Teaming Up to Prevent Skin Cancer
Collaborative Program Educates Stanford Athletes About Sun Exposure Risks

Collegiate athletes are getting attention from coaches, fans and even opponents... but dermatologists? At Stanford they do.

Over the last year Stanford’s outdoor athletic teams have received skin screening exams, educational talks and detailed questionnaires from dermatologists representing SUNSPORT, a new program to help protect student-athletes from sun-related skin damage.

SUNSPORT (Stanford University Network for Sun Protection, Organization, Research and Teamwork) is a partnership among the Stanford Cancer Institute, the Dermatology and Athletics departments, and Stanford Hospital & Clinics to inform outdoor athletes about their risks and to improve their sun-safety behaviors.

Research shows that National Collegiate Athletic Association (NCAA) athletes playing outdoor sports spend an average of four hours per day, ten months per year training and competing outside, often during times of peak sun intensity. What’s more, perspiration increases skin sensitivity and the risk of sunburn and other sun-related skin damage.

Despite these facts—and that 96 percent of NCAA athletes say they believe that sunscreen helps prevent skin cancer—over 50 percent report never using sunscreen, and 75 percent of those who use it do so just three or fewer days per week.

“The data show that outdoor athletes are at serious risk, especially later in life,” said SCI Director Beverly Mitchell, MD. “SUNSPORT provides education and skin protection strategies to reduce lifetime incidence of skin cancer among Stanford’s athletes and community.”

Skin cancer is the most prevalent form of cancer, with over 3.5 million cases
This issue of the Stanford Cancer Institute News brings attention to the complexity surrounding early detection of cancer. For many years there has been a near universal belief that we should make every effort to find cancer early and treat it before it becomes dangerous. However a growing body of knowledge has shown us that the issue can be far more complicated.

To be sure, there are many types of cancer where early detection is essential. The lead story documents the case of a young man whose strange-looking mole was noticed early and a potentially deadly melanoma was removed before it had spread. Although there has been recent progress in treating advanced melanoma, it remains a lethal disease. Regular skin examinations are a life-saving activity with essentially no side effects.

The interview with James Brooks, MD, Professor of Urology, highlights the complexity for prostate cancer and other types of tumors. For many years the Prostate Specific Antigen (PSA) test has been used to provide early detection of prostate cancer. But as Dr. Brooks points out, the test is not definitive. Many prostate cancers may not be dangerous, and there can be serious side effects with the surgery or radiation treatment needed to remove small tumors. Nevertheless, the death rate from prostate cancer has declined since widespread use of the PSA tests. A similar conundrum also exists for some early breast cancers, where a tumor’s aggressiveness or lethality cannot be immediately determined. Recently, a National Cancer Institute-sponsored working group recommended that a type of non-invasive breast tumor, called ductal carcinoma in situ, no longer be called cancer.

We know cancer can be cured when detected early, but we don’t always know which cancers are dangerous or when it is worth risking the side effects associated with removing them. The challenge for the cancer research community is to use new imaging, genomic and molecular techniques to better characterize individual cancers so that physicians can treat with more precision.

The members of the Stanford Cancer Institute are dedicated to meeting that challenge, and to doing all we can to improve the lives of current and future cancer patients. Our SCI News stories, interviews and member profiles will continue to bring you updates of their research innovations and clinical advances, as well as insights into the motivations that drive their work.

Beverly S. Mitchell, MD
Director
In Profile
Kimberly Allison, MD
New Stanford Pathologist Is A Breast Cancer Expert, and Survivor

In 2008 Kimberly Allison, MD, was 33, a new mother for the second time, and the new director of the Breast Cancer Pathology program at the University of Washington Medical Center. Her life was hectic, but she was happy and, she thought, healthy. Then came the news that she had Stage 3 breast cancer.

“It was a complete shock, as I am sure it is for everyone who is diagnosed with cancer,” said Allison.

But unlike most people, Allison diagnosed breast cancer for a living, so she knew all too much about the nature of her cancer and her likely prognosis.

“The instant I was diagnosed I knew that it was aggressive; the kind young women die of,” she recalled.

