Duke Comprehensive Cancer Center
notes
A Comprehensive Cancer Center Designated by the National Cancer Institute
SUMMER 2008

Duke scientist Ann Marie Pendergast, PhD, at work in her lab.

Nothing Basic About This Research

On average, researchers can spend 10 to 15 years of investigation and development before a new drug hits the market. This lengthy process often begins in a basic science laboratory, like that of Ann Marie Pendergast, PhD, James B. Duke Professor of Pharmacology and Cancer Biology.

"Laboratory research is used to expand our knowledge of a certain concept," says Pendergast. "Ultimately, we are partners with clinical scientists to translate new findings into treatments for the patients."

Pendergast and her team of scientists have been studying the Abl gene product for more than 20 years. Shortly after coming to Duke, Pendergast discovered critical roles Abl has played in the development of leukemias (blood cancers). Some of her recent work aims to explain how the Abl gene product, the Abl kinase, functions in normal cells and solid tumors, and to examine how these functions are affected by Gleevec, a drug that inhibits the activity of the Abl kinase and which is being used to treat some leukemia patients.

"Gleevec has been very effective in the treatment of leukemia, but

continued on page **3**

CHEMOTHERAPY MAY MAKE CANCER VACCINES MORE EFFECTIVE

Chemotherapy given in conjunction with cancer vaccines may boost the immune system's response, potentially improving the effectiveness of this promising type of cancer therapy, according to a study by researchers in the Duke Comprehensive Cancer Center.

Vaccines are being used in clinical trials across the country to treat many malignancies, including lung cancer, brain tumors, and colorectal cancer.

"Chemotherapy first knocks out T regulatory cells that suppress immune function. We thought that this might have a complementary effect when used in conjunction with vaccines," says Michael Morse, MD, lead investigator on the study. "We tested this theory both pre-clinically and in patients who were part of a vaccine trial at Duke for gastrointestinal cancers, and found that our hypothesis seemed to be true."

Michael Morse, MD

"In the lab work, we definitely saw a heightened immune response when we used a drug called denileukin diftitox (ONTAK) in conjunction with the vaccine. The vaccine we used targets a protein found in gastrointestinal tumors and works by boosting immune response to the cells carrying that protein," Morse says. "From there, we gave the drug to 15 patients in a phase I study using the vaccine."

The researchers found that when multiple doses of the denileukin diftitox were given, immune response to the vaccine was enhanced in these patients.

"This is encouraging. The next step will be to develop better drugs that support vaccines by enhancing the immune response they depend on to work," Morse says. "It's a concept that can be applied to any type of solid tumor, which has huge implications for cancer research."

THIS ISSUE:

The story of the longest surviving cord blood transplant recipient

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Stagnant NIH Budget Threatens to Derail Promising Research by Young Investigators

Dear Friends,

Duke and other major research institutions across the country released a sobering report earlier this year describing the dire consequences of continued flat funding of the National Institutes of Health's (NIH) budget over the last five years. This lack of funding has deterred promising young investigators here at the Duke Comprehensive Cancer Center and elsewhere and has threatened the future of Americans' health. The report acknowledges that without consistent and robust support for research, our nation could lose a generation of young investigators to other careers and other countries. Without them, a generation of promising research that could cure disease for millions for whom no cure currently exists might be lost.

Entitled *A Broken Pipeline? Flat Funding of the NIH Puts a Generation of Science at Risk*, the report profiles 12 researchers including Duke's Anil Potti, MD. Dr. Potti is considered an international leader in the development of personalized medicine. He and his colleagues have discovered genomic profiles that can be used to determine which chemotherapy is most beneficial for each patient. Yet, despite his scientific achievements, Dr. Potti has not been able to attain a Research Project grant from the NIH.

