

Making a Difference



Carbone's Passion for Fashion, an inaugural fashion show, raised more than \$14,000 for the UW Carbone Cancer Center. The event was emceed by cancer survivor and author of *Cancer is A Bitch*, Gail Konop Baker, and featured more than 15 cancer survivors modeling local fashions. More than 300 people attended the show. Pictured above are a few of the many people in attendance (left to right): Alissa Oleck, Courtney Carter Dugan, Laura Gmeinder, Armi Obcena and Yvonne Werner.



More than 200 people attended the Emerging Leadership Board's annual From Munich to Madison, a beer and wine tasting. Attending the event at HotelRed were Amelia Bunlap and Matthew Ellsworth. The Emerging Leadership Board is a dedicated group of up-and-coming professionals between the ages of 25 and 40 who raise community awareness and funds on behalf of the UW Carbone Cancer Center.

YES! I want to make a difference by giving to the University of Wisconsin Carbone Cancer Center.

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Mail this form to:
UW Carbone Cancer Center
 600 Highland Avenue, K4/658
 Madison, WI 53792-6164

You can also donate online by visiting uwhealth.org/cancerdonation
 Please call (608) 263-0160 with questions.

Blood Chromosome Differences are linked to Pancreatic Cancer

A new study published by scientists at the UW Carbone Cancer Center and Mayo Clinic shows that a blood marker is linked to pancreatic cancer.

First author Dr. Halcyon Skinner, assistant professor of population health sciences at the UW School of Medicine and Public Health, says the study is the first time pancreatic cancer risks have been linked to differences in telomeres' length in blood cells.

"This suggests a new avenue to identify those with pancreatic cancer or those at risk of developing the cancer in the future," he says.

Skinner's colleagues at Mayo Clinic took blood samples from more than 1,500 people - 499 of them with a diagnosis of pancreatic cancer and 963 of them cancer-free control subjects. Specifically, the scientists were interested in the length of the telomeres - the end caps on chromosomes - found in white blood cells. They found a direct relationship with the risk of

pancreatic cancer: the shorter the telomeres, the more likely a person was to have pancreatic cancer.

Telomeres maintain the stability of genes, and are known to shorten with age as cells divide. People of the same chronological age can have vastly different telomere lengths. In other words, some people's cells can be viewed as biologically older than cells from other people the same age.

"We know that people with many factors that are classically unhealthy also tend to have shorter telomeres. Those who have had stressful lives, exposed to chronic inflammation, have poor glucose control or smoked cigarettes, tend to have shorter telomeres, and that can set the stage for genetic damage," Skinner explains.

Shortened telomeres in the blood have already been associated with other types of cancer, including colon cancer.

"We found the same relationship with pancreatic cancer, and for the vast majority of our participants, there was a direct linear relationship," Skinner says, "the shorter the telomere, the higher the likelihood of pancreatic cancer."

But because shorter telomere length is also associated with the development of other cancers and other diseases of aging, measurement of telomere length alone is not a specific marker for pancreatic cancer.

Dr. Lisa A. Boardman, of Mayo Clinic, who led the overall study, says that future studies need to address if telomere length and other markers of pancreatic cancer should be combined to create a test that could be used clinically.

Skinner and UW colleagues Ron Gangnon and Kristin Litzelman led the design and data analysis of the study.



- Advances is published semi-annually by the University of Wisconsin Carbone Cancer Center (UWCCC), a National Cancer Institute-designated comprehensive cancer center.
- For patient services at the UWCCC, please contact Cancer Connect, (800) 622-8922 or (608) 262-5223 or e-mail cancerconnect@uwcarbone.wisc.edu.

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Will you be joining us? We hope so!

THINK YOU'RE SO SMART?