The cancer had already spread to her lymph nodes, but there was a bit of good news. Allison’s breast cancer was the “HER2-positive” sub-type, making her a candidate for a potent HER2-targeting drug called Herceptin. When administered with chemotherapy, Herceptin increases survival rates of women with HER2-positive cancer by more than a third.

Her six-month chemotherapy regimen started with a powerful agent called Adriamycin, typically reserved for advanced cancers due to its harsh side-effect profile. Adriamycin is a bright red liquid given intravenously, and its combination of color and side effects has earned it the nickname “red devil” from cancer patients. Allison chose a different moniker.

“I wanted to embrace my therapy, so it helped me to think of it as my ‘red sunshine’ instead,” she said.

“Red Sunshine” is also the title of Allison’s 2011 book chronicling her cancer experience with candor and wit. (www.redsunshine.org)

After three months of Adriamycin, she endured another three months of a milder chemotherapy agent plus the Herceptin, which she would take for a year. Surgery followed the chemotherapy, and Allison—both as a patient and pathologist—was eager to see her tissue.

“I knew exactly what a good response to treatment would look like,” she said. Hers was as good as it gets: no evidence of cancer.

“We call that a complete pathologic response, and it changes your survival prognosis from about 40 percent to about 95 percent,” Allison said with a wide smile.

Major Milestones
In January of this year Allison joined Stanford as an associate professor of pathology and associate residency director. In March she celebrated her five-year post-treatment milestone, still cancer free.

“We are thrilled to have Kim as part of our breast cancer team,” said SCI Director, Beverly Mitchell, MD. “She is a talented pathologist, researcher and leader with incredible passion for her work.”

Allison is an anatomical pathologist, meaning that she does tissue-based diagnosis of cancer and other disorders. When tissue is biopsied or surgically removed, it is sent to a pathologist for examination. If cancer is confirmed, they then determine its type, grade (i.e., how advanced or aggressive it is) and whether it has metastasized.

Pathologists provide physicians with detailed reports of their test results and observations, which form the basis for treatment strategies. But despite being the gold standard for diagnosis, pathological findings are not always black and white.

“The oncologist wants to know whether or not to treat patient, but biology is messy, so there are gray zones when the answer is unclear,” said Allison. “I am interested in studying what to do when you get a borderline result.”

Her research interests include refining standards for breast cancer diagnostics, and improving management of specific diagnoses. She also studies the use of imaging to identify the best location within a tumor from which to sample, as well as methods to predict the optimal times to test women for cancer recurrence.

Allison joined Stanford at an exciting time. The pathology department is “sub-specializing” to enable each pathologist to focus more exclusively on their particular area of expertise. And the breast cancer program has been recently bolstered with the edition of renowned physician-researchers George Sledge, MD, as head of oncology, and Mark Pegram, MD, as head of breast cancer research. Pegram was involved with the development and early testing of Herceptin—the drug Allison credits with saving her life—and now the two collaborate on HER2-related research projects.

“Stanford has such strengths in its research, pathology and clinical faculty,” Allison said “I am excited to have the opportunity to contribute.”
diagnosed in the U.S. each year. And melanoma, the deadliest form of skin cancer, is the second most common cancer among those aged 15 to 29.

The incidence of all types of skin cancer, including melanoma, is on the rise, particularly among girls and young women aged 15 to 39. Some of this increase is thought to be due to the proliferation of indoor tanning bed use, and SUNSPORT has anecdotal reports of some female athletes using tanning beds to even out their sports-related tan lines.

The risk for male athletes is also underappreciated. A recent study led by SCI member Susan Swetter, MD, showed that while the incidence rate is higher among young white women, young men are 55 percent more likely to die of melanoma than their female counterparts.

“Our findings suggest there may be biological differences between men and women that contribute to the worse survival from melanoma observed in young men,” said Swetter, director of the Stanford Pigmented Lesion and Melanoma Program and a founder of SUNSPORT. “Our study further underscores the importance of SUNSPORT’s mission and message.”

