



## Bringing Cancer Care Throughout Wisconsin: One Patient at a Time

Last December, Tom Helgestad of Wisconsin Rapids became one of the thousands of people in Wisconsin diagnosed with cancer. This spring, he became one of the survivors.

A simple procedure to diagnose what he thought was a bleeding ulcer disclosed a large tumor at the base of his esophagus. It wasn't what he and his wife were expecting. But for Tom, deciding where to get care was easy.

"To me there was no choice, no question...we went to the University of Wisconsin Cancer Center Riverview in Wisconsin Rapids," he explains.

Because his wife did fund-raising for the center he knew the physicians had excellent reputations and that the center was using tomotherapy, the latest in radiation therapy technology. It was close to home, and it is affiliated with the University of Wisconsin Paul P. Carbone Comprehensive Cancer Center in Madison.



Tom Helgestad

Both of Tom's parents had been treated at UW Hospital and Clinics in Madison and he felt that his best chance was going with UW again.

"The doctors were amazing. When we met the radiation oncologist, Dr. Jim Welsh, he gave us such a feeling

of confidence. He expected a good outcome. We were so fortunate this place is in our community," says Tom.

The UW Cancer Center Riverview is part of the UW's decade-old regional cancer network, established to share the experience and research of UW Carbone Cancer Center (UWCCC) with colleagues and patients throughout the state and northern Illinois.

**"To me there was no choice, no question...we went to the University of Wisconsin Cancer Center Riverview in Wisconsin Rapids."**

The network, comprised of six officially-affiliated community cancer centers, one stand-alone cancer center, and several medical oncology and radiation oncology outreach clinics, brings the expertise of Wisconsin's only federally-designated comprehensive cancer center to patients across the state.

UWCCC oncologists work closely with local oncologists and other physicians, providing educational and research opportunities, offering forums to discuss treatment options, setting quality goals and measures, and in some cases, supplementing radiation or medical oncology services in the community.

According to UWCCC Director George Wilding, MD, collaborations between local and university cancer care professionals have a tremendous impact on the patients in the state. "Each year, through our affiliations and our care in Madison, the lives of more than half of all the cancer patients diagnosed in the state are touched by UW cancer experts. This is truly an example of the Wisconsin Idea."

For example, UWCCC medical oncologists have clinics in Beaver Dam, Mauston, Monroe, Portage, Reedsburg and Richland Center and there is a full-time medical oncologist at the freestanding UW Cancer Center – Johnson Creek. UWCCC radiation oncologists work in Wausau, Wisconsin Rapids, Appleton, Oshkosh, Beloit, and Freeport, Illinois. UWCCC physicists either staff, or support the staffs, of many of the radiation therapy sites in the region.

These regional relationships expand the kinds of care available to patients. UWCCC partners can often offer interested patients opportunities to participate in clinical trials, frequently giving them a first chance to benefit from improved cancer therapies.

The network provides on-going quality initiatives, particularly through shared experiences. A long-standing program connects oncologists via video conferencing so they can collaborate, discuss complex cases, and gain valuable peer insights about charting a course of treatment. Dan Mulkerin, MD, medical director for UWCCC and the regional network, most recently worked with network members on participating in a national Quality Oncology Practice Initiative, which gathers benchmark data from oncologists from across the country to improve treatment practices.

Back in Tom Helgestad's hometown, Celse Berard, CEO at Riverview Hospital in Wisconsin Rapids says, "The University has brought to our center a level of expertise that could not be possible for a rural community hospital to provide on its own. Most importantly, the care patients receive from our two nationally- and world-renowned physicians - Dr. James Welsh, radiation oncologist, and Dr. Ron Kirschling, medical oncologist/hematologist - is enhanced by the collegial support they receive as faculty of the UW."

Patients like Tom know what this means to them and their families. "I was treated as an 'entire person' – mentally, physically, emotionally, spiritually. It was all very comforting. I can't say enough about these people. They saw me at my best, and they saw me at my worst. They were there for me."

After 33 treatments over three months, Tom's cancer appears gone. He still has trouble tasting sweets, but doctors are hopeful that a year from now he'll be enjoying chocolate again.