UW CARBONE CANCER CENTER TRIVIA NIGHT WITH ANDY NORTH

Friday, February 22, 2013 6:30 pm Wisconsin Field House uwhealth.org/trivia

Bowling for Colons

March 3, 2013 at five southern Wisconsin-area bowling centers

Dream Lanes and Schwoegler Park Towne Lanes – Madison
 Ten Pin Alley – Fitchburg
 Waun-A-Bowl – Waunakee
 Jud-Sons – Waupun

Visit uwhealth.org/bowling for more details

Cancer Researchers Discover New Form of Cell Division



Researchers at the UW Carbone Cancer Center have discovered a new form of cell division in human cells.

They believe it serves as a natural back-up mechanism during faulty cell division, preventing some cells from going down a path that can lead to cancer.

"If we could promote this new form of cell division, which we call klerokinesis, we may be able to prevent some cancers from developing," says lead researcher Dr. Mark Burkard, an assistant professor of hematology-oncology in the Department of Medicine at the UW School of Medicine and Public Health.

A physician-investigator who sees breast cancer patients, Burkard studies cancers in which cells contain too many chromosomes, a condition called polyploidy.

About 14 percent of breast cancers and 35 percent of pancreatic cancers have three or more sets of chromosomes, instead of the usual two sets. Many cancers have cells containing defective chromosomes rather than too many or too few.

"Our goal in the laboratory has been to find ways to develop new treatment strategies for breast cancers with too many chromosome sets," he says.

FINDING WAS UNEXPECTED

The original goal of the current study was to make human cells that have extra chromosomes sets. But after following the accepted

recipe, the scientists unexpectedly observed the new form of cell division.

Until now, Burkard and most cell biologists today accepted a century-old hypothesis developed by German biologist Theodor Boveri, who studied sea urchin eggs. Boveri surmised that faulty cell division led to cells with abnormal chromosome sets, and then to the unchecked cell growth that defines cancer. With accumulated evidence over the years, most scientists have come to accept the hypothesis.

Normal cell division is at the heart of an organism's ability to grow from a single fertilized egg into a fully developed individual. More than a million-million rounds of division must take place for this to occur. In each division, one mother cell becomes two daughter cells. Even in a fully grown adult, many kinds of cells are routinely remade through cell division.

The fundamental process of cells copying themselves begins with a synthesis phase, when a duplicate copy is made of cell components, including the DNA-containing chromosomes in the nucleus. Then during mitosis, the two sets are physically separated in opposite directions, while still being contained in one cell. Finally, during cytokinesis, the one cell is cut into two daughter cells, right at the end of mitosis.

Burkard and his team were making cells with too many chromosomes - to mimic cancer. The scientists

blocked cytokinesis with a chemical and waited to see what happened.

"We expected to recover a number of cells with abnormal sets of chromosomes," Burkard explains.

The researchers found that, rather than appearing normal, daughter cells ended up looking normal most of the time. Contrary to Boveri's hypothesis, abnormal cell division rarely had long-term negative effects in human cells.

So the group decided to see how the human cells recovered normal sets of chromosomes by watching with a microscope that had the ability to take video images.

"We started with two nuclei in one cell," Burkard says. "To our great surprise, we saw the cell pop apart into two cells without going through mitosis."

Each of the two new cells inherited an intact nucleus enveloping a complete set of chromosomes. The splitting occurred, unpredictably, during a delayed growth phase rather than at the end of mitosis.

POTENTIAL FOR LOWERING CANCER INCIDENCE

The scientists did a number of additional experiments to carefully make sure that the division they observed was different than cytokinesis.

"We had a hard time convincing ourselves because this type of division does not appear in any textbook," Burkard says.

Over time, they found that only 90 percent of daughter cells had recovered a normal complement of chromosomes. Burkard would like to leverage that statistic up to 99 percent.

"If we could push the cell toward this new type of division, we might be able to keep cells normal and lower the incidence of cancer," he says.

Burkard now thinks that among all those rounds of cell division an organism goes through, every once in a while cytokinesis can fail. And that this new division is a backup mechanism that allows cells to recover from the breakdown and grow normally.

