

Breast Cancer Patients Nurture One Another

THROUGH TREATMENT AND BEYOND

When Sara Kaluzynski and Susan Krozer underwent chemotherapy for breast cancer last year at Yale Cancer Center, they knew they would receive the best possible medical care. What they didn't know was that the start of their treatment would also mark the beginning of an enduring friendship full of laughter and hope that would sustain them through their darkest hours.

It was an ordinary Sunday in February 2005 when Sara, a middle school teacher in Stratford who was then 34, discovered a lump in her left breast while she was tak-

ing a shower. After undergoing a lumpectomy, she was shocked to learn that she had cancer and would need further treatment. Following a mastectomy, medical oncologist Gina Chung, MD, recommended eight rounds of chemotherapy over a 16-week period. Sara knew that undergoing chemo was necessary for her to win her battle against cancer, but the day she began treatment, she was on an emotional roller coaster that left her sobbing and shaky. That was the exact moment that she met Sue, 43, a registered nurse at Orange Health



Sue Rosenthal

Sara and Sue have remained good friends following their treatment.

Care Center, who was beginning an identical treatment regimen under the care of Michael DiGiovanna, MD, PhD.

Whether it was their shared vulnerability or an incredible stroke of luck, something drew the two women together. Sara noticed that Sue and her husband John seemed to be as nervous as she felt, while Sue noticed that Sara had shaved her head (she donated her hair to Locks of Love) and assumed she had already started treatment. They sat next to each other and struck up a conversation,

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Sue and Sara during one of their many treatment visits to Yale last year.



Environmental Influences on Cancer

RESEARCHERS LOOK TO DETERMINE THE LINK

In the search for possible causes of cancer, environmental factors have received a lot of attention in recent years as plausible culprits. Yet the link between the environment and cancer remains difficult to prove. Researchers at Yale Cancer Center, however, are determined to understand our environment's effect on our health, and they are pursuing innovative ways of doing it.

One of the major obstacles in pinpointing how environmental influences may cause cancer is that it's often very difficult to define a person's exposure. A patient diagnosed with cancer today may have been exposed decades ago to an environmental toxin. In addition, exposure to environmental toxins often affects only a small number of people, as is the case with industrial toxins at waste sites. Even the population that's affected may be difficult to determine. In most situations, people do not even know that they have been exposed to certain environmental hazards. "Studying environmental exposure and disease is difficult because often you cannot define exposure, you have a small popula-

Researchers at Yale Cancer Center are determined to understand our environment's effect on our health.

tion, you do not know exactly what exposure time is biologically meaningful, and the relationship between environmental exposure and disease is often weak," said Tongzhang Zheng, ScD, Professor of Epidemiology

and Public Health and Head of the Division of Environmental Health Sciences at Yale School of Public Health.

Nonetheless, Zheng has been hard at work trying to tease out the effects of various environmental factors on cancer. One of his well known studies, published in 2004, involved the relationship between hair dye and non-Hodgkin's lymphoma. Zheng and his colleagues conducted a six-year case-control study among women who had non-Hodgkin's lymphoma and had used hair coloring products, comparing them to healthy women of the same age and ethnicity. They found that women who used permanent dark hair dye for more than 25 years and started before 1980 had more than twice the risk of developing the disease than those who had never colored their hair. The fact that the increased risk was



Terry D'Agostini

Dr. Tongzhang Zheng, Head of the Division of Environmental Health Sciences.

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A Comprehensive Cancer Center
Designated by the National Cancer Institute

Agreement Reached on Cancer Center Building

After months of negotiations between Yale-New Haven Hospital and the City of New Haven, an agreement was reached on March 22nd clearing the way for the new cancer center to be built adjacent to Yale-New Haven Hospital.

"The new building will be an exciting enhancement of our facilities at the Yale-New Haven Medical Center. It will allow us to improve upon patient care with fully integrated services," Dr. Richard L. Edelson, Director of Yale Cancer Center, said.