Young investigators like Dr. Potti often must wait for years to receive funding that would enable them to begin or continue work on exciting and promising research projects. And just as junior researchers are struggling for funding, even senior scientists are worried about funding. The lack of funding available has discouraged big and innovative scientific thinking, and research progress has slowed.

from the director

I encourage each of you to reach out to your senators and representative and urge them to increase funding for cancer research. We must return to a time in which funding for cancer research is a priority in our nation. As Nancy Andrews, MD, PhD, dean of the Duke University School of Medicine, asserts, "The risks of continued flat funding of NIH are that people who have diseases that five or ten years from now should be curable are going to have to wait a lot longer. The knowledge is there, and we have the people who know exactly what to do to study the things that turn into cures. But they don't have the funding to do it."

You can read the entire report online at **www.cancer.duke.edu/pipeline.**

I want to take this opportunity to thank our friends – and there are many – who support our efforts through generous contributions of time and funding. Philanthropic gifts continue to play a major role in providing support for innovative research efforts aimed at finding new ways to diagnose, prevent, and treat cancer. This support is particularly important in today's economic climate when opportunities for major advances in cancer care are within our reach.

Sincerely,

H. Kim Lyerly, MD, Director

Targeted Therapy Plus Chemotherapy May Pack One-Two Punch Against Melanoma

The incidence of malignant melanoma is increasing at a rate faster than any other cancer, with 60,000 new cases expected to be diagnosed this year in the United States. Treatment options are limited for patients with melanoma that has spread beyond the primary site, and the response rates are often poor.

By targeting and disabling a protein frequently found in melanoma tumors, doctors may be able to make the cancer more vulnerable to chemotherapy, according to a new study by researchers in the Duke Comprehensive Cancer Center. Although this study was done in laboratory rats, a clinical trial applying the same concept to humans has already begun at four comprehensive cancer centers nationwide, including Duke.

Owen Montgomery of Monroe, NC, is participating in the clinical trial. Montgomery was first diagnosed and treated for melanoma in November 2004. In March 2007, the melanoma returned as Stage IV, and Montgomery sought treatment at Duke with Douglas Tyler, MD, a surgeon at Duke and the Durham Veterans Affairs Medical Center, and senior investigator on the study. Later in the spring of 2007, Montgomery went on the clinical trial.

"Today, I am disease-free," says Montgomery. "It's bad to have this disease, but it's wonderful to have professionals like Dr. Tyler with the knowledge and expertise you need. He's more than my doctor; he's my friend."

Doug Tyler, MD

The results of the laboratory study in rats have already clearly demonstrated the effectiveness of combination therapies. Compared to chemotherapy alone, the researchers saw a 30-fold reduction in tumor size following treatment with a combination of a drug known as ADH-1 and a common chemotherapy drug called melphalan. Tumor size shrunk about twofold in response to the combination of ADH-1 and another common chemotherapy drug called temozolomide.

"Furthermore, using ADH-1 with the chemotherapy produced no additional side effects in the rats, which is an important consideration in cancer treatment," adds Tyler.

Now, the researchers are optimistic that the clinical trials in humans will have equally successful results.

The researchers published their findings from the animal study in the May 15, 2008, issue of the journal *Cancer Research*. Funding for this study came from the United States Department of Veterans Affairs, the Duke Institute for Genome Sciences & Policy, the Duke Comprehensive Cancer Center, and Adherex Technologies, the company developing the compound that was tested in combination with chemotherapy.

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Duke Opens Clinical Trial to Test Personalized Medicine for Breast Cancer

Physician-researchers at Duke University Medical Center led by P. Kelly Marcom, MD, opened a clinical trial on May 1 to test genomic tools that will enable physicians to predict which chemotherapies will be most effective in early-stage breast cancer patients.

"There are a number of possible chemotherapies that can be administered by a physician," explains Marcom. "Determining which patient will respond positively to which treatment can be extremely difficult." Duke investigators are pioneers in the design of the genomic predictors that will be used in the study to determine which of the chemotherapies already available will be most beneficial to each individual patient based on the genomic profile of the tumor.

The plan is to enroll a total of 270 patients; 100 will be patients treated at the Duke Comprehensive Cancer Center. The remainder of the patients will be identified by working with oncologists at Duke Raleigh Hospital, Durham Regional Hospital, and at affiliate hospitals across the Southeast.