**Killer Tan**
Stanford scholar-athlete Erik Olson was proud of his tan. Actually, not so much the tan itself, but what it represented. Olson is a distance specialist on the Stanford Track & Field team, and in the running fraternity a deep tan is a sign of one’s commitment to training. His tan was “earned” logging countless miles in the California sun.

“I ran without my shirt on pretty much every day for five or six years,” said Olson. “The sun beat on my back with no sunscreen, and it took its toll.”

In August of 2012 Olson was diagnosed with melanoma above his right shoulder blade. He was just 20 years old. Fortunately, his cancer was caught early and a relatively minor surgery removed the lesion. The surgeon also removed lymph nodes from under Olson’s arm to determine if the melanoma had spread. The laboratory analysis took a few days.

“It seemed like an eternity,” said Olson. The call came early in the morning, waking him up. “It’s a negative result,” said the doctor.

Olson paused, still hazy with sleep. “Negative is good, right?”

“Yes, negative is very good.”

**Teaching From Experience**
Fully recovered and cancer-free, Olson began his Junior year with some new habits. He maintained his busy schedule of studying human biology and running track, but he now wore sunscreen every day, always ran in a shirt and saw his dermatologist regularly.

“I feel kind of lucky, in the sense that I am more aware of what the sun can do,” said Olson. “Now I am trying to do as much as I can to prevent sun exposure.”

And not just for himself. Olson hopes that other young people will learn from his experience, so he joined the SUNSPORT team as a Student-Athlete Adviser, serving as a role model of proper skin protection and helping SUNSPORT create messages and activities that are appealing and relevant to his peers.

Joining Olson on the advisory board is his Track & Field teammate, and girlfriend, Jessica Tonn. A fellow distance runner, it was Tonn who spied the unusual looking mole on Olson’s back and urged him to get it checked.

“We had just finished a run and I noticed a strange-looking bump,” said Tonn. “Thankfully, Erik is fine, but it was a scary situation. Through SUNSPORT we hope to help prevent others from having similar, or worse, experiences.”

In addition to student-athletes, SUNSPORT is also recruiting student volunteers, local community leaders and Stanford alumni to help support and expand the program. Plans include increased use of social media and creating a presence at select Stanford
sporting events. SUNSPORT booths will provide free information, sunscreen and other items to fans and the general public.

“The popularity of Stanford Athletics creates a great opportunity to promote sun safety to the community,” said SUNSPORT dermatologist Swetter. “Outdoor athletes are at increased risk, but we all need to be sun smart.”

This year SUNSPORT piloted some outreach efforts with the Men’s and Women’s Golf teams. For example, free sunscreen and sun exposure information pamphlets were provided for players from the 17 teams participating in the 2013 U.S. Intercollegiate Golf Tournament hosted at Stanford.

“Golfers spend a great deal of time in the sun,” said Conrad Ray, The Knowles Family Director of Men’s Golf. “SUNSPORT helps develop good habits in golfers and sports fans of all ages, and is a valuable service in people’s overall health.”

Over the summer, SUNSPORT dermatologists gave presentations to children attending several Stanford youth golf camps as well as local swim team members to assess their sun exposure knowledge and practices, and to provide education. Developing good sun protection habits at an early age is another SUNSPORT goal, and more youth-related activities are planned for the coming year.

Gordon, Swetter and the other Stanford dermatologists shared their concept with members of the SCI leadership, who supported development of a program as part of the Institute’s overall cancer prevention effort. A series of joint meetings solidified program goals, methods and identity, and SUNSPORT was launched.

“Cancer prevention is integral to our mission, and skin cancer is the most preventable form of cancer,” said SCI Director Mitchell. “SUNSPORT takes a proactive approach to encouraging healthy skin protection habits.”

The next step was to approach the Athletic Department to enlist their cooperation, and to determine how best to integrate SUNSPORT’s educational and behavioral components without creating additional burdens on time-strapped coaches and players. The administrators welcomed the program and recommended working with the Athletic Training staff, whose members are responsible for athletes’ day-to-day health and safety.

Scott Anderson, Stanford’s Head Athletic Trainer, immediately embraced the program and recommended that Assistant Athletic Trainer Matt Harrelson join SUNSPORT’s leadership committee to provide critical input and coordination with the teams, coaches and other Athletic Trainers.

