



In Conversation with
John Tarlton

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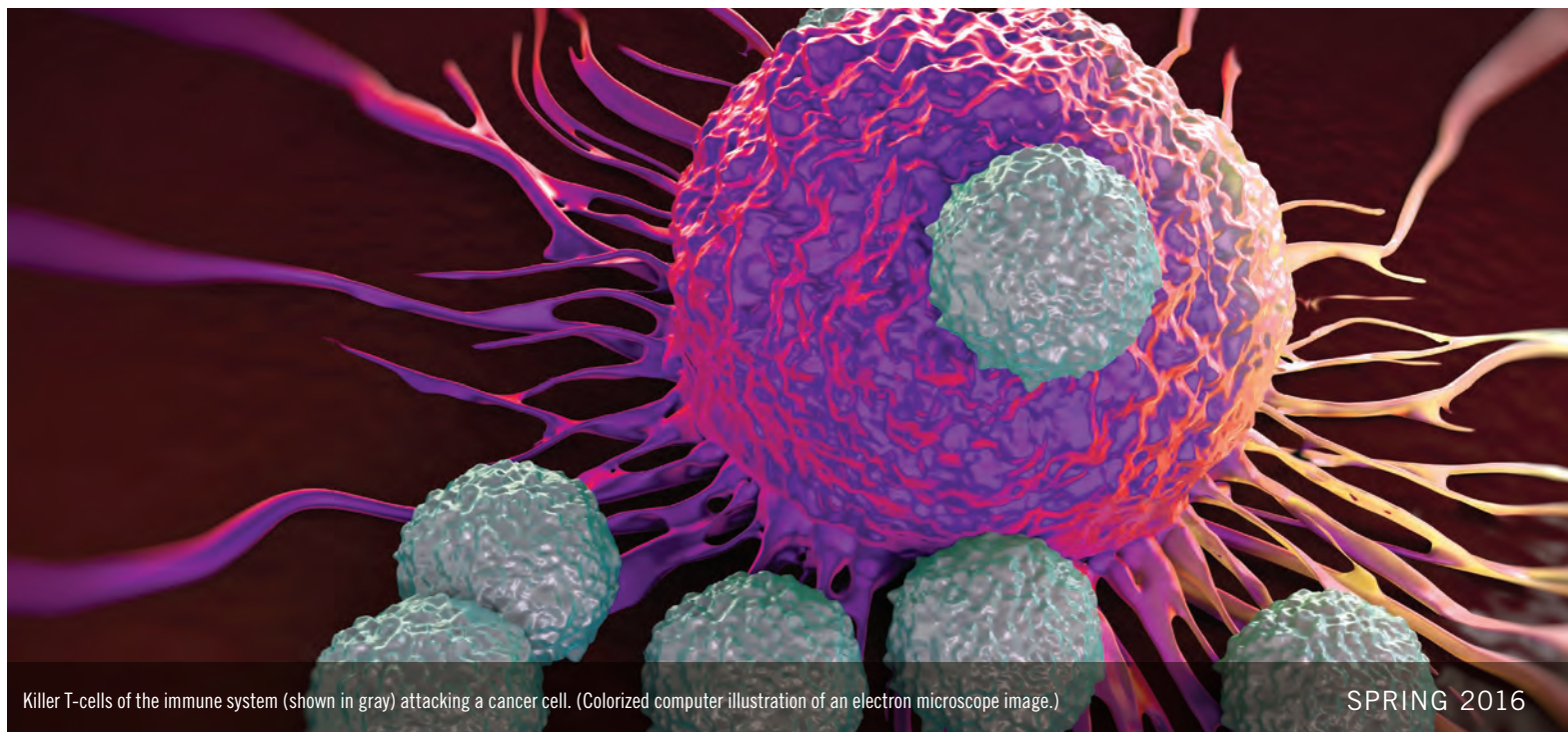


Transforming the
Cancer Patient
Experience

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Stanford Cancer Institute News

A PUBLICATION FOR PATIENTS AND FRIENDS OF THE STANFORD CANCER INSTITUTE



Killer T-cells of the immune system (shown in gray) attacking a cancer cell. (Colorized computer illustration of an electron microscope image.)

SPRING 2016

NCI Leader Joins Stanford's Immunotherapy Program Helping Our Bodies Beat Cancer

Can our immune systems be trained, or perhaps boosted in some way, to identify and eliminate a growing malignant tumor? Can cancer be treated like an influenza virus: introduce a small sample into our bodies—a flu shot—to spur a targeted and persistent immune response?

That is the aim of a large, diverse group of researchers and clinician-scientists within the Stanford Cancer Institute. The field is known as *cancer immunotherapy*, and although it encompasses a wide variety of approaches across a multitude of disciplines, the goal is simple to understand: prime our immune systems to target and destroy cancer cells through its

normal processes, and thereby avoid toxic and invasive treatment approaches, like surgery, radiation and chemotherapy.

Stanford has been a pioneer in cancer immunotherapy research, with several

notable discoveries claimed by past and current SCI members. Early this year, the SCI strengthened its commitment to the promise of immune-based therapies by recruiting **Crystal Mackall, MD**, a talented and experienced researcher, as the new leader of the Immunology and Immunotherapy of Cancer Program (one of eight SCI research programs).

“Cancer immunotherapy is one of the most promising areas in cancer research, showing remarkable results in several previously intractable cancers,” said SCI Director Beverly Mitchell, MD. “Dr.

See **IMMUNOTHERAPY**, page 4



Crystal Mackall, MD

Message from the Director

Acknowledging Some of the People Who Drive Cancer Research



The Stanford Cancer Institute has begun the year determined to accelerate efforts to better understand, diagnose, treat and prevent cancer in all its forms. We are enhancing our research capacity, extending the reach of patient care services and continuing to attract extremely talented leaders and young investigators.

