

FOX CHASE CANCER CENTER  
forward

Fall 2009



A Space of Their Own  
Women's Cancer Center Opens

Oncology Gets Personal | Going Global to Combat Cancer | One Scientist's 'Big Questions'

NEWS FROM THE VANGUARD OF CANCER CARE AND RESEARCH

## for•ward:

1. situated in the front
2. moving ahead
3. pertaining to the future

## FOX CHASE CANCER CENTER

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Fox Chase Cancer Center is one of the leading cancer research and treatment centers in the United States. Founded in 1904 as one of the nation's first cancer hospitals, it was also among the first institutions to earn the prestigious comprehensive cancer center designation from the National Cancer Institute. Today, Fox Chase provides leading-edge treatment, conducts world-class research, and offers special programs in cancer prevention, detection, and survivorship, as well as community outreach.

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## forward FALL 2009

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### Colleagues a Continent Apart

Tackling the global problem of cancer means partnering with physicians and researchers in other countries.



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### Original Researcher

In five decades of asking big questions, do-it-yourself scientist Beatrice Mintz has transformed the field of developmental genetics—and she’s not done yet.

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## ON THE COVER



### A Space of Their Own

Fox Chase’s new Women’s Cancer Center brings research, prevention, and treatment programs for breast and gynecologic cancers together under one roof, with the goal of treating “the whole woman.”

*Story on page 4*

Pictured on the cover is “Echo,” a sculpture by John Magnan, part of a collection he created to reflect his wife Mary’s experience with ovarian cancer. The sculpture is on display at the Women’s Cancer Center, along with other pieces from the collection. To read more of the story behind “Echo,” see page 6.

*Cover photo by Tommy Leonardi*



## {forward thinking}

Few would question that Fox Chase is a leader in cancer care and research. Over the course of its century in existence, the Center has amassed a long list of laudable accomplishments, from Nobel prizes to national "Top Docs" rankings to prestigious awards for excellence in nursing.



Scott Nibauer

But true leadership requires more than a list of achievements. True leadership means having the courage to face the unknown, do something new, and try to help where one sees a need. In this issue, as we celebrate the launch of our Women's Cancer Center, we honor some of the pioneering women, past and present, who have helped to make Fox Chase what it is and, in the process, affected countless lives.

There's Anna Gray, the white-gloved socialite who, more than 70 years ago, organized some of the first public forums to educate people about cancer. And Fox Chase scientist Beatrice Mintz, who, after decades of groundbreaking genetics research, looks to the next experiment, the next opportunity to help cancer patients. And then there's Mary Magnan, a woman whose own cancer journey lives on in artwork that speaks to the patients who succeed her.

These women embody the spirit that truly makes Fox Chase a leader: a spirit of innovation, backed by a dedication to continually pursue new and better ways of fighting cancer. The Women's Cancer

Center itself embodies that spirit with its unique, comprehensive approach to women's cancers. So too does our new Institute for Personalized Medicine, which aims to leverage the latest technology to provide patients with customized treat-

ments based on their genetic profiles. And Fox Chase physicians and scientists find fresh perspectives and new resources for grappling with the cancer problem by partnering with their colleagues around the globe.

The courage and hope displayed by the women featured in this issue, and by so many others who have dedicated themselves to the fight against cancer, serve as an inspiration and a reminder of what is possible. We must always look forward as we strive to understand this disease and stop the suffering it causes.

The importance of our mission demands nothing less.

A handwritten signature in dark ink that reads "Michael Seiden". The signature is fluid and cursive.

Michael V. Seiden, M.D., Ph.D.  
President and Chief Executive Officer

True leadership  
means having the  
courage to face  
the unknown.

# BEYOND BUNSEN BURNERS

## PROGRAM FOR STUDENT SCIENTISTS IGNITES YOUNG MINDS, ADVANCES SCIENCE

By Megan Othersen Gorman

**SCIENCE**, in its purest form, is the search for answers. Which makes it not unlike adolescence. Combine the two, and you have Fox Chase's perfect jewel of an initiative: the Partnership for Cancer Research Education, which places Philadelphia-area high school students in Fox Chase labs to work elbow-to-elbow, petrie-dish-to-petrie-dish, with top scientists on leading-edge cancer research.

"Working on their projects, the students learn firsthand the excitement of doing meaningful biomedical research," says program director Susanne C. Johnston, who notes that the teens have produced valuable results, including contributions to peer-reviewed publications. The students spend four hours a week at Fox Chase during the school year and participate full-time over the summer, giving presentations on their research at summer's end.

The decade-long initiative, which targets academically motivated students with a strong interest in science, aims to be inclusive by encouraging participation by minority students—including females, who are underrepresented in science—and those attending inner-city schools.

Lauren Johnson, a senior at Philadelphia's Germantown Academy, was among 17 students who graduated from the 2008/2009 program in August. Perched on a stool in the lab of her faculty "host," immunologist Glenn F. Rall, the 17-year-old giggles, eyes crinkling, when asked how working at Fox Chase differs from high school chemistry lab. "In chem lab, you already know what's supposed to happen," she says. "Here, you might have an idea, but no one actually knows what will happen. You're a part of figuring that out, so you're a part of something much larger."

Which, in a way, is the reason Rall embraces the program. "It is, without question, a great way to reach out to new gen-

*"Being a scientist is hard. It's hard to keep your lab moving forward and get funded and published. You can lose sight of why you got into the field in the first place. Having high school kids in the lab reminds me why, as a young person, I was thrilled by science. When you show them something for the first time—primary neurons growing in a dish, for instance—you get to experience, vicariously, that 'gee-whiz' moment all over again."*

Glenn F. Rall, immunologist



Joe Hurley

Student scientist Lauren Johnson works on an experiment as her faculty mentor, immunologist Glenn F. Rall, looks on.

erations of scientists," he says, warning that if he sounds a little "soapy," it's only because he finds the program "hugely impactful" to the students, of course, but also to science in general.

"I see my job as doing more than just the science," says Rall, who is co-leader of the Immune Cell and Host Defense Program. "It's also educating future generations of scientists. Because even if my colleagues and I do a good job with what we do, we're not going to answer all the questions that need to be answered. This is a way to get young people trained and interested in the field so they might at least consider it as a career."

For now, Lauren need only answer that time-honored question that high school seniors face so many times: What do you want to be? "I used to think I wanted to be a lawyer; I come from a whole family of them," she says. "But now... Now, I'm not so sure. I'm interested in continuing to pursue biology, but I also want to study Spanish. I'm thinking Doctors without Borders, that sort of thing."

Glenn Rall just beams. ■

The Partnership for Cancer Research Education has received funding from the Howard Hughes Medical Institute, the National Cancer Institute, the Jack Berry Fund, and the Henske Family Fund and is now seeking new sources of support. For more information on the program, contact Susanne Johnston at [Susanne.Johnston@fcc.edu](mailto:Susanne.Johnston@fcc.edu) or 215-728-5682.



John Magnan

**THE MANY FACES** of Mary Magnan make up "Survivor," a collage created by Mary's husband, John Magnan. The photos—most of them taken during Mary's treatment for ovarian cancer—testify to a challenge many cancer patients face: the struggle to maintain a sense of self as one's body changes. Part of an exhibit John created to document Mary's experience, "Survivor" now greets patients at the new Women's Cancer Center.

# Putting Women's Cancer in Its Place

Comprehensive New Center Treats 'Whole Woman' **By Megan Othersen Gorman**

With the recent opening of Fox Chase's new Women's Cancer Center, clinical services and research for breast and gynecologic cancers are housed in a brand-new space conceived of and designed specifically to contain women's cancers—figuratively as well as physically. Fox Chase is, quite literally, putting women's cancer in its place.

**Cancer spreads.** It's the nature of the disease to reach into as many places, both bodily and emotional, as it can. To infiltrate the bloodstream, to inhabit the subconscious, even to subsume its host's identity. It's the imperative of Fox Chase's newly opened, state-of-the-art Women's Cancer Center to do the opposite—as director Robert A. Burger puts it, “to displace the disease—to dislodge it, to make it other than the woman, and then to do everything humanly possible to eradicate it.”

It is perhaps a subtle but significant shift, this notion of “containing” cancer in such a way that women with breast and gynecological cancers feel larger than the rogue cells multiplying within them and, therefore, empowered to fight them. But this idea pervades every aspect of the center, which brings together not only clinicians and researchers but also wellness and mental health experts—the idea being that overall wellness, not just eradication of disease, is the goal.

Best-selling self-help author Stephen Covey might call this a paradigm shift—a change in the perception and interpretation of how something should work. In this case, that “something” is how women with cancer are best treated and cared for. “At the Women's Cancer Center, the idea is to treat the whole woman, not just the disease,” explains Burger, an ovarian cancer specialist. “Cancer demands clinical attention,

## PREVIEW

### The Women's Cancer Center:

- ▶ Provides comprehensive, state-of-the-art treatment for women with breast and gynecologic cancers.
- ▶ Treats “the whole woman”—not just her disease—by providing wellness and support services.
- ▶ Brings together researchers and clinicians in a collaborative effort.

continued on page 7

# The art of cancer

*Sculptures tell story of illness—and triumph*

Sculptor John Magnan's late wife Mary was diagnosed with advanced ovarian cancer in 1999. In the seven years from Mary's diagnosis to her death, Magnan created a series of sculptures that serve as a powerful witness to his and Mary's journey. A selection of those works will be permanently displayed at Fox Chase's new Women's Cancer Center.

**T**he final work in sculptor John Magnan's 16-piece series depicting his late wife Mary's journey with ovarian cancer is called "Echo." The 3 ½-foot wooden sculpture of a woman in an athlete's stance, head tipped skyward, strong arms raised in a "V" of triumph, was, he says, inspired by Mary's undaunted spirit—but also that of the many women similarly struggling with ovarian cancer with whom he shared countless doctor's offices and waiting rooms over the years.

"In 'Echo's' stance of power and determination, I see the strength and spirit of all women fighting ovarian cancer," says the Massachusetts-based artist. "They find meaning through their bravery and determination to hang on to a new normalcy, and that is their victory."

The victory of Magnan's collection, called "Body Image/Body Essence," is that it artfully depicts exactly that—the "new normalcy" of living with cancer: the hair loss, the loss of fertility, the IV pole as constant companion. And the honesty and humor of the work (one piece, called "Chemo Brain," features a blank section of wall with the inscription, "I had a great idea for this sculpture, but now I can't think of what it was") resonate with women who have walked the same path as Mary.

"When Mary and I first considered bringing the early pieces in the series to the public, we were thinking of raising awareness of ovarian cancer," Magnan says. "But the real power we've seen in the series is in people who already have cancer, connecting with the sculptures. I've had many women say to me, 'This, *finally*, is the thing that tells my story.'"

Mary's own story ended with a death too soon, at age 59. But Magnan insists that hers is ultimately a story of triumph, not tragedy. "We talked many, many times about what it means to have a shortened but more meaningful life," he says. "Many people live very long but aimless lives. Mary's life was shortened by cancer, but it was also enriched by it. She became a spokesperson for the sculptures and her experience of her disease. She connected with people; she helped them."

After a national tour that included 17 cities, "Body Image/Body Essence" has found a permanent home at Fox Chase. Magnan chose the Center because of president and CEO Michael V. Seiden, who, while leading the gynecologic cancer program at Massachusetts General Hospital, served as Mary's oncologist from her diagnosis until her death.

Magnan's hope is that his sculptures continue to serve as a conduit for the women who view and commune with them at the Women's Cancer Center. "My fondest wish for my art is that it validates the cancer patient's experience," he says. "In times of stress, we all want to be validated, to know that we're not weird or different, and that our trials and tribulations are valid. Cancer patients deal with huge loss and with compromise; they need to know that we know it. That in and of itself is empowering."

