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Research - Cancer

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FOR IMMEDIATE RELEASE

5/18/01

CONTACT: Gelsomina De Stasio, (608) 877-2000, pupa@mail.src.wisc.edu

CONTRAST AGENT SHOWS PROMISE FOR TREATING BRAIN TUMORS

MADISON - A chemical agent long used by physicians to get detailed pictures of cancer tumors may also have therapeutic value for a class of deadly brain tumors, according to a new study.

The study, published May 15 in the journal Cancer Research, demonstrates that gadolinium compounds, contrasting agents used in Magnetic Resonance Imaging (MRI) to illuminate tumors, can be absorbed by cancer cells where, in combination with thermal neutron treatment, they can destroy the DNA that cancer cells depend on to live and reproduce.

"It's like a small atomic bomb," says Gelsomina De Stasio, a University of Wisconsin-Madison professor of physics and the lead author of the study. "There is going to be a very strong and very destructive reaction where the gadolinium is situated" when it is exposed to low-energy neutrons while sparing nearby healthy tissue that does not contain gadolinium.

Gadolinium has been used for more than 15 years in MRI as a contrast agent to light up the tumor cells. But it has long been assumed to have no therapeutic value because it was thought that it could not be absorbed by cancer cells. The new study shows, however, that gadolinium is indeed absorbed by cancer cells where it migrates to the nucleus and can be triggered by thermal neutron radiation to destroy the cancer cell DNA.

"Everybody thought gadolinium therapy was not possible," says De Stasio. "It was assumed that gadolinium compounds remained extracellular

in tumor tissue and could not reach the cell nucleus. We show that that is not the case."

The results of the study, conducted at UW-Madison's Synchrotron Radiation Center, in collaboration with researchers in Italy, Switzerland and Montana, suggest that new gadolinium-compound therapies could be developed to treat glioblastoma, a brain cancer that kills an estimated 12,000 people every year in the U.S. alone. "It's a very nasty tumor and usually kills patients within six months of diagnosis," De Stasio says.

In the past, similar therapies employing boron compounds have been attempted, and are used widely in places such as Japan. But gadolinium compounds seem to be much more specific for tumor cells and, once absorbed into the cell nucleus, provide a much bigger target for the neutrons that provoke the DNA-destroying reaction.

The study published in Cancer Research was conducted in cultured tumor cells. Therapies involving gadolinium compound isotopes have not yet been tried in humans, but studies of how well the compounds are absorbed by tumor cells in patients are now underway. If successful, the new studies could lead to a non-invasive and non-toxic treatment for glioblastoma patients.

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-- Terry Devitt (608) 262-8282, trdevitt@facstaff.wisc.edu

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FOR IMMEDIATE RELEASE

7/27/01

CONTACT: Tom Rooney, (608) 265-2191, tprooney@facstaff.wisc.edu

HOW WILD IS THE NORTH WOODS? NOT VERY, BIOLOGISTS SAY

MADISON -- Biologists have constructed a new map for the north woods of Minnesota, Wisconsin, and Michigan that they say reflects how "wild" ecological conditions are across the region.

Their map, published this week in the Natural Areas Journal, is based on several geographic databases and takes into account forest cover, similarity to original forest conditions, public ownership, population density, road density, and an area's likelihood of supporting wolves.

The resulting map shows that less than 6 percent of the region surveyed met all five wildness criteria.

Tom Rooney, a co-author of the study and a University of Wisconsin-Madison botanist, says: "Conservation biologists have grown increasingly concerned with population expansion and continuing development in the north woods. Human activities are fragmenting forests and reducing the wild conditions many plants and animals need. This map both reveals the wilder areas we have left and can serve as a blueprint to promote restoring more wild conditions across our region."

The biologists say a key finding is that many wild areas in the region remain small and isolated, preventing the easy movement of wildlife across the region. Not surprisingly, all their measures of wildness were highly correlated with each other. The map, they say, can also serve as a baseline for future studies of the region.

The study was supported in part by the Superior Wilderness Action Network (SWAN) and produced at the University of Wisconsin-Madison's Land Information and Computer Graphics Facility. The map appears in both the article and on SWAN's Web site, <http://www.superiorwild.org>.

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FOR IMMEDIATE RELEASE

September 22, 1999

CONTACT: Susan Hagness, (608) 265-5739; hagness@engr.wisc.edu

MICROWAVE IMAGING MAY YIELD BETTER BREAST CANCER DETECTION

MADISON - A radar technology used to detect anti-personnel land mines may find a promising application in the campaign for early detection of breast cancer.

Susan Hagness, an assistant professor of electrical and computer engineering at the University of Wisconsin-Madison, is researching the use of microwave radar imaging for breast cancer detection, as a complement to the standard use of X-ray mammography.

The widespread availability of X-ray mammography has been a life-saving success story, providing an inexpensive and simple approach to early detection. Despite progress, the technology still produces a relatively high number of false negative and false positive diagnoses, Hagness says.

Hagness is researching whether images from microwaves - the same microwaves used to communicate with digital cellular phones, only at lower power - will offer the sensitivity to solve those problems.

"Early detection is the key to survival, so we always want to do a better job of identifying tumors as soon as possible," Hagness says.

Hagness received a boost this month with a \$207,000 grant from the Whitaker Foundation, a non-profit organization dedicated to engineering research that improves medical care. She also started a research partnership with Frederick Kelcz, associate professor of medicine and expert on breast cancer detection.

Although clinical trials are down the road, the team is conducting microwave measurements on breast tissue excised during biopsies at UW Hospital and Clinics. They are also creating computer simulations that test microwave sensor designs in realistic environments.

The work seeks to answer two key questions, Hagness says. First, can microwave imaging detect extremely small tumors, only a few millimeters in size, to improve early detection? And second, can it differentiate between a malignant and a benign tumor, thus eliminating the trauma of unnecessary biopsies for women?

Kelcz says mammograms are known to miss a significant number of breast cancers, especially in younger women. False positives are even more widespread. Of the women who follow up with biopsies of an abnormality, about 70 percent of them do not have cancer.

Microwaves are a non-ionizing form of electromagnetic waves that interact with tissue according to water content. In Hagness' research, low-power microwaves are used like sonar to bounce a signal off the tissue. Since tumors have a higher water content compared to normal tissue, they will

back-scatter the microwaves and produce an echo. The measurements of those echoes enable Hagness to develop a 3-D image of the tumor.

Sub-surface radar imaging has a number of applications to help reveal the invisible. In addition to land mine detection, they can be used to identify weaknesses in bridge structures, detect the thickness of glaciers or identify archaeological sites.

To date, Hagness is getting some promising images in her computer simulations of the microwave sensor. The ongoing research will help them learn how to distinguish cancerous tumors from harmless ones.

"We want to highlight those differences and determine the classic signatures to the microwave echoes," she says. "This could help us narrow down biopsy cases."

Kelcz says alternative approaches are important to pursue, since early detection saves lives. He notes that when cancers are detected less than a centimeter in size, there is a 95 percent survival rate. But at 2-3 centimeters, the cancer often moves into lymph nodes and survival rates begin to decline.

"We need technologies with the sensitivity to pick up abnormalities early enough to make a clinical difference," he says.

Hagness adds that microwave devices are inexpensive enough to make them widely accessible in health care. Microwave imaging also carries no danger of radiation exposure, and would not require breast compression.

She began the work with staff of the Chicago company Interstitial, Inc., while finishing her doctorate at Northwestern University. Interstitial was recently awarded three patents for this technology; Hagness and her colleagues have two patents pending.

Brian Mattmiller, 608/262-9772, bsmattmi@facstaff.wisc.edu

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Res -
Cancer

Governor sees 'biotech revolution' in the making

Brian Mattmiller

Gov. Tommy Thompson's fast-paced tour Nov. 30 through the biotechnology landscape at UW-Madison, from computer-packed genetics labs to nascent startup companies, was a showcase of great expectations.

Perhaps none are greater than Thompson's, who wants Wisconsin to emerge as a national leader in biotechnology development. Throughout the day, Thompson got a look at the intellectual works in progress that could make that expectation a reality.

"The competition is on," Thompson proclaimed early in the day at the university's Biotechnology Center. He told the story of a recent summit of Midwestern governors, in which his counterparts in Iowa, Michigan and Pennsylvania all claimed to be regional leaders in biotechnology.

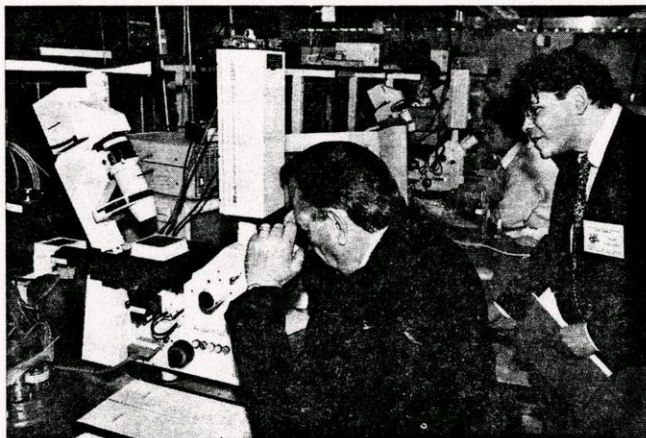
Thompson urged the gathering of scientists and administrators to be aggressive in promoting this field of the future. "Where will Wisconsin's niche be (in biotechnology)?" he asked.

There were clues scattered throughout the visit.

At the Biotechnology Center, Thompson toured the lab of new professor David Schwartz, who developed an "optical mapping" technology that can map whole genomes with remarkable speed. Thompson also viewed a new "gene chip" technology developed here that could make DNA analysis cheaper and more accessible to scientists.

At University Research Park, he heard the stories of three entrepreneurs who turned UW-Madison scientific advances into thriving companies. One of them, called Terionics, began a decade ago as a small, high-risk company developing drugs for osteoporosis and cancer. Today, it's poised to enter a new \$5 million, 24,000-square-foot building at the park with potential for 65 employees.

Provost John Wiley noted how quickly



At the university's Biotechnology Center, Gov. Tommy Thompson peers into a microscope at the lab of new professor David Schwartz, right, who has developed an "optical mapping" technology that can map whole genomes with remarkable speed. Thompson also viewed a new "gene chip" technology developed here that could make DNA analysis cheaper and more accessible to scientists. Photo: Jeff Miller

investments can pay off in this field. The \$1.5 million bioscience initiative, spearheaded by Thompson last year, "has paid just staggering dividends in a year's time," he said. The initiative, which allowed for the hiring of eight new faculty, is directly responsible for nearly \$30 million in additional research grants and contracts secured by faculty, Wiley said.

The total funding within biotechnology, which includes the Laboratory of Genetics and the new Genomics Center, now totals more than \$57 million and is growing rapidly. In the last year alone, research produced 30 faculty-initiated patents.

"This is an expensive venture," said Michael Sussman, director of the Biotechnology Center. "But we have been successful in bringing in the kind of money and talent needed to succeed The genomics pot is boiling, and there is a revolution happening in the way we do biology."

Other developments on the horizon

include the Waisman Center's Translational Research Facility, expected to be completed in fall 2000. It will be one of the only places in the country capable of producing gene therapy products "clean" enough for use in human clinical trials.

Terence Dolan, director of the Waisman Center, said this new building will help drive the center's ultimate goal of curing the myriad genetic diseases that affect children. There are anywhere from 6,000 to 7,000 genetic diseases that affect human health, he said.

Thompson also heard about a proposal to create a new master's-level training program in biotechnology. The program would fill a huge gap in the training of highly skilled technicians and create a quality work force that would be a tremendous advantage to Wisconsin industry.

Apparently, excitement over biotechnology is starting to spread. Wiley noted that 30 percent of 1999 UW-Madison freshman intend to major in biology. ■

Hospital to test potential cancer treatment

The Comprehensive Cancer Center expects next week to begin a clinical trial of the first human test of endostatin, a naturally occurring protein and potentially promising cancer treatment that has been shown to cut off the blood supply to tumors in mice.

Chosen as a study site last March by the National Cancer Institute, the center recently received approval to begin the tests. The CCC is one of three locations selected for the trial.

"Participating in this cancer treatment study is an honor and exciting privilege for the UW Comprehensive Cancer Center," says George Wilding, professor of medicine and principal investigator of the Experimental Therapeutics Program.

"Nothing would make us happier than to find a potentially revolutionary form of cancer treatment in humans. At the same time, we cannot overstate how often that humans have failed to respond to treatments that have shown promising results in animals."

Endostatin's potential value as a cancer

treatment received considerable attention after a May 1998 New York Times article described early results in mice in the laboratory of Judah Folkman of Harvard Medical School. In these animal studies, endostatin inhibited the growth of existing tumors and caused some to shrink to microscopic lesions. When researchers examined these tiny lesions, they found endostatin had blocked the growth of blood vessels that nourished the tumors.

James Thomas, assistant professor of medicine at the Medical School and chair of the CCC's endostatin study, says that endostatin is one of several potential cancer treatments known as angiogenesis inhibitors — drugs that halt the creation of blood vessels that keep tumors alive.

"If endostatin is effective, it would represent a whole new approach in cancer treatment," Thomas said. "Instead of killing the cancer cells, which we typically do with chemotherapy or radiation, we want to know if cutting off a tumor's blood supply represents a form of treatment that might prevent the spread of

cancer without the toxicity associated with existing radiation or chemotherapy treatments."

Wilding says the scope of this study, known as a phase one clinical trial, is limited to finding a safe dosage for humans, not determining effectiveness as a cancer treatment. Treatment effectiveness would be examined in phase two and phase three trials, if they occur, and would not begin for one to two years.