The UW Carbone Cancer Center has established alliances with healthcare facilities across the state and in northern Illinois. It has very special relationships with six Affiliate Partners, which bring UW physicians into local communities to provide on-site cancer care. They also link patients to cutting-edge clinical trial research. These affiliations are with:

- St. Elizabeth Hospital Cancer Center, at Affinity's St. Elizabeth Hospital, Appleton
- Michael D. Wachtel Cancer Center, at Affinity's Mercy Medical Center, Oshkosh
- Beloit Memorial Hospital, Beloit
- FHN Leonard C. Ferguson Cancer Center, Freeport, IL
- UW Cancer Center Johnson Creek, Johnson Creek (a partnership among Fort HealthCare, Watertown Area Health Services and UW Health)
- UW Cancer Center Riverview Hospital, Wisconsin Rapids

## Uncovering the Mysteries of Multiple Myeloma

**Q.** What is new in treating multiple myeloma?

**A.** Myeloma is the second most common hematologic malignancy, and is generally considered an incurable disease. Yet, it is difficult to think of any other cancer in which such vast improvements in treatment, survival and quality of life have come so directly from research. Two recent large retrospective population studies have shown conclusively that patients with myeloma are living on average five years and that patients diagnosed in their 50s have more than a 40% chance of living 10 years or more.

Research in the past 15 years has driven major changes in the way physicians treat multiple myeloma. Until the 1960s, typical myeloma patients had a life expectancy of about six months, and during that brief time they faced major complications from bone fractures and pain, anemia and infections. Only radiation therapy helped manage symptoms.

In the 1950s and 1960s researchers, including UW's Dr. Paul P Carbone, began studying melphalan, an oral chemotherapy agent used singly and then combined with steroids such as prednisone. This combination became the standard treatment for myeloma and increased survival by an average of about two years.

Over the last 30 years, many variations of chemotherapy drugs were tested in an attempt to improve survival response rates, but none of them proved to be more effective than melphalan and prednisone.

The story began to change in the area of high dose therapy. A 1996 landmark trial demonstrated that autologous bone marrow transplantation dramatically improved response and survival over combination therapy for patients younger than 60. For the first time, a substantial number of myeloma patients entered a complete remission from their disease, something older therapies had never done.

That same year, researchers showed monthly intravenous doses of pamidronate lead to almost a 50% reduction in bone fractures, pain and the need for surgery or radiation. These innovations meant myeloma patients could enjoy years of excellent health, although the majority of patients

would relapse after a transplant. Over the past 10 years transplantation techniques have been further refined to make this a safe and standard part of therapy.

Research also led to new applications of an old drug. Focusing on ways to keep myeloma cells from tapping into blood supplies, scientists looked to thalidomide. First used to treat relapsed myeloma, thalidomide has provided important treatment choices for newly diagnosed myeloma patients. The UW was one of several cancer centers participating in a trial of lenalidomide and dexamethasone for newly diagnosed patients which showed response rates in more than 80% of patients. These two agents also have been found to be excellent additions to older drugs in producing powerful oral combinations.

The discovery of the importance of proteasome inhibition in cancer treatments led to additional drug developments, including bortezomib, introduced in 2003 to treat relapsed myeloma. Used singly or combined with older and newer agents, it produces responses in newly diagnosed myeloma patients, as well as relapsed patients. Results from a recent international trial proved that the melphalan, prednisone and bortezomib combination was far superior to melphalan and prednisone alone.

UW Carbone Cancer researchers are participating in all aspects of myeloma research, including clinical trials using new combinations of agents, and basic science investigations, led by Dr. Shigeki Miyamoto to understand myeloma's drug resistance. We are also fortunate to have the support of strong myeloma patient advocacy groups that continue to demand better and safer treatments.