One of our stellar recent recruits, Crystal Mackall, MD, is featured in this edition's cover story on the field of cancer immunotherapy, a diverse and exciting area that aims to harness, or enhance, the body's immune response to cancer. Mackall is the new leader of SCI's Immunology & Immunotherapy of Cancer Program, and she joins a broad and deep pool of talented researchers pursuing a range of innovative immune system-based treatment approaches.

Our faculty profile is of another recruit—less recent, but equally stellar—who is leading our growing pediatric hematology/oncology program. She is Sheri Spunt, MD, and she brings a wealth of knowledge and compassion to the treatment of children with cancer.

We are also very pleased to share updates on our fantastic new cancer treatment center in San Jose and our Stanford Cancer Initiative, two major undertakings that are reducing the burden of cancer treatment for patients today and in the future.

The SCI could not do all that we do without generous and informed community support. We hope you will enjoy two stories about philanthropists whose families have experienced cancer, and who are now utilizing their talents to advance awareness and treatment. John Tarlton is a local commercial developer and elite athlete who cycles, swims and runs to support cancer research. Evan Goldberg is a software executive whose private foundation is helping SCI members study a specific form of inherited cancer.

In sum, this issue of SCI News highlights a few of the many dedicated individuals—on the faculty, among the staff and in the community—whose passion and intelligence fuel our mission. At a time when so much attention is focused on new technological and computational advances—and Stanford remains at the leading edge of innovation—we want to remind readers of the two most powerful tools in the struggle to eliminate cancer: the brain and the heart. ■

Beverly S. Mitchell, MD

Director

The Stanford Cancer Institute

The Stanford Cancer Institute provides support and coordination for the range of cancer-related activities occurring at Stanford University, Stanford Hospital and Clinics, and the Lucille Packard Children's Hospital. Our 300-plus faculty members belong to more than 30 academic departments, and represent the array of disciplines involved with comprehensive cancer research and treatment.

The Institute is a National Cancer Institute-designated Cancer Center, with a scientific agenda combining laboratory research, clinical study and population science. The Institute also engages in patient care, community education, clinical trials, as well as support and training for the next generation of cancer physicians and researchers.

Simply put, all of our members and resources are focused on one goal: to reduce the occurrence and impact of cancer.

Stanford Cancer Institute News is a quarterly update for members, supporters and friends. On behalf of our members and staff, we thank you for your ongoing support and welcome your feedback and inquiries.

Beverly S. Mitchell, MD

Director

David Rubenson

Associate Director of Administration and Strategic Planning

Michael Claeys

Senior Communications Manager

Contact

Stanford Cancer Institute

Lorry Lokey Building/SIM 1
265 Campus Drive, Suite G2103
Stanford, CA 94305
650.723.1680

scinewsletter@stanford.edu

cancer.stanford.edu

In Profile

Sheri Spunt

Sheri Spunt, MD, MBA, has the steady gaze and quiet confidence of someone used to getting things done. Maybe that is why Stanford has asked her to do so much.



Spunt is the Endowed Chair of Pediatric Cancer, an Associate Chair in the *Department of Pediatrics*, the Division Chief of *Pediatric Hematology/Oncology* and the co-director of the Bass Center for Childhood Cancer and Blood Diseases.

All those titles mean that she is a doctor treating children who have cancer, a researcher, an administrator of a growing pediatric hematology/oncology program, and a leader and mentor of other physician-scientists pursuing the puzzle of childhood cancers.

"I wear a few different hats," she says with a smile. Family photos on her desk highlight that she is also a single mother of two.

CULTIVATING PASSION

Joining Stanford in 2013 was a return for Spunt, who did her undergraduate studies here. She earned her medical degree at the University of Michigan, then completed a residency at UCLA and a pediatric hematology/oncology fellowship at Johns Hopkins University before spending fifteen years on the faculty of St. Jude Children's Research Hospital in Memphis. While her career flourished elsewhere, she always regarded Stanford as a special place.

"Stanford is an amazing University, with a real sense of innovation," she said. "There are a lot of talented people working across different disciplines to find new solutions for cancer patients."

As chief of the Pediatric Hematology/Oncology division, she is responsible for its direction and growth, while also helping

facilitate the work of approximately two dozen faculty members and the young researchers who keep their laboratories humming.

"I see my job as helping to find the passion in each individual, and helping them translate their passion into research to improve outcomes for cancer patients," said Spunt.

Another part of her job is developing the necessary institutional infrastructure to support clinical research, including trials of new cancer treatment paradigms. She is a classic physician-scientist, dedicated to providing patients with the best current standard of care while always working to improve treatment approaches and outcomes.

This relentless pursuit led to one of Spunt's most important research accomplishments: creation of a novel system of classifying patients with a broad range of childhood cancers called soft tissue sarcomas.

There are dozens of types of soft tissue sarcomas, but one, rhabdomyosarcoma, is by far the most prevalent, and therefore has been extensively studied. The remaining cases are divided among some 30 other varieties—often called the "non-rhabdos." Each individual type is rare, but when combined they represent about 4 percent of all childhood cancers—a significant number of lives.

"The thing that drove me was the realization that after 40 years of treating kids with non-rhabdos, we still had no recognized standard of care," said Spunt. "How could that be?"

So she did a rigorous analysis of all the literature and her own institution's experience with non-rhabdos, which led her to identify several features that predict how well children responded to treatment. She then created a classification system based on the patient's risk level, which when

applied to previous cases proved startlingly predictive. Patients classified as low-risk had a cure rate over 90 percent, while only 15 percent of high-risk patients survived.