The study will be funded with a $7 million research grant from the U.S. Department of Defense, which was awarded to Marcom and the team of researchers from the Duke Comprehensive Cancer Center, Duke Institute for Genome Sciences & Policy, Duke's Specialized Program of Research Excellence (SPORE) in Breast Cancer, and the Multidisciplinary Breast Cancer Program at Duke. Marcom expects the study to take five years to complete. The first two and a half years will be spent enrolling patients.

"We firmly believe that a global assessment of a patient's breast cancer biology can revolutionize early stage breast cancer treatment by allowing the design of individualized therapy directed by gene expression signatures," says Marcom. "By understanding which chemotherapies will be most beneficial, patients can be spared the side effects of ineffective chemotherapies."

John Olson, MD; Anil Potti, MD; Joseph Nevins, PhD; Joseph Geradts, MD; Jeffery Marks, MD; Sujata Ghate, MD; William Barry, PhD; Michael Datto, MD, PhD; and Geoff Ginsburg, MD, PhD, are co-investigators on the study.

For more information about the study, visit **genomestohealth.org**.

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>
> **P. Kelly Marcom, MD**

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NCI Director is Special Guest at Duke Town Hall Meeting

John Niederhuber, MD, director of the National Cancer Institute, was special guest at a town hall meeting at Duke this spring. The event was sponsored by the Duke Comprehensive Cancer Center and Duke's department of surgery and was attended by faculty, staff, and students. During his visit, Niedehuber also met with resident physicians from the department of surgery and with Cancer Center Director H. Kim Lyerly, MD, and Neil Spector, MD, director of translational research in oncology at Duke. "Investment in cancer research is an investment in understanding all diseases," says Niederhuber, here pictured with Victoria Seewaldt, MD, co-leader of the Cancer Center's Breast and Ovarian Oncology Research Program.

RESEARCH

Continued from Page 1

cells will eventually find a way to bypass the drug's effectiveness, and continuous treatment at higher doses may have side effects in a subset of patients. Our work to further current understanding of the role of Abl will also help shed light on the side effects of the drug Gleevec, such as cardiovascular problems that some patients experience," explains Pendergast.

"We have found that the Abl gene product is not only involved in promoting blood tumors like leukemias, but has a role in regulating the 'glue' that holds cells together among normal and cancer cells. Since Gleevec inhibits Abl and signaling pathways regulated by Abl, we believe that Gleevec might also be used to treat solid tumors and other diseases that depend on Abl function."

> "DR. PENDERGAST'S WORK is characterized by a unique combination of innovativeness and rigor..."
>
> **Tony Means, PhD**
> Deputy Director

"Dr. Pendergast's work is characterized by a unique combination of innovativeness and rigor that only she can provide," says Tony Means, PhD, deputy director of the Duke Comprehensive Cancer Center, Nanaline H. Duke Professor, and chairman of the department of pharmacology and cancer biology. "I find it fascinating that her work on proteins that interact with Abl has not only led to a deeper understanding of the physiologically relevant roles of Abl but also to an appreciation for the roles this pathway plays in development."

Sponsored by the Citizens Advisory Council

The Citizens Advisory Council (CAC) is the longest standing volunteer group at the Cancer Center. For more than 30 years, the volunteers have supported the mission of the Cancer Center through outreach, advocacy and personal philanthropy. Volunteers are deeply committed to helping advance the fight against cancer. For more information or to learn how to become a CAC volunteer please contact Ross Harris at **336-282-5983** or Doreen Matters at **919-667-2616**.

Gayle Serls holds a photo of her children, Corbin and Matthew.

Unlikely Transplant Gives New Life

Joseph Moore, MD

Forty-five-year-old Gayle Serls had been living a healthy life: she exercised and ate right and had never really been sick except for an occasional cold. But in the summer of 1995, her life completely changed.

When a lymph node in her neck became enlarged, she made a doctor's appointment. By the time she went to the doctor several days later, lymph nodes in her neck, under her arms, and in her groin area were swollen. After blood work was completed, Serls was told she had acute lymphocytic leukemia (ALL), a cancer of the blood that is diagnosed in approximately 5,000 people a year.