*Dr. Natalie Callander completed her residency at Bellevue Hospital in New York and a hematology/oncology fellowship at the University of California-San Diego. For more information about multiple myeloma treatment at the UW Carbone Cancer Center, please contact Cancer Connect, (800) 622-8922.*

### MARK YOUR CALENDARS

**Walk With Grace**  
August 8-9, 2008  
(608) 604-8255

**Celebrate Hope**  
August 10, 2008  
Benefit for UWCCC Lung Cancer Program  
(800) 252-2664 or (608) 271-2664, ext. 5341

**Drive for Hope Golf Outing**  
August 11, 2008  
Benefit for UWCCC Lung Cancer Program  
(800) 252-2664 or (608) 271-2664, ext. 5341

**Tomorrow's Hope**  
August 22-23, 2008  
(920) 674-8967

**Jewel of an Evening**  
September 3, 2008  
Event for gynecologic cancer patients  
(608) 261-1707

**Stand Up to Cancer**  
September 5, 2008  
www.standup2cancer.org  
(See article to the right)

**Toast to a Cure**  
September 12, 2008  
Benefit for UWCCC Melanoma Program  
(608) 516-1593

**Radiance Skin Therapy Event**  
September 18 & October 16, 2008  
Benefit for UWCCC  
(608) 240-0088

**HEADRUSH**  
September 27, 2008  
Benefit for UWCCC Brain Tumor Program  
(608) 469-8304

**Free to Breathe: Lung Cancer 5K Run/  
Walk & 1 Mile Walk**  
September 27, 2008  
Benefit for UWCCC Lung Cancer Program  
(608) 233-7905

**Sixth Annual Free Multiple Myeloma  
Education Day**  
October 4, 2008  
www.leukemia-lymphoma.org

**7th Annual Symposium: Advances in  
Multidisciplinary Cancer Care**  
Conference focusing on cancer psychology,  
spirituality and caregiving. Open to anyone.  
October 24, 2008  
(608) 263-0160

**Lung Cancer Awareness Week**  
November 10-12, 2008  
UW Carbone Cancer Center

*Please visit [cancer.wisc.edu](http://cancer.wisc.edu) for more information on all of the events listed.*



## National Stand Up to Cancer set for September 5

On Friday evening, September 5, 2008, the national television networks of ABC, NBC and CBS will donate one hour of primetime for a history-making interactive television special, uniting the nation as we *Stand Up To Cancer*, including:

- Performances by legendary recording artists.
- Over 50 of the biggest names in TV, film, sports and music participating in a live phone bank.
- Segments on cutting-edge cancer research with renowned scientists.



## Opening This Fall

Wisconsin Institutes for Medical Research East Tower

This September cancer researchers from across the UW-Madison campus will move into the first tower of the Wisconsin Institutes for Medical Research (WIMR).

The seven-story structure, one of three that will eventually comprise the WIMR complex, will house UW Carbone Cancer Center laboratory space dedicated to breast, prostate, lung and other types of cancer research.

# Tackling cancer on the Molecular level

Researcher Spotlight: Darin Y. Furgeson, PhD

Next time you hear someone grouse about working in tight quarters, consider the plight of molecular engineers like University of Wisconsin-Madison assistant professor Darin Y. Furgeson, PhD, who manipulate material 1,000 times thinner than a human hair as they work to build and improve therapies for cancer and other maladies.

Now, Furgeson doesn't operate at the molecular level, but he does display a rare talent for envisioning new therapeutic approaches and using advanced techniques to create them—a trait which is garnering accolades for Furgeson and for organizations like the UW School of Pharmacy and the UW Paul P. Carbone Comprehensive Cancer Center.

Recruited to UW-Madison in 2005 by the late Prof. Joseph Robinson of the School of Pharmacy, Furgeson is an assistant professor in the Division of Pharmaceutical Sciences, with an affiliate appointment to UW's College of Engineering Department of Biomedical Engineering. He's active in the UW Carbone Cancer Center's Experimental Therapeutics Program and the Biomedical Engineering's Center for Translational Research.

Furgeson's commitment to cross-disciplinary training and interdisciplinary research runs deep. He completed bachelors and masters degrees in chemical engineering at the University of Utah before studying non-viral gene therapy with Distinguished Professor Sung Wan Kim. After earning a PhD in Pharmaceutics and Pharmaceutical chemistry, Furgeson moved to Duke University to complete a post-doctoral fellowship in biomedical engineering with Professor Ashutosh Chilkoti.