The group has dubbed the new type of division klerokinesis to distinguish it from cytokinesis. Burkard enlisted the help of Dr. William Brockliss, UW-Madison assistant professor of classics, to come up with the name; klero is a Greek prefix meaning "allotted inheritance."

Collaborators on the project include Dr. Beth Weaver, assistant professor of cell and regenerative biology at the School of Medicine and Public Health; Dr. Alka Choudhary; Robert Lera; Dr. Melissa Martowicz and Dr. Jennifer Laffin.

Cancer and Nutrition: *What's the connection?*

Are there specific foods or nutrition supplements that can prevent cancer, cure cancer or even keep cancer from recurring? Researchers continue to make new discoveries; however, there is currently no scientific evidence that one single food or dietary supplement can protect against cancer alone. There is evidence that eating a healthy diet, including regular physical activity, and maintaining a healthy body weight are the best defenses against some types of cancers.

FOCUS ON PLANT FOODS. Plant foods contain fiber, phytochemicals and other nutrients that keep our body healthy. These nutrient-rich foods are low in calories, which make them great additions to a meal plan focused on weight control. Fill at least two-thirds of your plate with fruits, vegetables, whole grains and beans. Aim for at least five servings of fruits and vegetables each day. One serving of fruits and vegetables may include one medium piece of fruit or ½ cup fruit, ½ cup of 100 percent juice, ¼ cup dried fruit, ½ cup raw non-leafy or cooked vegetables, one cup raw leafy vegetables, or ½ cup cooked beans or peas.

LOWER INTAKE OF SUGAR AND FAT. Limit processed foods that are high in refined carbohydrates, sugar and fat. Avoid drinking high sugar beverages, like soft drinks or fruit flavored drinks. Choose healthier beverages like water, unsweetened tea, and coffee. Replace saturated fat and trans fat with monounsaturated fat and polyunsaturated fat like avocados, unsalted nuts and seeds, fish, olive oil and canola oil.

DECREASE INTAKE OF RED MEAT AND PROCESSED MEATS. Eat no more than 18 ounces (cooked weight) of red meat per week, including beef, pork and lamb. Red meats are higher in saturated fat and cholesterol. Avoid meats like ham, bacon, salami, sausage and hot dogs that have had preservatives added or are preserved by curing, smoking and salting. Include lean protein sources like poultry without skin, fish, beans and lentils.

LIMIT ALCOHOL CONSUMPTION. Alcoholic beverages are high in calories and low in nutrients. If you do not drink alcohol, you should not start. If alcohol is consumed, men should limit intake to two drinks per day and women should limit intake to one drink per day. One drink is equal to one of the following: a 12 ounce beer, 4 ounces of wine, 1.5 ounce of 80-proof spirits, 1 ounce of 100-proof spirits.

CUT OUT THE SALT. High salt foods may include frozen meals, bread, pizza, canned soups, chips, sauces and processed meats. A low sodium product contains less than 140 milligrams of sodium. Daily sodium intake should be less than 2400 milligrams per day. Learn how to read the nutrition facts label so you can make informed decisions for your health.

AVOID HIGH-DOSE VITAMIN AND MINERAL SUPPLEMENTS. Focus on getting your nutrition through a healthy, balanced diet consisting of a variety of foods and beverages rather than taking high-doses of vitamins and minerals. Prior to taking any supplement, check with a registered dietitian or medical doctor.

MAINTAIN A HEALTHY BODY WEIGHT. Carrying extra body fat around the waistline is harmful to your health. It's important to be as lean as possible without being underweight. The Body Mass Index (BMI) is a tool used to determine if your weight is putting you at risk for health problems. A healthy range for most individuals is 18.5-24.9. By maintaining a healthy body weight you will not only reduce cancer risk, you will also be less likely to develop other diseases like Type 2 diabetes and heart disease.

