to experience other wildlife up close and personal!*

Urologic Oncology Section Chief **Isaac Kim, MD, PhD**, *visited the Sultan Ahmed Mosque (known as the 'Blue Mosque' for its interior blue-colored tiles) in Istanbul in 2013 while at the World Congress of Endourology Annual Meeting.*

THIAGO DIZ

In our last issue of Cancer Connection, *we shared the story of behavioral scientist and running enthusiast* **Elliot J. Coups, PhD**, *and how he was preparing for a 155-mile, six-stage race across the Atacama Desert in Chile this past fall. His efforts resulted in $6,000 being raised for the organization Back on My Feet, which uses running to help those overcoming homelessness and addiction transform their lives. While carrying full gear and food on his back, Dr. Coups experienced some very unique terrain.*

While at the World Congress for the Advancement of Surgery meeting in Israel in 2010, Gastrointestinal Surgical Oncology Section Chief **David August, MD**, *took time to document his visit to the historical Western Wall in Jerusalem.*

RUTGERS
Cancer Institute
of New Jersey

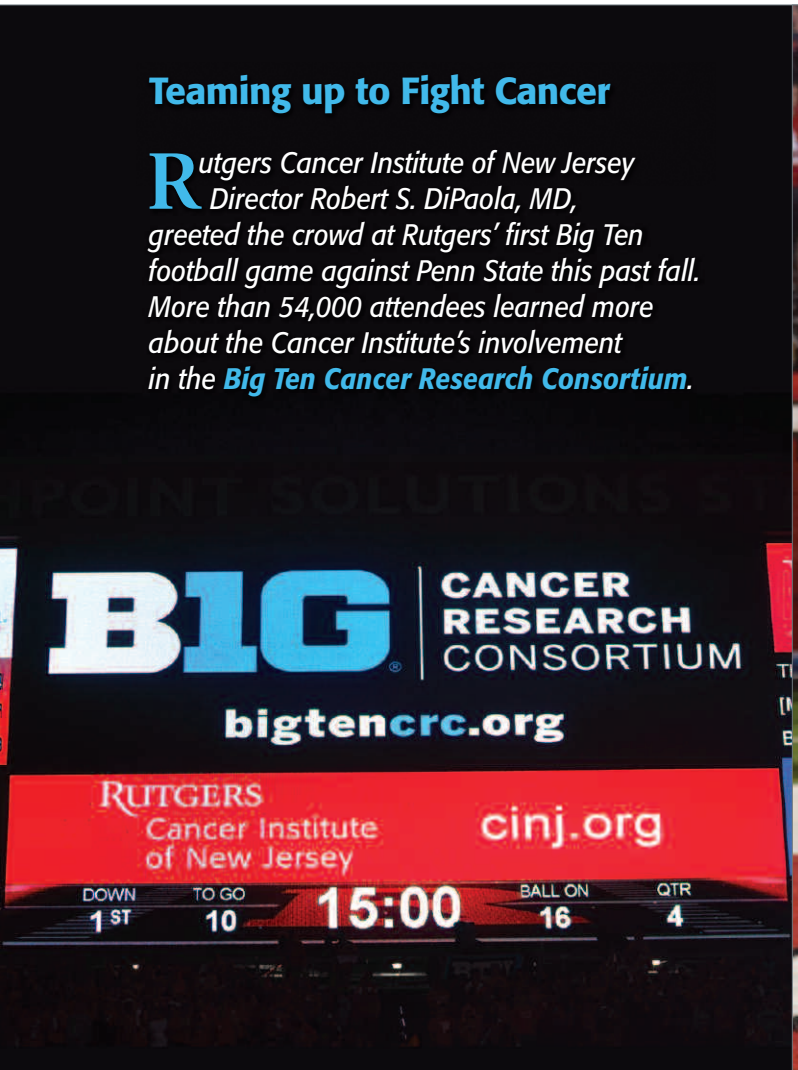
Rutgers Biomedical and Health Sciences
Rutgers, The State University of New Jersey
195 Little Albany Street
New Brunswick, New Jersey 08903

Non-Profit Org.
U.S. Postage
PAID
New Brunswick, NJ
Permit No. 920

NCI CCC A Comprehensive Cancer Center Designated by the National Cancer Institute

Teaming up to Fight Cancer

*Rutgers Cancer Institute of New Jersey Director Robert S. DiPaola, MD, greeted the crowd at Rutgers' first Big Ten football game against Penn State this past fall. More than 54,000 attendees learned more about the Cancer Institute's involvement in the **Big Ten Cancer Research Consortium**.*



PHOTOS BY: RUTGERS ATHLETIC MARKETING