To validate her findings, Spunt needed a prospective study, so she designed a clinical trial that used patients' risk profiles to modulate treatment, reducing the amount of harmful radiation given to children at low risk. Reducing the radiation dose lessens the risk of many harmful side effects, including developing second cancers later in life.

Over five years the trial enrolled some 550 patients in several countries (it is the largest single study ever conducted on childhood non-rhabdos). The results show that patients in all risk categories fared as well, or better, with lower doses of radiation than earlier patients with similar cancers. Some low-risk patients were able to recover without any radiation.

Spunt and her collaborators also established a tissue bank with tumors donated by trial participants, a valuable resource for researchers around the world.

FROM THE MOUTHS OF BABES

Spunt chose medicine early in life, announcing her intentions at age four. "I was certain I was going to be a doctor," she said. "When I was 11, I started saving my baby-sitting money to buy Gray's Anatomy."

Spunt's mother offered some practical parental advice: opt for the far less expensive soft-cover copy of the classic medical tome. "But I said no, 'because I am going to need this for my entire career,'" said Spunt.

Recounting the tale, she went to her bookshelf and produced a heavy green volume: the 1972 edition of Gray's Anatomy, in hardcover.

"I have always been a person with a plan," she said. ■

IMMUNOTHERAPY, *continued from page 1*

Mackall is at the forefront of research in this exciting area.”

Among Mackall’s notable scientific achievements are fundamental discoveries regarding human T-cell homeostasis, conducting the first studies in humans of recombinant interleukin-7, and her group was one of the first to demonstrate the stunning success of CD19-Chimeric Antigen Receptor modified T-cells for the treatment of pediatric acute lymphoblastic leukemia. She also holds patents or has patents pending for nine advances in cancer immune therapy.

“We have entered the golden age of immunotherapy for cancer,” Mackall said. “I think Stanford’s depth of scientific excellence and innovation will play a fundamental role in advancing this field. I’m excited to have the chance to develop a vibrant translational research program focused on cellular therapy for cancer, building upon all of the university’s existing strengths.”

After earning an MD from the Northeastern Ohio Universities Colleges of Medicine and Pharmacy and completing a residency in pediatrics and internal medicine at Children’s Hospital Medical Center of Akron/Akron General Medical Center, she moved to NCI for a fellowship in pediatric hematology/oncology. She advanced through the ranks of NCI investigators, earning the title of tenured principal investigator in 2003. She became chief of the pediatric oncology branch in 2008.

Mackall’s recruitment is in line with Stanford’s strategic decision to invest in research that will move laboratory discoveries to patients with complex diseases, including cancer and several genetic diseases. Mackall joins experts in genetic diseases, tissue-specific diseases and complex diseases that can also benefit from stem cell, gene therapy and immunotherapy techniques. To help the team put their techniques to use, in early 2016 Stanford will open a Good

Manufacturing Practice facility, certified for production of clinical-grade stem cells and related reagents to use in clinical trials of the new techniques.

GO GET ‘EM!

The human body is a highly desirable environment for all manner of microorganisms—viruses, bacteria, fungi—to complete their life cycles, replicating and multiplying, and sometimes making us sick in the process. It’s the job of the immune system to find and expel these invaders before they harm us.

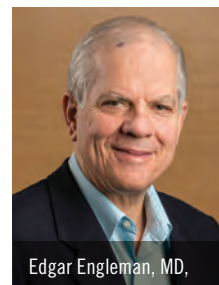
“Dendritic cells are unique in their ability to sense when evil lurks and then sound the alarm.”

— Edgar Engleman, MD,

One early line of defense is white blood cells called lymphocytes, which come in two main varieties: B-cells and T-cells. B-cells are the lookouts, tuned to respond to specific cell surface proteins, called antigens, which are the chemical fingerprints of the organisms. B-cells patrol the bloodstream, and when they recognize a trespasser, they churn out millions of antibodies that seek out the intruder and paint a target on it.

B-cells can’t penetrate cell walls, however, so they’re ineffectual against viruses that lurk inside the body’s cells. That’s where T-cells come in. Often called “killer T-cells,” these immune cells are lethal, but they don’t act independently, they rely on instructions from a third type of white blood cell, called dendritic cells, named for their treelike branching appendages.

“Dendritic cells are unique in their ability to sense when evil lurks and then sound the alarm,” explains SCI member **Edgar Engleman, MD**, a co-leader of the SCI’s Immunology and Immunotherapy of Cancer Program. “Basically they present pieces of those agents, whether they be viruses or bacteria—or tumors—to the other parts of



Edgar Engleman, MD,



Ronald Levy, MD

the immune system and essentially say, ‘Go get ‘em!’”

Through his study of dendritic cells in cancer, Engleman discovered that in the environment of a tumor, immune cells can be coaxed into helping cancer cells rather than hurting them. While this discovery was discouraging—cancer is even more clever than we thought—Engleman was among the first to demonstrate that the immune-compromised state was reversible. He removed dendritic cells from a patient, manipulated them in the lab to equip them with tumor antigens, and then injected them back into the patient in the hope that they would activate the T-cells to attack the malignant tissue. The results were promising, but not curative.

Engleman then gave the dendritic cells a boost, in the form of substances known to stimulate them, as an adjunct to the antibodies. The result was astounding.

“When we gave the two things at the same time: Boom! We got an explosive antitumor immune response that cured the tumors in the mice. Reproducibly, over and over again,” said Engleman

Not only did the combination injection kill the primary tumor, but it wiped out distant metastases as well. That is significant because in most cancers it is the metastases that are deadly, rather than the primary tumor. Moreover, there was no autoimmune reaction, no toxicity and no collateral damage whatsoever. The results were published in the prestigious journal *Nature*, and Engleman’s work continues.