“We can provide the education, skin cancer screenings and treatment for student-athletes,” said dermatologist Gordon, “but it’s the coaches and Athletic Trainers who reinforce good sun protection habits every day.”

With their help, SUNSPORT is making a difference. More student-athletes are accessing dermatological care and more seem to be protecting their skin: this Spring, for the first time in memory, the Athletic Department ran out of sunscreen!

More information on SUNSPORT can be found at sunsport.stanford.edu or on Facebook at “Stanford Sunsport.”
What drives the people who deliver cancer medicine?

Voices of the Stanford Cancer Institute

The Stanford Cancer Institute’s mission is as simple to state as it is complex to execute: end cancer as we know it. To do so we harness the collective intellectual and technological resources of Stanford University, Stanford Hospital & Clinics, Lucille Packard Children’s Hospital and the Cancer Prevention Institute of California. The Institute supports and coordinates the work of nearly 400 faculty members—physicians and scientists from many different disciplines, each working to advance the understanding and treatment of cancer. This feature presents a few of the dedicated people who make up the Stanford Cancer Institute, and, in their own words, tells why they do the work they do.

Beverly Mitchell, MD
Director, Stanford Cancer Institute
George E. Becker Professor of Medicine

“The members of the Stanford Cancer Institute are as diverse as they are talented. We bring together clinicians, basic scientists, epidemiologists and other specialists to focus their abilities on all facets of cancer research and treatment. We may work on many different aspects of cancer, but we all share a passion for medicine and for improving the lives of patients.”

Manali Patel, MD
Postdoctoral Medical Fellow

“Receiving my acceptance letter to medical school was one of the happiest days of my life. I felt like I could take the insights that I had gained as a patient at a very young age and bring them to my own patients to improve their experiences. We know that cancer is a very difficult diagnosis, but it is a unique opportunity to be there as part of the family for many of my patients, and that really inspires me.”

Susan Swetter, MD
Professor, Dermatology

“I don’t think I could be an effective researcher without seeing patients regularly. My patients teach me the meaning of the disease, from how it impacts their daily lives to their long-term outcomes. So for me, the patient is part and parcel of the research. They are what give medicine its humanism, and research its meaning.”

Ravindra Majeti, MD, PhD
Professor, Hematology

“New scientific observations come from caring for patients, of course. But it is the interaction with families who have a loved one struggling with a potentially life-threatening disease that really motivates me to get back to the laboratory and try to make progress in my research, and also to break down hurdles—like red tape—that slow you down when you are trying to do difficult things.”

James D. Brooks, MD
Chief, Urologic Oncology
Keith and Jan Hurlbut Professor of Urology

“What is it that keeps me awake at night? Worrying about which patients need aggressive treatment and which ones don’t. That is what motivates us to do research so that we can prescribe the best treatment for our patients.”
Philip Pizzo, MD
Former Dean, School of Medicine
Professor of Pediatrics and Microbiology & Immunology

“I think what I found at Stanford, and indeed what attracted me to this institution, is that it is so entrepreneurial. It is willing to bring people together from different disciplines to look at problems that many would say are unsolvable, and instead say, “That’s why we need to work on them!” Here we take challenges like cancer and try to push the domains in unique and different ways.”

Kelly Bugos, MS, NP
Nurse Practitioner

“We practice a philosophy of promoting health and preventing illness at every encounter, even if the patient is very sick. That philosophy attracted me to the profession and through it I have learned much from the patients I’ve worked with over the years. I’ve learned lessons that cannot be bought, lessons about life, the meaning of family and what is most important.”

Holbrook Kohrt, MD, PhD
Assistant Professor, Oncology

“I think that one of the most challenging things for people with cancer is that the second they get that diagnosis they feel like they lose control over their life. Understanding that, acknowledging it with the patient and helping them understand how they can regain control is critical. Being a hemophilia patient myself allows me the understanding to help bring that control back for my patients.”