"I was stunned," she recalls of learning the diagnosis. "How could this be happening to me?"

She was admitted to Duke University Hospital and began receiving chemotherapy, which appeared to be working. Although tired and scared, she was hopeful that she would be cured. More tests were administered.

One of the tests indicated that she had a rare type of ALL known as Philadelphia chromosome positive acute lymphocytic leukemia. This type, found in only about 25 percent of ALL cases, cannot be treated with conventional chemotherapies.

"This obviously wasn't good, but my oncologist Dr. Joseph Moore never said anything negative," Serls says. "He offered options, and I still had hope. We were simply moving from Plan A to Plan B."

The best solution seemed to be a bone marrow transplant. Serls's siblings were tested for a match. Coincidentally, their bone marrow matched one another, but neither matched hers. The search began for an anonymous donor who would be a match, and Serls made arrangements to go to Johns Hopkins Hospital for her transplant.

In 1995, Duke had a prominent children's bone marrow program led by Joanne Kurtzberg, MD, that is still very highly regarded, but no such program for adults. Duke's Adult Bone Marrow Program was formed in 1996 by Nelson Chao, MD.

At Hopkins, Serls was told that she was too old for a bone marrow transplant from an unrelated donor, but she could receive an autologous transplant. With this type of transplant, Serls's own cells would be harvested and treated to kill the cancer cells. Then, her own treated cells would be infused back into her.

Since this type of procedure was new and still being tested, Serls was apprehensive but realized it would buy her time until she could find a better solution. To prepare for the transplant, Serls discontinued her chemotherapy. But before flying to Hopkins for the transplant, she felt a lump on her neck. The cancer had returned and the doctors would not perform the autolgous transplant.

"This was even worse than first finding out I had cancer," Serls says. "Now I had no hope and didn't know what would happen."

"THERE ARE SO MANY THINGS I would have missed if this treatment hadn't been successful..."

Gayle Serls

Serls went back to Duke and received large doses of chemotherapy in an attempt to control her disease. She felt very sick and was in pain with colitis, a disease of the colon. In the midst of her treatment, Serls' mother happened to watch a story on the evening news that described how newborn babies' umbilical cord blood could help leukemia patients. The stem cells found in the cord blood replace the cancerous cells after they are destroyed through chemotherapy and radiation.

"Even with approximately seven million donors in the adult donor registry database, it can be hard to find an exact match needed for a bone marrow transplant," Kurtzberg says. It's even harder to find matches for minorities because there are fewer donors. However, with cord blood, only a partial match is needed to be successful, so matches are more likely.

In 1995, cord blood transplants were being performed successfully in children at Duke by Kurtzberg, who performed the world's first cord blood transplant of unrelated children in 1993. "Many researchers did not think the transplants could be done in adults because of the small amount of cord blood each newborn has, compared to that of bone marrow," Kurtzberg says.

But on May 1, 1996, Serls received a cord blood transplant at Duke, becoming one of the first adults in the world to receive this treatment.

Twelve years later, Serls is the longest-surviving adult cord blood transplant patient. "There are so many things I would have missed if this treatment hadn't been successful: seeing both of my children graduate from college, being able to dance with my son at his wedding, waiting for my first grandchild who is due later this year," she says.

Serls with her children on Thanksgiving Day 1999.

Today, Serls works for Kurtzberg at the Carolinas Cord Blood Bank, a public facility located at Duke that collects cord blood from newborns at local hospitals whose mothers grant permission. The blood is then tested, processed, stored, and listed on the national donor registry until it is needed for a transplant.

"I now have seen the whole process of how the blood is banked and then used," Serls says. "I feel so fortunate to have lived near Duke and could receive treatment here. If I hadn't, I don't think I would be alive today."

Cord blood transplants are now more common with about 3,000 performed annually, approximately a third of those for adults. Duke continues to be a leader in cord blood research for both adults and children.