The new comprehensive cancer center building will combine all diagnostic and treatment services for cancer patients into one 14-story, \$430 million building that would be located on the corner of Park Street and North Frontage Road. The building will include 112 inpatient beds, outpatient treatment rooms, expanded operating rooms, infusion suites, diagnostic imaging services and a floor each for diagnostic imaging and therapeutic radiology. A specialized Women's Cancer Center, including the Yale-New Haven Breast Center and the GYN Oncology Center, will be located on the building's first floor.

The facility will be the most modern and comprehensive cancer care facility in the Northeast. Site preparation for the new cancer center building has already begun, and construction is expected to begin in September.

For more information and the latest updates on the progress of the building, please visit www.yalecancercenter.org

A rendering of the new clinical cancer center.



In Memoriam: *John R. Murren, MD*



Dr. John R. Murren

Dr. John R. Murren died December 28, 2005 of metastatic melanoma at the age of 47. John had been at Yale since 1988 when he entered the fellowship program in the Section of Medical Oncology. Following his postdoctoral training, he was appointed to the fac-

John was an exceptional medical oncologist with widely recognized expertise in lung cancer, soft tissue sarcoma, neuroendocrine tumors, and the development of new drugs and drug combinations.

ulty of the Yale School of Medicine where he was an Associate Professor at the time of his death.

John grew up in Fairfield, where he attended Roger Ludlowe High School. He earned a B.A. in Chemistry at Duke University and then attended medical school at Loyola-Stritch School of Medicine in Chicago. He did his internship, residency, and chief residency in Internal Medicine at St. Vincent's Hospital in New York.

John was an exceptional medical oncologist with widely recognized expertise in lung cancer, soft tissue sarcoma, neuroendocrine tumors, and the development of new drugs and drug combinations. Since 1992, he received continuous NIH funding to study new therapies in lung cancer. During his career, John held several important leadership positions in the Section of Medical Oncology and at Yale Cancer Center. He was the Director of the Yale Medical Oncology Outpatient Center, the Director of the Lung Cancer

Clinic, and was Yale's leader in the development of phase I and II clinical trials. John played a critical role as Co-Director of the Developmental Therapeutics Program and Associate Director of the Phase I Translational Research Program, two key positions in the clinical investigations efforts of Yale Cancer Center.

In addition to his major responsibilities at Yale, John was the catalyst and inspiration for the development of the nonprofit Nevada Cancer Institute, founded by John's brother Jim, president and chief financial officer of MGM Mirage and Jim's wife, Heather. Due to their vision, residents of Southern Nevada no longer have to travel outside the region to receive state-of-the-art care or treatment on clinical trials. Although the Center only recently opened, thirty clinical trials are now actively accruing patients.

John was recognized nationally and internationally for his work. He served on the Clinical Research Subcommittee of the American Association of Cancer Research and the American College of Surgeons Cancer Committee. He also served as the Co-Chair of Novel Therapeutics for the American Association of Cancer Research National Meeting in 2001, and he was a member of the Research Grants Council in Hong Kong.

John was the consummate academic medical oncologist. In addition to providing unsurpassed care, he had an active laboratory and was considered an outstanding teacher and role model for the many fellows he mentored. In addition to John's expertise, his patients benefited from his warmth, compassion, and genuine joy when seeing them.

John will be remembered as an astute clinician, a creative and innovative scientist, but most of all as a kind gentleman sincerely devoted to his patients, family, and friends.

John was perhaps best known around the medical center for his radiant smile, quick wit, and kindness. To those who worked closely with John in the Section of Medical Oncology, he will be remembered as an astute clinician, a creative and innovative scientist, but most of all as a kind gentleman sincerely devoted to his patients, family, and friends.

YCC and CT Hospice Collaborate

PROVIDING COMPASSIONATE, COMPREHENSIVE CARE

When it opened its doors in 1974, the Connecticut Hospice pioneered the hospice movement in the United States by establishing an unparalleled model of home care for patients with cancer and other diseases. Today, it continues to develop the kind of interdisciplinary approach and support that patients across the state have come to rely upon.