In concert with standard clinical trial procedures, patients for the university's endostatin study will be selected from cancer patients who have already been treated by or referred to a medical oncologist at the Medical School; have advanced solid tumors (not leukemia or myeloma) for which no known beneficial therapy exists; and have a cancerous tumor that is easily accessible to repeated biopsies.

The identity of the 15 to 30 patients selected to participate in the CCC's endostatin study will be kept confidential.

More information about the CCC's endostatin study: 262-8330. ■

ADVANCES

Advances gives a glimpse of the many significant research projects at the university. Tell us about your discoveries by e-mailing: wisweek@news.wisc.edu.

Gas clouds seed galaxy

Massive clouds of gas, discovered long ago but only recently identified as being within the margins of the Milky Way, play a key role in the ability of the galaxy to churn out new stars by raining gas onto the plane of the galaxy, astronomer **Bart P. Wakker** and colleagues suggest, chipping away at a three-decade-old mystery. The team has discovered a mechanism by which the galaxy is seeded with the stuff of stars and solved a long-standing question of galactic evolution. "You don't need any other explanations anymore," Watkins says, "because we now know that this gas is raining down onto the plane of the galaxy."

AIDS variability explained

Scientists working with monkeys have taken another step toward developing a vaccine for AIDS. They have discovered new evidence explaining why retroviruses such as HIV in people and SIV in rhesus monkeys are so variable and difficult for the body's immune system to target and kill. A key finding: Killer cells called cytotoxic T lymphocyte cells (CTLs) likely play a greater role than previously thought in controlling infection in both humans and monkeys, says **David I. Watkins**, professor of pathology and laboratory medicine. The finding is another step toward the development of effective vaccines to prevent AIDS.

Path to dairying takes detour

Compared with established dairy farmers, new dairy farmers in Wisconsin are much less likely to be taking over the farm from their parents, and they're more likely to use off-farm income to supplement their farm income, according to researchers with the Program on Agricultural Technology Studies. The findings contradict long-held assumptions about Wisconsin's dairy farmers, and how farms pass from generation to generation, says researcher **Douglas Jackson-Smith**. Only 18 percent of new entrants farmed land that was part of their parents' farms, versus 62 percent of established farmers. New entrants were more likely than established farmers to run single-family or individual operations (85 percent versus 72 percent).

Ergonomics gets attention

Workplace ergonomics, in the national spotlight with new standards proposed by the Occupational Safety and Health Administration, are a prominent research focus at the university. **Robert Radwin**, chair of the Department of Biomedical Engineering, is a member of a National Academy of Sciences panel on musculoskeletal disorders and the workplace, and he has done influential studies on carpal tunnel syndrome and other work-related disorders. **Pascale Carayon** and **Michael Smith**, industrial engineering professors, ran projects at the Wisconsin Department of Transportation and Lands' End, respectively, that reorganized office space to produce a better ergonomic fit for employees.

Web-surfer, heal thyself?

Professor **Patricia Brennan** says the Web is driving big changes in the doctor-patient relationship and placing more responsibility with health care consumers. "Patients are now required to be smart — they no longer have a choice," says Brennan, an industrial professor of nursing and engineering. "There is a bigger assumption now that patients are getting more health information online." The long-term trend, Brennan says, is that more health care information will migrate from the hospital to the community.

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Tracks in iron help map microbial world

Reading the narrow bands of iron found in some sedimentary rocks, university scientists may have found a way to assess microbial populations across time and space, opening a window to the early history of life on Earth and possibly other planets.

Writing in the journal *Science*, a team of scientists led by geochemist **Brian L. Beard** describes a geochemical signature in iron as indicative of life. If the technique is confirmed and refined, it could be used to trace the distribution of Earth's microorganisms in the distant past, and it could help resolve disputes about the existence of past life on other planets such as Mars.

Iron is vital to plant, animal and microbial life. Nearly all organisms ingest it in the course of daily life. If scientists can devise a method to distinguish between iron that has been processed by a living organism and iron that has not been metabolized, they will have a way to measure the distribution of microbes on Earth billions of years ago. Because iron is common on the moon, planets and other objects in space, the technique could be used to detect signs of past life beyond our own planet.

Study: Policies interfere with pain management

Good pain control is an essential component of medical care for people with serious illnesses, but state policies can stand in the way of pain relief, according to a study by the Pain and Policy Studies Group at the Comprehensive Cancer Center.

Says **David Jonanson**, group director: "State policies aimed at preventing drug abuse often fail to recognize that these drugs are also necessary for medical purposes. Ironically, some new state laws that were meant to improve patients' access to pain management may actually make them harder to get."

Although there are many treatments for pain, pain experts agree that opioid drugs (like morphine) are the most effective treatment for severe pain, which may accompany many illnesses, including cancer. The study is the first phase of a major pain and public policy research project funded by the Robert Wood Johnson Foundation, Princeton, N.J. To get the report, "Achieving Balance in State Pain Policy," contact the Pain and Policy Studies Group, 1900 University Ave., Madison, WI 53705; phone: 263-7662; fax: 263-0259; e-mail: ppsg@maicc.wisc.edu.

Breast cancer study compares drug therapies

University researchers are seeking postmenopausal women interested in participating in a national study designed to find more effective ways to prevent breast cancer.

The study, which is expected to enroll 22,000 women across the nation, will seek to determine whether the osteoporosis-prevention drug raloxifene (trade name: Evista) is as effective in reducing the chance of developing breast cancer as tamoxifen (trade name: Nolvadex) has proven to be in a prior study.

"Women at an increased risk of developing breast cancer need options for preventing this disease that present a minimum of side effects," says **James Stewart**, medical oncologist at the Comprehensive Cancer Center. "We already know that tamoxifen is beneficial for this purpose, but perhaps there is something even better."

More information: 262-5223.

Microwave imaging may yield better breast-cancer detection

Brian Mattmiller

A radar technology used to detect anti-personnel land mines may find a promising application in the campaign for early detection of breast cancer.

Susan Hagness, an assistant professor of electrical and computer engineering at the university, is researching the use of microwave radar imaging for breast cancer detection, as a complement to the standard use of X-ray mammography.

The widespread availability of X-ray mammography has been a life-saving success story, providing an inexpensive and simple approach to early detection. Despite progress, the technology still produces a relatively high number of false-negative and false-positive diagnoses, Hagness says.

Hagness is researching whether images from microwaves — the same microwaves used to communicate with digital cellular phones, only at lower power — will offer the sensitivity to solve those problems.

"Early detection is the key to survival, so we always want to do a better job of identifying tumors as soon as possible," Hagness says.

Hagness received a boost this month with a \$207,000 grant from the Whitaker Foundation, a non-profit organization dedicated to engineering research that improves medical care. She also started a research partnership with Frederick Kelcz, associate professor of medicine and an expert on breast-cancer detection.

Although clinical trials are down the road, the team is conducting microwave measurements on breast tissue excised during biopsies at UW Hospital and Clinics. They also are creating computer simulations that test microwave sensor designs in realistic environments.

The work seeks to answer two key ques-

tions, Hagness says. First, can microwave imaging detect extremely small tumors, only a few millimeters in size, to improve early detection? And second, can it differentiate between a malignant and a benign tumor, thus eliminating the trauma of unnecessary biopsies for women?

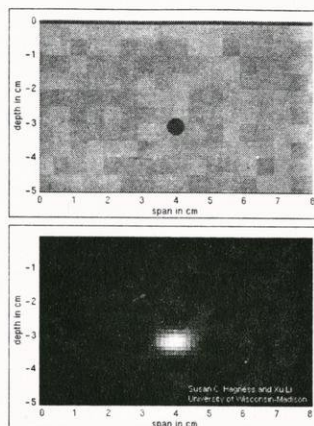
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Microwaves are a non-ionizing form of electromagnetic waves that interact with tissue according to water content. In Hagness' research, low-power microwaves are used like sonar to bounce a signal off the tissue. Since tumors have a higher water content compared to normal tissue, they will back-scatter the microwaves and produce an echo. The measurements of those echoes enable Hagness to develop a 3-D image of the tumor.

Sub-surface radar imaging has a number of applications to help reveal the invisible. In addition to land-mine detection, they can be used to identify weaknesses in bridge structures, detect the thickness of glaciers or identify archaeological sites. To date, Hagness is getting some promising images in her computer simulations of the microwave sensor. The ongoing research will help them learn how to distinguish cancerous tumors from harmless ones.

"We want to highlight those differences and determine the classic signatures of the microwave echoes," she says. "This could help us narrow down biopsy cases."

Kelcz says finding alternative approaches is important because early detection saves lives. He notes that when



Microwave radar imaging may prove useful for breast-cancer detection, as a complement to the standard use of X-ray mammography. The images show a computer-simulated breast tumor (top) and the corresponding microwave image (bottom) of the tumor. The ongoing research will help researchers learn how to more effectively distinguish cancerous tumors from harmless ones. Courtesy: Susan Hagness

cancers are detected less than a centimeter in size, there is a 95-percent survival rate. But at 2-3 centimeters, the cancer often moves into lymph nodes and survival rates begin to decline.

"We need technologies with the sensitivity to pick up abnormalities early enough to make a clinical difference," he says.

Hagness adds that microwave devices are inexpensive enough to make them widely accessible in health care. Microwave imaging also carries no danger of radiation exposure and would not require breast compression. ■

Campaign 'issue ads' don't pay off, study finds

Jeff Iseminger

The big spenders on campaign issue ads in the 1998 Wisconsin elections got very little payoff, says a political science professor who has just published his analysis of statewide spending.

Television "issue ads" are political messages that refer to candidates for public office but do not explicitly advocate support or opposition.

Kenneth Mayer found that the two biggest-spending issue advocacy groups were the Wisconsin Manufacturers and Commerce, a statewide business lobby, and Americans for Job Security, a Washington, D.C., group financed by insurers and paper corporations, among others. WMC spent \$335,714, and AJS spent \$134,512.

WMC invested in ads supporting Republican candidates in four state contests: 9th Senate District (Sheboygan), Paul Nus (R) vs. James Baumgart (D); 15th Senate District (Janesville-Beloit), William Sodemann (R) vs. Judy Robson (D); 27th Senate District (Middleton-Fitchburg-Verona), Nancy Mistele (R) vs. Jon Erpenbach (D); and 74th Assembly District (Ashland and far northern

A PDF version of the full report can be downloaded at: <http://www.polisci.wisc.edu/~kmayer>

Wisconsin), Tom Duffy (R) vs. Gary Sherman (D). AJS concentrated on the 9th and 27th districts, also supporting the Republican candidates.

As it turned out, the Democratic candidates won in all four contests.

"If recent experience is any guide, issue advocacy appears to be a remarkably ineffective way to influence elections," says Mayer. "When you combine the results of the 1996 and 1998 elections in Wisconsin, issue ads produced what their sponsors would consider preferred outcomes in only four of 19 campaigns."

Many campaign finance reform groups want issue ads subjected to the same regulations as any other electioneering. Those would include contribution limits, disclosure, and a ban on corporate and labor union money. Lawmakers are considering several bills that would make it harder for

groups to use issue ads in campaigns.

Such restrictions on issue ads would present legal problems, Mayer says. The federal courts have consistently rejected laws that redefine what counts as campaign speech subject to regulation.

But Mayer has an idea he believes would stand a good chance of surviving possible litigation. He proposes that any group must disclose its fund-raising and spending activities if it does the following:

- Broadcasts a radio or television ad referring to a clearly identified candidate for public office.
- Runs the ad within four weeks of a primary or general election.
- Spends more than \$5,000 on any ads directed at one candidate.

"This rule does not restrict the content or amount of speech, but instead provides voters with information through a minimally intrusive and narrowly crafted regulation," says Mayer. "The goal of reform should not be to decide what messages voters should hear, but to give them the information they need to assess what they hear." ■

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Common genes form new family tree

Looking deep within the genes of three very different kinds of animals, scientists have found enough molecular evidence to finally fell the animal kingdom's old family tree.

Writing in the British journal *Nature*, scientists from UW-Madison and elsewhere reported the discovery of a common genetic theme that provides powerful new evidence to firmly place nearly all animals — from mollusks to humans — on a simplified, three-limbed tree of life.

Scientists find gene that controls organ shape

Growing complete organs in the laboratory, a longstanding dream of biomedical science, is one key step closer to reality as a team of Wisconsin scientists report the discovery of a genetic mechanism that gives organs their shape.

Writing in the scientific journal *Nature*, a team of Howard Hughes Medical Institute researchers describe a protein that regulates organ shape in the nematode *Caenorhabditis elegans*. With the new discovery of an organ-shaping protein, and the gene that makes the protein, a key step in the process of how nature organizes an ambiguous mass of cells into a complex organ has been identified.

Study: Rural women take too little calcium

Less than 40 percent of rural Wisconsin women participating in a pilot study of osteoporosis risk reported taking the recommended amount of calcium, according to preliminary findings from a unique research project involving the schools of pharmacy and medicine and five community pharmacies. Osteoporosis, or low bone mass, affects up to 25 million Americans, especially women.

Study examines scope of partner violence

A new study of violence between intimate partners by two university psychologists reveals a problem of disturbing scope, with as many as one-third of respondents reporting being either victims or perpetrators of physical abuse.

Surprisingly, the researchers found that results by gender were not as lopsided as one would presume. Women reported being perpetrators of physical violence toward their partners slightly more than men did.

Link between gender, self-esteem exaggerated

Popular assumptions about a cavernous self-esteem gender gap may be greatly exaggerated, according to a new analysis of nearly 150,000 respondents by university psychologists.