Joanne Kurtzberg, MD

Program Supports **Children and Families** Through **Transplant Journey**

Jane Schroeder

While it's the potentially life-saving procedures that bring children and their parents from all over the world to Duke University Medical Center to receive blood and marrow transplantations, the program offers much more than a medical procedure. The Pediatric Blood and Marrow Transplantation Program's (PBMT) Family Support Program offers a variety of services and resources to help parents and children with the broader issues related to their transplant journey.

The program was created in 1997 by Jane Schroeder, PBMT Director Joanne Kurtzberg, MD, and PBMT parents Dennis and Holly Schell. The mission of the volunteer-based Family Support Program (FSP) is to care, serve, and lighten the emotional, psychosocial, financial, and logistical burdens inherent in relocation and treatment of children undergoing bone marrow stem cell transplants. Within the FSP, there are more than 20 programs to support patients, siblings, and parents.

With the Best Buddies program, volunteers are trained and then matched with PBMT families, spending between four and ten hours each week with the family, playing video games, providing respite and an ear to listen. "The volunteers are like extended family members," Schroeder says.

The Family Support Program receives most of its funding from the annual Rainbow of Heroes Walk. Each year, hundreds of children and their families gather at Duke to honor the children and to reconnect with each other and their physicians and caregivers. The walk takes place the first Saturday of May. For more information, go to **http://www.rainbowofheroeswalk.org/.**

Schroeder, who began working as a child life specialist at PBMT in 1992, retired in May after 16 years with the program. In April, she won a Meritorious Presidential Award, a high honor for Duke employees. "Jane has a wonderful warmth about her that few can maintain in the position that she held," says Raylene Means, a volunteer with the program. "She will be greatly missed."

Lindsey Kearns has taken over as director of the program. "Dr. Kurtzberg believes that psycho social care is as important as the clinical care, and she is very supportive of the program," says Kearns. "Most transplant facilities do not offer the wide range of support programs that we do at Duke. We simply want to support the children and their families to the best of our ability."

"JANE HAS a wonderful warmth about her that few can maintain in the position that she held."

Raylene Means
volunteer

Fang Fang Yin, PhD; John Kirkpatrick, MD, PhD; and Chris Willett, MD, in front of the Novalis Tx. Kirkpatrick holds the mask worn by patients.

Duke First in World to Use Innovative Machine to Deliver Radiation

"We are fortunate to have highly experienced physicians and staff as well as the most advanced technology available in Duke's radiation oncology department," says Christopher Willett, MD, chairman of the department.

Using the world's first Novalis Tx system, which arrived at Duke this spring, John Kirkpatrick, MD, PhD; John Sampson, MD, PhD; Fang Fang Yin, PhD, and their colleagues have developed innovative treatment techniques that deliver radiation with the best combination of precision, accuracy, and flexibility available today.

The system works by delivering high-energy, precisely shaped beams of radiation to the tumor from multiple directions. The "high-definition" beam shaper provides twice the resolution of coventional treatment machines. This allows the physician to tailor the beam of radiation so that it targets the tumor precisely and minimizes damage to healthy surrounding tissue.

"This highly precise form of radiation therapy can be very challenging because any change in the patient's position during set-up or treatment will compromise the accuracy of the treatment," explains Yin, professor and director of radiation physics. "With the Novalis system, we can detect deviations in position as little as one millimeter, not only between treatments but also during the treatment."

"I AM HAPPY TO know that the radiation is killing my tumor without affecting the rest of my body."

Terri Schinazi
Cancer patient

"The goal of radiation therapy has always been to maximize the dose of radiation to the tumor while sparing healthy tissue," says Kirkpatrick, clinical director of radiation oncology. "The systems that we are using now are dramatic improvements over the tools that were available just five years ago, and the Novalis Tx is considered the best of this new generation. With this system, we can safely, accurately, and efficiently deliver high-dose radiation, maximizing killing of cancer cells and minimizing the side effects of radiation therapy for our patients."