Consisting of five home care offices statewide and a palliative hospital located in Branford, CT, Connecticut Hospice offers medical and nursing care, social work, arts

Perhaps the biggest barrier to patients using hospice services are the patients and families themselves, who tend to underestimate how positive an impact hospice can have on quality of life.

therapy, physical therapy, massage therapy, spiritual care, and volunteer visits, all of which are coordinated to provide the highest quality of life possible to patients with irreversible illnesses and their families. "By collaborating with Connecticut Hospice, physicians at Yale Cancer Center still help to provide the very best care to patients who are terminally ill," said Kenneth Miller, MD, Director of Supportive Care at Yale Cancer Center and associate medical director of Connecticut Hospice. "Patients can be relieved of their symptoms as much as possible, be made comfortable, and are able to focus on things that are most important to them and their families."

Hospice staff visit approximately 350 patients at home each day as part of a program individually tailored to each patient's needs and desires and coordinated with families, family physi-

cians, community health agencies, and hospice team members. For cancer patients who have completed therapeutic treatment in a hospital and are ready to return home, the CAN SUPPORT program offers a seamless transition to continue their plan of care in the home environment. Patients who need extra support may be referred to the 52 bed inpatient hospital. Here the hospice team attends to their physical, emotional, and spiritual needs, while allowing them complete access to family members and even pets. Patients have a water view from their windows and for those who choose to take in the sea breezes on the terrace, their beds can be moved outside.

The Connecticut Hospice was established more than thirty years ago in order to address a lack of comprehensive patient and family driven care and support for people at the end of their lives for as long as they needed it, according to Marilyn C. Pellet, BSN, JD who is the hospice's director of ethics. It has not only amply fulfilled that promise over the years, it has grown into an organization that continues to refine an approach to interdisciplinary care that is renowned throughout the country, taking advantage of ties with numerous other institutions, among them Yale Cancer Center and Yale School of Medicine, with whom it has collaborated since 1986. Although hospice continues to provide patients who are at the end of their lives with the gold standard in palliative care, it is not just for the dying. "The hospice experience does not invite death," said Rosemary Johnson-Hürzeler, RN, MPH, HA, President and C.E.O. of Connecticut Hospice and the Hospice Institute for Education, Training and Research. "In fact, it invites the opposite. It invites comfort, healing, hope, good days, and good months."

Many people believe that hospice

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Connecticut Hospice on the shores of the Long Island Sound in Branford, CT.



Celebrating Survivors: Share your Story

Yale Cancer Center is redesigning our website to focus on cancer survivorship and to showcase the inspiration our patients show us every day. If you would like to share your story of hope and tell other cancer survivors how you live each day to the fullest, we would love to hear from you. Please email us at healthline@yale.edu or call 1-888-234-4YCC.



Carolyn Deal, President, Bill Raveis, CEO, and Candy Raveis of William Raveis Real Estate visit with Dr. Alan Garen, the recipient of the 2006 Raveis Exceptional Project Award from the Breast Cancer Alliance. Mary Ann Henry, Executive Director of the Breast Cancer Alliance joins them at right.



John Dolishny and Jessica Cini present a check to the Yale-New Haven Breast Center to fund patient bags, which will provide new patients with information about their treatment. Tanger Outlet Center in Westbrook, CT raised money to support patients with breast cancer receiving treatment at Yale throughout Breast Cancer Awareness month in October by selling bracelets to customers. Mr. Dolishny and Ms. Cini are pictured with Dr. Teresa Ponn, Associate Director for Breast Surgery, and Dr. Donald Lannin, Executive Director of the Yale-New Haven Breast Center.

establishing a pattern that would continue for the next four months.