BE PHYSICALLY ACTIVE. Regular physical activity keeps hormone levels healthy, strengthens immune system, promotes healthy digestion and prevents weight gain. Include at least 30 minutes of physical activity every day. For the most benefit, work towards at least 60 minutes of physical activity each day. Limit sedentary behaviors.



Kelly Nuckolls, BS, MS

Kelly Nuckolls is a registered dietitian at the University of Wisconsin Hospital and Clinics and is devoted to inpatient nutrition care for the oncology, bone marrow transplant, hematology and palliative care services. Kelly earned Bachelor of Science and Master of Science degrees in Family and Consumer Sciences with a dietetics focus from Eastern Illinois University in Charleston, Illinois. She then completed a dietetic internship at Cox College in Springfield, Missouri.



Sexual Health:

Addressing A Survivorship Issue in Women After Cancer

When a team of UW Carbone Cancer Center (UWCCC) providers learned that sexual dysfunction was an issue that many women experience in the wake of cancer treatment, they got together to give patients a greater role in understanding their own sexual health.

Over the course of the past year, physician assistants partnered with doctors, their patients and other caregivers to pioneer a new patient education program for any female cancer survivor interested in gathering information on the topic.

This spring, the UWCCC used a new clinical approach called Women's Integrative Sexual Health (WISH) Program. Equal parts treatment, research, and education and outreach, WISH is one of the first programs of its kind, and can transform the process of cancer survivorship for the patients who need it most.

Seven years ago, at age 51, Laura, a teacher, educator and writer, was diagnosed with ovarian cancer. After a hysterectomy threw her body into premature menopause, Laura and her partner moved to Madison to be closer to family.

Once here, Laura began attending "A View Beyond," the UWCCC's gynecologic cancer support group. During one of these sessions, UWCCC and palliative care chaplain Libby Caes, MDiv, BCC, brought up the issue of sexual health; something Laura knew had been affected by her cancer and treatment.

An outgoing woman who expresses her vocation through performances of one-woman plays throughout the Midwest,

Laura was relieved that the topic was raised. "I knew my sexual function had changed," she remembers, "but I only realized how much of an impact my sexual health had on me spiritually in the safe space of the support group."

Caes is also a cancer survivor and long realized the importance of addressing sexual health with UWCCC patients. She found a kindred spirit in certified physician assistant Lori Seaborne.

From the day Seaborne began treating patients at the UWCCC Gynecologic Oncology clinic 10 years ago, she found that patients' concerns about their sexual function rose as they moved further into recovery. "Three to six months down the road, when the cancer and the effects of treatment have subsided, patients want to get their lives back to normal," says Seaborne. "And sex is a big part of that."

She found that while many of her patients had experienced changes in sexual function, many had not spoken with their partners about them, let alone a medical professional. As a result, Seaborne began directly asking patients about sexual function during and after treatment. Once the doors of communication were open, patients began asking about sexual health much more frequently.

Concluding that patients needed more information, Seaborne, Caes and others developed a 90-minute interactive session to address sexual health called Intimacy and Sex in Women after Cancer. The program focuses on anatomy, education, and spirituality to give patients suggestions for communicating

with their partners about sexual health issues.

"The impacts of surgery, radiation and chemotherapy can all have an effect on a woman's experience during sex," explains Seaborne. "For example, what might have felt pleasurable before cancer might cause pain or discomfort after treatment."

In addition to discovering and communicating these changes, the program encourages couples to broaden their view of intimacy. "Cancer survivors' sex lives may have changed," she adds, "but with creativity, playfulness and practice, women can still feel pleasure and stay connected to their partners."

As one of the first to take part in the 90-minute-long survivorship program, Laura discovered there were some things she still didn't know about her own body.

"With my cancer, I had a feeling that my body betrayed me."

"With my cancer, I had a feeling that my body betrayed me," she says. "To make amends with myself, I had to physically reacquaint myself with my body and my partner. Once I understood that discomfort can be a common symptom in women who have had hysterectomies, I was able to accept the changes in my function and find ways to adapt."