Scarlett Lin Gomez, PhD, MPH
Research Scientist
Cancer Prevention Institute of California

“As a first generation Taiwanese immigrant, I saw first hand the challenges of navigating the healthcare system. And I have experienced how a cancer diagnosis impacts the whole family. These things motivated me to pursue research to help prevent people from getting cancer in the first place. Treatment is essential, but when we focus on prevention we can help a larger segment of the population.”

Mark Pegram, MD
Professor, Oncology
Susy Yuan-Huey Hung Professor of Medicine

“The patients are why we are here. All of the work we do—discovery research in the laboratory, translational work in the clinics, developing new therapeutic and diagnostic strategies—would all be interesting if I were simply a scientist and nothing else. But I am a clinician as well, working to change the standard of care, improve outcomes and survivorship for cancer patients. It’s that practical application that keeps me going, and that is what it’s all about.”

Christina Clarke, PhD, MPH
Research Scientist
Cancer Prevention Institute of California

“I am an epidemiologist studying cancer in populations in order to understand who gets cancer and why. Why do I study cancer? Because it is often a life-changing experience, and it is wreaking emotional and economic devastation on individuals, families and societies. We need to figure out how to manage cancer in a way that is sustainable.”
In Conversation
James D. Brooks, MD

Prostate cancer is the second leading cause of cancer death among men. SCI member James D. Brooks, MD, has been caring for prostate cancer patients and conducting laboratory and clinical research at Stanford for more than 16 years.

Brooks, the Keith and Jan Hurlbut professor of urology, recently answered questions on the state of prostate cancer research and treatment, as well as some of the recent controversies about screening. Several widely publicized studies have questioned the effectiveness of the PSA test to screen for prostate cancer, and of surgery to treat it. Brooks stressed that the studies’ flaws were less well publicized, but highly relevant. He continues to see screening and surgery as having important roles, even while he and his colleagues pursue more effective tests and treatment strategies.

Q: What is the PSA test?
PSA stands for “prostate specific antigen,” referring to a protein made exclusively in the prostate. We measure the relative level of PSA as an indication that cancer might be present. To be clear, though, the PSA test is not a cancer test. Lots of different things can make PSA level go up, including infections, enlarging of the prostate—which happens as we age—and other things that have nothing to do with cancer.

Q: Then how is prostate cancer diagnosed?
Through a biopsy of the prostate tissue. When a man presents with a high PSA score we do an ultrasound scan to look at the prostate and to guide our needle biopsies. We try to sample the whole prostate by taking two biopsies from the top, middle and bottom, which we then analyze in the laboratory to determine diagnosis.

Q: Who should get a PSA test, and how often?
Recently released guidelines from the American Urological Association advise that for men at an average risk for prostate cancer, they should get a PSA test every other year beginning at age 55 and stop at age 69. If they haven’t developed prostate cancer by that point, it is very unlikely that they are going to die of prostate cancer.

If a man has a family history of prostate cancer, or is of African American descent, it is probably better to begin at age 40 or 45, and if their first score is very low he can wait up to five years to get another test.

Q: What is “PSA velocity”?
Most men in the U.S. have received multiple PSA tests, some getting them annually. If you plot a patient’s results on a graph, you can how fast the PSA score is rising over time.

Seventy-five percent of men get an enlarged prostate as they get older, so invariably their PSA is going to go up. One theory is that with prostate cancer the PSA goes up faster. However, a recent study showed that PSA velocity was not a predictor of cancer. What mattered was the absolute PSA number—how high it was, not how fast it got there—and if any lumps on the prostate were found during rectal exam.

Q: What has been the impact of the PSA test?
I think it is pretty clear that screening has made a difference in survival rates. Prostate cancer death rates were slowly rising for many years. Then in the late 1980’s we started screening with the PSA test. Deaths from prostate cancer peaked in 1994, and they are now 40 percent lower than they were at that peak. Two things changed since 1994: aggressive screening and aggressive treatment of prostate cancer.

All of this screening has in a sense changed prostate cancer. It used to be that men presented with more advanced prostate cancer. For example, in 1990, one in five men who walked into my office had prostate cancer that had already spread outside the prostate. Now only one in 25 men has metastatic disease.