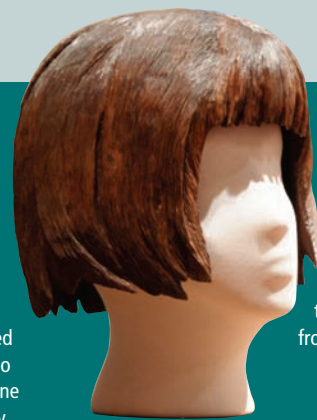
*For more information on "Body Image/Body Essence," including a link to exhibit images and the artist's commentary, visit [www.bodyimage-bodyessence.com](http://www.bodyimage-bodyessence.com).*



**TEAL MADONNA**, with its 2,000 ribbons of "hair," exhibits the widening part often seen on women who are beginning chemotherapy—an outward sign of cancer that may drive home the reality of a journey just beginning.



**THEY SAY IT NEVER GROWS BACK THE SAME** (a.k.a. "Bobby"), a 52-inch sculpture bristling with bobby pins, reflects the humor Magnan often hears expressed by women who have undergone chemotherapy when they discuss the topic of hair.



**WIG**, a wearable walnut carving, resulted from Mary's request of her husband, in the midst of her chemotherapy, to make her a wig from wood.



**DAY 17,** a mirror framed in carved cherry wood, is dedicated to a woman who told Magnan the story of how she lost all her hair, all at once, while shampooing and shuddered to think what she would see when she looked in the mirror.



*John Magnan's sculptures offer what he calls a "visual vocabulary" for ovarian cancer. "Art offers a unique pathway to the psyche," he explains. "Through it, you can communicate in ways that you can't often manage verbally, especially when what you have to talk about—like cancer—is so painful. Art can speak more deeply in those circumstances, and it can touch you in ways you never anticipated."*

continued from page 5

of course, but because cancer isn't all of who the patient is, it won't be the sole focus of her care."

Burger pauses. "It's in this way," he says, "that cancer becomes viewed as a manageable entity."

The paradigm shifts—and cancer is put in its place.

## A SPACE OF ONE'S OWN

The Women's Cancer Center brings every aspect of cancer care for women, from risk assessment and prevention to actual treatment and support for survivors, together under one roof. At present, the center provides diagnostic imaging services and outpatient clinical care, with plans to add a recovery and resource center designed to support patients' quality of life, as well as other wellness resources, in the coming months. The facility is expected to be fully functional by spring.

Located in the newly expanded Robert C. Young, M.D., Pavilion, the center provides a physical space designed to support healing, with warm colors, natural lighting, and waiting areas that allow for both privacy and interaction. It is in this environment that expert surgeons, medical oncologists, radiation oncologists, and pathologists work side-by-side to provide patients with comprehensive, individually tailored treatment plans.

In addition to providing patient services, the center works in partnership with Fox Chase research programs, including the recently launched Institute for Personalized Medicine. (See story on page 12.) This integrative approach, a hallmark of Fox Chase, is one that senior vice president and chief scientific officer Jeff Boyd says the center will augment. "Laboratory scientists have to be informed by clinicians about what the bedside concerns are," he explains. "Theirs is a yin-yang relationship."

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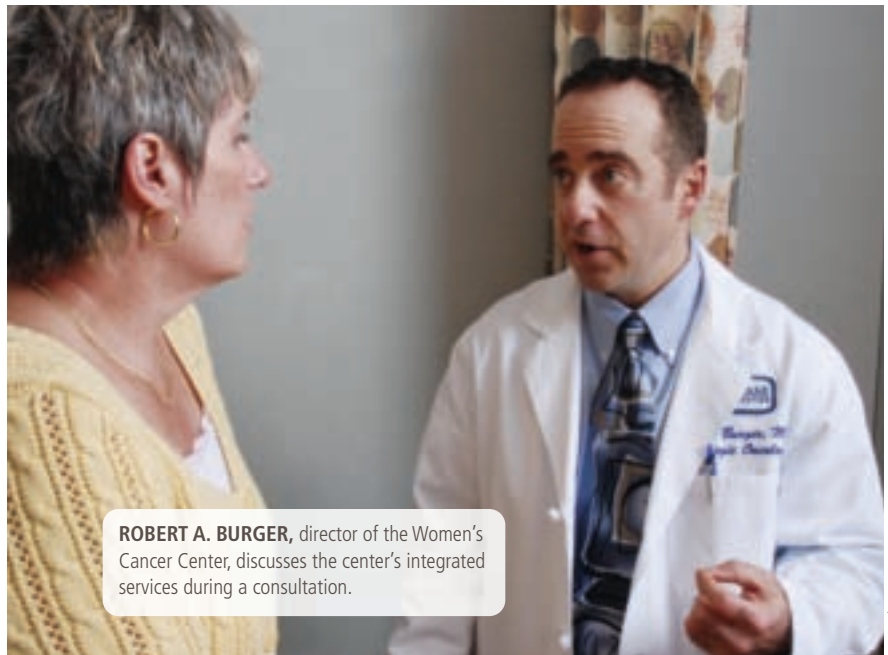
Photos: Tim Sylvia, Jim Reese

**SHARPS!**—a wooden egg covered with 46,000 pin heads, atop a prickly nest of the cut-off ends—took seven months to make. Its creation became a calming practice for Magnan during his wife's convalescence.



*“Because cancer isn’t all of who the patient is, it won’t be the sole focus of her care.”*

—Robert A. Burger, director, Women’s Cancer Center



**ROBERT A. BURGER**, director of the Women’s Cancer Center, discusses the center’s integrated services during a consultation.

Joe Hurley

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“The vast majority of cancer researchers in the United States go to work every day and don’t ever see a cancer patient,” Boyd adds. “It’s extraordinarily beneficial for everyone—clinicians, researchers, and patients alike—to integrate the lab and the clinical components. It’s an approach that makes absolute sense, and yet it’s rare, even unique.”

### A UNIFIED APPROACH

Perhaps even more rare is another integration represented by the center: that of breast and gynecological cancers. Despite commonalities between the two, cancer centers tend to treat them separately. Fox Chase is thought to be the first NCI-designated cancer center to unify its research and treatment approaches in an entity that addresses the full spectrum of women’s cancers.

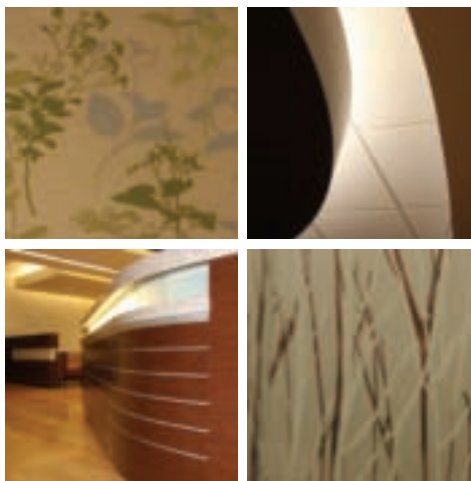
“Breast cancer care tends to fall under the domains of medical oncology, radiation oncology, and surgery, while care for gynecologic cancer typically falls under the departments of obstetrics and gynecology,” explains president and CEO Michael V. Seiden, who led the gynecologic cancer program at Dana-

Farber/Harvard Cancer Center prior to coming to Fox Chase. “So care for these cancers typically becomes ‘siloed,’ or housed in separate departments in separate areas of hospitals, even though the cancers themselves share many common threads.”

The genetic link between the two is well-established: A woman with an alteration in the BRCA1 or BRCA2 genes is at heightened risk of developing both breast and ovarian cancer. There also are hormonal links between the cancers’

causes, and they respond to many of the same preventive strategies. But the cancers’ connection doesn’t end there. Treatment for breast cancer often leads to early menopause, which can, in turn, cause gynecologic problems. And strategies to decrease a woman’s risk of ovarian cancer—say, by removing her ovaries—subsequently decrease her risk of breast cancer. Women with breast and ovarian cancers also share a vulnerability to issues with body image and sexuality.

Beyond that, Burger says, “there’s a unity that we’ve observed among women with gender-specific cancers, both breast and ovarian, but there’s never been one organization that deals with both cancers in the same space, with a common



approach. There's a breast cancer coalition, a cervical cancer coalition, an ovarian cancer coalition. . . . But there isn't, as yet, a collective, woman-specific organization out there, and there's a need for it. It's my hope that the Women's Cancer Center will provide a beacon for the formation of such a group."

It is, at the very least, a place to begin.

## BUILDING ON HISTORY

Even as it breaks new ground, the Women's Cancer Center builds on Fox Chase's historical strength in women's cancers. Fox Chase is one of only five institutions in the country to receive a prestigious National Cancer Institute-sponsored grant for a Specialized Program of Research Excellence in the prevention, diagnosis, and treatment of ovarian cancer. Long

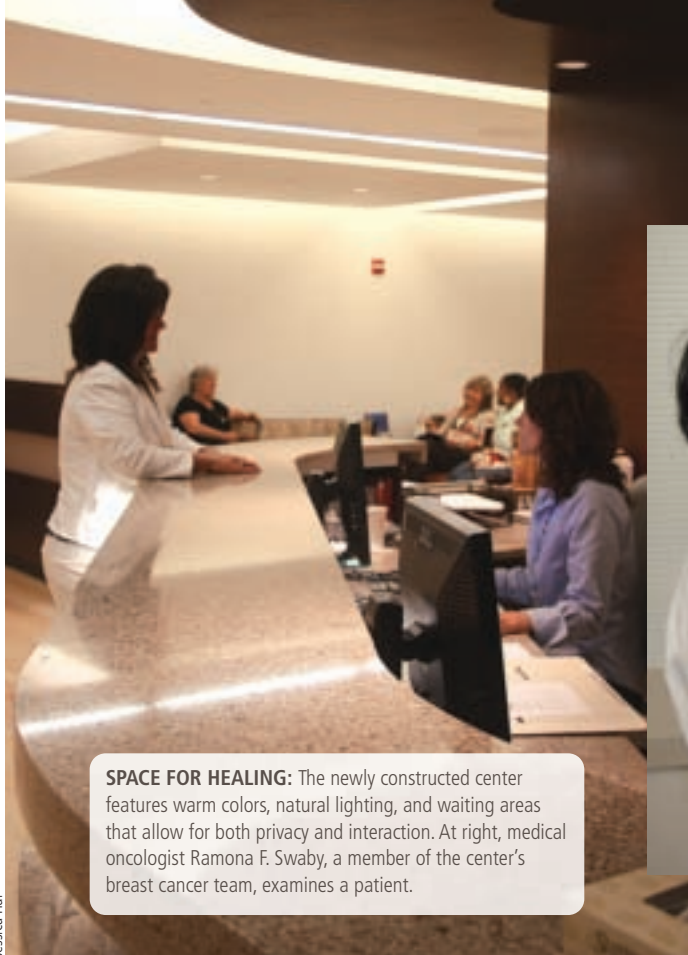
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Renderings: Ewing Cole



**UNDER ONE ROOF:** Located in Fox Chase's newly expanded Robert C. Young, M.D., Pavilion, the Women's Cancer Center brings research, prevention, and treatment programs for women's cancers together in a space that provides both leading-edge technology and a comfortable, supportive environment. Already providing diagnostic imaging services and outpatient care, the center is expected to be fully functional—and the final phase of construction complete—by spring.



**SPACE FOR HEALING:** The newly constructed center features warm colors, natural lighting, and waiting areas that allow for both privacy and interaction. At right, medical oncologist Ramona F. Swaby, a member of the center's breast cancer team, examines a patient.



Paul Cohen

Jessica Hui

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known for its robust clinical trials program, Fox Chase leads two dozen clinical trials involving breast or ovarian cancer, providing patients with access to the latest treatments.

In addition, nearly two decades ago, medical oncologist Lori Goldstein founded the Breast Evaluation Center, of which she is now director. Newly diagnosed breast cancer patients can consult with an entire team of specialists and develop a treatment plan during a one-day visit to the center, now part of the Women's Cancer Center. And the pioneering Margaret Dyson Family Risk Assessment Program was founded in 1991 to provide personalized prevention strategies and early detection services for women with a family history of breast or ovarian cancer.