"With this new image-guided machine, it takes approximately one hour to administer the entire treatment as opposed to six hours for preparation and treatment with the prior process. Now patients are fitted with a custom mask which reduces the anxiety and anticipation of the halo brace that was previously used," explains patient Terri Schinazi. "My deepest gratitude goes to Duke's Radiation Oncology team for offering patients cutting edge technology treatments."

Duke Cancer Physician and Researcher Honored as Heroes

Researcher Martin Tornai, PhD, and surgeon Lee Wilke, MD, were named Health Care Heroes by the *Triangle Business Journal* this spring for their innovation and compassion.

Martin Tornai, PhD

Tornai won an Innovator/Researcher Award for his efforts to design breast scanners that are more accurate than traditional mammograms in finding small tumors. The scanners, which are still in the developmental stage, also are more comfortable than traditional mammograms and give off less radiation. Clinical trials of the new scanner are underway at Duke.

Lee Wilke, MD

Wilke, a breast cancer surgeon, was nominated by former patients and co-workers for the Physician Award. Wilke's goal is to make sure that her patients benefit from the cutting-edge research that takes place at Duke and to help them understand their cancer and the technology and complementary medicine that can be used in their treatment.

Duke Opens New Survivorship Clinic for Breast Cancer Patients

In February, Duke opened the new Breast Cancer Survivorship Clinic to help survivors deal with the long-term and late effects of breast cancer. The clinic is part of the Duke Center for Cancer Survivorship, which offers services to all cancer survivors.

The Breast Cancer Survivorship Clinic features a multidisciplinary team of health care providers who work with small groups of patients. On clinic day, the patients arrive and take their own blood pressure and weight. Afterwards, a discussion determines the issues important to the patients in the group. Each patient is then directed to the appropriate caregiver, which can include a nurse practitioner, social worker, clinical dietitian, or physical therapist. The team of caregivers also includes other Duke specialists such as licensed marriage and family therapists and psychiatrists.

There are 10 MILLION cancer survivors living in the United States today...

"Cancer is a life-changing experience," says Tina Piccirilli, LRT, CTRS, administrative director of Duke's Center for Cancer Survivorship. "The question becomes, 'What does life look like after treatment is complete?'"

The new Breast Cancer Survivorship Clinic is the first specialized clinic in the Duke Center for Cancer Survivorship and will serve as the model for other specialized survivorship clinics that address the issues unique to patients with a particular kind of cancer. A prostate survivorship clinic is currently under consideration.

"There are more than 10 million cancer survivors living in the United States today, and many of those survivors experience lasting physical and psychological challenges," says Piccirilli. "Our primary goal is to help patients with all types of cancer make healthy lifestyle choices that contribute to improved quality of life and minimize the risks of secondary cancers and other illnesses."

For more information about the Center for Cancer Survivorship or the new Breast Cancer Survivorship Clinic, call **919-684-8571.**

Drs. Darell Bigner and Allan Friedman, Mike Traynor, Dean Nancy Andrews, Dianne Traynor, and Dr. Henry Friedman

$6 Million Gift from Pediatric Brain Tumor Foundation to Fund Research

The Pediatric Brain Tumor Foundation (PBTF) awarded a second gift of $6 million to Duke in May to fund brain tumor research in children. In 2003, the Foundation established the Pediatric Brain Tumor Foundation Institute at Duke with an initial gift of $6 million. The Institute's primary goal is to develop innovative and less invasive clinical treatments for children diagnosed with brain tumors.

"The grant to the Pediatric Brain Tumor Foundation Institute at Duke from the foundation is very emblematic of their role in moving childhood brain tumor research forward in the United States and worldwide," says Darell Bigner, MD, PhD, director of the PBTF Institute at Duke. "On behalf of Duke and on behalf of all of our childhood brain tumor patients, I want to thank the foundation for the support and the opportunity to help these children."

Researchers at Duke will use the funds to continue their study of pediatric brain tumors. Since Duke received the initial grant five years ago, PBTF-funded research has focused on projects aimed at developing gene-based therapies, vaccines, and other novel treatments for common childhood brain tumors, including medulloblastomas and astrocytomas.