Darin Y. Furgeson, PhD

It wasn't easy leaving Utah, especially to begin a largely new curriculum. "It was daunting, to say the least," Furgeson says. "But I firmly believe that you need a very broad knowledge base in order to succeed

as a junior faculty member. And the experience of working at Utah and Duke leads me to try to look at the problem from both sides: from the basic science problem out to the therapeutic and from the therapeutic inward."

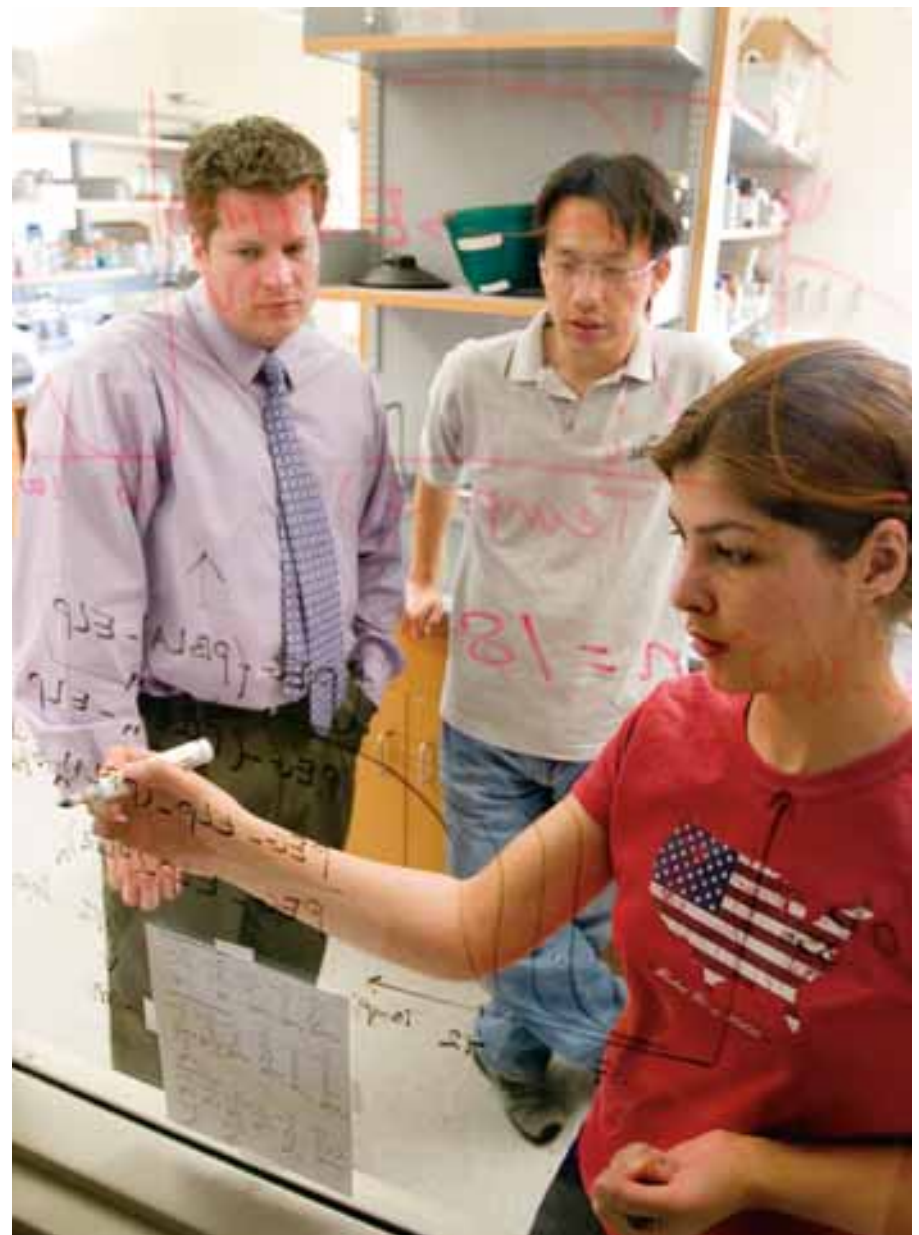
While at Duke, Furgeson gradually transitioned into molecular biology and drug delivery. He also designed and genetically engineered several polymers, or many molecules strung together, that migrated toward heated areas, making them potential avenues for tumor-targeted chemotherapy.