However, as Burger puts it, "While we certainly have longstanding strengths in the areas of breast and ovarian cancers, there hasn't been, until now, what I'd call a 'neural network' that connects those strengths in a significant way—in our institution or any other. I see the Women's Cancer Center as the body that will create and nurture that neural network."

## STRONGER TOGETHER

A landmark University of California, Los Angeles study several years ago found that a woman's reaction to physical and emotional stress—such as that of living with cancer—is utterly distinct from a man's. Less fight-or-flight than what the researchers call "tend-and-befriend," women under stress are inclined to reach out to other women to soothe themselves. And thanks to a rush of the neurotransmitter oxytocin, that strategy works. Specifically, women who reach out to other women in times of stress feel less out of control and more, well, themselves.

"Wouldn't it be wonderful if you walked in the door of your doctor's office or hospital and felt empowered as opposed to weak and diminished?" Burger asks. "That is what the Women's Cancer Center, girded by Fox Chase's long tradition of clinical and research expertise, is endeavoring to do—to set women with cancer apart from men with cancer so women can find support in each other, and to set women's cancers apart from the identities of the women who have them."

To make the cancers "other."

To contain them, to eradicate them.

And that work starts with giving women a space of their own. ■■



### ON THE WEB

For more information on the Women's Cancer Center, visit [www.fccc.edu/wcc](http://www.fccc.edu/wcc).

# Strong together

## Advisory council spreads word about Women's Cancer Center

When she was diagnosed with cervical cancer in her early 30s, Pam Strisofsky saw 10 oncologists in the space of a week at prestigious institutions up and down the East Coast. "In virtually all of those places, I felt like a number," she recalls. One doctor told her, less than 30 seconds into her consultation, that she needed a radical hysterectomy.

At Fox Chase, she says, "my case was reviewed by a team ... and they said things like, 'Here's what we think is best, and here's why.' They took the time to explain everything in detail. It made a huge difference."

Today, Pam draws on her experience as a cancer patient more than 10 years ago to inform her role as a founding member of the Leadership Advisory Council for Fox Chase's new Women's Cancer Center. The center provides comprehensive services for women with breast and gynecologic cancers in a newly constructed facility. (See story on page 4.) Made up of more than 40 thought leaders from the business and civic communities who offer ideas and advice to center leadership, the volunteer council focuses on raising funds and visibility and enhancing the patient experience.

### A good investment

Like Strisofsky, many of the council's members are cancer survivors. Strisofsky says her story illustrates the special dimension of treatment that the center embodies—comprehensive, seamless care provided by a coordinated team.

As managing director and chief financial officer of TL Ventures, a venture capital firm based in Wayne, Pennsylvania, Strisofsky oversees a portfolio of more than \$1.5 billion. She knows a good investment when she sees one, and she sees one in Fox Chase.

"Fox Chase isn't just a research facility, and it isn't just a hospital," she says. "It's like an ecosystem unto itself, and everyone there has this incredible passion for their core mission. They're pooling all of their strengths in the Women's Cancer Center."

The council is led by Margot Keith, a longtime member of Fox Chase's board of directors who, along with husband Bob Keith, is

among Fox Chase's most generous supporters. "I'm most interested in exposing a larger constituency of women to the Women's Cancer Center," she says. "Fox Chase offers world-class care and a personal, reassuring touch that larger institutions often do not, and now we're able to do it in beautiful new surroundings."

The council began to coalesce at a dinner the Keiths hosted in April. The event included some 25 women interested in the new center, along with president and CEO Michael V. Seiden. "Their enthusiasm for this entire effort was really remarkable—they were full of suggestions and ideas," Keith recalls. (One idea—for Fox Chase physicians to lead monthly lunchtime webinars on women's cancers—is among the initiatives planned for next year.) Members also offer their own considerable business acumen and experience when it comes to realizing the ambitious vision for the center. "This is a group of professional women who are accustomed to getting things done," Keith says.

On the "raising visibility" front, council members have been busy organizing outreach events at community venues and for professional women's groups in the Philadelphia region. Recognizing the significant role of spouses and partners in women's cancer experiences—and how the male perspective can strengthen the work of the Women's Cancer Center—the council is recruiting men, too.

### Sharing stories

"Since our dinner, I have talked with many people whose stories amaze me with the strength, vitality, and hope that is so much a part of the cancer experience," Strisofsky says. "This is what we do—we share our stories to get stronger and to help each other."

Raising the regional and national profile of the Women's Cancer Center is Job One, she says: "There are too many women who get diagnosed and don't know what to do next or get referred to a hospital that isn't the right fit. I want people to recognize the Women's Cancer Center as the place to come. I want to be a resource for making that happen in any way I can."

—George Beschen





# CUSTOMIZED

INSTITUTE FOR PERSONALIZED MEDICINE TACKLES  
CANCER AT INDIVIDUAL, GENETIC LEVEL

By Thomas W. Durso Illustration by AcquireVisual.com

**Two women:** Mrs. Jones and Mrs. Smith. Each suffering from advanced ovarian cancer, they arrive for treatment and embark upon the same regimen.

Surgery.

Then chemotherapy: carboplatin and taxol.

Mrs. Jones and Mrs. Smith likely will survive for a period of time with no evidence of their disease, but eventually their cancers probably will return. They will be treated—again, in identical ways. They will beat the cancer for a while, and then the cycle will begin anew until, finally, the disease wins.

Today, says Jeff Boyd, senior vice president and chief scientific officer, “every breast cancer, every colon cancer, every ovarian cancer, every brain cancer gets the same therapy, regardless of what we know to be different molecular, genetic profiles of these tumors.”

That is about to change, and Fox Chase is playing a key role in that transformation. In May, the Center announced the launch of its Institute for Personalized Medicine, which seeks to match emerging targeted drug therapies to the unique genetic profiles of individual patient tumors on a much larger scale than previously possible, in hopes of making today’s one-size-fits-all approach to treatment a thing of the past.

## Setting the stage

“Personalized medicine is truly transformational,” Boyd says. “It’s impossible to overstate this inflection point that cancer medicine is entering. The whole premise of how cancers are treated becomes not the tissue of origin, or how it looks under a microscope, how it looks to the surgeon, how it looks to the pathologist, but how it looks to the DNA sequencer.”

A number of factors make Fox Chase an ideal place to move forward with such an approach. For starters, the Center long ago earned a reputation for its expertise in cancer genetics, and its already substantial biosample repository provides a wealth of genetic information about individual patient tumors to build on. And Fox Chase’s highly regarded clinical trials program, which tests a broad spectrum of novel therapeutics in patients with advanced cancers, has enabled it to build strong relationships with pharmaceutical firms, setting

## TERM DEFINED

**DNA sequencing:** A process for determining the sequence of nucleotides, the building blocks that make up the “backbone” of a DNA strand. Once laborious to carry out, this process can now be performed rapidly by machines called DNA sequencers.



# ONCOLOGY

the stage for future joint efforts as those companies seek to test therapies targeting cancer's genetic roots.

"This initiative will significantly expand our understanding of cancer at the individual and the genomic level," says Biao Luo, who joined Fox Chase as the institute's director in September after five years with the Broad Institute of the Massachusetts Institute of Technology and Harvard University. "We will then use that comprehensive knowledge to rationally develop personalized cancer therapies.

"Personalized medicine has been talked about for some time, but now we are at a stage where we can develop personalized therapies in a systematic way, thanks to breakthroughs in areas like DNA sequencing technology."

George Simon, director of thoracic oncology, is one of the field's pioneers. Simon, who joined Fox Chase in 2008, is among a group of researchers whose preliminary work strongly suggests that designing chemotherapy treatments based on the genetic makeup of a patient's tumor greatly increases response and survival rates. Fox Chase is now taking part in a multi-institution international trial designed to confirm those preliminary findings. At the same time, Simon and his team are developing improved methods of customizing treatments that take into consideration a wider range of clinical and genetic information, with the aim of

more precisely pinpointing which combination of therapies will be most effective in a particular patient.

While Simon works in lung cancer, he notes that the institute will seek to apply his principles in treating other types of tumors. The institute's focus, after all, is on a tumor's DNA, not where in the body it forms.

"What's good for Joe may not be good for Mary," he explains. "A different cocktail of drugs might work better for one person than for another. Currently, at most treatment centers, everyone gets the same cocktail. This 'one-size-fits-all' approach is going to change. At Fox Chase, we are able to design an individualized treatment strategy for each patient. This is not a technology of the future; it is happening here and now."

## PREVIEW

**Fox Chase's new Institute for Personalized Medicine** seeks to replace "one size fits all" cancer treatment with individually tailored therapies by:

- ▶ **Using leading-edge technology** to expand the understanding of cancer genetics.
- ▶ **Partnering with the pharmaceutical industry** to conduct clinical trials of experimental therapies.
- ▶ **Matching emerging, targeted drug therapies** to the unique genetic profiles of individual patient tumors.

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## A time of opportunity

The Institute for Personalized Medicine is no mere virtual program. It has dedicated space and a dedicated staff, led by Luo, and has acquired the kind of high-end sequencing technology required to evaluate tumors at the genetic level. And it is already gearing up to demonstrate to the pharmaceutical industry that it is a viable partner to conduct clinical trials of the targeted therapies the companies are developing.

“The Institute is really a research and development entity that feeds in, ultimately, to a clinical entity,” Boyd says. “We’re going to spend the first year using the technology, staff, and instrumentation to show that we can sequence a large number of tumors in a short period of time and publish a peer-reviewed paper on the results. At that point, corporate and academic partners will be much more interested in talking to us than if we hadn’t shown we can do what we say we can.”

And what does that mean for Mrs. Jones and for Mrs. Smith? In five or 10 years, when they show up at Fox Chase, the first thing each of their physicians will do is order a full genome sequencing. Then, instead of undergoing the same, cookie-cutter treatment, the women will be categorized based on the genetic abnormalities that caused their tumors to begin forming. And they will be treated with therapies that have been shown—thanks to trials conducted under the auspices of the Institute for Personalized Medicine—to have the greatest efficacy against those abnormalities.

“We are at a time of great opportunity to advance cancer treatment,” Luo says. “Many drug companies are developing potent inhibitors of the molecules essential to cancer growth. This is an ideal time to leverage our strength in translational medicine to take full advantage of the genomic information becoming available to us.

“The opportunity at Fox Chase that appealed to me most was to join this integrated approach to fighting cancer.” ■■

## BEYOND GENETICS

### *The role of personality in personalized treatment*

**B**ehavioral researcher Suzanne M. Miller wants to put the *person* in personalized medicine.

While her colleagues embark on their promising work to link genetic research to clinical therapies through the new Institute for Personalized Medicine, Miller, who is director of the Psychosocial and Behavioral Medicine Program, is researching how a patient’s psychological reaction to her diagnosis and treatment affects the effectiveness of that treatment.

“My work, since before the advent of ‘personalized medicine,’ has been about tailoring psychosocial and counseling interventions to the individual patient,” she says.

In a commentary published in the September 10 issue of *Oncology Times*, Miller argues that personalized medicine must take into account not only a patient’s genetic profile, but also her psychological profile, if truly personalized treatment is to take place.

She describes two types of patients, “blun-

ters” and “monitors,” whose differing approaches to their health can significantly affect the success of cancer treatment. Blunters downplay the impact of potentially threatening personal health issues and avoid confronting them. Monitors, on the other hand, are hypervigilant about their health, prone to extreme health-related worry, and tend to experience more symptoms and treatment side effects than blunters do. Miller estimates that most patients fall into one of these two categories. One goal of personalized medicine, she maintains, should be to foster in patients a balance between willful ignorance and obsessive dwelling.

“The differences that are expressed in individual personalities and mental states are as much a factor in the quality of cancer treatment as are genetic differences,” she writes in her commentary.

Fox Chase psychosocial and behavioral researchers are working to take psychological differences into account in developing tools for cancer patients. For example, they are creating computer programs

that would provide patients with varying amounts of information depending on their personality types. These multimedia, virtual health centers would guide patients through the decision-making process and educate them in clear, understandable terms about their conditions.