LONG AND WINDING ROAD

The notion of immunotherapy has been around for more than 125 years. In 1891, a clinician-scientist named William B. Coley,



Irving Weissman, MD



John Sunwoo, MD

regarded as the father of immunotherapy, published findings in the journal *Annals of Surgery* that bacterial toxins could be used to stimulate the immune system to shrink tumors.

But while the idea is simple, the execution for Coley and many who have followed has proven devilishly inconsistent, and the field has endured ups and downs over the intervening decades. For example, efforts to super-charge the immune system against cancer can lead to unwanted attacks on healthy tissues. Over-active immune systems that target one's own body cause a host of crippling conditions, from Multiple Sclerosis to Rheumatoid arthritis to graft vs host disease related to transplantation.

"When you look at medical progress, most of the time it entails a long and checkered history, with a pattern of early excitement, then failure, then the process gets re-imagined," said Mackall. "It is really more like the process for invention, because most inventions are not a one insight; they take iteration and translation."

There have been some successes, first in cancers occurring in blood cells, and more recently in lung, bladder and skin cancers. SCI members have made, and are continuing to make, major contributions to this fast-moving field.

Ronald Levy, MD, the co-director of SCI's Lymphoma and Leukemia Research Program is a pioneer in developing immune therapies based on patient-specific antibodies that target lymphoma cells. He famously developed the first monoclonal antibody therapy approved by the Food & Drug Administration for the treatment of cancer, a groundbreaking drug called Rituxan. Among other current projects, his lab is developing a vaccine approach

for the treatment of lymphoma, which is customized for each patient based on the unique characteristics of their tumor.

HIDE AND SEEK

Cancer can also be frustratingly covert, often hiding in plain sight from the immune system's defenses. Stanford researchers are among the leaders in creating strategies for unmasking clandestine cancer cells.

More than a decade ago, leukemia research led by SCI Senior Scientific Advisor **Irving Weissman, MD**, established a link between cancer cells and high levels of a protein called CD47. Weissman recognized that this protein acts as a disguise, hiding malignant cells from roving B-cells, and allowing tumors to grow unabated. Continued study led to development of a CD47-blocking antibody that cured some cases of leukemia by exposing the cancer cells and stimulating an immune response.

An early stage clinical trial is now underway to access the safety and efficacy of the CD47 antibody treatment for a variety of cancers.

The Weissman lab went on to show that most cancer cells have higher levels of CD47 than healthy cells, suggesting that the anti-CD47 antibody may be effective against a variety of cancers.

"What we've shown is that CD47 isn't just important on leukemias and lymphomas," Weissman said. "It's on every single human primary tumor that we tested."

An early stage clinical trial is now underway to access the safety and efficacy of the CD47 antibody treatment for a variety of cancers.

Head and neck surgeon **John Sunwoo, MD**, another SCI physician-scientist, has been investigating how certain stem cells in head and neck cancers manage to evade the body's immune system. Although it's been known

that a type of head and neck cancer cells — called CD44+ cells — are particularly resilient to treatment, it's not been known why.

Sunwoo recently published a study showing that a protein called PD-L1 is expressed at higher levels on the surface membrane of CD44+ cells than on other cancer cells. PD-L1 is believed to play a role in suppressing the immune system during pregnancy and in diseases like hepatitis, and may do the same in cancer.

"We believe that our work provides very important insight into how cancer stem cells, in general, contribute to tumor cell dormancy,"

— John Sunwoo, MD

"We believe that our work provides very important insight into how cancer stem cells, in general, contribute to tumor cell dormancy," said Sunwoo. His finding seem to provide one explanation for how a patient can appear cancer-free, only to have the disease recur years later.

Sunwoo and his colleagues also showed that PD-L1 expression on the CD44+ cells initiates a series of signaling events within the cells that could reveal valuable targets when designing future therapies.

These are but a few of the many exciting immune system related projects being conducted by SCI members. Our current cancer treatments are saving more lives than ever before, but if we can continue to find ways to increase the body's own response to cancer—and reduce our use of necessarily harmful chemical and radiation treatments—then future cancer patients will benefit from a better treatment experience as well as better outcomes.

Stay tuned to *SCI News* for updates on the progress of the exceptional investigators in our Immunology and Immunotherapy of Cancer Program. ■



In Conversation

John Tarlton

Silicon Valley businessman John Tarlton has deep roots at Stanford. His parents met here as students in the 1950's. As a child, he sold popcorn at Cardinal football games. Later his sister and mother received life-prolonging care through the Stanford Cancer Center Palo Alto.

Now Tarlton is tapping his life's passions to give back to the Stanford cancer community. As CEO of Tarlton Properties, the developer of Menlo Business Park and other life science properties in the area, he supports the incubation and commercialization of new medical advances, including those discovered and developed at Stanford.

Tarlton also uses his extraordinary athletic ability to raise awareness and resources for cancer research and treatment. In 2014, he completed the annual Race Across America (RAAM)—a 12-day, 3,000-mile bicycle race from California to Maryland—and used the high-profile feat to raise money for SCI. In September 2015, he completed the Ironman Lake Tahoe triathlon—a 2.4-mile swim, 112-mile cycle and 26.2-mile run performed continuously in a single day—as his personal challenge and platform to raise additional funds.

SCI News asked Tarlton to discuss his unique athletic accomplishments and his motivation for supporting cancer research and care at Stanford.

How did you feel crossing the RAAM finish line?

To be honest, after so many years of training and preparation, it was a little anti-climatic (laughs). It was like, "Well, now what?"

What shape were you in physically?