Originally diagnosed in 1999, this was Sue's second bout with breast cancer. When a routine mammogram in 2004 showed a recurrence, she had a double mastectomy only to discover a lump in her right lymph node several months later. Even though she had already been through a round of chemo following her first diagnosis, she was feeling just as fragile as Sara was, and they naturally gravitated toward one another. "I can't stress how much it helped to have someone to go through this experience with," Sue said. Every other week when they came to Yale for chemo accompanied by their husbands, they would save seats for one another, looking forward to chatting, laughing, and sharing advice. "In a twisted way, we would look forward to going," said John Krozer, who became friendly with both Sara and her husband, also named John. Sometimes the foursome would become so boisterous that they feared disturbing other patients. "We really made the best of it," said Sue. "We tried to sit there like we were having a good time instead of focusing on what it was all about."

Their friendship eventually extended beyond the confines of the hospital; they would call one another in between visits to discuss side effects, how they were feeling, and to lend moral support. They commiserated about losing their hair and compared notes about the sudden onset of menopause that chemotherapy sometimes causes. The two also underwent genetic testing at the same time, an anxiety-provoking experience that they were able to share and eventually rejoice about together, when they received the news that they were both negative for the BRCA1 and BRCA2 gene. "It was like a support group," said Sue. At one point, when Sara became so despondent that she felt she didn't want to continue with the treatment, the thought of seeing Sue and John spurred her on. "It was like being part of a team," said her husband John. The couples have kept in touch since completing chemotherapy over the summer, continuing to draw strength from one another as they voice concerns that are difficult to share with family and friends.

Both women underwent radiation following chemotherapy, and now that their treatment is completed, their lives have returned to normal. They are back at work and busy with their children. But something has changed in their outlook. Sue, who continued to walk five miles a day during chemotherapy and even went on a cruise during the treatment, said that she and her husband try to live each day to the fullest. "It's an ongoing axe over your head," she admitted, "but you can't let it rob you of your life." Sara also has a positive outlook on life, even though her husband still sometimes struggles with feelings of fear. "I'm back to normal and then some," she said. "I wouldn't say I'm in denial, but I have moved on."

Both women say they hope their experience is helpful to other cancer patients. "I hope other women can reach out and buddy up with someone," said Sue. "No one can comfort you like someone going through this at the same time."

Healthline with Yale Cancer Center

A WEEKLY RADIO PROGRAM ON WTIC NEWSTALK 1080



Dr. Kevin Kelly, a recent guest on Healthline, discusses new treatment strategies for prostate cancer.

Yale Cancer Center is broadcasting "Healthline," a weekly radio program that airs from 8:30-9:00 a.m. every Sunday morning on WTIC NewsTalk 1080 AM.

Healthline is co-hosted by Yale Cancer Center oncologists, Dr. Edward Chu, Chief of Medical Oncology, and Dr. Kenneth Miller, Director of Supportive Care. Each week they are joined by a different cancer specialist, bringing the innovation and expertise of Yale Cancer Center to all of Connecticut.

"Healthline was created to provide patients and their families with help and hope to sustain them in their fight against cancer," Dr. Miller explained. "The help comes from experts at Yale Cancer

Center who are working to develop new and better treatments. The hope comes from our doctors, nurses, and staff whose knowledge and compassion are helping to win the battle against cancer, one patient at a time."

Myths, facts and advances in cancer diagnosis and treatment are discussed, with a different focus each week. Nationally acclaimed specialists in various types of cancer research, diagnosis, and treatment discuss common misconceptions about the disease and respond to questions from the community.

Recent and coming broadcasts include breast, prostate, lung and colon cancer, melanoma, non-traditional and complementary herbal therapies and tips for survivors. Each program includes a fact-packed "Medical Minute" and the "Survivor Story" of a Connecticut resident.

"A central component of Yale Cancer Center's mission is education and outreach to the residents in the State," said Dr. Richard L. Edelson, Director of Yale Cancer Center. "The weekly radio broadcast of Healthline provides a unique resource for cancer patients and their families to learn about the latest clinical advances available to them. We are extremely pleased to be able to offer this new program and bring hope to so many of our neighbors."