Miller notes that while her work has focused on cancer, it applies throughout medicine and should be considered as President Obama and Congress struggle to reform what most acknowledge is a broken health-care system.

“As we move through health-care reform, there’s more of a focus on access to care, which is important but also implies volume—seeing a lot of patients in a short time,” she says. “The challenge is how best to include everyone in the system while at the same time personalizing their treatment, not only medically but also psychologically.”



#### ON THE WEB

For more information on Suzanne Miller and to link to her commentary in *Oncology Times*, visit [www.fccc.edu/research/pid/miller](http://www.fccc.edu/research/pid/miller).







# Fox Chase International

CENTER PARTNERS WITH GLOBAL CANCER COMMUNITY

By Jill Horne and Abbey J. Porter

## Cancer is a global problem,

and it will take the combined strength and ingenuity of scientists and clinicians worldwide, working together, to defeat it. At least, that's the perspective of medical oncologist Paul F. Engstrom. He should know: a veteran Fox Chase physician, Engstrom also plays a key role in an initiative that reaches across an ocean to share knowledge and save lives.

Engstrom, a specialist in gastrointestinal cancers, is program director for the American Russian Cancer Alliance. The collaborative venture brings together some of the top cancer physicians and researchers in the United States and Russia—an effort Engstrom finds well worthwhile.

“The United States is a leader in cancer care and research, yet our colleagues throughout the world can provide valuable insight in the quest to understand risk factors and develop new therapies,” he says. “International partnerships can offer fresh perspectives and greater understanding of factors such as environment, culture, and genetics in cancer.”

### Breaking down barriers

Formalized in 2001, ARCA includes Fox Chase, the N.N. Blokhin Russian Cancer Research Center (the Russian counterpart to the National Cancer Institute), the Russian Nuclear Industry Network, and the University of Maryland

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# “Medicine can be a universal language. The fact that we have different backgrounds doesn’t seem to matter when we’re talking about helping our patients.”

continued from page 15

Biotechnology Institute. Its aim: to pool members’ expertise and experience to advance cancer research and its clinical application.

Engstrom points to ARCA’s work in lung cancer as a crowning achievement. With one of the highest smoking rates in the world, Russia offers a unique environment for studying tobacco use. Research by the alliance has identified genes related to nicotine dependence and will help clinicians in Russia and the United States to provide intervention and treatment for smokers. ARCA efforts also have led Russia to adopt anti-smoking policies. In addition, the collaboration benefits the United States by giving U.S. scientists access to an additional sample population that can help to shed light on important research questions.

Partnerships like ARCA promote not only information-sharing, but also something more fundamental, says Richard E. Greenberg, chief of urologic oncology at Fox Chase and surgical director for ARCA.

“Building relationships with physicians in other countries is very helpful,” he says. “It breaks down barriers that are put up just because of differences in politics and language. Medicine can be a universal language. The fact that we have different backgrounds doesn’t seem to matter when we’re talking about helping our patients.”

Greenberg has been instrumental in establishing a group that began as an ARCA offshoot. In 2001, he showed colleagues at the Blokhin center how to perform a nerve-sparing prostatectomy, a procedure that can preserve sexual function in prostate cancer patients. The physicians’ relationship continued to grow, and four years ago, the Russian Association of Urologic Oncologists held its inaugural meeting, with Greenberg as the sole U.S. representative. Since then, Greenberg has spent a week in Moscow each fall, giving lectures and sitting in on panel discussions at the association’s annual conference.

Greenberg sees his role primarily as sharing techno-

logical advances with his Russian peers. “They’re a little behind us,” he says, “but they’re good at catching up fast.”

## An international training ground

Fox Chase participates in the global cancer community in another way as well: by bringing young scientists from abroad to train in its laboratories. Just ask Ilya Serebriiskii.

Serebriiskii left his native Russia in the mid-1990s to pursue his postdoctoral training at Fox Chase. Almost 15 years later, Serebriiskii—now a staff scientist in the lab of molecular biologist Erica A. Golemis—is helping to forge connections between the Center and other young scientists in his home country.

Graduate students and postdoctoral research associates represent a critical component of institutions like Fox Chase, performing important work in the laboratories of senior scientists while at the same time gaining valuable experience.

“Since Fox Chase does not have its own graduate school, we always have to be looking for promising young scientists to work here,” Golemis says. More than a decade ago, she and Serebriiskii decided to expand their trainee pool by reaching out to institutions in Russia.

At the time, a downturn in the Russian economy was making it difficult for researchers there to fund the resources needed for bench training. But the financial crunch helped jump-start a partnership: Fox Chase gained trainees with a first-rate education and fresh ideas, and the young researchers gained the opportunity to continue their training with access to modern technologies and equipment. The program began with the Russian State Medical University in Moscow and later expanded to include other top Russian research institutes.

About 50 Russian students have trained at Fox Chase to date. “Students who trained here have gone on to do very well,” Golemis notes. “They have been listed on publications in very high-profile journals, which we judge as a significant success.”

The program benefits not only the Center, Serebriiskii adds, but also the



students' home country, to which many return. "We are providing something back to Russia that helps to raise a new generation of scientists there," he says.

The program depends partly on U.S. grant funding to pay trainees' expenses and stipends, and with the current stiff competition for grants, finances are a challenge. "We really want to continue," Golemis says, but the initiative faces an uncertain future.

### Israel: connection and collaboration

The Center's collaboration with Ben-Gurion University of the Negev in Israel has gone even further than attracting trainees. "Our relationship has focused not only on attracting Israeli students, but also on fostering scientific collaboration," says vice president and deputy scientific director Jonathan Chernoff, who has been instrumental in developing the partnership, formalized in 2003.

Located in Israel's southern *negev*, or desert, region, the university focuses on study and research in areas including environmental science, biotechnology, and medicine. Israeli students who train at Fox Chase are mentored jointly by senior scientists at both institutions. The scientists, in turn, collaborate on research into important cancer questions, from genetic risk factors to the role played by viruses and the basis for cancer progression. A project involving the study of the "natural killer" cells involved in immune response earned joint funding from the United States-Israel Binational Science Foundation—a development that, Chernoff hopes, might lead to published papers and future joint projects.

The institutions also co-sponsor a seminar series that alternates between the university and the Center, and faculty members at both Fox Chase and Ben-Gurion are seeking adjunct appointments at their respective partnering institutions.

Even as he, too, faces the ongoing challenge of finding sufficient funding for the program, Chernoff works to expand the effort. "We would like to increase participation, so I make it my business to search out potential collaborators," he says. "You might say I'm a matchmaker."

His efforts are likely needed. When the problem is cancer, the saying "There's strength in numbers" seems especially fitting when it comes to finding a solution. ■



#### ON THE WEB

For more information on Fox Chase's collaborative training programs with institutions in Russia and Israel, visit [www.fccc.edu/research/graduateProgram](http://www.fccc.edu/research/graduateProgram).

## PHILADELPHIA INTERNATIONAL MEDICINE

### *A clinical connection to the world*

While Fox Chase scientists and physicians collaborate with peers in other countries to advance cancer research and treatment, the Center provides world-class care to people in need from around the world, thanks in part to an organization called Philadelphia International Medicine.

Through PIM, Fox Chase and several other Philadelphia-area hospitals provide specialty treatment to patients who lack access to such care in their home countries. The non-profit helps patients and their families choose appropriate treatment providers based on their needs and assists them with travel and accommodations, translation services, and other issues associated with their traveling to Philadelphia.

Requests for help can come from physicians, as well as from patients and their families.

"PIM lets us expand Fox Chase's mission by reaching out to patients and health-care providers around the world," says Susan H. Tofani, senior vice president of clinical services and business development, who has been involved with PIM since its inception in 1999 and serves on its board of directors.

PIM also offers training and education programs through which Fox Chase physicians travel to hospitals abroad to share information about the services they provide. In addition, the Center hosts PIM seminars for health-care leaders from other countries who want to learn about cutting-edge Fox Chase programs such as risk assessment and clinical genetics and how they might start similar services at their own institutions.

To date, PIM has established relationships with health-care agencies in parts of Europe, the Middle East, and Asia and is seeking to develop new relationships in Canada and South and Central America.

"Fox Chase has a wealth of resources to offer," Tofani says, "and PIM has given us an organized way to provide access to these services to a much wider audience."



# FOX CHASE PATIENT TRAVELS TO WHITE HOUSE

## FOR NATIONAL HEALTH-CARE FORUM

By Jill M. Ercolino

**B**eth Corkery doesn't often seek the spotlight, but when she was handed a once-in-a-lifetime opportunity to be on TV and possibly meet President Barack Obama in June, she and her husband packed their bags, jumped on a train, and departed Philadelphia for Washington, D.C.

The 43-year-old mother of two, who with the help of Fox Chase doctors and investigative drugs is living with advanced breast cancer, was among 164 people selected by ABC News to pepper the president with questions during a "Prime-time" forum on Obama's health-care reform plan.

Not long after, the Corkerys found themselves in the East Wing of the White House, surrounded by glaring lights and cameras, rubbing shoulders with moderators Diane Sawyer and Charlie Gibson. The president, who entered just moments before taping began, ventured into the audience during commercial breaks.

"He was within touching distance at one point," Corkery says, "but just as he neared our row, they called, 'Thirty seconds!' and he was gone."

### 'It was all very positive'

Even making the trip to Washington wouldn't have seemed possible a few years ago when, severely weakened by a cancer that had spread to her lungs, bones, and liver, Corkery could barely get off the sofa. She made an amazing rebound, however, after participating in a Fox Chase clinical trial in

which she was treated with an experimental drug that has stabilized her disease.

"It was a rebirth for me," she says.

Corkery's life has been full of surprises—some good, some bad—since she learned she had the disease in 2001. Her VIP trip to the White House, she says, was one of the better ones.

"It was a wonderful experience to see the president," Corkery says, adding that she was impressed with the man and his message. "He didn't have a teleprompter, and he answered everyone's questions from the heart. He told us he was going to make the plan work."

Although she didn't get the chance—only a handful of participants were called on during the 90-minute Q-and-A—Corkery wanted to quiz Obama on whether his plan would limit patients' access to experimental treatments, which have given hope to her and many others diagnosed with chronic, life-threatening diseases.

Was she disappointed that she didn't get a turn? Not at all.

"I wasn't alone," Corkery says. "A lot of people didn't get to ask their questions. When we left, I didn't see an unhappy face in the bunch. It was all very positive." ■



Jessica Hui

Beth Corkery is living with advanced breast cancer, with help from an experimental treatment received at Fox Chase.



#### ON THE WEB

For more information on Fox Chase's clinical trials program, visit [www.fccc.edu/cancer/clinicalTrials](http://www.fccc.edu/cancer/clinicalTrials). To read more about Beth Corkery's story, see [www.fccc.edu/topics/corkery](http://www.fccc.edu/topics/corkery).



**FOX CHASE STAFF MEMBERS** often are called upon by the media to share their expertise in cancer care and research. Following are highlights of recent Fox Chase media coverage.

## 'New York Times' Covers Struggle to Defeat Cancer

In April, former president Robert C. Young talked with *New York Times* reporter Gina Kolata about the nation's struggle to defeat cancer, setting the stage for two subsequent front-page articles.

The first article, published in April, pointed out that the death rate for cancer had dropped by only about 5 percent from 1950 to 2005, while the death rate for heart disease dropped by 64 percent, and for flu and pneumonia, 58 percent.

Kolata argued that there has never been enough funding for the kind of innovative studies that could fundamentally change the

way scientists think about cancer or doctors treat it. Young agreed: "Every organization says, 'Oh, we want to fund high-risk research.' And I think they mean it. But as a matter of fact, they don't do it."