The study, led by professor Janet Shibley Hyde and researcher Kristin Kling, consisted of an analysis of hundreds of self-esteem studies done since 1987. The conclusion: Males have only slightly higher levels of self-esteem than females across most ages. Hyde says the results took the group by surprise.

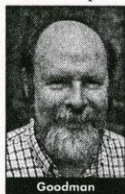
Lung cancer drug study under way

A study to assess the safety and effectiveness of squalamine, a new drug designed to treat the most common form of lung cancer, is under way at the Comprehensive Cancer Center. Unlike conventional chemotherapy, which destroys cancer cells, squalamine is a so-called anti-angiogenic agent — something that actually prevents the creation of blood vessels that feed cancer cells.

Caterpillar teaches old biology lesson in new way

Terry Devitt

In Walter Goodman's laboratory, *Manduca sexta*, a.k.a. the tobacco hornworm caterpillar, lives in the limelight.



Goodman

Twenty-four hours a day, seven days a week, the caterpillar grows ever larger — and ever more interesting — under the steady, unblinking eye of a video camera. Soon, if all goes well, the caterpillar will become the star of biology class for elementary school students nationwide as they tune in through the World Wide Web to the life and times of *Manduca sexta*.

"This is serious fun for these kids, and that serious fun turns into serious learning," says Walter Goodman, a professor of entomology.

Like many other research scientists around the country, Goodman has labored to find ways to move primary school students beyond science texts to learn about biology firsthand. And now, through the Web and a growing collaboration with teachers from Wisconsin to Arizona, Goodman has found a way to capitalize on new, inexpensive technology to deliver lessons of life.

The tobacco hornworm, says Goodman, is an ideal prism for viewing the lessons of biology. Because it develops quickly as it cycles through the several stages of caterpillarhood known as instars, students can see development firsthand and, ultimately, view the rarely observed process of metamorphosis as the caterpillar changes into an adult moth. But it is during its life as a

caterpillar that the tobacco hornworm serves up a host of biology lessons.

With the help of the Center for Biology Education through the Science Education Scholars Program, students from the School of Education, and Madison public school teachers, Goodman is bringing his vision to the Web.

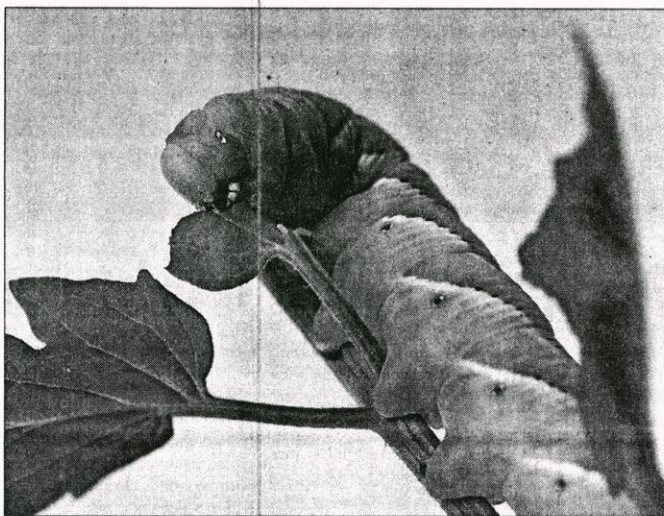
In addition to basic information on the caterpillar's life history, lesson plans and information on how to raise your own *Manduca sexta*, Goodman's Web site has a caterpillar under 24-hour video surveillance, meaning that students miss nothing as the caterpillar grows and undergoes metamorphosis.

By bringing the insect to the Web,

Goodman and the students and teachers who work with him hope to bring a new and more powerful way of learning about the world to more students.

"With the live video camera, the kids aren't looking at a picture that was taken five years ago," says Sean Ruppert, a School of Education student who, with fellow student Tess Bashaw, is helping develop the Web site. "It gives them a real-life feel." ■

The star of Walter Goodman's show, *Manduca sexta*, chews on a leaf. If all goes well, elementary school students nationwide will be able to use the World Wide Web to observe the caterpillar's life. Visit: <http://manduca.entomology.wisc.edu>
Photo: Jeff Miller



New technique may lead to better flu vaccines

Brian Mattmiller

A research team has perfected a method for creating designer influenza viruses, which can be tailor-made to solve mysteries about how flu strains mutate, spread and cause illness.

The development may also lead to more efficient influenza vaccines and safer gene therapies, says Yoshihiro Kawaoka, a virologist and author of the report in the Aug. 3 *Proceedings of the National Academy of Sciences*.

"This technology should help us gain a greater biological understanding of influenza and improve our methods of disease control," says Kawaoka.

Scientists have tried for years to create influenza viruses in the laboratory, but the process is made difficult by the complexity of the virus, Kawaoka says. The influenza genome has eight different segments of RNA, compared to only one in viruses such as rabies.

To accomplish the feat, the researchers used a basic ingredient in biotechnology called plasmids, which are independent segments of DNA capable of replicating on their own. Plasmids are commonly used in science to transport genetic material from one cell to another.

Kawaoka and his School of Veterinary Medicine research group introduced eight plasmids — one for each segment of flu RNA — into a common line of cells used

for research. They also introduced nine other plasmids into the cells that serve as building blocks for the proteins needed to make a complete influenza virus.

Although Kawaoka says they are not entirely sure why the system works so well, it is producing viruses in about one in every 1,000 cells. It's a 1,000-fold improvement over current methods, which only produce altered viruses but not entirely new ones.

This technology is exciting, Kawaoka says, because it allows scientists to precisely manipulate influenza viruses by flipping genetic switches and producing mutations, which can expose the flu's complex machinery.

"With this technology, we can introduce mutations any way we want," he says. "We can control the virulence by mutating here, there, anywhere. That could help us generate a live vaccine that is also stable."

Current inactivated flu vaccines are good, but can be improved. Live vaccines could be advantageous because they induce both cellular and antibody immune responses. They also produce immunity where it needs to be, such as the nasal cavity and respiratory tract.

There may be even broader applications in gene therapy in areas such as cancer treatment, he says. In fighting cancer, doctors want to introduce genes that effectively kill cancer cells but will not

replicate in the body and damage healthy tissue. The influenza virus may be an ideal vector, Kawaoka says, because it does not get integrated into the human genome.

Influenza remains a major public health menace, killing an average of 20,000 people each year and infecting up to 40 million people in the U.S. alone. Influenza-related health costs top \$4.6 billion per year. But basic mechanics of the virus, such as what triggers dangerous shifts in flu strains, are poorly understood.

Kawaoka says this technology will be valuable from a basic science perspective. They can use cloned viruses to study influenza viral growth, pathogenesis and what allows some viruses to transmit across species.

For example, avian flu viruses almost never transfer to humans, but when they do they can be particularly deadly, such as the 1997 Hong Kong virus. "Now we can introduce mutations in the avian influenza virus and understand for the first time what makes these viruses grow in humans," he says.

A dozen researchers worked on the project, including post-doctoral researcher Gabriele Neumann and graduate student Tokiko Watanabe. The research was supported by the National Institute of Allergy and Infectious Diseases Public Health Service, a division of the National Institutes of Health. ■

Wes-Cancer

THE WISCONSIN WEEK WIRE - July 14, 1999
for UW-Madison faculty and staff
(issue on Web at <http://www.news.wisc.edu/wire/i071499/>)

Wisconsin Week's print edition is on vacation until Wednesday, Aug. 25, but the Wire will continue to keep you updated through the summer.

TOP NEWS

- o Wisconsin lands transportation research center
- o Hospital ranks high in magazine survey
- o Students return home after African bus-train crash
- o Smoothie pies win spot in national food fight

RESEARCH

- o Study: Rural women do not take enough calcium
- o Lung cancer drug study underway
- o Environmental health facility dedicated

SPOTLIGHT

- o Bluebirds, birdies cohabitate at UW golf course

ON CAMPUS

- o Author to share Arctic adventures at convocation
- o Events calendar: <http://calendar.news.wisc.edu>

MILESTONES

- o Interim director named for EDRC
- o Professor to lead weather satellite science group

NEWS IN BRIEF

- o State budget in conference committee
- o Economists: Regional dairy compacts are bad policy
- o Professor: Ad regulators ignore deceptive spots
- o Two humanities grants go to campus projects
- o Asthma study participants sought
- o UW-Elsewhere: News from around the system

RESOURCES

- o DOIT delivers new email option

TIP: GETTING AROUND

- o Observatory Drive closes July 14-19

(issue on Web at <http://www.news.wisc.edu/wire/i071499/>)

Top news

WISCONSIN LANDS TRANSPORTATION RESEARCH CENTER

Wisconsin is behind the wheel of a multi-million dollar regional transportation research center, thanks to an innovative partnership forged between university engineers and state officials. The U.S. Department of Transportation awarded UW-Madison \$890,000 per year over five years to support the new University Transportation Center. That funding will in turn be matched by the Wisconsin Department of Transportation and private industry, bringing the total budget of the project to nearly \$9 million over five years.

(Full story: <http://www.news.wisc.edu/wire/i071499/transport.html>)

HOSPITAL RANKS HIGH IN MAGAZINE SURVEY

University of Wisconsin Hospital and Clinics ranks among the top 2 percent of the nation's major medical centers in 10 of the 16 medical specialties ranked in U.S. News and World Report's "America's Best Hospitals" guide. The guide assesses care in 16 specialties at 1,881 major medical centers. The hospital ranked among the top 2 percent in the following categories: ophthalmology, rheumatology, urology, endocrinology, geriatrics, otolaryngology, cardiology/heart surgery, orthopedics, cancer and gastroenterology. Most categories are assessed based on reputation, mortality rates and a mix of other data.

(Full story: <http://www.news.wisc.edu/wire/i071499/hosp.html>)

STUDENTS RETURN HOME AFTER AFRICAN BUS-TRAIN CRASH

Ten university study tour participants have returned to Madison after their 14-member group was involved in a minibus-train crash in Malawi. Funeral services were held Tuesday, July 13, for medical student Michele Tracy, 24, of Middleton, who along with Malawian bus driver Herbert Chissaka died in the crash near the village of Balaka. Three group members remain in Johannesburg, South Africa, recovering from injuries. The group was on a month-long student-organized program in the central African nation. The crash took place as the group was heading for the airport to return home.

(Full story: <http://www.news.wisc.edu/wire/i071499/ret.html>)

SMOOTHIE PIES EARN SPOT IN NATIONAL 'FOOD FIGHT'

Food science students have earned a finalist spot in a national competition by inventing a healthy taste treat, "smoothie pies." The students have turned the traditional smoothie into a refrigerated treat made of a thick, creamy strawberry and yogurt filling that is cradled by a crunchy graham cracker pie crust and separated by a thin layer of chocolate. Six university teams will engage in the "food fight" at the Institute of Food Technologists annual meeting July 25-26 in Chicago. The annual North American contest honors the top three food product inventions of student teams.

(Full story: <http://www.news.wisc.edu/wire/i071499/smoothie.html>)

Research

STUDY: RURAL WOMEN DO NOT TAKE ENOUGH CALCIUM

Less than 40 percent of rural Wisconsin women participating in a pilot study of osteoporosis risk reported taking the recommended amount of calcium, according to preliminary findings from a unique research project involving the schools of pharmacy and medicine and five community pharmacies. Osteoporosis, or low bone mass, affects up to 25 million Americans.

(Full story: <http://www.news.wisc.edu/wire/i071499/calcium.html>)

LUNG CANCER DRUG STUDY UNDERWAY

A study to assess the safety and effectiveness of squalamine, a new drug designed to treat the most common form of lung cancer, is underway at the Comprehensive Cancer Center. Unlike conventional chemotherapy, which destroys cancer cells, squalamine is a so-called anti-angiogenic agent - something that actually prevents the creation of blood vessels that feed cancer cells.

(Full story: <http://www.news.wisc.edu/wire/i071499/lung.html>)

ENVIRONMENTAL HEALTH FACILITY DEDICATED

The Wisconsin State Laboratory of Hygiene Environmental Health Division facility, dedicated Friday, June 18, is expected to help WSLH scientists expand their research in exploring the link between the environment and human health. The \$16.8 million facility on Madison's east side allows the hygiene lab to consolidate from its current four sites to two: the new east side facility and its current UW-Madison campus clinical laboratory facility, which will be remodeled.

(Full story: <http://www.news.wisc.edu/wire/i071499/wslheh.html>)

Spotlight

BLUEBIRDS, BIRDIES COHABITATE AT UW GOLF COURSE

With some forethought and routine maintenance, bluebirds and birdies can find common ground on Wisconsin's golf courses. Gary Gaard, a turfgrass diagnostician at the College of Agricultural and Life Sciences, has established the bluebird trail at the 225-acre, 18-hole University Ridge public golf course outside Madison. The number of nesting bluebird pairs along the trail has jumped from one to 12 bluebird nests in a single year.

(Full story: <http://www.news.wisc.edu/wire/i071499/birdie.html>)

On Campus

(Events calendar: <http://calendar.news.wisc.edu>)

AUTHOR TO SHARE ARCTIC ADVENTURES AT CONVOCATION

Author and explorer Alvah Simon will share lessons he learned while trapped in the Arctic at a presentation Wednesday, Sept. 1, to new freshmen at the 1999 Chancellor's Convocation. Simon's best-seller "North by the Night: A Year in the Arctic Ice," chronicles his five-month, harrowing expedition high above the Arctic Circle. The free event, scheduled at 2 p.m. at the Kohl Center, is also open to other students and the public.