My left foot was killing me. The small toes had developed what we call "hot foot,"

or super-tender nerves, so every time anything touched the outside of my foot, it was like an electric jolt up my leg. And I had some temporary nerve damage in my left hand, which limited mobility and made it hard for me to change gears. But other than that I felt pretty good. I felt like, "Ok, let's ride home."

And honestly, I would have preferred to cycle rather than the plane ride home; it was miserable. There was no position in the airplane seat that was remotely comfortable for me.

"I believe that Stanford's cancer care prolonged my sister's and mother's lives significantly."

— John Tarlton

But of course none of that overshadowed the joy of the finish line. I achieved my goal and my family was there, including my son Jack, who crewed the entire race. He was ecstatic because he had been putting in 18-hour days for the entire 12-day race.

Tell us about your days. How much did you sleep?

I slept about three hours and was on the bike roughly 20 hours a day.

How do you keep your mind occupied for 20 hours a day?

Audio books. I am a big fan of Harry Potter.

Wait, you're a sophisticated businessman and elite athlete, and you like Harry Potter?

Well, think about it, they are fantasy books, which means that while I am physically on my bike, my mind is in my pain cave watching an entertaining movie.

Pain cave?

It's a mental technique. Most people can endure pain for a short period of time, or a finite period that they know is going to end. But when it is 20 hours a day for almost 12 straight days, you have to get yourself into a mindset where you can almost "enjoy" the pain, or else it can crush you mentally.

I've got a great pain cave. There is a nice recliner, a full refrigerator within arm's reach, and a big-screen TV with a great sound system.

Was the race more difficult physically or mentally?

The two are so intertwined that I honestly can't separate them. I don't know medically how to answer that question, but for me, the physical pain and the mental endurance are one in the same.

Did you do anything to celebrate when you finished?

I had a lot of really good ice cream. We finished in Annapolis, Maryland, and there are great boutique ice cream shops there, and I tried, well, a few (laughs).

You finished just a couple of hours ahead of the 12-day race deadline. How stressful was that?

We were a very data-centric team, monitoring my heart rate, wattage, cadence, average speed and other metrics in real time throughout the race. We stayed very controlled up until Pennsylvania, where I started going much faster, in part because I knew I was going to finish, and also because we didn't have a lot of extra time. In racing, we call it "dropping the hammer."

You rode most of the way across the country and then sped up?

Exactly, and we could do it, in part, because our race plan was very



John Tarlton celebrating completion of the 3,000-mile Race Across America bicycle race, June 2014.

conservative. We had a first-time rider and crew, which is rare. I think we are the only entirely rookie team to have ever finished RAAM. We planned a careful strategy to try to ensure finishing.

A lot of endurance racing is aimed at keeping your heart rate down, in what's called the aerobic zone, because if you get your heart rate up into your anaerobic zone you can quickly burn yourself out. Throughout the race, I was consistently keeping my heart rate around 120 beats per minute. My resting heart rate is the low- to mid-50's (beats per minute) and my high is 210, so 120 is right in my aerobic zone.

And, by the way, this is exactly what doctors and trainers tell recreational cyclists to do—stay in the aerobic zone by keeping the cadence up and the resistance down. Almost all cyclists ride in too high a gear and they spike into the anaerobic

zone, get tired and then coast. They should do what I did for 3,000 miles: stay in the aerobic zone at a high cadence. It's better for your muscles, joints and overall endurance.

Why did you choose to benefit the Stanford Cancer Institute?

SCI is at the forefront of the cancer treatment effort, from cutting-edge primary research to new ways of focusing on the patient during recovery. My professional life revolves around buildings for life science research and commercialization. The partnership between Tarlton Properties and SCI seems a natural fit.

Also, my family has strong ties to Stanford. My parents met in the Stanford Choir in 1954, and my father is a past president of Stanford Associates. My wife, Jenny Dearborn, graduated from the Stanford Teacher Education program; her father

attended Stanford and her grandfather was a professor there.

Finally, my family has been deeply affected by cancer. Stanford doctors were central to the care of my mother and sister, as well as my RAAM crew chief's wife, during their battles with cancer. My family and I believe that Stanford's cancer care prolonged my sister's and mother's lives significantly, and for that I am eternally grateful.

What do you have in mind for your next challenge?

Next year I want to do an Ultraman, in which each stage is twice the distance of the Ironman. It's considered one of the most difficult sporting events in the world.

To learn more about John and Team Tarlton, visit www.teamtarlton.com, and follow them on *Facebook* and *Twitter*. ■



State-of-the-Art Treatment Center Opens in San Jose

Stanford Cancer Care Extends to the South Bay

On June 26 Stanford Health Care and the Stanford Cancer Institute opened the doors to comprehensive clinical care and research for cancer patients living in the fast-growing southern Bay Area.

The Stanford Cancer Center South Bay delivers Stanford's brand of individualized and coordinated cancer care through a conveniently located, leading-edge facility built to meet the needs of patients and family members. Located at the intersection of highways 17 and 85 in San Jose, the four-story, 70,000-square-foot center provides multi-disciplinary treatment through streamlined, patient-friendly processes in a warm, welcoming environment.

"This new center represents our commitment to improving patient care," said SCI Director Beverly Mitchell, MD. "It seamlessly blends state-of-the-art technology with patient-focused design to create an environment of healing and support."

The careful design and construction process including recommendations from a patient and family advisory council in order to maximize the patient experience in Stanford

"Stanford Cancer Center South Bay represents the intersection of leading-edge technology and science with personalized, precise and compassionate care."

— Lloyd Minor, MD, Dean,
Stanford School of Medicine

Health Care's first off-campus outpatient clinic for the diagnosis and treatment of cancer. Advanced information management, ergonomic details and an emphasis on personal attention all help patients move through their appointments with minimal wait, confusion or discomfort.