In June, in an article featuring both Young and researcher Eileen K. Jaffe, the newspaper further explored the limitations of the federal grant system in funding research likely to take significant steps toward curing cancer. The article referenced Jaffe's proposal to pursue an entirely new class of drugs that could disable certain proteins that fuel cancer cells—one of a number of novel proposals

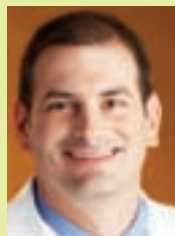
rejected by reviewers due to a lack of preliminary data.

"They said I don't have preliminary results," Jaffe said. "Of course I don't. I need grant money to get them." Although Jaffe persists with her research, her situation shows why people with bold new ideas often just give up, Young said. "You can't prove it will work in advance," he said of plans like Jaffe's. "If you could, it wouldn't be a high-risk idea."

*To read about a hearing convened to discuss federal funding following publication of the New York Times article, see page 22.*

## Radiation Oncologist Joins Expert Panel on 'Today'

Eric M. Horwitz, chairman and clinical director of the department of radiation oncology, appeared in June as a guest on NBC's "Today" show, which dominates the morning news arena with an average of 5.9 million daily viewers nationwide.



Horwitz joined an expert panel to discuss the future of cancer care and new treatments under development. The show was the final episode in a four-part series that also looked at the cost of cancer care, survivorship challenges, and other cancer-related questions.

"We're understanding much more about the genetics ... but there are lots of parts we still don't know about what causes cancers," Horwitz said.

*To view the "Today" segment, visit [www.fccc.edu/physicians/directory.html](http://www.fccc.edu/physicians/directory.html) and click on "Eric M. Horwitz, MD."*

## Associated Press Reports on New Prostate Cancer Screening Guidelines

In April, Associated Press reporter Marilyn Marchione spoke with Robert G. Uzzo, chairman of the department of surgical oncology, about new prostate cancer screening guidelines issued by the American Urological Association.

According to an expert panel, many men do not need yearly screening after age 50, as had been previously recommended. In recent years, annual screening has been associated with unnecessary biopsies and treatment, with insufficient proof that it saves lives.

"Many doctors are already advising longer testing intervals," Uzzo said, adding that, depending on initial test results, "I don't insist on yearly screening."

The story was published by prominent media outlets across the country.

## Scientist Discusses Stem Cell Research in 'U.S. News & World Report'

Deputy scientific director Jonathan Chernoff was featured in July in a *U.S. News & World Report* article about research involving embryonic stem cells, as well as other types of stem cells that show promise to advance medical treatments.

"I've never been in a field that is moving at this pace," Chernoff noted.

The article was published several months after the Obama administration lifted certain restrictions on government funding of stem cell research.

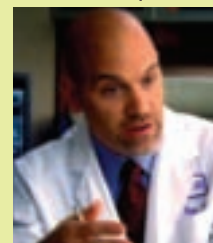


### ON THE WEB

To read more about how Fox Chase is making news, visit [www.fccc.edu/news](http://www.fccc.edu/news).

## 'Cancer Conversations' Airs on Radio

Surgeon Robert G. Uzzo is hosting an ongoing series of 60-second educational messages about cancer on KYW Newsradio 1060 AM, Philadelphia's most popular radio station. The series, dubbed "Cancer Conversations with Dr. Robert Uzzo," is intended to create a dialogue with listeners, who can visit [www.fccc.edu/cancer/conversation.html](http://www.fccc.edu/cancer/conversation.html) to listen to archived messages, post questions about cancer, and read answers to previous questions.



{focus}

# The Iconoclast and Her 'Big Questions'

By George Beschen



FOX CHASE'S BEATRICE MINTZ has been at the forefront of developmental genetics for nearly 50 years. Her groundbreaking contributions to science include the recognition of the central role of stem cells in cell development and cancer, as well as the introduction of techniques that allow scientists to transfer genes from one species to another. Mintz characterizes her career as pursuing "a series of big questions" that she has had "a good time" answering. Here, she considers (smaller) questions posed by *Forward*.

**Q** *You have said your experiments always begin with a big question. What was the first of these questions?*

**A** I was still a graduate student at the University of Iowa when I asked myself the question that would still be central to my research when I came to Fox Chase in 1960: "How can a complex individual arise out of a small number of cells in an embryo, and how do the cells become so widely diversified and specialized?" The question had been asked for decades, but it was still being approached

with classical methods, such as adding dye to “mark” a cell and track its path. I thought the only really relevant marker for tracing how cells diversified was the gene.

**Q** *How did you go about answering this fundamental question?*

**A** I first made composite mouse embryos by essentially gluing together early-embryo cells from genetically different mouse strains. I found that they still developed into single, normal-sized mice. These animals, which contained multiple, genetically identifiable populations of cells, became known as “chimeric” mice. The experiments showed that complexity originates from only a few

*irreversibly abnormal, opening the door to a new generation of research in this area. How did you reach this insight?*

**A** That experiment grew out of my next question: “Is cancer basically an aberration of development in which stem cells often opt for multiplying rather than differentiating?” I created a chimeric mouse out of normal embryo cells combined with stem cells of a tumor called a teratocarcinoma, which contained many different kinds of tissues. I surmised that there must be a stem cell in the tumor that had once had much in common with the stem cells of a normal embryo.

Normal, tumor-free mice resulted, with both genetic cell strains present

more direct approach for getting the DNA of specific genes into a fertilized egg, so that an animal is actually born with the desired gene. Animal models of human diseases could be produced in this way, giving scientists new opportunities for study. The most important mouse model generated in my lab is one with malignant melanoma.

**Q** *How has science changed over the course of your career?*

**A** Research funding today is such that you are expected to have a very precise idea of what you want to do; there is inadequate opportunity for exploration. In my view, one of the most important advances is the increased appreciation that a gene can express itself in many different ways, even without undergoing mutation. But the things I have always valued most—originality, bravery, thinking outside the box—are still the premium.

## *NEW QUESTIONS, and experimental ways to try and answer them, continue to fascinate me.*

developmentally flexible “stem cells,” which can divide and also give rise to a branching hierarchy of more specialized stem cells. Recognizing that these cells could generate a complete organism not only told us a lot about development but also pointed to the possibility of using such cells to replace defective cells in humans.

**Q** *How unusual was this research at the time?*

**A** This was the first successful work of its kind. Very few labs at the time were attempting to perform experiments on mammalian embryos. That required new technology. I came from a do-it-yourself family—you didn’t buy things that you could make—and I enjoyed the fact that I had to work out everything myself.

**Q** *Your later work challenged the assumption among scientists that malignant cells are*

in all tissues. The experiment showed that the tumor stem cells could be converted to normalcy in a normal environment. This discovery has inspired many scientists to investigate the role of the “microenvironment” in tumor stem cell behavior. The work has exciting implications for the design of cancer therapies.

**Q** *How did this research lead you to develop transgenic technologies that allow scientists to introduce into mice—or other species—genes they want to study?*

**A** Since I knew that both normal embryo stem cells and stem cells of some tumors could contribute to normal development, I wondered whether they could also be used as vehicles to transfer specific genes into a mouse for study. We showed that this could be done.

Later, at the same time as labs at three other institutions, we found a

**Q** *What aspect of your career have you found the most rewarding?*

**A** Having the freedom to go from one really tantalizing question to the next, and to recognize and follow clues along the way. New questions, and experimental ways to try and answer them, continue to fascinate me.

**Q** *What questions are you focusing on most in your current research?*

**A** One important emphasis in research today is to identify how specific cancers are unique at the molecular level. I feel I can contribute to a different question: whether all cancers are similar in some ways. Uncovering the similarities could help us understand why many cancers return after initially effective therapy. I feel that finding even a partial answer will be the most important work of my life. ■

{review}

## A Call for a New Funding Paradigm

Arguing that the National Institutes of Health's current funding structure stifles innovation in cancer research, Fox Chase leaders recently urged lawmakers at a special congressional hearing to overhaul the federal grant system.

In July, president and CEO Michael V. Seiden and researcher Eileen K. Jaffe joined representatives of the Philadelphia area's leading cancer research organizations for a field hearing convened by U.S. Sen. Arlen Specter at the National Constitution Center. Seiden and Jaffe distinguished themselves from their colleagues in the degree of fundamental change for which they advocated.

"For some perfectly understandable reasons, the process tends to support the status quo and encourage a systemic cautiousness that has the unintended consequence of discarding some of the most promising research proposals being offered up by some of our most creative scientists," Seiden testified. "So the question before us today is this: What can be done to intelligently identify and support potentially game-changing new ideas in the

fight against cancer?" He suggested that federal funding agencies:

- Shift their emphasis toward "high-quality, multi-functional teams that have a theme but not necessarily specific aims."
- Rely more on investigators' prior accomplishments than a proposed project's preliminary findings.
- Use "multi-disciplinary and perhaps multi-agency review teams" comprising researchers from different fields to bring unbiased consideration to novel ideas.

In her testimony, Jaffe suggested that it is human nature for "different" ideas to foster feelings of discomfort. In the case of peer-reviewed research, she said, that discomfort often leads to unwillingness to fund work that is based on novel concepts and has a greater chance of advancing the field rapidly, in favor of more familiar research that moves in incremental steps. She called for new measures to evaluate proposals that would "identify chances worth taking."

"This discussion is pertinent to all scientific research, and not just cancer," Jaffe added. "The public generally does not understand that supporting basic science can lead to important therapies for a myriad of diseases."

Specter, the senior member of the Senate subcommittee that oversees the National Cancer Institute, convened the hearing after a front-page *New York Times* story, which quoted Jaffe and former Fox Chase president Robert C. Young, pointed to the federal grant system's limitations in funding research likely to take significant steps toward curing cancer. "For all the money poured into cancer research," read the story, which was published in April, "there has never been enough for innovative studies, the kind that can fundamentally change the way scientists understand cancer or doctors treat it."



### ON THE WEB

For more information on the research conducted by Eileen K. Jaffe, visit [www.fccc.edu/research/pid/jaffe](http://www.fccc.edu/research/pid/jaffe).

## Home Away from Home



Lisa Godfrey Photography

Hope Lodge, a facility located less than a mile from Fox Chase's main campus, opened its doors in May to cancer patients needing a place to stay while receiving treatment. Officially named the AstraZeneca Hope Lodge of the American Cancer Society, the facility provides temporary lodging for patients undergoing treatment at Philadelphia-area hospitals who are traveling from more than 40 miles away. Owned by the American Cancer Society and located on land donated by Fox Chase, the lodge provides 37 guest rooms, as well as kitchen and laundry facilities, for patients and their caregivers. Patients must be referred by their physicians or social workers. More information is available by contacting lodge manager Byron Barksdale at 267-622-6002 or visiting [www.fccc.edu/patients/resources](http://www.fccc.edu/patients/resources) and clicking on "AstraZeneca Hope Lodge."



## New Department of Clinical Genetics Builds on Rich Pedigree

**W**hen it comes to dealing with hereditary cancers, the family tree can be almost as important a tool as the X-ray or the mammogram. Its importance is reflected in the Center's recent creation of the department of clinical genetics, which provides comprehensive risk assessment services for people with a hereditary risk of cancer.

The new department is chaired by medical oncologist Mary B. Daly, a pioneering figure in family genetic counseling. In 1991, Daly began the Margaret Dyson Family Risk Assessment Program, which focused on women with a family history of breast or ovarian cancer. The Fox Chase program was one of the first in the nation to offer screening, education, and counseling to healthy people at increased genetic risk for cancer. Since then, the Center has added risk assessment programs for melanoma, gastrointestinal, and prostate cancers.

The department consolidates the clinical components of the Center's risk assessment programs into a comprehensive service that includes screening, genetic testing, counseling, and clinical intervention geared toward preventing cancer in people at high risk. Its staff of 30 includes physicians, physician assistants, genetic counselors, nurses, and health educators.

"We have gotten to the point as an institution where our risk assessment programs warrant a full-fledged clinical department, allowing us to expand the services we can offer and, in time, the types of hereditary cancer disorders we assess," Daly says.