(Full story: <http://www.news.wisc.edu/wire/i071499/simon.html>)

Milestones

INTERIM DIRECTOR NAMED FOR EDRC

Luis A. Piñero, associate director of the Equity and Diversity Resource Center, has been named the center's interim director. Piñero replaces Gregory J. Vincent, who has accepted a position as vice provost for campus diversity at Louisiana State University. Piñero's appointment began July 9. Piñero will oversee the day-to-day operations of the EDRC and assume a leadership role on campus workforce diversity initiatives and issues, including faculty hiring.

PROFESSOR TO LEAD WEATHER SATELLITE SCIENCE GROUP

Professor Steven A. Ackerman has been named director of the Cooperative Institute for Meteorological Satellite Studies. Ackerman is a scientist in the Space Science and Engineering Center and professor in the Department of Atmospheric and Oceanic Sciences.

News in brief

STATE BUDGET IN CONFERENCE COMMITTEE

A conference committee made up of state lawmakers from both houses is hammering out an agreement needed to send the state's \$41 billion budget on to the governor for final approval. Among other things, the committee has agreed to allow new UW System faculty and academic staff to be eligible for health insurance beginning on the first day of employment (rather than the current six months after employment). The measure includes many other items of departmental and individual interest. For an overview of recent action, visit: <http://www.news.wisc.edu/chancellor/staterelations/>

ECONOMISTS: REGIONAL DAIRY COMPACTS ARE BAD POLICY

As Congress considers enlarging interstate dairy compacts, a new study by three campus agricultural economists denounces the compacts as bad public policy. Members of Congress from the Northeast and South want to create new dairy compacts for their regions in order to circumvent federal milk pricing reforms and the scheduled elimination of dairy price supports next January. Will Hughes, one of the study's authors, says: "Compacts protect a small segment of dairy farmers in one region at the expense of dairy farmers in other regions. This flies in the face of efforts to develop national dairy policies that work for everyone in an equitable manner."

PROFESSOR: AD REGULATORS IGNORE DECEPTIVE SPOTS

A university advertising expert charges advertising regulators, including the Federal Trade Commission, with dereliction of duty in identifying and prosecuting deceptive advertising claims. Ivan L. Preston, professor emeritus of journalism and mass communication, has published an article that says the FTC gives potentially deceptive advertisers immunity from investigation under so-called "loophole" exemptions. Preston says chief among the deceptions is "puffery," the marketplace term for unverified opinions such as "better" and "best." Preston says the solution is for the FTC and other regulators to examine carefully how advertising claims work in the minds of consumers and eliminate deceptive claims: "The public should be able to trust rather than forced to distrust advertisers."

TWO HUMANITIES GRANTS GO TO CAMPUS PROJECTS

Two university projects, both dealing with African art and culture, have won grants from the Wisconsin Humanities Council. Using \$2,000, the UW-Madison African Studies Program and the South Madison Branch Public Library will explore recent African books and in free public forums at the Harambee Center, 2222 S. Park St., beginning Saturday, Sept. 18. Educational programs surrounding the Elvehjem Museum of Art exhibition "Beads, Body and Soul: Art and Light in the Yoruba Universe" beginning in January 2000, received \$9,800 to cover 10 lecturers, a film series, teacher workshops and curricular materials.

ASTHMA STUDY PARTICIPANTS SOUGHT

If you have asthma, the Asthma and Allergy Clinical Research program could use your help to evaluate new treatments by participating in a study. Studies may include evaluations of new medications, devices, or medications already available. Some studies evaluate no medications and are instead designed to study the causes and mechanisms of asthma. Additional information may also be found by visiting:

<http://www.medicine.wisc.edu/sections/allergy>

UW-ELSEWHERE: NEWS FROM AROUND THE SYSTEM

* Parkside: After penning five major books, including a best-selling biography of John F. Kennedy, history professor Thomas C. Reeves is working on a biography of 1950s Catholic archbishop Fulton J. Sheen.

* Stevens Point: Sociology professor Robert P. Wolensky, his daughter and his brother, have written "The Knox Mine Disaster," published on the 40th anniversary of the notorious Pennsylvania accident in which a river flooded a mine, drowning 12.

* Eau Claire: The social work program received a reaffirmation of accreditation, which lasts until 2007, from the Council on Social Work Education, a nation-wide standard-setting body in the social work field.

* Oshkosh: Ibrahim Y. Mahmoud, professor emeritus of biology, has been awarded a Fulbright grant to teach graduate students and conduct research at Sultan Qaboos University in Oman from September 1999 to July 2000.

Resources

DOIT DELIVERS NEW EMAIL OPTION

The Division of Information Technology has announced the release UW-MadMail, a new server-based email system that is unique because it provides email storage on a dedicated server and backup of email. These are key benefits for mobile users who need access to email from different locations on campus or their home computer. For details, visit: <http://pubs.doit.wisc.edu/f/news/newsitem.cfm?filename=214>

Tip: Getting around

OBSERVATORY DRIVE CLOSES JULY 14-19

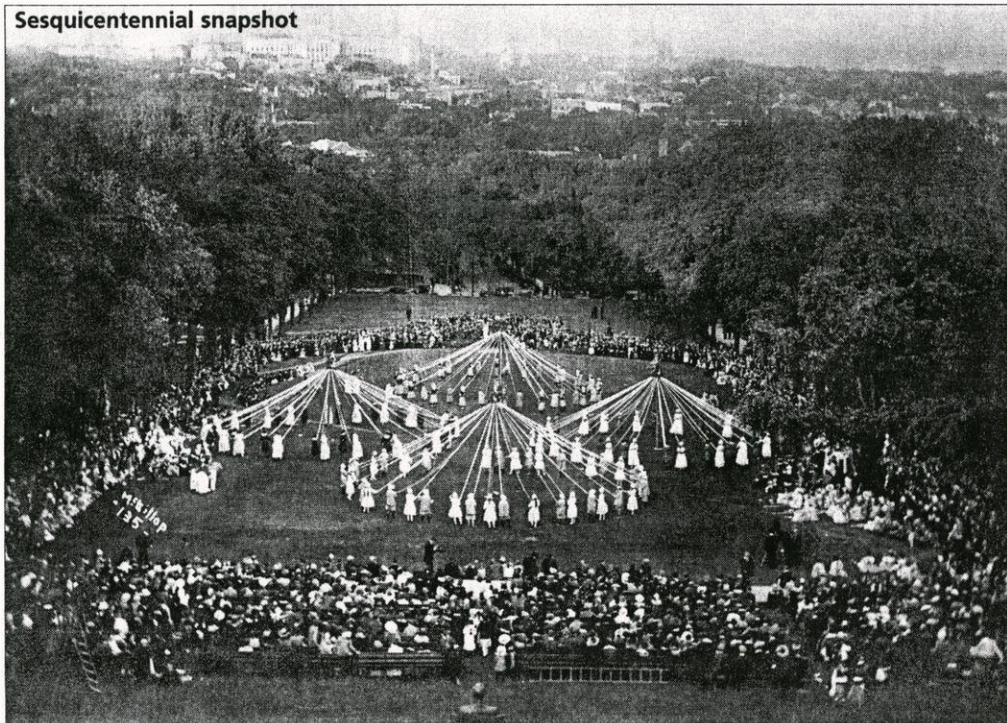
Observatory Drive between Liz Waters and the top of Bascom Hill will be closed starting Wednesday, July 14, for patching and final resurfacing, concluding last year's water utility project. The road should be open by Monday, July 19. Bus traffic will be re-routed. Access to parking lots will be maintained as feasible, but some parking stalls near Elizabeth Waters Hall will need to be closed.

The Wisconsin Week Wire: Vol. III (No. 13)

150 YEARS

UNIVERSITY OF WISCONSIN • SINCE 1848

Sesquicentennial snapshot



A long-gone rite of spring: Campus residents gather round the maypole for a 1915 celebration on Bascom Hill.

FLASHBACK

HISTORICAL HIGHLIGHT

At a time when African-American artists were barred from performing in many venues, Memorial Union's theater welcomed them. The famous contralto **Marian Anderson**, for instance, capped the theater's opening season in 1939, not long after she was refused the use of the D.A.R. Constitution Hall in Washington, D.C. Among other black artists sponsored by the Union were **Paul Robeson**, **Harry Belafonte**, **Louis Armstrong**, **Duke Ellington** and **Ella Fitzgerald**.

PEOPLE FROM OUR PAST

In the 1930s, **Frederick Mohs** pioneered a form of surgery that helped rid patients of external tumors such as lip and skin cancers. The technique, known as Mohs Micrographic Surgery, relied on extremely precise dissections of tumors instead of the gross removal of tumor masses. Mohs' method, still in widespread use, has treated thousands of patients' cancers while sparing undamaged tissue.

FACULTY MEMORIES

There are three teachers I distinctly remember, above and beyond my very positive memories of my educational experience at UW-Madison as a whole: The first is professor **Steve Nadler**, who taught the Philosophy 101 class I took in 1989. I was a BS student, disgusted to find I would be forced to take a humanities class. I tried to get into those I thought the least "touchy-feely": first, economics, sociology, geography. As an entering student, I found them all booked solid by the time I was allowed to register. I kept working my way down my preference list, until near the bottom I got into Philosophy 101. Needless to say, I entered as a skeptic: doubting the class would be any good, angry I was being forced to take it. I said as much in the first recitation section. My transformation was nearly magical, in that by the end of the term I was a firm advocate of the policy of making needs like myself take humanities courses. I took an emphasis (minors not being allowed in ChE) in Philosophy and still 'think hard' to this day, even though I am, indeed, a scientist.

The second is **Tim Allen**. I audited two of Allen's botany classes, just because they were so damn good. [Well, OK, he also got me intrigued about systems science.] I was a chemical engineer and had always disliked biology. His classes were the ultimate in edutainment. Simply incredible.

John Wright taught my Chemistry 110 class. He also taught me what teaching should be like, what it meant to be a mentor, and how to explain something from an angle the audience wants to understand. There's no one story I can tell to justify this strong assertion, but all-around I've never had a better teacher than Professor Wright, and I doubt I ever will. Have you ever felt empowered to understand, rather than simply taught? It's magical. He did it.

— **Robert Rossi**, BS '92

TO GET INVOLVED

The Wisconsin Alumni Association is working with UW-Madison Archives to collect campus memorabilia of historical interest and value. If you have something of interest, please contact WAA, 650 North Lake St., Madison, WI 53706-1476; phone 262-2551; e-mail waa@badger.alumni.wisc.edu.

Van Hise monolith gains national historic status

Terry Devitt

Tucked away in the Baraboo River Valley gorge is the rock that made Wisconsin famous.

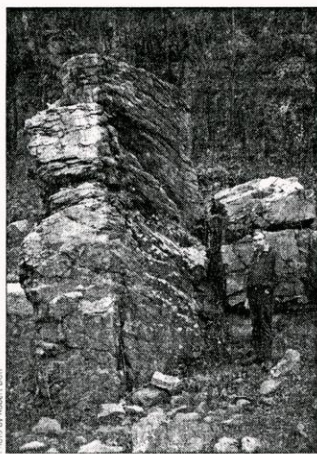
First used more than a century ago by University of Wisconsin geologist Charles R. Van Hise to teach some of the principles of geology, the solitary outcrop of Baraboo quartzite is for scientists the single most famous geological feature in the garden of stony wonders that is the Baraboo Hills.

A mecca of geology, like much of the region, the rock was used by Van Hise to show his disciples the hidden secrets of the structure and history of the Earth. And his students and generations of textbook writers carried its lessons worldwide.

The monolith nestled near the roadside on a curvy portion of State Highway 136 has long been a window to what the world was like more than a billion years ago. And now, the famous rock is about to gain historic merit. On May 9, Van Hise Rock will become the 24th site in Wisconsin to be designated a national historic landmark, the highest honor bestowed by the National Park Service.

The educational value of the 1.7-billion-year-old rock, still visited by legions of students from all over the Midwest, lies in the story it tells about the geology of the Baraboo region and the insights it provides into the underlying processes that shape the Earth, according to Robert Dott, professor emeritus of geology.

The Baraboo Hills, says Dott, reflect a remarkable geologic history that encompasses almost half of the estimated four-billion-year age of the planet. Van Hise Rock,



Robert Dott and the Van Hise Rock, 1973.

Dott explains, covers much of that history in one neat package.

The rock reveals features of a now-buried fold in the Earth's crust that tells a story of mountain building that occurred in the region an estimated 1.6 billion years ago. Van Hise, using the the Baraboo Hills as a classroom, made Wisconsin internationally famous as a center of geological research and education. ■

The dedication of Van Hise Rock will be Sunday, May 9, at 1:30 p.m. in Abelman Gorge, one mile north of Rock Springs on Highway 136.

Sesquicentennial Events

Public events and exhibits

April

30 Friday

SESQUICENTENNIAL LECTURE

"Trends in Imaging for the 21st Century," Elizabeth V. Patton, Kodak. Sponsored by Chemistry, Chemical Engineering, and Materials Science. 1361 Chemistry Bldg., 3:30 p.m.

May

3 Monday

INTERNATIONAL CONVOCATION

Events for international alumni and others. May 3-7.

June

16 Wednesday

LAMPMAN MEMORIAL LECTURE

"A Financial Policy in Lampman's Tradition: The Community Reinvestment Act," Edward Gramlich, University of Michigan. 1100 Grainger Hall, 4 p.m.

August

21-22 Saturday-Sunday

CAMPUS OPEN HOUSE

October

15 Friday

SCHOOL OF NURSING 75TH ANNIVERSARY GALA CELEBRATION

Details developing. Monona Terrace.

Exhibits

ENGINEERING PHOTO EXHIBIT

"Engineering Time." Scenes from the college's rich history; 23 images span 1881-1998. East wall, 1610 Engineering Hall. Exhibit runs through the year.

HUMAN ECOLOGY STUDENT EXHIBIT

Exhibits from landscape architecture, interior design, and textile and apparel design. Through May 13.