"This stunning new facility has been designed with a complete focus on delivering the absolute best in cancer care and compassion to patients and families," said Amir Dan Rubin, former president and CEO of Stanford Health Care.

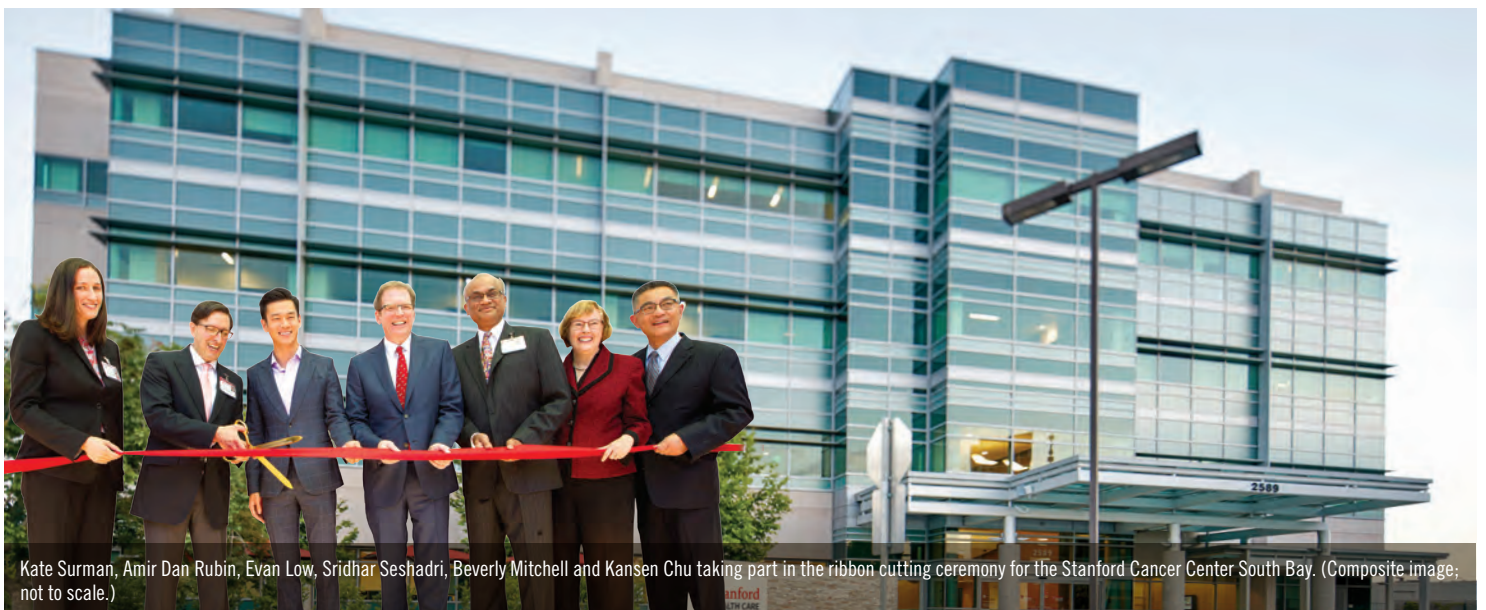
FUNCTIONAL DESIGN

Each of the center's four floors has been

thoughtfully organized by function, and patients are asked to check in only once, whether or not they have multiple appointments during their visit.

The first floor houses the expansive medical imaging services area, including CT, PET-CT, MRI, nuclear medicine and linear accelerators, as well as a suite of private consultation rooms. The main entry lobby and a comfortable café are also located on the ground floor. The second floor includes specialized radiology rooms, two operating rooms where same-day surgeries are performed, five pre- and post-anesthesia recovery bays, a pathology lab and a sterile processing unit.

The third floor is home to the Family Resource Center, which encompasses a variety of patient support services, including social workers, nutritionists and support groups. Twenty-one private exam rooms, three procedure rooms, five consultation rooms and the Health Library are all located nearby. The chemotherapy infusion center resides on the fourth floor, and features 22 infusion chairs, 15 private exam rooms—five of which serve as hybrid infusion bays—a clinical lab for blood



Kate Surman, Amir Dan Rubin, Evan Low, Sridhar Seshadri, Beverly Mitchell and Kansan Chu taking part in the ribbon cutting ceremony for the Stanford Cancer Center South Bay. (Composite image; not to scale.)

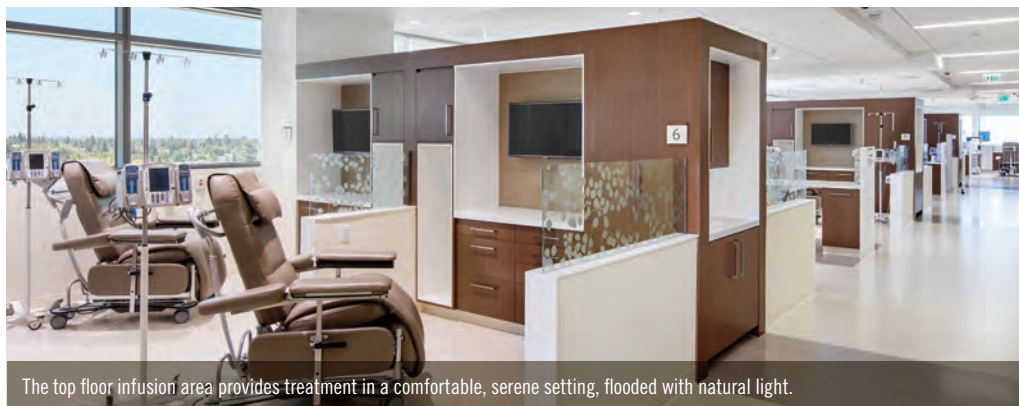
draws and other tests, and a pharmacy. The fourth floor is wrapped in windows offering natural light and beautiful, sweeping views of the surrounding foothills to provide the most tranquil possible environment for people undergoing their individualized cancer treatment.