At present, there are 20 to 40 genes suspected to be involved in inherited cancer disorders, from the mutations associated with the rare Li Fraumeni disorder to the more common BRCA1 and BRCA2 vari-

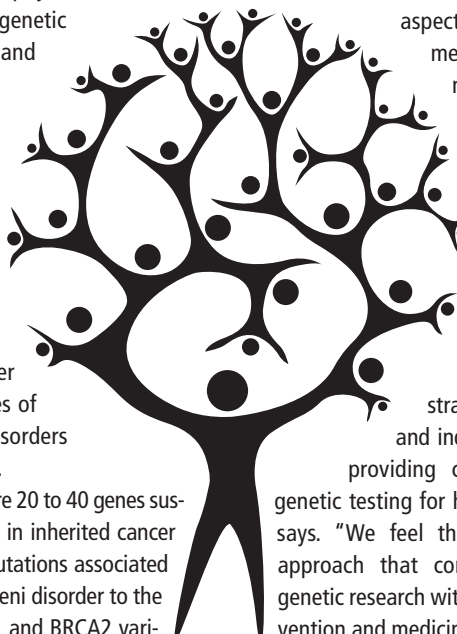


Reviewing patient records are genetic counselor Andrea Forman and medical oncologist Angela Bradbury, director of breast and ovarian cancer risk assessment, members of the new department of clinical genetics.

ants linked to breast and ovarian cancer. The department of clinical genetics encompasses the full range, with plans to expand its scope even further.

Genetic testing is only one aspect of cancer risk assessment and prevention, Daly notes. Fox Chase's comprehensive approach also includes genetic counseling, which can help patients and their families understand and cope with having an inherited risk of disease.

"We have demonstrated the effectiveness of, and indeed the basic need for, providing counseling along with genetic testing for high-risk families," Daly says. "We feel that it is a responsible approach that combines the power of genetic research with the best in cancer prevention and medicine."



## Young Steps Down as Chancellor

**A**fter 20 years of distinguished service and leadership at Fox Chase, former president Robert C. Young stepped down as chancellor July 1.

Speaking at a ceremony commemorating the occasion, president and CEO Michael V. Seiden noted, "Dr. Young has served as a compassionate and generous mentor and advisor as I have worked to serve the Center during these challenging economic times and as we navigate numerous transitions and develop our plans for growth. I know I speak on behalf of many at the Center when I extend my heartfelt gratitude for his invaluable counsel."

Young served as Fox Chase's president for 18 years, resigning in 2006 and taking up the role of chancellor. His legacy includes the creation of the first comprehensive program of cancer prevention research, the Research Institute for Cancer Prevention.

This transition does not represent retirement for Young, who plans to remain active as an advisor to the National Cancer Institute and a number of NCI cancer centers, as well as biotechnology and health-care companies that contribute to reducing the burden of human disease.

Young is internationally known for his work in the treatment of lymphoma and ovarian cancer and has received multiple national awards for his contributions to science and medicine.

## Gynecologic Cancer Experts Gather for Symposium

Leaders in the field of gynecologic cancer from around the globe gathered at the Center in September for "Gynecologic Cancers—the Next 25 Years," a symposium honoring longtime Fox Chase faculty member Robert F. Ozols. A leader in advancing chemotherapy research, Ozols is internationally recognized for his expertise in ovarian cancer.



Robert F. Ozols, in whose honor a symposium on gynecologic cancer was held, has led development of new treatments for ovarian cancer.

The symposium provided a forum for discussion of treatment advances that could help oncologists, gynecologists, and advanced practice clinicians to evaluate and recommend appropriate strategies for managing patients with ovarian, endometrial, and cervical cancers.

While at Fox Chase, Ozols led a research team that developed new clinical approaches to treating ovarian cancer, including a chemotherapy regimen that has become the worldwide standard for treating the disease. In recent years, he served as senior vice president and chief clinical officer, overseeing all patient care and clinical research at the Center. He stepped down this summer and adopted the role of senior advisor to the institution.

Ozols' research focused on how cancer cells develop drug resistance and strategies for overcoming it. Resistance to chemotherapy, which often occurs in patients with ovarian cancer, is a major treatment obstacle in a number of adult cancers.

## Fox Chase Receives \$8 Million Grant to Expand Laboratory Animal Facility

Fox Chase has received an \$8 million grant from the National Center for Research Resources of the National Institutes of Health to expand its laboratory animal research facilities. The new facility will support advanced research into the biological processes underlying cancer, paving the way for the development of new treatments. The funds were made available through the American Recovery and Reinvestment Act.

Construction of the four-story, 25,300-square-foot expansion, which will house mouse "models" of cancer vital to research, is expected to begin within a year.

"While the current facilities are entirely adequate for the care and feeding of the animal models they house, they are simply not large or sophisticated enough to meet the needs of Fox Chase's expanding research fac-

ulty," notes Harry Rozmiarek, laboratory animal facility director. Upon joining Fox Chase in 2004, Rozmiarek initiated a long-range plan to expand and improve the facilities. "This expansion is essential to complete the plan and will permit the high-quality research at Fox Chase to continue to improve and expand," he says.

President and CEO Michael V. Seiden adds: "We are grateful that the NIH recognizes the need to strengthen basic science infrastructure, and that it has the funding to do so. Without such facilities, biomedical research would be impossible and advances in medicine would simply stop moving forward."

The animal care and use program at Fox Chase has received full accreditation from the Association for the Assessment and Accreditation for Laboratory Animal Care International continuously since 1969.

## Animal Facility Director Honored by State Veterinary Association

The Pennsylvania Veterinary Medical Association has presented its Lifetime Achievement Award to laboratory animal facility director Harry Rozmiarek. He was recognized for a "lifetime of dedicated service to the advancement of veterinary medicine, animal health and welfare, and laboratory animal medicine during his vast and unparalleled career," according to the association.

"We are fortunate to have someone of Harry Rozmiarek's caliber administering our laboratory animal facilities," notes Jeff Boyd, senior vice president and chief scientific officer. "His wealth of experience and keen scientific mind has enabled him to make great progress in expanding and modernizing our facilities, which serve as the engine for most of our research."

Rozmiarek earned his veterinary degree from the University of Minnesota College of Veterinary Medicine in 1962 and embarked on a distinguished career that began with 20

years' active duty with the U.S. Army Veterinary Corps. By the time he retired from the Army as a colonel in 1983, he was board-certified in laboratory animal medicine, had completed a master's degree and residency in laboratory animal medicine, had earned his doctorate in immunology from the Ohio State University, and had been elected national president of the American Association for Laboratory Animal Science.



An accomplished scientist, Rozmiarek has published extensively on immunology, toxicology, virology, and infectious disease, as well as laboratory animal management and husbandry. Among his numerous national and international scientific leadership roles, he was appointed by the National Research Council in 2003 as the U.S. representative to the International Council for Laboratory Animal Science. In addition to his most recent honor, he has received several national awards for excellence in laboratory animal science.

## Longtime Fundraiser Joins Center

**R**obert G. Wilkens Jr., a veteran fundraiser for cancer centers and other academic medical institutions, recently became Fox Chase's new senior vice president and chief development officer. He succeeds

Jill A. Marsteller, who departed the Center in September for a position at Ursinus College.

Previously, Wilkens led the development programs at Memorial Sloan-Kettering Cancer Center in New York City and the Ohio State University's Comprehensive

Cancer Center—James Cancer Hospital and Solove Research Institute. Most recently, he was executive director for development and philanthropy for Memorial University Medical Center in Savannah, Georgia, where he worked closely with the Curtis and Elizabeth Anderson Cancer Institute.



## Program in Head and Neck Cancer Added to Keystone Roster

**F**ox Chase recently announced the latest addition to its innovative, team-based Keystone Programs for Collaborative Discovery: the Keystone Program in Head and Neck Cancer, which brings clinicians and scientists together to apply knowledge about the genetics and molecular biology of head and neck cancer to the treatment of the disease.

The program will bring emerging research into cancer growth and targeted therapeutics to bear in the treatment of head and neck cancer, an illness that includes cancers of the nasal cavity, mouth, throat, and voice box. The disease affects more than 45,000 people in the United States alone and has a survival rate of about 50 percent.

Fox Chase is known for its strength in treating head and neck cancer, and its doctors are recognized leaders in the field. Their experience in leading clinical trials for each stage and type of the disease also adds depth

to the program's research component. The initiative is led by an interdisciplinary team: medical oncologist Barbara Burtness, molecular biologist Erica A. Golemis, and head and neck surgeon John A. "Drew" Ridge.

"I congratulate the team leaders for building a cohesive and compelling scientific program that makes tremendous use of our existing research and clinical strengths," says president and CEO Michael V. Seiden. "The program reaches broadly across the Center to capture the creativity and efforts of an array of constituents who bring a myriad of talents and expertise to the problem of head and neck cancer."

Like the four founding Keystone Programs, launched in 2008, the new addition was selected after a competitive external peer-review process, making the program eligible for at least \$5 million in support over five years. The Keystone Programs are funded primarily through private philanthropy.



## Satellite Radiation Facility Opens

President and CEO Michael V. Seiden addresses the nearly 200 community well-wishers and members of the Fox Chase faculty and leadership who gathered in July to celebrate the opening of Fox Chase Cancer Center Buckingham, the Center's satellite radiation treatment facility in Bucks County, about 20 miles north of Fox Chase's main campus. After remarks by Seiden and Eric M. Horwitz, chairman and clinical director of radiation oncology, guests toured the 12,500-foot facility to see the latest in radiation technology, including a CyberKnife Robotic Radiosurgery System and a Trilogy Linear Accelerator with Rapid Arc. For more information on the Buckingham facility, visit [www.fccc.edu/buckingham](http://www.fccc.edu/buckingham).

## HEADING FOX CHASE CANCER CENTER BUCKINGHAM

is Shelly B. Hayes, who joined Fox Chase in July as the facility's director. Hayes, who completed her residency at Fox Chase, returned to the Center this summer from Richmond, Virginia, where she worked with Virginia Radiation Oncology Associates.



"I am thrilled to be director of this beautiful facility," she notes, "and I am eager to bring the latest radiation technologies to Bucks County."

Hayes has a particular interest in breast, gynecologic, prostate, and lung malignancies, as well as brain and spinal cord tumors. She earned her M.D. at Temple University School of Medicine.

## 'Social Media' Outlets Offer New Opportunities to Connect with Fox Chase

**M**ore and more often, people looking for information turn first to the Internet—and in particular to the rapidly developing communications channels known collectively as "social media." Internet-based tools such as Facebook, Twitter, and YouTube let users stay up to date and engaged on a whole new level, and these interactive tools provide users with new opportunities to connect with Fox Chase.

Facebook members can receive Fox Chase news updates, learn about upcoming events, read patient stories, and participate in discussions by becoming a "fan" of Fox Chase on Facebook. Membership in the social networking site, which is free, is required for participation.

Twitter is a free service that allows users to post and read short messages known as "tweets." Fox Chase uses its newly developed Twitter page to post timely updates on news and events.

YouTube is a Web site that allows users to upload and share videos that can immediately be accessed by millions of people. The Fox Chase YouTube channel includes videos that provide an overview of the Center, as well as physician profiles and information on research programs.

With hundreds of millions of people worldwide engaged in various ways with social media, it seems that the tools are here to stay, and the Center plans to expand its social media presence as opportunities arise.

To access Fox Chase's social media sites, visit [www.fccc.edu/news/follow-us.html](http://www.fccc.edu/news/follow-us.html).



Scott H. Spitzer

### Artistic Support

#### Byers' Choice Joins Fox Chase in Fight Against Breast Cancer

"The Days of Wine and Roses and You," designed by Barbara Blankenship of Angleton, Texas, was among the one-of-a-kind "art bras" featured at an exhibit designed to raise awareness of breast cancer and support Fox Chase research. Byers' Choice Ltd., a maker of handcrafted gifts, hosted the exhibit in October at its headquarters in Chalfont, Pennsylvania, to honor Breast Cancer Awareness Month. The show's grand opening, which drew nearly 100 people, kicked off the company's first annual "Think Pink" program, which also included a benefit walk and health and craft fair, with proceeds benefiting the Center.