Today, by combining biomolecular engineering and polymer chemistry, his team's research is rapidly advancing translational options for multimodal therapy. In a report published in the *Journal of Controlled Release* in June 2007, Furgeson and four other UW researchers presented a research summary indicating they'd successfully developed prototype polymers they called "intelligent biosynthetic nanobiomaterials" that combined heat-based targeting and delivery of chemotherapy agents.

"My experience at Duke led me to want to stay in academia. I wondered: 'Could I leverage the best parts of what I learned at both institutions?' My overall training pointed to targeted drug delivery: 'How can we deliver an amount of drug so it can get to the tumor site in a more efficient manner?' I began to think of more elegant ways to deliver hyperthermia, which led me to develop new thermal-sensitive bioorganic and biosynthetic polymers."

A current project, involving a new form of hyperthermia therapy that uses advanced microwave technology to super-heat and destroy tumors, appears tailor-made for Furgeson. Working with Professor of Radiology Fred Lee, Jr., MD; and Prof. Chris Brace of Radiology and Biomedical Engineering, Furgeson will tap his experience with thermal-sensitive polymers to create a polymer that can carry a chemotherapy agent to the exterior of the heated tumor.

For this project, Furgeson envisions creating a polymer that a patient would receive shortly before microwave thermal ablation treatment began, essentially positioning the chemotherapeutic agent for rapid transport to the exterior wall of the tumor, or tumor margin.



UW-Madison assistant professor Darin Y. Furgeson, PhD consults with Tze-Haw Howard Chen, MS (center) and Elham Nejati, MS, who work within his laboratory at the UW School of Pharmacy.

"Introducing our polymer system prior to the microwave thermal ablation would essentially allow us to attack the tumor almost simultaneously from the inside out—with direct microwave therapy—and from the outside in—with a chemotherapeutic agent introduced by our polymer," Furgeson said. "Cancer is such a wicked beast, you have to try to hit it from every angle you can. The thermosensitive polymers we have developed are designed not only for chemotherapy but also gene therapy.

A tumor margin is an excellent target for chemotherapy because it has a thickened structure that can sometimes resist treatment, which makes tumor margins a frequent site of cancer recurrence, he said.

While this is an example of actively targeting a tumor, Furgeson is also well-versed in the design of polymers that target tumors passively. In the latter case, the polymer and an attached chemotherapy agent need only be small enough and light enough to flow naturally into tumors, which tend to have

loose vasculature and lack a protective lymphatic system. A biodegradable agent that will break down rapidly inside the tumor, releasing the chemotherapy, can hold the chemotherapy agent in place.

Polymers offer researchers and clinicians several advantages. Chief among them are significant structural flexibility, ease of access and rapid production time. Polymers can be genetically engineered to fit a specific clinical need, stored in a plasmid in a freezer, then thawed, cultured and purified in about two days. "When you're done, you have the polymer at exactly the molecular weight and architectural design you want, extremely pure," Furgeson said.

"And you can produce them rapidly in large amounts, which is important, because we want to treat the patient, we don't want to spend undue time making the drug delivery vehicles."



- **Advances is published semi-annually by the University of Wisconsin Paul P. Carbone Comprehensive 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 [uwccc@uwccc.wisc.edu](mailto:uwccc@uwccc.wisc.edu).**

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### DONOR SPOTLIGHT:

## JODI LOU LUNG CANCER FUND

Ray Rickert of Hollandale, Wisconsin knew the first annual Jodi Lou Lung Cancer Run/Walk held in June would be successful, but little did he realize it would raise \$31,000 for lung cancer research at the UW Carbone Cancer Center.

The event was held in memory of Ray's wife, Jodi Lou who two years ago was diagnosed with lung cancer at the age of 34.