“It’s rare to see such a commitment to provide a fully integrated care environment, one which merges advanced clinical care practices and technologies, supported by a design that dignifies the patient,” said Doug Olson, the senior project manager who facilitated planning, design and documentation for the facility. Olson, who’s been involved in health care design and construction for 25 years, says this project is the most sophisticated one he’s worked on in terms of its patient-centered integration.

“At Stanford Medicine, we are leading the biomedical revolution in precision health, and the new Stanford Cancer Center South Bay represents the intersection of leading-edge technology and science with personalized, precise and compassionate care,” said Lloyd Minor, MD, dean of the School of Medicine.



The modern design seamlessly blends warmth and efficiency.



The top floor infusion area provides treatment in a comfortable, serene setting, flooded with natural light.

LOCATION, LOCATION, LOCATION

The centralized location of the center gives patients in and around the South Bay easier access to ongoing SCI-administered clinical trials and skilled, multidisciplinary teams of doctors, nurses and technicians who provide care for complex cancer cases. The new center’s clinicians include many from the Stanford Cancer Center Palo Alto, and all of those from Southbay Oncology Hematology Partners, a local cancer clinic from which physicians and staff were hired.

“Stanford has wanted to take its expertise beyond the main campus,” said Sridhar Seshadri, PhD, vice president of Stanford Health Care’s cancer and cardiovascular services. “We saw the Southbay Oncology Hematology group as a perfect marriage. Many of these physicians are Stanford trained, they’ve been in practice for many years and have a strong reputation. And we wanted to learn from them as we bring our practice to the community.”

PATIENT-FOCUSED HIRING PROCESS

One of the most unusual aspects of the center is the review process for hiring its employees, according to Kate Surman, the center’s administrative director. The center’s 215 employees, even those who won’t work directly with patients, were all interviewed by Stanford patient and family advisory council members as part of their hiring process. Stanford Health Care has 11 such councils, whose more than 100 volunteers partner with administrators, clinicians, nurses and staff to improve the quality and experience of care by sharing their perspective and insights.

“We are making patients and their needs our highest priority,” Surman said, “and we are shaping the culture at this new center so that everyone, even those who are not involved in direct patient care, understands the importance of, and is recognized for their role in, patient care.”

ADVANCING CLINICAL RESEARCH

In addition to extending comprehensive cancer care to residents of the South Bay, the new center also adds critical capacity to SCI’s clinical research efforts. Clinical trials are the indispensable mechanism to test new cancer therapies and protocols, and the participation of patient volunteers is always needed.

“Clinical trials are an important component to the treatment options provided by the SCI,” said Kellie Baumann, a clinical research coordinator with SCI’s Cancer Clinical Trials Office. “The Cancer Center South Bay allows us to widen our reach to the community, making clinical trials more accessible.”

The diversity of the South Bay region combined with Stanford’s advances in genetic analysis and population sciences promises to further advance our understanding of the variation of cancer prevalence, treatment strategies and outcomes amongst different ethnic groups.

“We welcome the opportunity to extend our cancer care to more Bay Area residents, including more in underserved communities, and to enhance our growing clinical research programs,” said Mitchell. ■

Cancer Initiative Update

Transforming the Cancer Patient Experience Through Science and Compassion

In 2013, the SCI and Stanford Healthcare launched an ambitious project to transform the experience of every cancer patient treated by Stanford. Called the **Stanford Cancer Initiative**, this multifaceted program is benefitting today's cancer patients and families, while simultaneously studying our current performance in order to improve the treatment and outcomes of future patients.

Each edition of *SCI News* updates the progress of the Initiative so that Stanford community members can see our commitment to providing the most efficient and effective cancer care anywhere. One of the signature features of the Initiative is the development and deployment of Multidisciplinary Care Coordinators (MCCs), specially trained oncology nurses who serve to provide critical information to the patient in the first 30-days of care at Stanford and actively advocate for the cancer patients during the decision making process.

With the support of generous and visionary philanthropy, the MCC program has made tremendous strides. In January 2015, the Gynecologic Oncology department fielded four MCCs to help manage its growing caseload. Recent faculty recruitments and the expansion of a new Stanford Cancer Center South Bay (see story on Page 8) led to a 13 percent increase in new patients last year. To further illustrate the importance of MCCs and this new model of patient care, in 2015 four MCCs supported over 4,000 patient visits—of those, 789 were for new patients. Each visit represents a touch-point for patients and our MCCs who help simplify what is often a very complex treatment regimen by offering coordinated, personalized care and support. To meet growing demand, another Gynecologic Oncology MCC and five Hematological Oncology MCCs are being added, bringing the total to 11.

As the patient transitions through different treatment modalities—surgery, radiation and chemotherapy—the Initiative will provide additional resources to reduce anxiety, alleviate pain and financial toxicity associated with months of cancer treatment. This approach will be threefold: 1) provide precision education—giving the patient the right information at a time when they are ready to receive it, 2) deploy navigators that serve as a constant contact throughout their treatment, and 3) proactively develop patient-reported outcomes to enhance our understanding of each patient's well being. This new program will be implemented in Breast, Head & Neck and Cutaneous Oncology in the next year.