Q: So what is the debate over screening?
Prostate cancer is an unusual cancer in that it is typically slow growing. There are many men who have the disease, but will never die of it. The question is how often does screening and treatment save lives versus how often are we finding cancers that are not life threatening, yet men are still getting treatments with the potential of serious physical, emotional and financial side effects?

When we started screening with PSA we found the big, bad cancers. As we have screened more men more often we now find smaller, earlier stage cancers. Finding cancer and treating it earlier would seem to be a good thing, but the problem is that there are a lot of men with a small prostate cancer lesion that they will die with rather than from. So we are increasingly finding small, indolent cancers and yet men suddenly have a diagnosis of prostate cancer that we are not sure is life threatening. Given that situation, most men opt for treatment.

It would be a non-issue if the treatments had no side effects, but the treatments we currently have—surgery and radiation therapy—can have real, life-changing consequences. Unlike cancer in some other sites, tumors are not surgically extracted from the prostate. Instead, the entire prostate is removed, leading to short- and long-term side effects in patients.

Q: What are the most common side effects?
The prostate is located under the bladder,
with the urethra running through the middle of it. Also, the nerves responsible for sexual function run along side the prostate. So the side effects of treatment include bladder and urinary dysfunction and problems with sexual function.

Q: Do surgery and radiation cause different side effects?
With surgery, most men will experience urinary leakage and regain control in approximately a year. About 5 to 10 percent will require an absorbent pad for the rest of their lives. With radiation therapy, leakage is fairly rare, but radiation makes the bladder overactive causing problems of frequent and urgent urination.

In terms of sexual function, most studies show the same rate of problems with both surgery and radiation, but a few studies show more problems with surgery. I review all those data with the patients and they have to think about their life priorities and their relationships, and what would be most acceptable for them.

The side effects of surgery also vary with age. Ten to 20 percent of men in their 40’s loose sexual function, while at least 60 percent of men in their 70’s loose function after surgery. The same is true with urinary leakage following surgery; older men experience more leakage.

Q: How do you talk to patients about their treatment options?
I always have a very frank discussion with them about the survival rates, side effects and potential complications. I also go through the whole process in detail including what they can expect in the first week after treatment, in the first few months, first two years and so on.

Since I am a surgeon, I will recommend that patients then go have the exact same conversation with a radiation oncologist to hear a slightly different perspective. This is in recognition that we all have our biases. When asked what treatment option they would chose for themselves, 90 percent of surgeons chose surgery and 90 percent of radiation oncologists chose radiation.

Q: Is there a difference in survival rates between surgery and radiation?
Several studies have looked back in time and compared medical records of men with similar PSAs, Gleason scores and exam findings and compare those that had surgery against those that had radiation to see who is still alive and what their side effects are. Those studies turn out to be somewhat mixed, and all imperfect. Some say that by ten years survival rates are identical. Others show a slightly better survival rate with surgery than with radiation, but those studies are flawed because the urologists who diagnose the patients might have sent the slightly worse patients to the radiation therapists, thereby skewing the outcomes.

Q: What is a Gleason score?
The Gleason score is a pathology test that can tell us about the cancer’s aggressiveness, but it’s not a definitive test. That is because the needle-stick biopsy we use typically measures only about 1/1000 of the prostate. Tumors are not homogeneous, and by taking such a small sample, we can miss the aggressive tissues residing elsewhere in the tumor. Studies have compared the biopsy with the surgically removed tumor, and found that in about 40 percent of the cases the cancer was actually worse than the Gleason score based on the biopsy indicated. So Gleason is just one more piece of data we look at.

Q: What about the new “genomic” test to assess a tumor’s aggressiveness?
Cancer is a genetic disease and we are beginning to identify some of the specific genes associated with more aggressive cancers. A company called Genomic Health has analyzed gene expression data in cancers from many studies and come up with a short list of genes that are involved in aggressive cancers. In fact, the roles of some of these genes were discovered in our work at Stanford. A recent study showed that the test could predict which men had worse cancers.