Plants: Good for you, bad for tumors

Isoprenoids may shunt human cancer cells to a natural death

George Gallepp

Campus researchers report that small concentrations of two compounds from plants we eat suppress the growth of three kinds of human cancer cells in the laboratory.

"Our studies showed that cancer cells were more sensitive to these compounds than normal cells and that the two compounds had a stronger effect when combined than we would have expected from the action of either alone," says Charles Elson, a nutritional scientist in the College of Agricultural and Life Sciences. "Our findings strengthen the idea that a diet rich in plants is beneficial because of the large array of plant compounds rather than the singular action of one kind of plant or one compound in plants."

Elson suggests that the anticarcinogenic activity of these and similar plant compounds differs from the mechanism of other agents that block or suppress cancer cell growth. Unless controlled, cancer cells typically live and divide indefinitely.

"The two compounds we studied suppress an enzyme," Elson says. "We think that this deprives tumor cells of chemical intermediates they need to multiply. The two compounds even work on human tumor cell lines that have mutations known to promote cancer."

Studies consistently have shown that people who eat a diet high in fruits, vegetables and grains have a reduced risk of many types of cancer, including lung, alimentary tract, liver, pancreas, bladder, kidney, breast, endometrium, cervix and prostate.

What is it about these foods that limits cancer? In a quest reminiscent of the search for vitamins begun in the last century, scientists are trying to identify the beneficial compounds in the fruits, vegetables and grains we eat that control tumor growth.

Research initially focused on compounds such as vitamin A, vit-

amin E and folic acid. But clinical trials with them have been inconclusive at best, Elson says. Other scientists have been examining non-nutritive compounds in plants. Elson has been studying compounds he calls isoprenoids, which contribute to plants' distinctive flavors and fragrances, among other things.

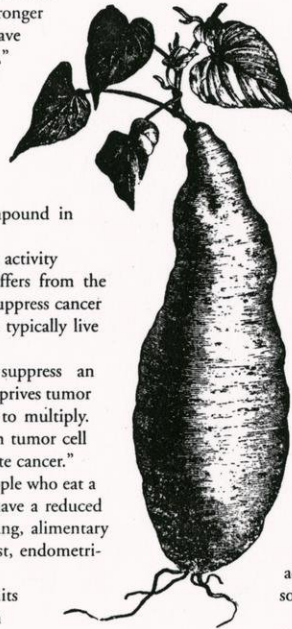
Elson began working with isoprenoids because some can reduce cholesterol levels in animals. However, he noticed that the isoprenoids slowed tumor growth.

To screen isoprenoids for those with anticarcinogenic activity, Elson tests them against a cell line developed from an extremely aggressive form of mouse melanoma. He has identified many isoprenoids that can slow the growth of this cell line. The tricky part has been finding isoprenoids that suppress cancer growth at the low concentrations that might occur in diets.

One such isoprenoid is gamma-tocotrienol, a compound found in cereal grains; it has a chemical structure related to vitamin E. In the current paper in the *Journal of Nutrition*, Elson and graduate student Huanbiao Mo found that gamma-tocotrienol slowed the growth of cell lines from human leukemia and breast cancer. They also tested beta-ionone — an isoprenoid found widely in fruits and vegetables — and showed that it also suppressed the growth of cell lines for human leukemia and breast cancer, as well as human colon cancer.

The nutritional scientist does not anticipate that his research will lead to a single critical isoprenoid or vegetable that people can eat to protect themselves from cancer. "These compounds act as a group to inhibit cancer growth," he says, "with some enhancing the effectiveness of others."

Nor does Elson believe in an exclusively vegetarian diet. "I don't think that it's the presence of meat in diets that leads to health problems, but the lack of enough fruits, grains and vegetables. The people who eat a lot of animal products are often the same individuals who don't eat enough fruits and vegetables," he says. ■



DRYWALL: GOOD FERTILIZER?

One day those unused scraps of clean wallboard from construction sites and remodeling projects may be crushed and spread on agricultural fields.

Crushed wallboard is very similar to commercial gypsum fertilizer, a soil conditioner and fertilizer that supplies calcium and sulfur to soils. Using drywall as fertilizer would help divert some of the estimated 2 million to 3 million tons of gypsum wallboard scraps that are put into U.S. landfills each year.

"In a three-year study, we found that applying crushed wallboard has neither strong positive nor negative agronomic effects on alfalfa production," says Richard Wolkowski, a soil scientist in the College of Agricultural and Life Sciences. "Gypsum wallboard is primarily calcium and sulfur with much smaller amounts of other elements such as magnesium. A few Wisconsin crops such as potato may respond to the calcium in gypsum fertilizer. But it is the sulfur in gypsum that is more often beneficial to crops, and gypsum is one of the more economical sources of sulfur."

Working at the college's research stations at Arlington, Lancaster, Spooner and Ashland, Wolkowski studied how application rates and methods affected alfalfa yield, stand density, soil test, and forage nutrient content.

HERBAL STUDY UNDER WAY

Bruce Barrett, a Department of Family Medicine researcher, is conducting a study to determine whether the herbal supplement echinacea is an effective treatment for reducing the duration or severity of the common cold or flu.

Acute upper respiratory infection is the most common acute illness in the country. "Unfortunately, there are no good treatments," Barrett says.

"Decongestants, cough suppressants and analgesics offer little benefit and antibiotics just plain don't work. However, European studies looking at echinacea show promising results."

For the research, Barrett needs 160 registered students, 18 years or older, who are not pregnant, do not have an autoimmune disease and are just beginning to have cold symptoms.

Participants will take either echinacea or placebo tablets. Students will be given \$40 for their participation. To participate in the study, call 220-4042. Information: Rob Maberry, 265-9041, or email: rmaberry@fammed.wisc.edu.

GEOLOGY HOLDS OPEN HOUSE

Mars talks, dinosaur masks and flying reptiles will be part of the show Sunday, April 18, during the Geology Museum open house in Weeks Hall, 1215 Dayton St.

The free, family-oriented event, which will run from 1-5 p.m., will feature six special programs in addition to its standing exhibits. Throughout the afternoon, Plan B Design Studio of Hazel Green, Wis., will lead a dinosaur mask-making workshop with children.

At 1:10 p.m., James Graham of the physiology department will give the talk "Mars — Past, Present and Future," in the L.R. Laudon Lecture Hall. Another talk, "Life on Mars?" will be given at 2:45 p.m. in the same hall by geology scientist William Barker.

At 2:15 p.m. and 4 p.m., the museum will invite children to sort through a "Free Rock Pile." Kids should bring an empty bag and rain gear if needed.

At 3:30 p.m., the museum will unveil its newest display, a model of the flying reptile Pteranodon. UW-Madison geology student Christopher Ott crafted the balsawood skeleton.

Limited parking is available in Lot 54 adjacent to the museum. Information: 262-2399.

So you've lost that loving feeling?

Experts seeks answers to emotional questions

Dian Land

How do anxiety and depression impact brain pathways over time? Which brain changes result from cocaine abuse? How might emotions influence learning? How do difficult experiences early in life lead to depression later? What role does maternal care and touch play in emotional development and learning ability? What's the newest technology available to understand brain regions involved in regulating emotion?



Ned Kalin

About 300 scientists and students interested in answers to these questions will gather in Madison, April 23-24, for the fifth annual Wisconsin Symposium on Emotion, an international forum on the latest basic and clinical research dealing with emotion.

The theme of this year's symposium is "Affect and Plasticity: Neural Mechanisms Underlying Emotional Change," says Ned Kalin, director of the HealthEmotions Research Institute, which is sponsoring the symposium.

"A variety of influences — stress, prolonged emotional states, and some drugs and medications — can produce fundamental changes in brain chemicals and circuits over time. These are potentially very important phenomena that can result in

long-term changes in brain function that may affect an individual's mental and physical health," Kalin says. "Understanding how this neuroplasticity occurs can provide important insights into potential ways to prevent and treat some of the negative effects of emotions."

Steven Hyman, director of the National Institute of Mental Health, will launch the symposium with a public talk, Thursday, April 22, at 4 p.m. at the State Historical Society. He will speak on "The Worrisome Question of Whether There's a Worry Gene, and Other Investigations of Genes and Behavior."

Seven leading scientists will describe the most current research on emotional change.

Presenters include Mary Carlson, Harvard University School of Public Health; Dennis Charney, Yale University School of Medicine; Jonathan Cohen, Princeton University; Mark George, Medical University of South Carolina; Michael Meaney, McGill University; Charles Nemeroff, Emory University School of Medicine; and Terry Robinson, University of Michigan.

The symposium encourages broad student participation from across the U.S. and Canada, says Kalin, who is also chair of the Medical School psychiatry department. The institute pays travel expenses for 87 of the most highly qualified undergraduate, graduate, medical and post-graduate stu-

dents interested in studying emotions.

UW-Madison graduate students enrolled in psychology seminar 711 eagerly anticipate the symposium. All semester they've been immersed in journal articles by scientists who will be presenting at the meeting. The students will lead discussion sessions following each expert's talk and will be ready to ask their own well-prepared questions. They'll also write reviews of the research presented, which will be compiled

The fifth annual Wisconsin Symposium on Emotion will be held April 23-24 at Monona Terrace Convention Center. The theme of this year's symposium is "Affect and Plasticity: Neural Mechanisms Underlying Emotional Change."

in a volume to be published after the symposium.

The Wisconsin Symposium on Emotion was first conceptualized five years ago by Richard Davidson, Vilas and William James Professor of Psychology and Psychiatry, as a means to highlight research of UW faculty studying various aspects of emotion. With the support of the HealthEmotions Research Institute, the symposium has grown to become one of the most important scientific gatherings concentrating on the study of emotion. ■

Kes -
Cancer

THE WISCONSIN WEEK WIRE - March 31, 1999
for UW-Madison faculty and staff
(issue on Web at <http://www.news.wisc.edu/wire/i033199/>)

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- o Workers spruce up campus lecture halls
- o Leadership Institute broadens perspectives, participants say

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- o Former Miss America to speak about sexual assault issues
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(issue on Web at <http://www.news.wisc.edu/wire/i033199/>)

Front Page

FACULTY SENATE CONSIDERS RESETTING 'TENURE CLOCK'

Campus departments could get more flexibility in calculating how long new assistant professors can take to earn tenure under a proposal to be reviewed by the Faculty Senate. (Full story in Wisconsin Week, page 1)
<http://www.news.wisc.edu/wire/i033199/tenure.html>

WORKERS SPRUCE UP CAMPUS LECTURE HALLS

A new remodeling program, called the Instructional Technology Improvements Program, targets large lecture halls for renovation, transforming them from drab, uninspiring chambers into bright, engaging learning environments with state-of-the-art teaching technology. (Wisconsin Week, page 1)
<http://www.news.wisc.edu/wire/i033199/remodel.html>

LEADERSHIP INSTITUTE BROADENS PERSPECTIVES, PARTICIPANTS SAY

Participants in UW-Madison's Leadership Institute, a yearlong program to build leadership skills in junior- and senior-level faculty and staff, gain a keener awareness of self and others as they broaden their perspective as leaders. (Wisconsin Week, page 1)
<http://www.news.wisc.edu/wire/i033199/lead.html>

Profile: Monty Nielsen

BASEBALL ENERGIZES REGISTRAR

Buried deep in new registrar Monty Nielsen's vita is a curious reference to baseball. What does being a registrar have to do with baseball? Everything, if you're Nielsen. (Wisconsin Week, page 4)
<http://www.news.wisc.edu/wire/i033199/nielsen.html>

Features

TINY MEDICAL TOOLS GIVE NEW MEANING TO 'CUTTING EDGE'

They look more like stray computer parts than precision medical tools, but Amit Lal's research creations could give surgeons an incomparable new edge in medicine. (Wisconsin Week, page 16)
<http://www.news.wisc.edu/wire/i033199/memstools.html>

150 YEARS:

INTERNATIONAL ALUMNI CONVOCATION PLANNED IN MAY

International alumni representing 30 countries and virtually all of the university's schools and colleges are expected to return to Madison May 3-7 for a convocation. (Wisconsin Week, page 5)
<http://www.news.wisc.edu/wire/i033199/intlconv.html>

Learning

SERVICE LEARNING BROADENS EDUCATION

The idea of volunteering as coursework has been gaining momentum in the last several years, both at UW-Madison and other institutions. Next month UW-Madison will host a three-day national conference to explore the mission of land grant colleges and universities concerning service learning.

(Wisconsin Week, page 11)

<http://www.news.wisc.edu/wire/i033199/service.html>

DEMAND INCREASING FOR PHARMACY GRADUATES

America's burgeoning elderly population, which is using sophisticated drug therapies in record quantities, has helped make highly educated pharmacists one of the hottest commodities in health care, School of Pharmacy researchers say.

(Wisconsin Week, page 3)

<http://www.news.wisc.edu/wire/i033199/pharm.html>

Research

MADISON STUDENTS IN UW PROJECT USE VIDEO TO EXPRESS DIVERSITY

A new School of Education project called the Kid-to-Kid Video Exchange Project aims to develop a network of K-8 classrooms that create and share videos as an essential element of their social studies curriculum.

(Wisconsin Week, page 6)

<http://www.news.wisc.edu/wire/i033199/video.html>

STUDY: CHILD ABUSE CAN ALTER BRAIN DEVELOPMENT

For children suffering from severe abuse, anger is a danger sign they dare not overlook. Spotting it early becomes a survival skill. A new study by a campus psychologist suggests that this survival skill is strong enough to actually trigger biological changes, altering the way the brain processes anger.