### Fox Chase Physicians Assume National Leadership Positions

• **ERIC M. HORWITZ**, chairman of radiation oncology, has assumed the position of president of the American Brachytherapy Society. Founded in 1973, the nonprofit society seeks to provide insight and research into the use of brachytherapy—radiation treatment given by placing radioactive material directly in or near the target or tumor—for malignant and benign conditions.

The organization strives to benefit patients by providing information directly to them and promoting the highest standards of practice, and to benefit health-care professionals by

encouraging improved and continuing education for radiation oncologists.

• **SURGEON JOHN A. "DREW" RIDGE'S** national leadership in head and neck cancer has been recognized by the leading professional society in the field. At the annual meeting of the American Head and Neck Society, held in May in Phoenix, he was elevated to society president. The American Head and Neck Society is the largest organization in North America dedicated to the advancement of research and education in head and neck oncology.



## Beck Assumes Role of Chief Medical Officer

In June, J. Robert Beck assumed the role of chief medical officer. He also continues in his role as chief academic officer.

"As chief medical officer, Dr. Beck will have the opportunity to work with physicians and nurses to improve the delivery of clinical care in both the inpatient and outpatient departments," notes president and CEO Michael V. Seiden. Beck also works with clinical department chairs and senior administrative leaders to improve processes, quality, and safety in all patient-related areas.

Prior to becoming chief academic officer, Beck served as deputy director of the population science division and as vice president for information services and chief information officer. He holds grants from the National Institutes of Health, the Commonwealth of Pennsylvania, and the National Cancer Institute's Cancer Biomedical Informatics Grid, or caBIG™.

A pathologist by training, Beck has authored nearly 200 publications in the fields of laboratory medicine, informatics, and medical decision-making.

*Fox Chase recently welcomed the following clinicians and researchers to its staff.*

### CLINICIANS

**Yun Shin Chun** is a surgical oncologist who specializes in treating patients with gastrointestinal cancers, including cancers of the liver, pancreas, colon, and rectum, as well as melanoma. A recipient of the Janet M. Glasgow Memorial Achievement Citation from the American Medical Women's Association, Chun earned her M.D. at New York Medical College. A member of many professional organizations, she serves on the Hepatobiliary Task Force of the American Joint Committee on Cancer. Chun completed her fellowship in surgical oncology at the University of Texas M.D. Anderson Cancer Center in Houston, where she also served as a clinical specialist in the department of critical care.

**Jeffrey M. Farma**, a surgical oncologist, treats patients with melanoma, sarcoma, and gastrointestinal cancers. His expertise includes minimally invasive, laparoscopic techniques, as well as traditional surgery. Farma received his M.D. from Temple University School of Medicine. He came to Fox Chase after completing his fellowship in surgical oncology at the H. Lee Moffitt Cancer Center

& Research Institute in Tampa, Florida. Farma is a recipient of the ASCO Foundation Merit Award. His volunteer service includes participation in Temple's Cradle to Grave program, an educational anti-violence program for at-risk youth.

**Karen S. Gustafson**, a pathologist, came to Fox Chase from Johns Hopkins University School of Medicine and the Johns Hopkins Hospital, where she served as assistant professor of pathology and cytopathologist, respectively. She has provided editorial review for journals including *Cancer Cytopathology* and *Gynecologic Oncology*. Her teaching experience includes regular continuing medical education instruction on the pathology of cervical cancer and cervical cancer screening. Gustafson earned her M.D. and a Ph.D. in biomedical sciences at the University of Minnesota Medical School in Minneapolis. She has completed fellowships in surgical pathology and cytopathology at the Hospital of the University of Pennsylvania.

**Sarah H. Kim**, a gynecologic surgical oncologist, has expertise in minimally invasive surgery—specifically, using robotics and

advanced laparoscopy for uterine and cervical cancers, as well as for radical procedures for debulking ovarian tumors. Kim earned her M.D. from the State University of New York Upstate Medical University College of Medicine in Syracuse. She came to Fox Chase from the Hospital of the University of Pennsylvania and University of Pennsylvania School of Medicine, where she served as attending physician and instructor of gynecologic oncology, respectively.

**Amy R. MacKenzie** helps coordinate inpatient medical care as a member of the Center's hospitalist service. She earned her M.D. from Drexel University College of Medicine and is a recipient of the school's Samuel Levit Award for Outstanding Skills and Humanitarianism in Medicine. Most recently, she completed her residency in internal medicine at Temple University Hospital.

**Anthony J. Olszanski** is a medical oncologist who specializes in Phase I clinical trials and treating patients with gastrointestinal cancers. He earned his M.D. from the University of Medicine and Dentistry of New Jersey in Newark and completed his residency in

continued on page 28

internal medicine, as well as fellowships in hematology/oncology and clinical pharmacology/toxicology, at Dartmouth Hitchcock Medical Center in Lebanon, New Hampshire. Olszanski came to Fox Chase after serving as clinical leader and director of Pfizer Oncology in New London, Connecticut.

**Neeta Somaiah**, a medical oncologist, treats patients with bone cancer, soft tissue sarcomas, and lung cancer. She recently completed her fellowship in hematology and oncology at Fox Chase. A member of the Research Review Committee since 2007, Somaiah also has worked in the Center's tumor cell biology program. She earned her medical degree at Maulana Azad Medical College, Delhi University, India. She is a member of Vidyavikas, an initiative aimed at providing scholarships to children in rural India.

**Matthew B. Zook**, a dermatologist, treats patients with melanoma, pigmented lesions, and nonmelanoma skin cancers. He received his M.D. from Jefferson Medical College and came to Fox Chase after completing his residency at Thomas Jefferson University, where he also earned his Ph.D. in microbiology and molecular virology. Zook's volunteer work has included caring for underserved populations in the Philadelphia area through the JeffHOPE program, and for patients in rural India through Youth With A Mission.

## RESEARCHERS

**Elizabeth Hopper-Borge**, a molecular biophysicist, studies the cellular mechanisms that enable cancer cells to resist chemotherapy. Her laboratory focuses on a family of so-called multidrug resistant proteins, which act like molecular pumps to remove toxic substances from cells. An understanding of how these pumps work in cancer cells could allow for more effective use of chemotherapeutics. She earned her Ph.D. at the University of Pennsylvania. Prior to becoming a faculty member, she was a postdoctoral fellow at Fox Chase.



### ON THE WEB

To learn more about Fox Chase doctors and researchers, visit [www.fccc.edu](http://www.fccc.edu) or call 1-888-FOX CHASE (1-888-369-2427).

## PROMOTIONS

### Daly Heads New Clinical Genetics Department

Medical oncologist Mary B. Daly has been named chairwoman of the newly created department of clinical genetics, which consolidates the clinical services of the Center's existing risk-assessment programs. (See story on page 23).

Building on the success of the Margaret Dyson Family Risk Assessment Program, which Daly founded in 1991, the department focuses on the clinical use of genetic and molecular information and tools to more effectively prevent, diagnose, and treat cancers.

Previously, Daly led the Cancer Prevention and Control Program. She also leads the Keystone Program in Personalized Risk and Prevention, a collaborative effort that brings together scientists and clinicians.



### Fang Leads Cancer Prevention and Control Program

Behavioral researcher Carolyn Y. Fang assumed leadership of the Cancer Prevention and Control Program in July, stepping into the role vacated by Mary B. Daly as she assumed leadership of the new department of clinical genetics.

Fang also is a member of the new Keystone Program in Head and Neck Cancer.

"The Cancer Prevention and Control Program has long been a scientific strength of the Center, as well as integral to our continued recognition as an NCI-designated comprehensive cancer center," says president and CEO Michael V. Seiden. "I have great confidence that Dr. Fang has the experience, knowledge, and vision to contribute to the continued success of this program at a leadership level."



### Hall Directs Gastrointestinal Risk Assessment Program

Michael John Hall was appointed director of the Gastrointestinal Tumor Risk Assessment Program in June. He succeeds program founder Neal Meropol, who departed the Center for a position at the Case Comprehensive Cancer Center in Cleveland.

Hall joined the faculty in October 2008 after completing medical oncology training at the University of Chicago and additional epidemiology and biostatistics training at the Columbia University School of Public Health. He has received an American Society of Clinical Oncology Young Investigator Award and an American Cancer Society Mentored Research Scholar Grant.



## Experimental Breast Cancer Drug Owes Origins to Fox Chase Lab

Given the time it takes for scientific discoveries to travel from “bench” to “bedside,” laboratory scientists rarely get to see their work directly affect patients—but that is exactly what happened this summer when Fox Chase became one of just two sites in the country to take part in a clinical trial of a unique drug shown to slow the growth of breast cancer.

Known as MM-111, the drug is based on a similar molecule, ALM, developed at Fox Chase in collaboration with researchers at the University of California, San Francisco. (See page 32 of the spring 2009 issue of *Forward*.) The two institutions partnered with Merrimack Pharmaceuticals Inc., which further refined ALM for use as a drug in humans. The result was MM-111.

“It is a rare and wonderful thing to see a clinical trial begin at the place where the concept underlying the drug was initially conceived,” notes oncologist Crystal Denlinger, who heads the MM-111 trial at Fox Chase.

MM-111 resembles an antibody—a protein the immune system uses to confront invading pathogens such as viruses or bacteria. However, unlike most antibodies, which bind to only one target at a time, MM-111—like ALM before it—attaches to two targets simultaneously: the signaling proteins ErbB2 and ErbB3. According to researchers, the two proteins work in tandem on the surface of many cancer cells, including those involved in head and neck cancer and drug-resistant breast cancer, to promote cancerous cell growth. The drug works by latching on to

ErbB2 and using that connection as a foothold to block ErbB3 from transmitting molecular signals within the cell.

MM-111 is believed to be the first drug that operates as a “bispecific” antibody to enter clinical development.

### CLINICAL TRIALS

With more than 225 clinical trials underway at any given time, Fox Chase offers access to the latest lifesaving medical advances, sometimes years before they become widely available. For more information on the Center’s clinical trials program, visit [www.fccc.edu/cancer/clinicalTrials](http://www.fccc.edu/cancer/clinicalTrials) or call 1-888-FOX CHASE (1-888-369-2427).

## ‘Disorder’ within Proteins Is Anything But

Sections of proteins previously thought to be useless may have an unexpectedly important biological role, providing certain proteins with a way to deactivate themselves, according to structural biologist Heinrich Roder.

In the May issue of the journal *Structure*, Roder and his colleagues described this phenomenon in a vital protein called NHREF1, which is crucial to the ability of cells to receive chemical signals. By understanding the protein’s structure, Roder believes scientists will understand how the protein functions—or malfunctions—in diseases such as breast cancer and cystic fibrosis.

“Here we have a molecule that serves an important role in how cells function and survive, but it contains these puzzling ‘junk’ sequences that don’t have any apparent purpose,” Roder says. “Our work suggests that this disorder is really a way of creating flexibility, allowing the protein to function as a molecular switch, a process that goes wrong in certain diseases.”

NHREF1 serves as an adapter that allows molecular messages from outside the cell to trigger changes within the cell. The “disordered” sections of the protein allow it to flex and block its own active site as a means of regulating itself. The discovery, made through an innovative application of nuclear magnetic resonance spectroscopy and other biophysical techniques, was the first successful attempt to determine the structure of this type of protein.

In general, proteins are composed of one or more modular sections with a particular shape and amino acid sequence that have been conserved through evolution. More than a third of human proteins, however, contain disorganized, seemingly random sequences that don’t match any of these known structures. Often, these disordered sequences are dismissed as mere evolutionary detritus.