Q: How might this test impact patient care?
These genetic tests could help identify men who harbor more aggressive cancers so that they can be treated. Perhaps more importantly, they might offer reassurance to men with non-life-threatening tumors that they can forego immediate treatment in favor of close observation—what we call “active surveillance.” This way men can avoid the side-effects of treatment, and the genetic tests may help alleviate some uncertainty as to whether the cancer could be more aggressive than it appears.

Q: Are there other hopes for reducing the side effects of treatment?
There is a lot of current research, including here at Stanford, to try and come up new ways to image tumors within the prostate. That would be a game-changer, because if I can accurately see the tumors then I would only need to do one biopsy to diagnose, which means less discomfort and fewer side effects for patients, as well as cost savings.

Also, if I could accurately see the size of tumors I would feel much more confident doing active surveillance on little ones. What’s more, if I can see them I can do targeted treatment with focused radiation, freezing or high-intensity ultrasound—techniques that would not affect the bladder or the nerves involved with sexual function.

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SCI Head of Population Sciences Leads Worldwide Effort
Hunting Genetic and Environmental Clues to Colon Cancer

In early June, SCI member Robert Haile, Dr.P.H., hosted an international group of researchers representing the leadership of the Colon Cancer Family Registry (Colon CFR) for a two-day conference in San Francisco. The Colon CFR is a shared database and research infrastructure for investigators interested in studying the causes, risk factors and potential treatments of colon cancer. Haile helped create the Colon CFR 15 years ago, and has co-directed it since.

“The Colon CFR now represents the largest single resource in the world for studies of colorectal cancer.”
— Robert Haile, Dr.P.H.

The conference assembled over 40 scientists from Colon CFR centers in the U.S., Canada, Australia and New Zealand to share recent findings, discuss ongoing studies and plan new projects. The highly collaborative group also heard presentations from outside researchers, including several from Stanford, who had data or technologies that may be applicable to future colon cancer studies.

The Colon CFR has assembled a database of information on risk factors, screening practices, clinical outcomes and biological samples (blood and tissue) contributed by more than 11,000 families, the largest group of colon cancer families ever involved in research. The samples are housed in the individual centers and all the records are shared electronically among the centers and with researchers throughout the world through a centralized data center. Its sheer size allows for more detailed studies into the effects of environmental exposures and lifestyle differences than is possible with smaller study cohorts.

They also search for genetic factors that may play major or minor roles in vulnerability to colorectal cancer. The Registry contains samples from participants without cancer including so-called “relative controls” (blood relatives of colon cancer patients who have not had cancer) and from unrelated controls. These individuals allow comparison of genetic, environmental and behavioral factors between those with and without cancer.

A central goal of the Colon CFR is the translation of this research into better treatment and prevention strategies for the benefit of Registry participants and the general public. The effort has earned strong support from the National Cancer Institute, which recently awarded a $13 million grant to Haile and his colleagues to maintain the Registry and related research projects.

“The next five years will be an exciting period for the Colon CFR as we integrate data on genetic, environmental and lifestyle factors that cause colorectal cancer,” said Haile. “We plan prevention trials in high-risk families, as well as studies to detect colorectal cancer early when it is more easily cured. And for the first time in the Registry’s 15-year history, Stanford faculty will be involved in many of these studies.”

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Q: Is Stanford conducting any clinical trials for prostate cancer?
Yes, we are conducting studies to try to cover all phases of the disease, from early to late stage, and we are trying to couple many of them to markers in the blood that help us predict whether or not treatments are going to work. That would be a real step forward. (For more information on clinical trials at Stanford visit: cancer.stanford.edu/trials)

Q: What is known about diet and prostate cancer?
It seems that whatever is good for your heart is good for your prostate, so eat less red meat and more green vegetables. Fish and omega 3 fatty acids are probably helpful, as are soy-based products. We have done research showing that cruciferous vegetables, like broccoli, cauliflower, bok choy and brussels spouts, contain a compound called sulforaphane that activates a set of enzymes to neutralize carcinogens.