"Science is moving very fast now and the technology that's available today simply wasn't around even five years ago," Bigner says. "We are now able to develop new therapies that not only will be effective but won't damage the nervous systems and brains of these children. The grants from the foundation have really been the catalyst to make a lot of this work possible, not only at Duke but at the three other institutions where similar institutes are housed."

Chancellor Victor Dzau with Mike and Dianne Traynor

"The Pediatric Brain Tumor Foundation Institute at Duke is the largest basic research collaborative in existence for pediatric brain tumors," says Dianne Traynor, the foundation's director of research funding and advocacy. "We are excited about the advances Duke is making and hopeful that, together with our other research institutes, they will find a cure."

Foundation Seeks to Expand Understanding of Kidney Cancer

In 2005, John Dickson was fighting an aggressive form of kidney cancer and running out of options. When a clinical trial for an experimental therapy opened, he wanted to take part. But his cancer had metastasized to his brain, which made him ineligible for cytokine therapy, a prerequisite for this study. He came to Duke, and working with Daniel George, MD, a medical oncologist specializing in kidney cancer, they were able to get permission for him to be treated in the study.

Although Dickson passed away from the disease in late 2005, he was grateful for the opportunity to try the latest treatment options. In recognition of George's efforts in treating Dickson and in support of his innovative research in kidney cancer, the foundation established in Dickson's memory recently donated $85,000 in support of George's research.

"Kidney cancer is not as common as breast, lung, or prostate cancer, and there is less known about the disease. We wanted to make a donation that would have a major impact on the research that will increase the understanding of this terrible disease," says Pandra Dickson Richie, Mr. Dickson's widow.

John Dickson

The John Dickson Kidney Cancer Research Foundation will fund the initial phase of a collaborative project at Duke that seeks to develop genomic profiles to use in the treatment of kidney cancer. "Without this gift," says George, "we would not be able to begin this much needed research."

Researcher Awarded for Innovative Thinking

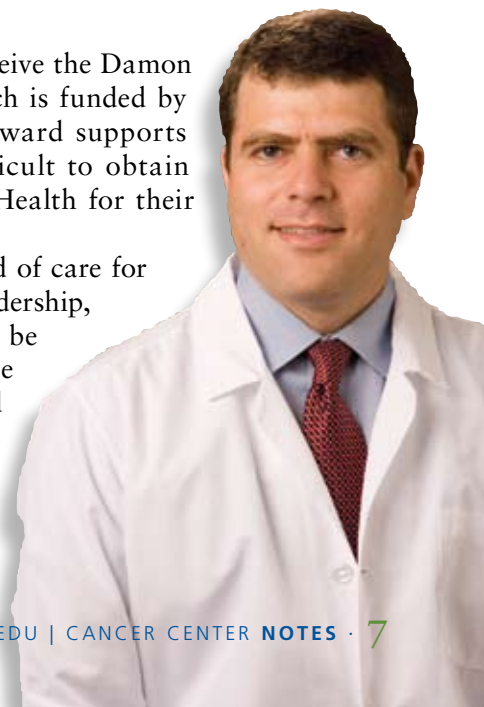
Small amounts of a patient's tumor, called residual cancer, are often left in the body even after the tumor is removed during surgery.

"Current technology cannot detect very small amounts of remaining tumor," explains Duke Comprehensive Cancer Center member David Kirsch, MD, PhD. "Since it is difficult to determine which patients have residual cancer, many patients receive radiation treatment following surgery as a precaution, although some will not benefit from the treatment."

Kirsch recently won a $450,000 award from the Damon Runyon Cancer Research Foundation to develop a handheld machine that scans the tumor site to detect residual cancer in sarcoma patients (cancer of the bone or soft tissue). The device would enable physicians to determine more precisely which patients need radiation after surgery. Those who do not would be spared the side effects associated with radiation treatment.

Kirsch is one of the first scientists to receive the Damon Runyon-Rachleff Innovation Award, which is funded by venture capitalist Andy Rachleff. The award supports young researchers who may find it difficult to obtain funding from the National Institutes of Health for their innovative projects.