Listeners can submit questions to healthline@yale.edu to be answered on the program or by leaving a message at 1-888-234-4YCC. As a resource, archived programs are available in downloadable MP3 format from the Yale Cancer Center website at www.yalecancercenter.org.

Dr. Ed Chu and Dr. Ken Miller, co-hosts of the weekly radio program.





Yale Cancer Center has been selected by **A Run for Survivorship**

Coast to Coast: A Run for Survivorship as the primary beneficiary for its cross country run in 2006.

"We are honored that Coast to Coast has partnered with Yale Cancer Center to increase awareness and funding for cancer survivorship, not only in Connecticut but nationwide.

states making stops to visit cancer patients during their trip. Both

high school teachers, McEvoy and Chenier are also challenging high school students to join them in raising both awareness of the issues affecting cancer survivors as well as funds to support cancer patients and research. High schools along the route will be encouraged to form relay teams to join McEvoy for segments of the run.

"The personal challenge I will face in running across the country is really insignificant when compared to the challenges cancer survivors face every day of their lives. I am inspired by the cancer survivors I know and I am excited that we found a way to help raise funds and awareness for all survivors," McEvoy said.

Chenier shares McEvoy's enthusiasm for the upcoming challenge and said, "I look forward to supporting Christian as he runs from the Pacific to the Atlantic. I am also very excited by the meaningful opportunity to involve high school students in this huge effort."

In his or her lifetime, one in two men and one in three women will

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develop cancer. Over 10 million cancer survivors live in the United States today and due to the advances in cancer treatment, the number of survivors will continue to grow. Long term consequences of childhood and adult cancer treatments may include heart problems, fertility issues, lymphedema, post-traumatic stress, impaired growth, osteoporosis, or increased risk of second cancers.

The Connecticut Challenge Adult Survivorship Center at Yale Cancer Center, scheduled to open this fall, will provide care and consultation to people who have been diagnosed and treated for cancer and focus on the long-term effects of cancer, surgery, radiation, and chemotherapy. The multidisciplinary team will consist of a physician, a specialized advanced practice nurse, social workers, a nutritionist, and other medical specialists who focus on the special problems of patients and their families both during and after cancer treatment.

www.coasttocoastrun.org



John Chenier (left) will join Christian McEvoy as he runs across America to raise funds for cancer survivorship at Yale Cancer Center.

The commitment and dedication they will make to cancer survivors throughout the five month run is an inspiration," said Richard L. Edelson, MD, Director of Yale Cancer Center.

President of the Challenge America Foundation, Christian McEvoy, 23, will complete the 3,500 mile run from the Pacific to Atlantic Oceans to raise awareness of cancer survivorship and funds for the Yale Cancer Center Connecticut Challenge Adult Survivorship Center. McEvoy joins

President of the Challenge America Foundation, Christian McEvoy, 23, will complete the 3,500 mile run from the Pacific to Atlantic Oceans to raise awareness of cancer survivorship and funds for the Yale Cancer Center Connecticut Challenge Adult Survivorship Center.

fewer than fifty runners who have completed the cross-country run. The run will begin in San Francisco on July 1, 2006 and finish in Rhode Island in late November, 2006.

Joining McEvoy in Coast to Coast, is John Chenier, event coordinator for the run. The team will pass through 13

Upcoming Events

April 5, 2006 • 6:00 pm

YNHH East Pavilion Cafeteria

Understanding Cancer Lecture Series

Prostate Cancer

Dr. John Colberg, Associate Professor, Surgery

Dr. Richard Peschel, Professor, Therapeutic Radiology

Dr. Wm. Kevin Kelly, Associate Professor, Medical Oncology

Call 1-888-700-6543 for more information and reservations.