This vision of multidisciplinary care, precision education, navigation and patient communication will truly transform the cancer care experience at Stanford. Patients and their families express appreciation for the support, noting how important it is to have a knowledgeable nurse by their side throughout their care, and how comforting it is to better understand their



SCI News is also proud to report that Stanford Hospital was recently recognized by *U.S. News and World Report* as the best hospital in California and was among only 15 hospitals in the nation earning Honor Roll status and receiving national top tier rankings in 13 of 16 medical specialties for 2015-16. The Honor Roll highlights 15 hospitals out of nearly 5,000 nationwide for their expertise.

treatment plan and what they can expect in the future. Exposure to this role has often been a deciding factor for patients about where to receive treatment.

While these early experiences are clearly impactful for patients, and seem to validate the cancer program concept, we are continuing to rigorously gather and review data on patient satisfaction and outcomes to determine the most effective ways to support cancer patients and their loved ones. We are committed to ongoing analysis, review and improvement of the cancer program, as well as the entire Stanford Cancer Initiative. ■



Photo by Norbert von der Groeben

BRCA Foundation Supports SCI Researchers \$2 Million Gift Fuels Targeted Cancer Projects

A multidisciplinary team of Stanford cancer researchers and information scientists has received a \$2 million philanthropic investment to pursue three interrelated studies of the connections between BRCA mutations and cancer. Individuals carrying inherited alterations to the BCRA genes have a higher risk of developing breast and ovarian cancer, as well as other types of cancer.

The support comes from the BRCA Foundation, a newly launched private venture of Evan and Cindy Goldberg, a local couple with BCRA mutations and other cancer experience within their extended families.

“Our mission at the BRCA Foundation is to accelerate research and foster collaboration in order to prevent and cure BRCA-related cancers,” said Goldberg, chairman of the BRCA Foundation. “This partnership with Stanford will support groundbreaking work on BRCA to help us end the threat to individuals and families.”

“I hope that we can have an impact by pioneering approaches that focus on the cancer type rather than the cancer site.”

— Evan Goldberg, chairman of the
BRCA Foundation

SCI members **Jim Ford, MD**, and **Allison Kurian, MD, MSc**, will conduct clinical, molecular and statistical analyses of approximately 100 familial breast and ovarian cancer cases. The complex analysis includes whole-genome sequencing, methylation assays, and RNA sequencing of tumors. The resulting data will provide treatment insights for the individual patients, and also establish a valuable research resource for future studies.

A second project, headed by **Arend Sidow, PhD**, will also sequence tumor DNA in the hope of finding internal or external triggers for BRCA-related cancers. Cancer is often caused by a combination of genetic and environmental factors. Professor of computer science, Serafim Batzoglou PhD, an expert in computational genomics, will lead the sequencing and data analysis for the team.

Maximilian Dean, MD, PhD, will lead a project to use a powerful technology that he helped develop, called CAPP-Seq, to identify tiny fragments of tumor DNA circulating in the bloodstream. The goal is to study BRCA cancer syndromes through simple blood tests, which could make cancer diagnosis and treatment less costly and less invasive for patients. The team aims to detect cancer earlier than possible with current techniques, to gather information about the tumor’s genetic makeup and to monitor treatment response over time.

Goldberg is applying lessons learned over 30 years in Silicon Valley technology companies, including his latest, *NetSuite*, which provides cloud-based business management software. He believes in eliminating information silos, and enabling ideas and data to flow seamlessly across organizations, encouraging greater cooperation and creativity among teams, regardless of their physical locations.

“To me, our business approach is somewhat analogous to how we should approach cancer,” said Goldberg. “I hope that we can have an impact by pioneering approaches that focus on the cancer type rather than the cancer site.”

The Stanford projects are aligned with other BRCA Foundation-supported work at Harvard University and University of California, San Francisco. Goldberg looks forward to expanding the BRCA Foundation’s efforts and influence in the cancer research arena.



Evan Goldberg

Photo courtesy of NetSuite.

“Cancer is, in part, a big data problem, and we have tremendous expertise at Stanford and throughout Silicon Valley,” he said. “It is exciting to help bring together experts to determine exactly what data we need and how to collect it.”

But of course the BRCA Foundation’s motivation is more than purely intellectual. “We have two daughters, and one of my hopes for this foundation is to eliminate the threat of these cancer-associated mutations in their lifetimes,” said Goldberg.

SCI’s leadership, members and staff all share in the urgency to identify, treat and prevent cancer. Targeted collaborations, like those with the BRCA Foundation, create opportunities to advance the understanding and treatment of all types of cancer.

“More than ever, the work of the Stanford Cancer Institute is propelled by contributions from our knowledgeable, motivated and incredibly generous community members, like the Goldbergs,” said SCI Director Beverly Mitchell, MD. “We are grateful for, and inspired by, their mission to eradicate BRCA-related cancers.”

Thank you for being part of our community of support, and please visit the How You Can Help page on SCI’s newly redesigned website: <http://med.stanford.edu/cancer/about/help.html> ■



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SCI Website Redesigned

The SCI website (cancer.stanford.edu) has undergone an extensive redesign, delivering a better user experience and a clean visual style.

The yearlong project was executed by designers and engineers of the Stanford Medicine Information & Technology Resources' Digital Experience team, and overseen by leaders and staff from SCI and Stanford Health Care (SHC). Together they created a seamless interface between the SCI site and the areas of the SHC site that contain cancer-related material. The result is substantively improved content that is easier to access.

To serve our many audiences, including

patients, scientists and physicians inside and outside of Stanford, the site contains information on SCI's research and training programs, resources available to members, a member directory, a calendar of events, the latest cancer-related news and more.

The improved Cancer Clinical Trials section enables visitors to search open cancer trials, request individual assistance and access information in Spanish, Chinese and Russian language text and video.

Please explore cancer.stanford.edu, and return often as new information and features are added. ■