To fully evaluate sexual function as a distinctive concern in cancer survivors, Seaborne and her colleagues are beginning to address it independently from the usual clinical follow up. According to Seaborne, this approach will

allow clinicians proper time to address this complicated issue.

Collaborating with David Kushner, MD, director of Gynecologic Oncology at UWCCC, Seaborne and colleague Joanne Rash, PAC, are creating WISH to do just that. In the intake sessions, practitioners incorporate sexual health into general medical histories, and offer resources such as physical therapy, sex therapy and couples counseling as needed.

Kushner, a gynecologic oncologist with a focus on surgical research, sees a tremendous value in adding a clinical component to the education being offered in the monthly sessions. "From a research standpoint," Kushner notes, "the ultimate goal is to collect data in order to formulate evidence-based treatment for sexual function problems."

"So little research has been done in the area of sexual health in cancer patients and survivors," he notes. "We have the opportunity to make it okay for women to talk about sexual health in a positive way."

The UWCCC team has also signed on as charter members of the Scientific Network on Female Sexual Health and Cancer, a new national organization whose mission includes improving sexual health in all women after cancer. "It's clear that medicine is far behind in this area," Kushner says. "We have the opportunity to be a leader in helping all women with cancer overcome sexual dysfunction."

Updates in Clinical Trials



Breast Cancer

Female hormones such as estrogen are commonly known to make some breast cancers grow. However, new research indicates that male hormones may be important as well. Androgens are male hormones and are found in women as well as men. A new research study led by Dr. Amye Tevaarwerk at the UWCCC is testing a new medication that can block both types of hormones in women with breast cancer.

The new drug, called orteronel or TAK700, turns off an enzyme (protein) called a 'lyase.' Lyases normally make the precursors for both male and female hormones so estrogens and androgens decrease when this protein is turned off. Orteronel was originally developed for prostate cancer treatment and is a pill taken two times daily. Dr. Tevaarwerk and others realized that it could be useful for treating breast cancer because both androgens and estrogens are important in cancer growth. "A drug that blocks androgens may help overcome the resistance some breast cancer cells have to standard antiestrogen medications," Dr. Tevaarwerk explains. "Lyase inhibitors have been extensively tested for prostate cancer but have not been used for women with breast cancer." Orteronel's side effects are expected to be less than most chemotherapy treatments – the medication is demonstrated to be safe and tolerated in men, but has not previously been used in women. The first goal of the study is to give women the same dose used in men and make sure it blocks hormones effectively without unexpected side effects.

The study will include postmenopausal women with metastatic breast cancer. Because it is an anti-hormonal medication, women on the study must have breast cancer that is "positive" for hormone receptors. However, it does allow women to participate if prior anti-hormonal or chemotherapy treatments have stopped working to control the growth of their breast cancer. The study is a collaborative project between UWCCC and Millenium-Takeda Pharmaceuticals. (CO11109)

Lung Cancer

Lung cancer is the leading cause of cancer deaths in the United States. Despite advances in early detection and standard treatment, non-small cell lung cancer (NSCLC) is often diagnosed at an advanced stage and has a poor prognosis.

CO11508 is the first randomized Phase II trial that the UWCCC has developed to run through with Wisconsin Oncology Network (WON).

The study pairs docetaxel, a standard of care chemotherapy for NSCLC, with the new non-cytotoxic drug suramin. The study hypothesizes that suramin in combination with docetaxel will improve the progression-free survival in patients with advanced NSCLC. More than 20 subjects have been enrolled to date and early findings show that the toxicity profile of suramin seems manageable. This study is a collaborative effort between the UW Carbone Cancer Center, Medical College of Wisconsin, Wisconsin Oncology Network and Optimum Therapeutics and is funded in part by the National Institutes of Health.

For more information about these and other clinical trials at the UW Carbone Cancer Center, contact Cancer Connect, (800) 622-8922 or (608) 262-5223 in the Madison area.