April 23, 2006 • 10:00 am

Choate Rosemary Hall

Sixth Annual Terry Fox Run

For more information or to register, please go to

<https://www.choate.edu/parents/terryfoxrun.asp>

April 29, 2006 • 6:00 pm

The Belle Haven Club, Greenwich, CT

La Cassa Magica

Yale Cancer Center's Annual Gala

For more information, call (203) 737-2439.

May 25, 2006 • 11:00 am

Hope Building, Yale School of Medicine

Cancer Survivors Day

New Beginnings: Complementary Approaches

to Living Well Today

Call 1-888-700-6543

for more information and reservations.

Get Involved

Yale Cancer Center is looking for volunteers to help in the Development Office with fundraising efforts and events. Fundraising initiatives are instrumental in providing support for many of the patient services we offer. If you are interested in volunteering your time, please call Kathleen at (203) 737-2439.

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is only for the last two weeks of life, according to Elizabeth Bradley, PhD, Associate Professor of Epidemiology and Public Health, who has conducted research on hospice care for almost a decade. However, this could not be further from the truth. Sometimes patients enter the hospice program and benefit so much from the care they're given, that they no longer need hospice care. "They may need very intense support at home, and then improve either as a result of their therapy or partially as a result of supportive care at home and then be in a sense discharged from the program," said Miller. Patients can also be admitted to the hospital for short periods of time during their treatment when extra support is needed, a pattern that may be repeated more than once during the course of their illness.

Even among physicians and nurses there is a misconception about what hospice is and how it can benefit patients, according to Bradley. But that is changing as physicians utilize the program for their patients more frequently and as hospice has been integrated into many medical education programs. Physicians completing a fellowship in medical oncology at Yale Cancer Center do rotations with Connecticut Hospice to learn the benefits of the program and the depth of resources available to their patients.

Perhaps the biggest barrier to patients using hospice services are the patients and families themselves, who tend to underestimate how positive an impact hospice can have on quality of life. "Hospice really is the best that medicine has to offer in terms of compassionate holistic care," said Miller.

Staff Briefs

JoAnn Bilyard has joined the Office of Development as a Development Associate working on special events and fundraising for Yale Cancer Center.

Dr. James Brink has been appointed to Chair of Diagnostic Radiology at Yale School of Medicine and Chief of Radiology at Yale-New Haven Hospital.

The **American Cancer Society** has re-elected **Dr. Vincent T. DeVita, Jr.**, the Amy and Joseph Perella Professor of Medicine and Chairman of the YCC Advisory Board, to the National Board of Directors.

Dr. Alan Garen has been awarded a 2006 **Breast Cancer Alliance** Exceptional Project Grant to support his research project, *Breast Cancer Immunotherapy using Targeted Nanoparticles Encoding an Icon*.

Ira Mellman, PhD, Scientific Director of YCC, was one of three Americans elected to the European Molecular Biology Organization as one of 40 leading life scientists.

Diane Miranda has joined the staff at Yale Cancer Center as the Protocol Review Committee Coordinator. She is working to improve the process of protocol initiation and implementation for the Center.

Dr. Jill Reiter was awarded the 2006 **Breast Cancer Alliance** Masin Young Investigator Grant for her project looking into the *Quantitative Analysis of EGFR Variants in Breast Cancer*.

Dr. Joseph Schlessinger, Professor and Chair of the Department of Pharmacology, will share the \$1 million Dan David Prize for his research on innovative ways of treating cancer. The Dan David Prize is a joint international enterprise endowed by the Dan David Foundation and headquartered at Tel Aviv University.

Dr. Warren Shlomchik was selected as the recipient of a five-year **Leukemia & Lymphoma Society** Scholar in Clinical Research Award.

The **Breast Cancer Alliance** has awarded **Dr. Joanne Weidhaas** a Young Investigator Grant in support of her research project, *Defining the Best Treatment Options in BRCA1-mediated Breast Cancer Using a C. Elegans Model of Radiosensitivity*.

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not evident in those who dyed their hair after 1980 illustrates the tentative relationship between environmental chemicals and disease; it could be because hair dye formulations changed after 1980 or because not enough time had passed for the health effects to show up.