(Wisconsin Week, page 6)

<http://www.news.wisc.edu/wire/i033199/brain.html>

NEW APPROACH BOOSTS 5TH GRADERS' MATH AND SCIENCE LEARNING

University researchers have helped achieve a startling effect by using models to teach mathematics and science to elementary school students: Fifth graders are performing at 12th grade levels.

(Wisconsin Week, page 10)

<http://www.news.wisc.edu/wire/i033199/model.html>

NEW BOOK: SCHOOL CULTURE CAN BE TOXIN—OR TONIC

The culture of a school—a web of values, traditions and symbols—can be toxin or tonic for education reform.

(Wisconsin Week, page 10)

<http://www.news.wisc.edu/wire/i033199/school.html>

UW LEADS NATIONAL CLINICAL TRIAL OF CANCER DRUG

The Comprehensive Cancer Center has been chosen as one of two sites in the nation to conduct human tests of endostatin, a promising potential cancer treatment that seems to work in part by disrupting the growth of blood vessels that nourish tumor cells.

(Wisconsin Week, page 2)

<http://www.news.wisc.edu/wire/i033199/endostatin.html>

RESEARCH DIGEST

Acid linked to soil aging; study shows women's farm role; pesticide study grants offered.

(Wisconsin Week, page 6)

<http://www.news.wisc.edu/wire/i033199/rd.html>

Awards

This issue of Wisconsin Week features the faculty, academic staff and classified staff who have been chosen from among their peers for outstanding achievement.

Distinguished Teaching Awards

(Wisconsin Week, page 7)

<http://www.news.wisc.edu/wire/i033199/dta.html>

Academic Staff Excellence Awards

(Wisconsin Week, page 8)

<http://www.news.wisc.edu/wire/i033199/asa.html>

Classified Employee Recognition Awards

(Wisconsin Week, page 9)

<http://www.news.wisc.edu/wire/i033199/csa.html>

Campus News

U.S. SUPREME COURT PLANS TO DECIDE STUDENT FEE CASE

The U.S. Supreme Court agreed Monday, March 29 to decide whether the mandatory fees violate students' free-speech rights. Their decision will affect student fee systems at all public universities.

(Wisconsin Week, page 3)

<http://www.news.wisc.edu/wire/i033199/segfees.html>

PROGRAM SEEKS MORE MILWAUKEE STUDENTS OF COLOR

The university is stepping up recruitment of students of color in the state's largest city—with assistance from their school district and potential future employers. A new university initiative—the Pre-College Enrollment Opportunity Program for Learning Excellence, or PEOPLE—will enroll 100 Milwaukee ninth-graders beginning this summer.

(Wisconsin Week, page 3)

<http://www.news.wisc.edu/wire/i033199/people.html>

CONFERENCE FOCUSES ON BREAK-UP OF MULTI-ETHNIC FEDERATIONS
About 100 prominent Central and East European scholars and writers plan to gather on campus Friday, April 16, for a groundbreaking workshop examining the disintegration of multi-ethnic federations associated with the break-up of the former communist states.
(Wisconsin Week, page 2)
<http://www.news.wisc.edu/wire/i033199/ethnic.html>

U.S. NEWS RANKS GRADUATE PROGRAMS
The university received several high rankings in the 1999 rating of graduate programs released Friday, March 19 by U.S. News & World Report.
(Wisconsin Week, page 3)
<http://www.news.wisc.edu/wire/i033199/rank.html>

NEWSMAKERS
UW-Madison Libraries recognized for excellence; environmental toxicologist Warren Porter publishes a major pesticide finding; entomologist David Bowen touts natural pest control; and negotiations between students and administrators regarding ROTC's anti-gay discrimination policy is highlighted.
(Wisconsin Week, page 3)
<http://www.news.wisc.edu/wire/nm.html>

On Campus
(Events calendar: <http://calendar.news.wisc.edu>)

WILLIAM BOWEN TO LECTURE ON RACE-SENSITIVE ADMISSIONS
William G. Bowen, co-author of the new book "The Shape of the River: Long-Term Consequences of Considering Race in College and University Admissions," will speak at UW Wednesday, April 7 at 7:30 p.m.
(Wisconsin Week, page 2)
<http://www.news.wisc.edu/wire/i033199/bowen.html>

PACK OF JOURNALISTS TO VISIT
April is showering the campus with high-profile visitors from the media, including Washington Post columnist David Broder, NPR science correspondent Richard Harris, Washington Post business correspondent Sharon Walsh and senior Financial Times correspondent Wolfgang Munchau.
(Wisconsin Week, page 16)
<http://www.news.wisc.edu/wire/i033199/scoops.html>

FORMER MISS AMERICA TO SPEAK ABOUT SEXUAL ASSAULT ISSUES
Former Miss America Marilyn Van Derbur will speak about sexual assault and her recovery from incest Tuesday, April 6, on campus.
(Wisconsin Week, page 13)
<http://www.news.wisc.edu/wire/i033199/vanderbur.html>

UW chosen to help test promising new cancer drug

Substance blocks the growth of blood vessels that feed tumors

MJS 3-20-99

BY MARILYNN MARCHIONE
of the Journal Sentinel staff

The University of Wisconsin's Comprehensive Cancer Center is one of two sites in the nation to get approval to do the first human tests of endostatin, a promising cancer treatment de-

veloped by Harvard researcher Judah Folkman that eliminated some tumors in mice.

UW and the University of Texas M.D. Anderson Cancer Center in Houston were selected for the initial endostatin clinical trials. They will involve only a small number of patients with advanced cancers, the National Cancer Institute announced Friday.

Endostatin and a similar substance, angiostatin, are angioge-

nesis inhibitors — naturally occurring proteins that fight cancer by blocking angiogenesis, the formation of new blood vessels that tumors need to grow.

These attack cancer in a different way than current treatment options — surgery, chemotherapy, radiation, gene therapy, immunotherapy — and may offer hope for patients with inoperable tumors or cancer that has spread to vital organs.

Interest in the substances soared after Folkman reported that they made tumors shrink or disappear in lab mice. After initial problems in duplicating and verifying Folkman's work, government scientists announced in February that they had been able to do so with endostatin and that cancer centers now could apply for permission to test the substance in humans.

Please see UW page 8

UW/Drug will be used to treat advanced cancers

From page 1

Lab production of angiostatin is going much more slowly, and the protein is not available in enough quantity to start human trials yet, a cancer institute spokeswoman said.

"We are honored and very excited to be taking part in these trials," said a statement from the UW cancer center's director, John Niederhuber. "This is an important opportunity to answer some key questions about a very interesting compound."

It's not known when patients can enroll for the experiments, but "probably no sooner than fall," said George Wilding, the professor of medicine who will lead the study at UW. The study needs to go through several more review processes, although the funding for the work has been awarded.

"We are not taking a waiting list," and most of the patients probably will be those already going through UW for cancer treatment, Wilding said. "The research team will recruit patients with solid tumors that have failed to respond to treatment."

The best candidates are patients with breast cancer, melanoma, kidney cancer, or mesothelioma, a cancer of the lining of the lung that's been associat-

ed with asbestos exposure. Those cancers typically need many blood vessels, which endostatin targets.

This will be a Phase 1 clinical trial, which is designed just to determine optimal dose, the best way to administer the treatment and whether there are immediately apparent harmful side effects.

Three to six patients will get small doses of endostatin and will be monitored for side effects. Additional patients will get graduated doses until the optimal or tolerable level is determined.

Endostatin and angiostatin are being developed by EntreMed Inc., a biotech company in Rockville, Md.

Progress in continuing the research appeared to suffer a setback in February, when Bristol-Myers Squibb Co. announced it was pulling out of a partnership with EntreMed to develop the proteins and test them as anti-cancer agents. But days later, hopes soared again when government researchers said they had successfully duplicated Folkman's work.

More than a dozen human experiments already are under way in the United States, including a couple in Wisconsin, using angiogenesis inhibitors that work in ways similar to endostatin and angiostatin.

Kes
Cancer

New cancer treatment to get human tests at UW

3/20/99

By Aaron Nathans

The Capital Times

The UW Comprehensive Cancer Center is one of two sites chosen to conduct the first human tests of a new cancer treatment.

Endostatin has worked in animals to disrupt the growth of blood vessels that nourish tumor cells.

The National Cancer Institute notified UW on Friday of its participation.

The UW cancer center expects to treat 20-30 adults in its program, testing a handful at a time every couple of weeks. A start date has not been scheduled, although

it could be four to six months away.

"This really speaks volumes about the resource here at the University of Wisconsin," said Dr. John Niederhuber, the center's director. "We're very proud we were selected."

The trial will treat people with solid tumors — anything other than leukemia, which circulates in the blood, said John Wilding, the center's experimental therapeutics director.

Patients with renal cell carcinoma, mesothelioma, breast cancer and melanoma may be particularly well-suited for the

study. That's because those cancers tend to have a large number of blood vessels, the drug's target.

In animal studies, endostatin inhibited the growth of pre-existing tumors and caused some to shrink to microscopic lesions, a news release from the cancer center said.

When researchers examined those lesions, they found the endostatin had blocked the growth of blood vessels that nourished the tumors.

Wilding urged people not to get too excited about the program.

"This compound represents exciting concepts," Wilding said. "But it has not been tested on humans."

Side effects of the treatment are unknown.

"The research team will recruit patients with solid tumors that have failed to respond to treatment," Wilding said.

UW professor Joan Schiller and assistant professor James Thomas will co-chair the study.

The study will need to go through several review processes, including the National Cancer Institute and an in-house review.

Those who are interested should call the UW Cancer Connect Line at 262-5223 or (800) 622-8922.

UW to conduct trials of anti-cancer drug

By Patricia Simms

Health reporter *UW* 3/20/99

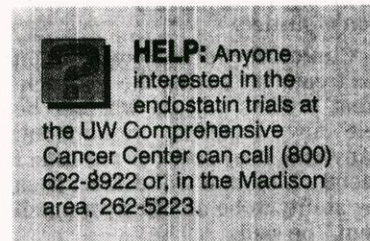
The UW Comprehensive Cancer Center (UWCCC) has been selected to run the first human trials of endostatin, one of a promising new breed of anti-cancer compounds that appear to starve the blood vessels that feed cancer cells.

The National Cancer Institute (NCI) in Frederick, Md., Friday told the UW and the M.D. Anderson Cancer Center in Houston that they had won the competition to test endostatin for side effects on humans.

It could take between four and six months before the trials get started, said Dr. George Wilding, principal investigator and director of experimental therapeutics at the UW Cancer Center, Friday.

Initially, three to six patients will receive small doses of the drug, which is an angiogenesis inhibitor. Eventually, between 20 and 30 cancer patients will be asked to test endostatin, but the regimen will be tough, he said.

"It will require a lot of work on the part of the patient and the doc-



tor," Wilding said.

That includes multiple biopsies, MRIs and scans, and lots of patient visits, he said.

"Not all cancer patients are eligible for this," he said.

"The research team will recruit patients with solid tumors that have failed to respond to treatment," Wilding said.

Patients with renal and breast cancer, melanoma and mesothelioma may be particularly suited because such tumors typically have a large number of blood vessels.

The UWCCC is publishing a contact number that cancer patients can call for more information, but that phone line will not be used to create a waiting list, Wilding said.

Instead, he said, "as we get close to opening the trials, we'll be talking to patients (who are) at our clinic now."

UW Medical School oncologists Joan Schiller and James Thomas will co-chair the study.

"In pre-clinical work, endostatin showed a lot of promise," Thomas said.

Endostatin as a cancer treatment broke into the news last year after a front-page New York Times article enthusiastically described early results on mice in the laboratory of Dr. Judah Folkman of Harvard Medical School.

But NCI scientists had trouble reproducing Folkman's results. Last month government scientists said they'd finally managed to duplicate Folkman's success at his laboratory at Children's Hospital in Boston, and they planned to begin human testing by the fall.

Endostatin, a natural protein, makes cancer fall dormant or disappear in lab animals, but there have been no human tests.

Endostatin is being developed by EntreMed Inc., a small biotech company in Rockville, Md.

BRIEFS

GETTING AROUND

For the next couple of months, motorists will not be able to reach the west side of the campus by turning off University Avenue onto Babcock Drive. The segment of Babcock between University and Linden Drive was closed to traffic Monday, March 29, so that crews can complete utility work in the area. The street will be closed to vehicles until mid-June, but bicyclists and pedestrians will be allowed through the area. The only entrance to Lot 40 will be the one located between the Stock Pavilion and Babcock Hall.

AUTISM STUDY SEEKS HELP

A new study at the Waisman Center focusing on autism and family life is recruiting Wisconsin participants.

Marsha Seltzer, a UW-Madison Waisman Center researcher and social work professor, is director of the study. According to Seltzer, "the medical and genetic aspects of autism have been well-studied, but very little is known about family experiences and problems."

"A critical time is when autistic children approach adulthood," she adds. "Families will begin to face questions about their son or daughter's long-term future and independence."

This study will include 200 Wisconsin families who have a son or daughter with autism. To participate, families must be caring for a son or daughter 14 years of age or older. All information shared is confidential.

Results of the study are intended to better inform policy-makers, practitioners, families and the general public of the needs of these families, and to advocate for better services.

For more information, contact Project Manager Renee Makuch at 262-4717, or e-mail at makuch@waisman.wisc.edu.

EASTER BREAKFAST PLANNED

Memorial Union's Lakefront Cafe once again will host an annual Easter Sunday Breakfast. Breakfast items will be available from 8 a.m.-1:30 p.m. The union, 800 Langdon St., opens Sunday, April 14, at 8 a.m. Information: Mike Hirsch, 262-7429.