A complete listing of clinical trials at the UWCCC is also available on our website, uwhealth.org/cancertrials

MARK YOUR CALENDARS

UW Carbone Cancer Center Trivia Night with Andy North
February 22, 2013 – Wisconsin Field House, UW-Madison campus
Contact Amy Manecke, (608) 262-6967 or Janie Winston, (608) 262-1032
uwhealth.org/trivia

Curl vs. Cancer
February 22-23, 2013 – Madison Curling Club, McFarland
Contact Jenniffer Krug, (608) 842-6725
madisoncurlingclub.com

Bowlin' for Colons
March 3, 2013
Contact Katie Arendt, (608) 263-0160 or kjarendt@uwcarbone.wisc.edu
uwhealth.org/bowling

Charity Jamboree
March 9, 2013 – Come Back Inn, Essen Haus and Up North Bar, Madison
musiccanbeatms.com

St. Patrick's Day Parade
March 17, 2013 – Capitol Square, Madison
Contact Jackie Cosgrove, Jackie@broach.com or (608) 469-7406 or Ed Jaeger, Ed@pensionmark.com
stpatmadison.com

Super Colon
April 17 & 18, 2013 – Hilldale Mall, Madison
Contact Craig Robida, (608) 263-4982 or crobida@uwcarbone.wisc.edu

Walk for Courage
May 2013 – Maple Bluff neighborhood, Madison
Contact Tess Hackworthy, hackworthytess@aol.com

Shave to Save
May 3, 2013 – Health Science Learning Center, UW-Madison campus, Madison
Contact Erin McCarthy, (608) 263-2892, emccarthy@uwhealth.org or Rachel McMahon at (608) 930-6497, mmahon@uwhealth.org
uwhealth.org/shave

5th Annual Pardeeville High School Student Council Run/Walk
May 4, 2013 – Pardeeville High School, Pardeeville
Contact Chris Lynch, (608) 429-2153, Ext. 245 or lynchc@pasdwi.org
FHSrunwalk.com

Chelsea's Hope
May 4, 2013 – Brink Lounge, Madison
Contact Chelsea Harris at charris2004@gmail.com

Carbone's Peddling for Pancreas
May 11, 2013 – Verona Hometown USA Park
Contact James Listug, jalistug@uwcarbone.wisc.edu

Concert for a Cure for Cancer
May 18, 2013 – Pacelli High School, Stevens Point
Contact Amy Formella, amymysic@charter.net

Our Hope of Burlington
May 18-19, 2013 – Burlington High School, Burlington
Contact Judy Bratz, (262) 763-5319
ourhopewalk.com

The Feature at PGA West
May 29, 2013 – PGA West, La Quinta, CA
Contact Ty Tribovich, ttribo@earthlink.net

5th Annual Teresa's Benefit for Pancreatic Cancer
May 31, 2013 – Olympia Resort and Conference Center, Oconomowoc
Contact Pete, pjsdds@wi.rr.com

Andy North and Friends
June 2-3, 2013 – Kalahari Resort and Trappers Turn, Wisconsin Dells
Contact Janie Winston, (608) 262-1032 or Amy Manecke, (608) 262-6967
andynorthandfriends.com

Ride for Research
June 5, 2013 – Wabeno
Contact John Newton, Bigwoods200@hotmail.com

The Steel Curtain Open
June 28, 2013 – Door Creek Golf Course, Cottage Grove
Contact Tyna Swatek, tynaswatek@aol.com

Tomorrow's Hope Walk Fest
July 19-20, 2013 – Jefferson County Fairgrounds, Jefferson
Contact Barb Endli, bendli@charter.net
Tomorrowshope.org

Heads Up! Golf Outing
July 22, 2013 – University Ridge Golf Course, Verona
Contact Theresa Breunig, breunig@humonc.wisc.edu or Jody Fisher, fisher@humonc.wisc.edu or call (608) 265-5506