Another factor that makes defining the link between the environment and disease difficult is that the relationship between the two is often dependent on the individual's susceptibility. For example, why do some smokers develop lung cancer, while others don't? The answer may have to do with an interaction between the environment and a person's genetic makeup; epidemiologists call it gene-environment interaction.

Realizing the limitations of studying diseases from an environmental perspective, Zheng has expanded his team's research to incorporate genetic susceptibility, enlisting the aid of molecular biologist Yong Zhu, PhD, Assistant Professor of Epidemiology and Public Health. Zhu has been studying the effect of disruptions in circadian rhythms on breast cancer. Recent studies have shown that genes responsible for circadian rhythm also regulate many other biological pathways, including those related to cancer, and that disrupting these rhythms (for example, by working at night) may be a risk factor for breast cancer. Early last year, Zhu published the first study supporting this hypothesis from a genetic perspective. By examining the variation in length in a circadian gene known as *Period3* among breast cancer patients, Zhu and his colleagues found that a certain variant was associated with an increased breast cancer risk among premenopausal women. In theory, the implications of these findings could mean that some people, due to their genetic makeup, should avoid night shift work. Zhu has since gathered additional evidence to support these findings. Based on their research on circadian genes and breast cancer, Drs. Zhu, Zheng and the research group have recently originated the hypothesis that circadian rhythm disruption may increase the risk of prostate cancer, another hormone-related cancer. "We believe that if circadian rhythms play a role in breast cancer by regulating or changing sex hormone expression, then they may do the same thing in prostate cancer," Zhu said.

Zheng and his study group have also been conducting research on environmental exposures and breast cancer risk, investigating whether exposure to environmental hormone disrupters (such as polychlorinated biphenyls, PCBs, and organochlorine pesticides) affects breast cancer risk. In a study published in 2000 involving nearly 1,000 Connecticut women, Zheng examined levels of PCBs and several pesticides in the breast tissue and blood serum of women with and without breast cancer, finding no significant difference in the levels of these compounds between the two groups. But upon further examination of the relationship taking into account genetic susceptibility, they found that women who have a specific genotype in a gene known as *CYP1A1* and were exposed to high levels of PCBs have a significantly increased risk of developing breast cancer. "This helps explain why some people exposed to certain things get cancer while others don't," said Yawei Zhang, MD, PhD, Assistant Professor of Epidemiology and Public Health and the first author of the published study. "People with different genetic makeups have different abilities to metabolize environmental carcinogens, which result in different susceptibility to environmental insults."

But it may not only be toxins that could potentially pose a threat to human health. Based on evidence that sun exposure can reduce immune function and is linked to skin cancer, and the fact that those with skin cancer have a much higher risk of developing non-Hodgkin's lymphoma, Zheng hypothesized that sun exposure can increase the risk of the disease. He and his team conducted a study to test this hypothesis and although they are only in the preliminary stages of analyzing the data, there appears to be an association between sun exposure and increased risk of this type of cancer.

In the years ahead, Zheng and his team will continue to explore the role of the environment in human health. They are currently investigating the relationship between circadian gene, circadian disruption and breast cancer risk. They have recently secured the funding to study the relationship between environmental hormone disrupters, genes and testicular cancer in Connecticut and Massachusetts. Testicular cancer incidence has been increasing among Caucasian men, especially in the young, during the past decades with unknown reasons. They are also currently conducting an epidemiological study of environmental exposures and the age of puberty onset in the People's Republic of China. Age at puberty has been steadily decreasing in girls in the United States, and earlier age at puberty has been linked to human cancer risk, such as breast cancer and testicular cancer. Examining the gene-environmental interaction will play a large role in their research. "We try to put disease within the framework of genetic and environmental interaction to address our questions," said Zhu.

This is the first part of a two-part series on the environment and cancer. The next issue of the newsletter will feature an article about the influence of nutrition and physical activity on cancer.