On campus

Conference focuses on break-up of multi-ethnic federations

About 100 prominent Central and East European scholars and writers plan to gather on campus for a groundbreaking workshop examining the disintegration of multi-ethnic federations associated with the break-up of the former communist states.

The conference Friday, April 16, sponsored by the International Institute, its member programs, and the Department of Slavic Languages, is entitled "Brothers No More."

Tomislav Longinovic, associate chair of Slavic Languages, says political scientists and historians usually dominate discussion of this topic.

"This is a unique opportunity to hear the point of view of those who participated in the social and cultural movements as practitioners" who experienced events firsthand, he says.

The conference comes at an important time. With the outbreak of war over the future of Kosovo and renewed debate over the question of America's role in the region, there is, more than ever, a need for background and perspective.

The workshop will address cultural issues related to the identities of Bosnians, Serbs, Jews and Russians in the context of new nationalism. The event brings together a panel of exceptionally distinguished writers, journalists and translators. Among them:

- David Albahari was president of the Jewish community of Yugoslavia when civil war broke out in that country several years ago. He is the author of more than a dozen books, including "Words are Something Else." Albahari will speak about the position of Jews in new state entities that have emerged since the break-up of the former Yugoslavia.
- Aleksandar Hemon, a fiction writer and journalist, is the author of a collection of short stories and numerous articles in the Sarajevo (Bosnia-Herzegovina) press. Hemon, who currently lives in Chicago, will speak about the complexities of Bosnian identity.
- Dragan Kujundzic, a professor of Russian at Memphis University in Tennessee, is the author of numerous theoretical studies on Russian literature and identity.
- Zoran Multinovic, visiting professor of comparative literature at Wesleyan University in Connecticut, is one of the most promising young scholars from East Central Europe. He was fired from the University of Belgrade, along with five other colleagues, when he refused to sign a loyalty oath.

The conference is sponsored by the International Institute; the Center for Russian, East European and Central Asian Studies (CREECA); the Global Studies Program; two research circles of the International Institute; the Slavic Languages department; and the Wisconsin Union Directorate.

The free event, to be held in Memorial Union, is open to the public. Information: Tomislav Longinovic, associate professor, Slavic languages, 262-4311. ■

UW leads national clinical trial of cancer drug

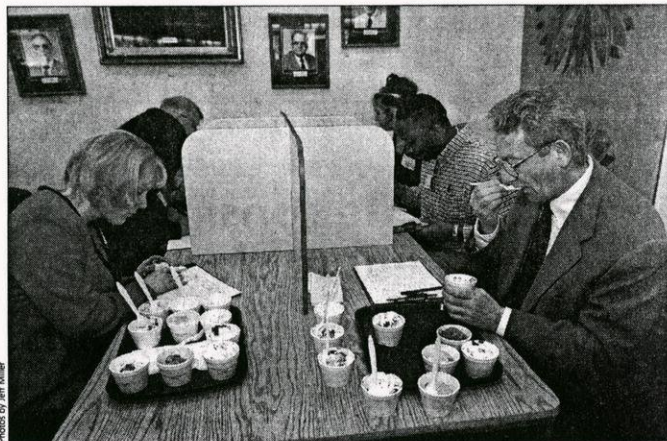
The Comprehensive Cancer Center has been chosen as one of two sites in the nation to conduct human tests of endostatin, a promising potential cancer treatment that seems to work in part by disrupting the growth of blood vessels that nourish tumor cells.

"We are honored and very excited to be taking part in these trials," says center director John Niederhuber. "This is an important opportunity to answer some key questions about a very interesting compound."

Endostatin's potential value as a cancer treatment received worldwide attention after a May 1998 New York Times article described early results in mice at Harvard Medical School. In May 1998, the National Cancer Institute called animal studies on the compound "encouraging" and later announced it would accept applications from research organizations to conduct tests in humans.

In animal studies, endostatin inhibited the growth of already existing tumors and caused some to shrink to microscopic lesions. When researchers examined those tiny lesions, they found the endostatin had blocked the growth of blood vessels that nourished the tumors.

The UW-Madison trials will be "Phase 1" tests in which researchers will try to discover the maximum dose patients can tolerate without undue toxicity. Joan Schiller, UW Medical School professor of medicine, and James Thomas, assistant professor of medicine, will co-chair the study. The study will need to go through several review processes. Information: 262-5223. ■



Allen Ruplinger

UW-Madison Chancellor David Ward, right, was among the panelists who picked "Praise to Thee, Our Almond Mocha" as the winner Monday, March 29, in a taste test of 10 flavors vying for the ice cream that will help mark the university's 150th anniversary. The winning flavor was proposed by Allen Ruplinger of Waukesha. He is a 1993 alumnus who works as a manufacturing engineer for Harley Davidson in Milwaukee. Ruplinger's entry was one of nearly 800 in a statewide contest to create a new sesquicentennial flavor. His entry will now be produced by the Babcock Dairy Plant on campus for serving at sesquicentennial events and through Babcock outlets. The name is a play on "Varsity," a traditional UW-Madison song that includes the words, "Praise to thee, our Alma Mater." The ice cream is a mocha-flavored vanilla with almonds. Runner-up honors went to "Sesquiberry," a strawberry ripple suggested by Frank Cook a UW-Madison archivist.

Expert to speak on euro

Wolfgang Munchau, international journalist and expert on the European Economic and Monetary Union, will discuss the European economy and its new currency, the euro, from 8:30 a.m. Friday, April 9, at 4151 Grainger Hall, 975 University Ave.

Munchau is senior correspondent for The Financial Times and author of the recently published book, "Birth of the Euro." His talk, "The Euro: Political and Economic Consequences for Europe and the Implications for the U.S.," will include insights and predictions on Europe's economy.

His two-day visit to the UW campus is part of a series on the changing European economic scene and includes classroom discussions with journalism and business students. Information: Helen Capellaro, 262-9213. ■

Second Thursday gives sneak peek of engineering exploits

Get a peek at plans for the Engineering Expo, see a display of student-built concrete canoes and take a look at a variety of automotive technologies at the next Second Thursday, April 8.

A variety of student projects will be on display at the Second Thursday hosted by the College of Engineering, Physical Sciences Lab (PSL) and Synchrotron Radiation Center (SRC).

Second Thursday is a chance to meet colleagues and enjoy refreshments. The event runs from 4:30-6:30 p.m. at Engineering Mall. ■

William Bowen to lecture on race-sensitive admissions



William Bowen

William G. Bowen, co-author of the new book "The Shape of the River: Long-Term Consequences of Considering Race in College and University Admissions," will speak at UW-Madison Wednesday, April 7, at 7:30 p.m.

Bowen is a former president of Princeton University and now president of The Andrew W. Mellon Foundation, which focuses much of its work on higher education. He wrote "The Shape of the River" with Derek Bok, a former president of Harvard University.

Bowen will speak on the effects of race-sensitive admissions policies April 7 in the Memorial Union Theater. Free tickets will become available at the Union box office on March 29 to faculty, staff, students and Union members (one ticket per person) and on Monday to the public if tickets remain.

Union box office hours are 11:30 a.m.-5:30 p.m. weekdays and noon-5 p.m. Saturday. After 7:20 p.m., people unable to get tickets will be allowed to take remaining seats.

"The Shape of the River" is the first large-scale study to examine the actual effects of race-sensitive admissions on the lives of students both during and after college. Bowen and Bok drew on a database of 45,000 students of all races who entered 28 selective colleges and universities in 1976 and 1989.

"Overall," Bowen and Bok write, "we conclude that academically selective colleges and universities have been highly successful in using race-sensitive admission policies to advance educational goals important to them and societal goals important to everyone."

It is only by examining the college careers and the subsequent lives of students — or, to use the Mark Twain metaphor, by learning the shape of the entire river — that we can make an informed judgment of university admissions policies, they say.

Sponsoring Bowen's visit to UW-Madison are the Chancellor's Office, the School of Education, the Wisconsin Union Directorate and The Andrew W. Mellon Foundation. ■



Wisconsin Week
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THE WISCONSIN WEEK WIRE - April 14, 1999
for UW-Madison faculty and staff
(issue on Web at <http://www.news.wisc.edu/wire/i041499/>)

Res-
Cancer

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(issue on Web at <http://www.news.wisc.edu/wire/i041499/>)

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Front Page

MICROGRAVITY MAY MULTIPLY SUCCESS OF GENE TRANSFERS

Transferring desirable genes into crops is a high-tech game of chance, with success rates running about one in 1,000. But the odds get a whole lot better, it seems, when you remove gravity from the mix.

(Full story in Wisconsin Week, page 1)

<http://www.news.wisc.edu/wire/i041499/micro.html>

GRANT TO FUND OVERHAUL OF LAKESHORE PATH

The university plans to spend nearly \$500,000 - most of it coming from a federal grant - to spruce up one of the campus's favorite transportation routes, the Howard M. Temin Lakeshore Path.

(Wisconsin Week, page 1)

<http://www.news.wisc.edu/wire/i041499/path.html>

WEB TOOLS USED TO ENHANCE VICTORIAN LITERATURE COURSE

Students enrolled in a course called "The Woman Question in Victorian Literature and Culture" continue their learning outside the classroom in a virtual Victorian study created using WebCT—a new instructional technology tool now available to faculty.

(Wisconsin Week, page 1)

<http://www.news.wisc.edu/wire/i041499/webct.html>

Profile: Dale Bauer

PROFESSOR IGNITES STUDENTS' LEARNING WITH UNORTHODOX TECHNIQUES

Dale Bauer, professor of English and women's studies, keeps her students tuned in to her Major American Novelists course with innovative approaches like Jeopardy Day and Groundhog Day.

(Wisconsin Week, page 4)

<http://www.news.wisc.edu/wire/i041499/bauer.html>

Features

**150 YEARS: INTERNATIONAL CONVOCATION TO DRAW
PROMINENT, DIVERSE GROUP OF GLOBAL ALUMS**

Alumni from 30 nations, including the manager of the famous Bullet Train in Japan, will return to their alma mater May 3-7 to attend the International Alumni Convocation.

(Wisconsin Week, page 5)

<http://www.news.wisc.edu/wire/i041499/intlconv.html>

Issues

CAMPUS TO DELIVER DIVERSITY PLAN TO REGENTS

University officials this week will deliver to the Board of Regents a proposed strategy to attract more minorities over the next decade. Plan 2008 seeks to increase the number of students, faculty and staff of color through expanded pre-college programs, stronger recruitment and retention measures, curriculum changes and other initiatives.

(Wisconsin Week, page 8)

<http://www.news.wisc.edu/wire/i041499/plan2008.html>

REACCREDITING SITE TEAM VISIT UNDER WAY THIS WEEK

A team of faculty and university administrators will be touring the campus April 11-14 as part of UW-Madison's 10-year reaccreditation.

(Wisconsin Week, page 8)

<http://www.news.wisc.edu/wire/i041499/rp.html>

RETIREEES CRITICIZE OPTIONAL RETIREMENT SYSTEM

State retirement groups last week criticized a proposal to let new UW faculty and staff invest in individually directed retirement accounts, saying it would weaken the current pension system.

(Wisconsin Week, page 2)

<http://www.news.wisc.edu/wire/i041499/retire.html>

Research

PLANTS: GOOD FOR YOU, BAD FOR TUMORS

Campus researchers report that small concentrations of two compounds from plants we eat suppress the growth of three kinds of human cancer cells in the laboratory.

(Wisconsin Week, page 6)

<http://www.news.wisc.edu/wire/i041499/plants.html>

EXPERTS SEEKS ANSWERS TO EMOTIONAL QUESTIONS

About 300 scientists and students will gather in Madison, April 23-24, for the fifth annual Wisconsin Symposium on Emotion, an international forum on the latest basic and clinical research dealing with emotion.

(Wisconsin Week, page 6)

<http://www.news.wisc.edu/wire/i041499/emotion.html>

FERTILIZER RUN-OFF THREATENS LONG-TERM BALANCE OF LAKES

A new university study of what happens to all the agricultural run-off pouring into Lake Mendota suggests it could literally take centuries for the lake to regain its natural chemical balance.

(Wisconsin Week, page 7)

<http://www.news.wisc.edu/wire/i041499/lake.html>

RESEARCH DIGEST

Drywall: Good fertilizer? Study of herbal flu remedy underway and the Geology Museum holds open an house.

(Wisconsin Week, page 6)

<http://www.news.wisc.edu/wire/i041499/rd.html>

Awards

ARTS INSTITUTE HONORS OUTSTANDING CAMPUS ARTISTS

Artists drawn from the ranks of UW-Madison faculty, along with one graduate student, will be honored with awards coordinated by the UW-Madison Arts Institute.

(Wisconsin Week, page 14)

<http://www.news.wisc.edu/wire/i041499/artawards.html>

FOUR UW-MADISON FACULTY RECEIVE HILLDALE AWARDS

Four UW-Madison faculty members have been chosen to receive this year's Hilldale Awards for major achievements in teaching, research and service.

(Wisconsin Week, page 14)

<http://www.news.wisc.edu/wire/i041499/hilldale.html>

Campus News

GORE: U.S. MUST CLOSE PAY GAP BETWEEN MEN AND WOMEN

Vice President Al Gore was on campus Saturday, April 10, for a visit to a biotechnology lab and a panel discussion on women in scientific and technology fields.

(Wisconsin Week, page 3)

<http://www.news.wisc.edu/wire/i041499/gore.html>

MCCUBBIN TO STEP ASIDE AS HUMAN ECOLOGY DEAN

Hamilton I. McCubbin, who has served as dean of the School of Human Ecology for nearly 15 years, will step down as dean July 1.