"This scanner could change the standard of care for many patients," Kirsch says. Under his leadership, the device is being created and will soon be tested in mouse models. Assuming those tests prove successful, the next step would be to test the device in clinical trials in patients with sarcoma. "If the device is successful in sarcoma patients, then this technology should be applicable to other tumors as well," Kirsch says.



ask the expert

ANDREW BERCHUCK, MD

is director of gynecologic oncology at Duke and holds the F. Bayard Carter Distinguished Professorship. In addition to treating patients with ovarian, endometrial (lining of the uterus), and lower genital tract cancers, he conducts research on the molecular-genetic alterations involved in ovarian and endometrial tumor formation.

Dr. Berchuck just completed a term as president of the Society of Gynecologic Oncologists, the leading organization of gynecologic oncologists in the United States. We asked Dr. Berchuck to discuss what progress has been made in the prevention, diagnosis, and treatment of gynecological cancers and what the future holds.

Can you briefly describe gynecological cancers?

DR. BERCHUCK: Gynecological cancer refers to several types of cancers that impact the female reproductive systems. Uterine cancer is the most common while ovarian is the most deadly. Each cancer has different symptoms. These cancers can be difficult to diagnose because many of these symptoms, such as bloating for ovarian cancer or bleeding for endometrial cancer, can also be symptoms for other conditions. Treatment options for gynecologic cancers are based on the individual patient's tumor characteristics and may include a combination of surgery, chemotherapy, and radiation.

What kind of progress has been made in treating and preventing gynecological cancers?

DR. BERCHUCK: We are in the golden age of medical progress—we've made great strides in the last few decades. One example is the use of minimally invasive laparoscopic or robotic surgery for endometrial cancer, which uses tiny incisions and enables the patient leave the hospital the next day. I routinely perform this procedure as do other oncologists at Duke.

Another advance is the discovery that women who carry mutated BRCA1 or BRCA2 genes have an increased risk of developing ovarian cancer. Our team at Duke was part of the international consortium that was involved in the discovery of these genes. Patients with these mutated genes make up 10 percent of ovarian cancer cases, so we can save the lives of many women each year if every woman who has a family history of ovarian cancer receives a genetic risk assessment. Women who find they have an elevated risk can decide whether or not to have their ovaries removed before cancer develops.

I'm very excited about the FDA approval last year of the vaccine that prevents human papillomavirus (HPV) infection, which can cause cervical cancer. Between the vaccine and the use of Pap smear and HPV screening, hopefully cervical cancer can largely be eradicated in the coming decades.

What are the next steps in preventing and treating gynecological cancers?

DR. BERCHUCK: More funding for research is needed because there are no good diagnostic tests to determine if a woman has early stage ovarian cancer. I am happy to say that Senators Elizabeth Dole and Barbara Boxer have introduced The Ovarian Cancer Biomarker Research Act of 2008 that would authorize the National Cancer Institute to make grants to public or nonprofit entities to establish research centers focused on ovarian cancer biomarkers. (The House has similar legislation introduced.) Biomarkers would indicate the probability of a woman developing ovarian cancer and may indicate which treatments would be most effective, much like the PSA test for prostate cancer. At Duke, we are conducting research to find these biomarkers.

Better prevention strategies are needed to reduce the risk of ovarian cancer. The North Carolina Ovarian Cancer Study was initiated in 1999 by Joellen Schildkraut, PhD, and me in an effort to better understand the origins of ovarian cancer in the 90 percent of women who do not have BRCA1 or BRCA2 mutations. There is strong evidence to suggest that reducing numbers of lifetime ovulations and use of analgesics are protective against ovarian cancer.

While prevention is very important, we also need more effective treatments. We are initiating clinical trials at Duke that seek to determine which therapies will work best for a particular patient based on a genomic analysis of her cancer—personalized medicine. The hope is that this will not only cure more patients, but also spare patients from the side effects of ineffective treatments.

To contact Duke Comprehensive Cancer Center's Office of Development call 919-667-2600, or visit cancer.duke.edu/gift