Sharing her own story was critical to Jodi, as she wrote the following:

"As you can imagine, I had several shocks. The toughest one, telling my husband of three years and father of our 8½ month-old daughter that I may be dying. Since I had never chosen to smoke, the news came as a complete disbelief. I became astonishingly aware that lung cancer is not just a smoker's disease. Unfortunately, at the time of my diagnosis, it had metastasized to my bones, spinal cord, hip, shoulder, knees, brain and the liver classifying the disease as Stage Four."

According to Ray, even with all Jodi was enduring she made it one of her last missions to establish the Jodi Lou Lung Cancer Fund to help others by advancing lung cancer clinical trials.

"It was Jodi's wish to avoid even one more parent having to say goodbye to their child," said Ray. "Our mission is to quickly move research from the scientists in the lab to cancer patients in the clinical setting."

"Lung cancer is the leading cause of death from cancer in Wisconsin, in the US, and worldwide. Over 3,000 people in Wisconsin die from lung cancer each year," said Anne Traynor, MD who specializes in lung cancer. "As in Jodi's case, lung cancer strikes thousands of people who never smoked. The only way to lower the number of deaths and reduce the number of people afflicted by this horrible disease is to increase funding dedicated toward lung cancer research."

Funds raised from this event will benefit the "Creating Hope" Lung Cancer Campaign to provide facilities, staff and support for lung cancer research at the UW Carbone Cancer Center. The "Creating Hope" campaign is getting a boost with a one-time state of Wisconsin matching grant of \$2.5 million. The Cancer Center will receive this state money if \$2.5 million in gifts and grants from private sources is initially raised toward the campaign.



Jodi Lou Rickert is shown with her daughter, Sofie. Sadly, Jodi Lou died from lung cancer in April 2008.

For more information about the Jodi Lou Lung Cancer Fund or the "Creating Hope" Lung Cancer Campaign with state match, please contact Russ Austin at the UW Foundation, [russ.austin@uwfoundation.wisc.edu](mailto:russ.austin@uwfoundation.wisc.edu) or (608) 263-7594.

## STUDY: Breast cancer patients with greater need do more online information seeking



Patients with more concerns about their breast cancer are heavier users of online information according to a new study conducted by the University of Wisconsin-Madison Center for Excellence in Cancer Communications Research funded by the National Cancer Institute. Additionally, those in greater need were more likely to seek out experiential information such as stories about other patients or how to be a better healthcare consumer as compared to more science-based content.

This is the first study to take a comprehensive look at what psychological characteristics predict online information seeking among underserved breast cancer patients. The study sample included 144 recently diagnosed, low-income, rural breast cancer patients in Wisconsin who were referred by their healthcare providers to a study in which they were provided a free computer, Internet access and training on how to use an online health education and support system called the Comprehensive Health Enhancement Support System (CHESS)

program, a computer-based health education and support system. Surveys were administered before group access, and use data about how women used different types of information within the system were also collected.

"Many thought that cancer patients who were better off would be more likely to use resources such as the Internet to cope with their illness - yet our research indicates that underserved patients with greater psychological needs are more likely to take advantage of the Internet as a source of cancer information. Our findings support efforts to expand access to Web-based cancer information resources for vulnerable populations who could benefit from this support," said Bret Shaw, PhD, lead author of the study. "It is also interesting to learn that experiential information such as personal stories from other patients may be among the content that patients want most," said Shaw.

The results of the study were published in the June 2008 issue of the Journal of Health Communication.

# Making a Difference



Cancer Center gynecologic oncologist, Joe Connor, MD accepts a \$10,000 check at the second annual Wisconsin Ovarian Cancer Alliance (WCOA) Survivor Brunch. Presenting the check were Maggie Lange, vice president and Kelli Zembruski, president of the WCOA. The money will be used to support gynecologic oncology research at the UW Carbone Cancer Center. Thank you WCOA for your dedication in supporting groundbreaking research for all women and families affected by gynecologic cancer.