It is important to realize, though, that the effect of diet is small and it does not apply equally to all people due to our different genetic makeups. Bottom line: eating a good diet—and getting regular exercise—will probably reduce your risk of prostate cancer, and they will absolutely reduce your risk of heart disease, the number one killer of men and women.
Cancer Discovery Fund

Partners in Medicine, Investing in Innovation

On April 23, “Partners in Medicine,” Stanford Medicine’s new leadership society, hosted a reception at the historic Bently Reserve conference center in San Francisco. The program focused on advancing innovation and collaborative medical research. Beverly Mitchell, MD, director of the Stanford Cancer Institute (SCI) and the George E. Becker Professor of Medicine, welcomed guests and thanked them for empowering Stanford to transform the patient experience through innovation.

Saying we have reached “an amazing point in time” in cancer research, Mitchell highlighted new approaches to prevention and diagnosis. The genomic revolution has opened up new ways to assess risk, she explained. She described how physician-researchers are using molecular diagnostics to identify cancers “at the molecular level, before they are deadly.”

Mitchell credited the Cancer Discovery Fund (CDF) and its seed grant program with empowering SCI to fund researchers with promising ideas that are not sufficiently developed to get outside support.

Mitchell introduced the evening’s keynote speaker—and past CDF seed grant recipient—Joel Neal, MD, PhD, assistant professor of medicine. Noting that Neal is a co-principal investigator on multiple clinical trials involving lung cancer. Mitchell described him as “an incredible asset to the institution.”

Even with decreases in smoking, Neal reported, lung cancer continues to be the second most frequently diagnosed cancer among both men and women and the most deadly, accounting for more than 25 percent of annual cancer deaths among women and more than 30 percent among men.

Neal noted the importance of maintaining critical information on the entire patient population at Stanford—a goal now being pursued through SCI’s recently launched Stanford Cancer Database.

“In the past, we were losing information on patients we treated but who didn’t participate in clinical trials,” Neal explained. Now Stanford can “capture and analyze treatments and outcomes” among the entire patient population.

Neal set the stage by describing a traditional clinical approach to lung cancer: one diagnosis, one treatment (chemotherapy).

The Cancer Discovery Fund provides uniquely flexible resources to support Cancer Institute members.

“Chemotherapy has improved,” he acknowledged, “with more kinds that are less toxic. And outcomes are improving.”

But the range of outcomes is still large enough to make it difficult to give patients a clear prognosis. In contrast, Neal described the promise of genotype-directed therapy, which is “working to improve outcomes even more dramatically.” In this approach, physicians identify the genetic subtypes, or specific mutations driving the cancer cell.

“Many have become more targetable and therefore more treatable,” he said. Most importantly, progress is tangible. “About every year we find a new subtype along with therapies that might work against them.”

Neal concluded by describing a revolutionary collaboration with Stanford data scientist Atul Butte, MD, PhD, chief of systems medicine and associate professor of genetics. Butte’s team “mines” biomedical databases to identify drugs that halt the development of specific disease tissue. The Butte lab discovered a negative correlation between a particularly aggressive form of lung cancer and tricyclic antidepressant drugs (TCAs). Although TCAs are no longer commonly prescribed for treating depression, the data suggested they might inhibit some lung tumors. On the basis of these promising insights, Neal created a small clinical trial to test repurposing these nearly forgotten drugs.

The trial is in progress, but Neal stressed the impact of the bioinformatics process itself. Exploring the influence of drugs with known safety profiles both speeds up the drug development timeline and reduces development costs. “Identifying a potentially effective drug normally takes six years,” Neal said. “We did it in one.”

In her closing remarks, Mitchell called Neal’s work “a tremendous example of what makes Stanford special.” She thanked donors for investing not only in new approaches to cancer but “in Stanford Medicine overall, which is recognized for this kind of innovation and bringing new approaches to disease states.”

Please join the Partners in Medicine through your generous support for the Cancer Discovery Fund. The CDF provides uniquely flexible resources to support SCI’s members and fuels their novel investigations and therapeutic advances.

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Funds raised through the Canary Challenge support the Stanford Cancer Institute and Canary Center at Stanford for Cancer Early Detection. For more information, or to register, visit: canarychallenge.com.