The longest of NHREF1’s disordered segments consists of a chain of 100 amino acids, the chaotic nature of which has prevented scientists from creating an accurate model of

the entire protein. Roder and his colleagues used an innovative approach that combined nuclear magnetic resonance spectroscopy—a technique that determines a protein’s shape by measuring how individual atoms interact with an intense magnetic field—with optical spectroscopy—a less powerful method that uses light instead of a magnetic field—to form a more complete picture of the molecule and understand the role of the disordered region. This breakthrough enabled them to see what NHREF1 looks like both when it is active and when it is “turned off.”

Roder found that the protein’s supposedly disordered region allows the protein to block its active site, like biting one’s lip to keep from talking. This ability to flex, he says, is an essential part of the protein’s architecture.

*Funding for this research was provided by the National Cancer Institute, the National Institutes of Health, and the American Cancer Society.*

## Protein Shown to Support Aggressive Breast Cancer

Fox Chase researchers have demonstrated that a protein called NEDD9 may be required for some of the most aggressive forms of breast cancer to grow—a finding that could aid the development of improved tools for diagnosing and treating the disease.

The study, published in October in *Cancer Research*, showed that reduced levels of NEDD9 in mice limit the appearance of aggressive metastatic breast cancer.

"This was the first study to address the question of what happens in breast cancer if this gene isn't around," says molecular biologist Erica A. Golemis. "And the answer is that we see more moderate cancer development, which speaks volumes about the role of the protein in aggressive breast tumors."

The protein could serve as a biomarker, or indicator, of aggressive forms of breast cancer, Golemis says. It also may provide the basis for the development of new drugs against the disease.

The Golemis laboratory first identified NEDD9 in 1996. In recent years, scientists around the world have contributed to research showing how excess amounts of the protein contribute to metastasis in a number of cancers, including melanoma, lung cancer, and a type of brain tumor called glioblastoma.

A so-called "scaffolding protein," NEDD9 forms part of a complex of molecules just inside the cell membrane that collectively act as transmitters, relaying signals from the cell

surface to the interior to control cancer cell growth and movement.

"By their nature, cancer cells are evolutionary machines, constantly looking for ways to exploit the vast networks of signaling pathways that are an inherent part of cell function," Golemis notes. "The more we understand these pathways, the better we will understand the ways cancer cells evolve to use those pathways, and how to stop them."

*Funding for this research was provided by the National Cancer Institute, National Institutes of Health, Israel Cancer Association, Stanley Abersur Research Foundation, Ben-Gurion University of the Negev, Pew Charitable Trusts, and the Commonwealth of Pennsylvania.*

## Should Parents Tell Children About Results of Genetic Testing? Study Looks at Offspring Reactions

"The Talk" is a traditional rite of passage by which parents pass on wisdom about delicate subjects such as sex. But should "The Talk" extend to children's risk of hereditary cancer?

Medical oncologist Angela Bradbury, director of breast and ovarian cancer risk assessment, queried parents who were tested for the hereditary BRCA1 and BRCA2 gene mutations associated with breast and ovarian cancer to better understand how children react when parents communicate such results to them. She presented her findings in May at the annual meeting of the American Society of Clinical Oncology.

"We know that many people who carry the BRCA1 and BRCA2 gene mutations share their genetic test results with their children," she explains. "According to our preliminary research, most parents do not perceive their children to have strong adverse reactions to this information, although children who learn their parent tested positive for a mutation may be more susceptible to initial negative reactions."



Of the 163 parents surveyed, 52 tested positive for the mutations. Just over 100 parents, or 66 percent, shared their results with at least one of their children, representing a total of 201 offspring ages 5 to 24. Parents who had tested positive reported their child's

response as "upset—strong emotional reaction" in 18 percent of cases, compared to 2 percent of cases of parents with negative results.

In 13 percent of cases, parents reported offspring concern for self and family—reactions that also were more frequent among those with positive tests. Most parents reported that the communication had either no significant impact (39 percent) or a positive impact (36 percent) on their offspring.

"This is exploratory data," Bradbury notes, "that we will evaluate further with future studies."

Bradbury and her colleagues plan to further study the psychosocial and behavioral responses to learning of hereditary cancer risk during childhood and adolescence, with the hope that such research could aid the development of models that parents could use to conduct "The Talk"—at least as far as cancer risk goes.

Parents are on their own for the birds and the bees.



## Study Challenges Routine Use of MRI Scans to Evaluate Breast Cancer

The use of magnetic resonance imaging, or MRI scans, following breast cancer diagnosis does not improve how well a patient fares, according to a recent study by Fox Chase researchers. In fact, women who receive MRI scans are more likely to receive a full mastectomy when they might have otherwise been eligible for a less invasive procedure.

There is no demonstrated benefit of using MRI in such cases, says Richard Bleicher, breast surgeon and lead author of the study, especially in light of the three-week delay in patient evaluation typically associated with its use. Bleicher and his colleagues examined the records of 577 breast cancer patients and reported their findings in August in *Journal of the American College of Surgeons*.

Bleicher believes many of the women who received mastectomies after their MRIs could have been candidates for a less invasive procedure known as a lumpectomy. An MRI scan is very sensitive, he says, and could lead physicians to overestimate the severity of some cases. "Rather than having a biopsy to see if those findings are real, women and their doctors may choose



MRI scans could lead physicians to overestimate the severity of some cases.

mastectomy out of an abundance of caution," he adds.

The study demonstrates that routine use of MRI scans in women newly diagnosed with breast cancer increased significantly between 2004 and 2005, and again in 2006. While MRI might be valuable as a screening tool for some women,

such as those with genetic mutations that predispose them to breast cancer, there is no evidence that it improves care when used routinely to evaluate a previously diagnosed case, Bleicher says.

*This study was supported by the U.S. Public Health Service.*

## Perception of Cancer Risk Might Not Mirror Reality

People at an elevated risk for gastrointestinal cancers overestimate their actual degree of cancer risk and, therefore, their true need for support in preventing the disease, according to a study presented in May at the annual meeting of the American Society of Clinical Oncology.

The findings are particularly important for considering how risk assessment programs direct educational, counseling, and diagnostic resources, says oncologist Michael John Hall, who directs the Gastrointestinal Tumor Risk Assessment Program.

"Preventing cancer is as important as treating cancer," Hall says. "The goal of our study was to improve how we think about and direct our prevention resources."

Hall led a study that evaluated 398 individuals from 278 families enrolled in the Gastrointestinal Tumor Risk Assessment Program over a nine-year period. The researchers established participants' risk through family and personal histories of gastrointestinal cancers and/or colorectal polyps, as well as genetic testing. Results showed that more than 17 percent of participants were at high

risk; 70 percent were at moderate to high risk; and 12 percent were at low risk. However, prior to counseling, individuals in the low-risk group estimated their cancer risk as equal to that of the high-risk group.

"Clearly, the first step in offering clinical prevention tools to all of the individuals entering our risk assessment program is to help them to understand their actual level of risk," Hall says. "Only then can we recommend the appropriate prevention support."

{close-up}

# Philly or Bust

## Woman Leaves London Home for Lifesaving Surgery at Fox Chase

By Jill M. Ercolino

Nothing was going to stop Olapeju Ferreira—not an aggressive form of cancer, not a dim prognosis, not even distance.

From her home in London, the mother of three, whose uterine sarcoma had recurred in less than a year despite surgery and intensive chemotherapy, did what most people in her position would do. She went on the Internet and did some digging.

Ferreira found hope in Fox Chase surgeon James C. Watson. A specialist in gastrointestinal cancers and sarcomas, he had successfully treated others with her disease, leiomyosarcoma, a rare cancer that most often attacks the uterus and stomach.

Not long after discovering Watson, Ferreira rearranged her life. She took a leave of absence from her job helping welfare recipients, put her children in a relative's care, and boarded a plane for Philadelphia with her husband, Sola.

"When my cancer came back, it was quite a shock," recalls Ferreira, a native of Nigeria, "but I was determined that I was going to beat it. I've always felt that if I can't control something, I won't panic. I will come up with a plan and I will deal with it."

That meant that, no matter what, she was going to meet Watson.

### Finding hope in the States

Still, as she made her way to the United States, Ferreira was filled with anxiety.

Recent surgery had revealed that she had five new cancerous masses in her uterus, and her doctor, declaring there was nothing more he could do, had stitched her up and sent her home. Ferreira wondered: Could Watson be the answer to her many prayers?

As it turned out, he was. After review-

ing her X-rays, the surgeon called her with good news. "He told me he could operate, and that's all I needed to hear," Ferreira says. "I was very relieved and happy."

Six months later, Ferreira was back with her family,

back to work, and cautiously optimistic. While recent tests have come back negative, she remains keenly aware that, like before, her cancer could return.

"I don't fret, though. If it comes back, I will deal with it," Ferreira says. And for now, life goes on. "In Nigeria, we have a saying: 'Why die before death actually comes?' There is always some hope, somewhere."

Olapeju Ferreira is living proof of that. ■

"He told me he could operate, and that's all I needed to hear."



Olapeju Ferreira

Jessica Hui



#### ON THE WEB

To read more about Ferreira and other survivors, visit [www.fccc.edu/topics/ferreira](http://www.fccc.edu/topics/ferreira).

# Anna Gray to the Rescue

Pioneering Woman Fought Cancer with Knowledge

**A**nna Gray brewed up some tea at her home outside Philadelphia and invited a few friends to join her for a cup. But she had more on her mind than friendly conversation.

The year was 1933, and the Great Depression gripped the country. But Gray, a mover and shaker in Philadelphia society, wasn't looking for help. Instead, she was hoping to give it: to a friend, oncologist Stanley P. Reimann.

Gray had learned that Reimann's Lankenau Hospital Research Institute for the Promotion of Cancer Research was nearly penniless, and if something wasn't done soon, years of painstaking study to find a cause and cure for cancer would crumble with it.

True to form, Gray mustered her troops. Between sips of tea, a powdered contingent of doctors' wives and fellow churchgoers anted up enough money to rescue the institute, which would later become one of the building blocks of Fox Chase. They also organized Lankenau's first women's auxiliary. In doing so, the society ladies joined a growing faction of women nationwide, many affiliated with social clubs and universities, dedicated to fighting cancer with knowledge. Often, the auxiliary's members mixed socializing with fundraising by throwing elaborate dances, intimate recitals, and oceanside card parties that generated hundreds of thousands of dollars for cancer research, scholarships, and treatments for the needy.

"Women play bridge anyway," Gray reportedly commented, "so why not contribute some money for

the benefit of the institute while enjoying matching wits across the table?"

## The right woman at the right time

Throughout it all, the commanding figure of Anna Gray, a banker's wife and well-known singer, was front and center.

Photos of Gray, who served as the auxiliary's president for two decades, show a woman with a kind face who fancied smart suits, dainty hats, pearls, and white gloves. However, snippets culled from yellowed newspaper clippings reveal a hard-charging steel magnolia who was fiercely devoted to the cancer cause.

"As president of the women's auxiliary, Mrs. Gray has done more against cancer than any other person in this state, not excluding those in the medical profession," a well-known doctor was quoted as saying in 1951.

While Gray's knack for fundraising earned her accolades, her efforts to educate the masses about cancer at a time

when it bordered on being a dirty word were just as important. She pioneered the auxiliary's tradition of hosting annual cancer forums, groundbreaking public events that focused on scientific breakthroughs and encouraged early detection and treatment.

"Cancer is a great menace," Gray once told a reporter, "and only public understanding of it can result in its ultimate elimination."

Anna Gray wasn't the only woman to help Stanley Reimann on his way to building a world-class cancer research and treatment facility, but when he was down and nearly out, she emerged—the right woman at the right time.

—Jill M. Ercolino

Pioneering cancer educator and fundraiser Anna Gray, far right, and other members of the auxiliary she founded welcome Eve Curie, second from left, daughter of "Madame" Marie Curie, to the Institute for Cancer Research in 1948.



# FOX CHASE CANCER CENTER

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## *Getting Personal*

The “cookie cutter” approach to cancer treatment may soon be a thing of the past. Fox Chase’s new Institute for Personalized Medicine focuses on analyzing each patient at the genetic level and customizing her therapy based on her individual profile.

*See story on page 12.*