Members of the Women's Committee of Local Lodge #873 International Association of Machinists, and employees of John Deere in Horicon, raised \$588 through a candy bar sale in honor of their co-worker John DeMeester. John was diagnosed with prostate cancer two years ago. Shown above is Colleen Gavin of the Cancer Center accepting the check.

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

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Check enclosed. Please make checks payable to **UW Carbone Cancer Center.**

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# Updates in *Clinical Trials*



## **Chemoprevention**

Starting in late summer, a new cancer research study will open only to people without cancer: “A Pilot Study of the Novel Retinoid, 9cUAB30, to Determine Preliminary Pharmacokinetics”. This new drug, 9cUAB30, is in a family of drugs called “retinoids.” Retinoids are natural or man-made compounds that are related to Vitamin A. This study will be the first time this medication is given to humans. The purpose of the study is to see how a new drug, 9cUAB30, is absorbed and processed by the body and what side effects it might have. In animal studies, it seems to have fewer side effects than other medicines like it. The side effects of other medicines in this family can include things like skin rash, chapped lips, headache, elevated blood lipids, blurry vision or changes in liver enzymes. Depending on the results of this study, 9cUAB30 could be developed further as a treatment for cancer.

During the study, participants will take one dose of 9cUAB30 by mouth. After taking the medication, participants will remain on the research unit of University Hospital for 24 hours. During those 24 hours, blood (about 2 teaspoons) will be drawn 13 times and all urine will be collected. Volunteers will return to the hospital one week after taking the study medication for a physical exam and to have another blood sample taken. Finally, 30 days after taking the study drug, a brief interview will be conducted by phone. This will end study participation. All participants who complete the study will be given \$300 as reimbursement for time, travel, parking, etc.

## **Head and Neck**

The UWCCC has several clinical trials open for patients with newly diagnosed cancers of the Head and Neck (H&N) region. One is a national study sponsored by the National Cancer Institute evaluating the addition of a promising new drug, cetuximab, with concurrent cisplatin chemotherapy and radiation. Cetuximab is a molecular growth factor inhibitor that blocks cell signaling in squamous cell cancers, the most common tumors of the H&N. Patients receive weekly cetuximab along with chemotherapy and daily radiation for six to seven weeks. Eligible patients must not have had prior surgery, radiation or chemotherapy for their cancer.

Another interesting study for H&N cancer patients is evaluating the use of an oral drug, Lapatinib in patients who cannot tolerate the standard intravenous chemotherapy drugs used during radiation. This trial is open at a limited number of institutions including UW, Stanford, Duke, Beth Israel, and University of Florida. Lapatinib is a promising new dual-molecular inhibitor that targets several important growth receptors that are commonly active in epithelial tumors like those in the H&N region. Lapatinib is taken by mouth daily during six to seven weeks of radiation. Eligible patients must not have had prior treatment for their cancer.

## **Leukemia/Myelodysplastic Syndrome**

While younger patients with acute myelogenous leukemia (AML) or myelodysplastic syndrome (MDS) are often cured with aggressive treatment, those patients that have recurrence of their disease have few viable options for achieving remission or cure. A possible treatment for these bone marrow cancers is the inhibition of blood vessel growth that is required to support the growth of the cancer cells. All blood vessel cells grow in response to a hormone called “vascular endothelial growth factor” (VEGF). When there is a need for new blood vessels, VEGF is produced and the hormone binds one of the VEGF receptors on a blood vessel cell. The hormone stimulates the blood vessel cells to proliferate and create a new blood vessel.

A new medication AZD2171 (cediranib) can block the ability of the VEGF receptors to sense the hormone, which will inhibit the blood vessel cell from growing. AZD2171 also blocks a leukemia growth receptor called c-kit and the VEGF receptors on leukemia cells possibly further inhibiting the growth of the disease itself. A new study sponsored by the National Cancer Institute is available that is designed to treat AML or MDS patients with AZD2171 to determine how well the medication works to control these diseases and what kind of side-effects are caused by the medication.

For more information about these and other clinical trials at the UW Paul P. Carbone Comprehensive 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, [www.cancer.wisc.edu](http://www.cancer.wisc.edu)