(Wisconsin Week, page 2)

<http://www.news.wisc.edu/wire/i041499/mccubbin.html>

ISIS MOVING FORWARD

The largest part of the conversion to UW-Madison's new student record system is complete, and campus officials overseeing the project say the transition has gone fairly smoothly.

(Wisconsin Week, page 8)

<http://www.news.wisc.edu/wire/i041499/isis.html>

ARBORETUM TREE REMOVAL CLEARS WAY FOR NEW GARDENS

When you visit the Arboretum this spring, expect to see some dramatic changes in the land surrounding the visitor center - including the removal of dozens of black locust trees.

(Wisconsin Week, page 13)

<http://www.news.wisc.edu/wire/i041499/arb.html>

HERBICIDE USE PLANNED IN CAMPUS NATURAL AREAS

Efforts to restore and maintain native vegetation in the Campus Natural Areas will again involve the application of chemical herbicides.

(Wisconsin Week, page 2)

<http://www.news.wisc.edu/wire/i041499/herbicides.html>

NEWSMAKERS

Professor of Engineering Physics Gerald Kulcinski weighs in on the prospects of on-the-cheap fusion energy; astronomer John Gallagher describes merger theory; a Robert Wood Johnson Project web site garners attention for promoting non-alcoholic events; and Sharon Dunwoody explains why having two student daily newspapers is good news for the journalism school's students.

(Wisconsin Week, page 3)

<http://www.news.wisc.edu/wire/nm.html>

On Campus

(Events calendar: <http://calendar.news.wisc.edu>)

MULTICULTURAL STUDENT CENTER CELEBRATES 10 YEARS

The Multicultural Student Center's 10th anniversary celebration April 19-23 will showcase the opportunities it provides to students and members of the community.

(Wisconsin Week, page 9)

<http://www.news.wisc.edu/wire/i041499/msc.html>

FILM FEST SHAPES UP

Independent filmmakers and restored prints from the Motion Picture Academy archives will highlight a festival of cinema April 29-May 1 at the university.

(Wisconsin Week, page 9)

<http://www.news.wisc.edu/wire/i041499/film.html>

EXPO '99: A BRIDGE TO THE NEW MILLENNIUM

From rampaging robots to high-tech racing machines, EXPO '99 on the College of Engineering campus this weekend will showcase the creativity and innovation of students and industry.

(Wisconsin Week, page 10)

<http://www.news.wisc.edu/wire/i041499/expo.html>

CONFERENCE EXAMINES GRAD STUDY ISSUES

The Modern Language Association of America conference, April 15-18 on campus, will examine key issues expected to shape graduate studies in English, comparative literature, and foreign languages and literature.

(Wisconsin Week, page 3)

<http://www.news.wisc.edu/wire/i041499/mla.html>

COLLOQUIUM EXPLORES HEALTH OF AGING WOMEN

Health issues for aging women will be explored in a colloquium April 22-23 sponsored by the Institute on Aging.

(Wisconsin Week, page 3)

<http://www.news.wisc.edu/wire/i041499/aging.html>

The Wisconsin Week Wire: Vol. III (No. 7)

On Campus

(Events calendar: <http://studentnews.wisc.edu/>)

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The Multicultural Student Center's 10th anniversary celebration April 19-23 will showcase the opportunities it provides to students and members of the community.

(Wisconsin Week, page 9)

<http://www.news.wisc.edu/wire/i041499/misc.html>

Res-
Cancer

April 16, 1999

TO: Editors, news directors
FROM: UW-Madison Office of News and Public Affairs

UNIVERSITY DAYBOOK FOR APRIL 17-24

This daybook, a weekly service of the Office of News and Public Affairs, provides a quick summary of some of the events and activities that may be worth covering in the coming week at the University of Wisconsin-Madison. Contact numbers are listed for most items. If you need more help, call the Office of News and Public Affairs, (608) 262-3571.

EXTRA!

ENVIRONMENT BEAT: A new study of what happens to all the agricultural runoff coming into Lake Mendota suggests it could literally take centuries for the lake to regain its natural chemical balance. A research team led by Elena Bennett, a doctoral student of limnology, says the problem for Mendota, and for most watersheds in agricultural settings, is that what goes into the watershed isn't necessarily coming out. The researchers found that significant amounts of phosphorus accumulate in the watershed's soil every year. Phosphorus is what causes the stinky green slime that builds up in the lake each summer. CONTACT: Elena Bennett, (608) 262-3088; embenne1@students.wisc.edu

For more background on this issue, contact Brian Mattmiller, Office of News and Public Affairs, (608) 262-9772. And look for a news release on the study this coming week.

HEALTH/MEDICAL BEAT: Campus researchers report that small concentrations of two compounds from plants we eat suppress the growth of three kinds of human cancer cells in the laboratory. The findings strengthen the idea that people who eat a diet high in fruits, vegetables and grains have a reduced risk of many types of cancer, including lung, alimentary tract, liver, pancreas, bladder, kidney, breast, endometrium, cervix and prostate. CONTACT: Charles Elson, nutritional scientist, College of Agricultural and Life Sciences, (608) 262-2727.

Science Report

Agricultural and Consumer Press Service
440 Henry Mall
Madison WI 53706 (608) 262-1461
Madison

College of Agricultural and Life Sciences
Research Division
University of Wisconsin-

rec. April 8, 1999
For Immediate Release
For More Information:
Charles Elson (608) 262-1332
elson@nutrisci.wisc.edu

COMPOUNDS FROM FRUITS, VEGETABLES AND GRAINS SLOW THE GROWTH OF HUMAN TUMOR CELLS

*Evidence points to mechanism of how isoprenoids
inhibit the multiplication of tumor cells and shunt cells to a natural death*

Researchers at the University of Wisconsin-Madison report in current issue of the Journal of Nutrition that small concentrations of two compounds from plants we eat suppress the growth of three kinds of human cancer cells in the laboratory.

“Our studies showed that cancer cells were more sensitive to these compounds than normal cells and that the two compounds had a stronger effect when combined than we would have expected from the action of either alone,” says Charles Elson, a nutritional scientist in the College of Agricultural and Life Sciences. “Our findings strengthen the idea that a diet rich in plants is beneficial because of the large array of plant compounds rather than the singular action of one kind of plant or one compound in plants.”

Elson suggests that the anticarcinogenic activity of these and similar plant compounds differs from the mechanism of other agents that block or suppress cancer cell growth. Unless controlled, cancer cells typically live and divide indefinitely.

“The two compounds we studied suppress an enzyme,” Elson says. “We think that this deprives tumor cells of chemical intermediates they need to multiply. The two compounds even work on human tumor cell lines that have mutations known to promote cancer.”

Studies consistently have shown that people who eat a diet high in fruits, vegetables and grains have a reduced risk of many types of cancer, including lung, alimentary tract, liver, pancreas, bladder, kidney, breast, endometrium, cervix and prostate.

FRUITS/VEGGIES/TUMORS – add one

What is it about these foods that limits cancer? In a quest reminiscent of the search for vitamins begun in the last century, scientists are trying to identify the beneficial compounds in the fruits, vegetables and grains we eat that control tumor growth.

Plants contain many beneficial compounds including fiber and micronutrients such as vitamins and their precursors. According to Elson, research initially focused on compounds such as vitamin A, vitamin E and folic acid. But clinical trials with them have been inconclusive at best, he says.

Other scientists have been examining non-nutritive compounds in plants. Elson has been studying compounds he calls isoprenoids, a group that includes more than 22,000 compounds. All are derived from a parent compound called mevalonic acid. Limonene and lycopene are examples of isoprenoids that inhibit cancer.

Many isoprenoids contribute to plants' distinctive flavors and fragrances, Elson says. In plants, isoprenoids help regulate germination, growth, flowering, and dormancy while attracting pollinators and protecting plants from insects and fungi.

Elson began working with isoprenoids because some can reduce cholesterol levels in animals. Initially he hoped that depriving tumor cells of cholesterol would make them susceptible to cancer treatments. But Elson's early experiments showed he could not lower the cholesterol in tumor cells by feeding animals isoprenoids. However, he noticed that the isoprenoids slowed tumor growth.

To screen isoprenoids for those with anticarcinogenic activity, Elson tests them against a cell line developed from an extremely aggressive form of mouse melanoma. He has identified many isoprenoids that can slow the growth of this cell line. The tricky part has been finding isoprenoids that suppress cancer growth at the low concentrations that might occur in diets.

One such isoprenoid is gamma-tocotrienol, a compound found in cereal grains; it has a chemical structure related to vitamin E. In research published in 1997, Elson's group showed that substituting gamma-tocotrienol for vitamin E in a diet fed to mice slowed the growth of tumors transplanted to those mice. It was the first research demonstrating that an isoprenoid slowed cancer growth and prolonged the life of mice when fed at a level that an animal might consume.

-more-

FRUITS/VEGGIES/TUMORS – add two

In the current paper, Elson and his graduate student, Huanbiao Mo, found that gamma-tocotrienol slowed the growth of cell lines from human leukemia and breast cancer. They also tested beta-ionone -- an isoprenoid found widely in fruits and vegetables. Beta-ionone is related structurally to beta carotene, the precursor of vitamin A. Elson and Mo showed that beta-ionone also suppressed the growth of cell lines for human leukemia and breast cancer, as well as human colon cancer. The human cell lines were even more sensitive to the action of the isoprenoids than the mouse melanoma cells, according to Elson.

“We found that the human cancer cell lines were three times more sensitive to the isoprenoids than a non-cancerous cell line,” Elson says. “This raises the issue of why cancer cells might be more sensitive to these plant compounds than non-cancerous cells.”

Mo and Elson found that the isoprenoids interfered with the maturation of lamin B, a material cells need when they divide. Many of the tumor cells treated with the isoprenoids accumulated in a pre-division phase while many others entered apoptosis, or programmed cell death. The researchers showed that the isoprenoids suppressed the activity of 3 hydroxy-3-methylglutaryl coenzyme A (HMG CoA) reductase, an enzyme critical for the maturation of lamin B as well as the synthesis of cholesterol.

“We’ve known since the 1950s that tumor cells are more sensitive to reductions of HMG CoA reductase than healthy cells,” Elson says. “When isoprenoids inhibit the activity of this enzyme they disrupt the processing of mevalonic acid via the mevalonate pathway. We think the tumor cells need chemical intermediates produced from the breakdown of mevalonic acid for lamin B maturation and that isoprenoids slow tumor growth by depriving tumor cells of those intermediates.”

The nutritional scientist does not anticipate that his research will lead to a single crucial isoprenoid or vegetable that people can eat to protect themselves from cancer. “These compounds act as a group to inhibit cancer growth,” he says, “with some enhancing the effectiveness of others.”

Nor does Elson believe in an exclusively vegetarian diet.

“I don’t think that it’s the presence of meat in diets that leads to health problems, but the lack of enough fruits, grains and vegetables. The people who eat a lot of animal products are often the same individuals that don’t eat enough fruits and vegetables,” he says.

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Res-
Cancer

FOR IMMEDIATE RELEASE

UW COMPREHENSIVE CANCER CENTER ONE OF TWO SITES NATIONWIDE
SELECTED FOR CLINICAL TRIAL OF CANCER DRUG

CONTACT: Lisa Brunette, 608-263-5830, labrunet@facstaff.wisc.edu

MADISON - The University of Wisconsin Comprehensive Cancer Center has been chosen as one of two sites in the nation to conduct human tests of endostatin, a promising potential cancer treatment that seems to work in part by disrupting the growth of blood vessels that nourish tumor cells.

The National Cancer Institute (NCI) notified the UWCCC early this afternoon of its participation.

"We are honored and very excited to be taking part in these trials," said UWCCC Director Dr. John Niederhuber. "This is an important opportunity to answer some key questions about a very interesting compound."

Endostatin's potential value as a cancer treatment received worldwide attention after a May 1998 New York Times article described early results in mice in the laboratory of Dr. Judah Folkman of Harvard Medical School. In May 1998, the NCI called animal studies on the compound "encouraging" and later announced it would entertain applications from research organizations to conduct tests in humans.

In animal studies, endostatin inhibited the growth of already existing tumors and caused some to shrink to microscopic lesions. When researchers examined those tiny lesions, they found the endostatin had blocked the growth of blood vessels that nourished the tumors.

Researchers also conducted tests in which mice were given endostatin until their tumors shrank, at which time the treatment was stopped. Treatment resumed when the tumors began to grow back. In each case, the tumors in mice became smaller when endostatin was given. Significantly, the tumors did not develop resistance to endostatin even after six cycles of treatment.

The trials at UW will be "Phase 1" tests in which researchers will try to discover the maximum dose patients can tolerate without undue toxicity. Initially, three to six patients will receive small doses of the drug and will be carefully monitored for toxic effects. Additional patients will then receive graduated doses of the drug. All patients will be carefully monitored through a variety of complex tests.

"The research team will recruit patients with solid tumors that have failed to respond to treatment," said principal investigator Dr. George Wilding, director of the UWCCC experimental therapeutics and professor of medicine

at UW Medical School. Patients with renal cell carcinoma, mesothelioma, breast cancer and melanoma may be particularly suited to the trials because such tumors typically have a large number of blood vessels, the target of the drug.

Dr. Joan Schiller, UW Medical School professor of medicine, and Dr. James Thomas, assistant professor of medicine, will co-chair the study. Both are medical oncologists practicing at UW Hospital and Clinics and members of the experimental therapeutics program. Other collaborators include Kendra Tutsch of the UWCCC analytical lab; Dr. Robert Auerbach of the zoology department; Amy Harms of the UW Biotechnology Center; Drs. Fred Lee, Fred Kelcz, Scott Perlman, James Zagzebski and Thomas Grist of the UW Medical School radiology department; and Richard Chapell of biostatistics.

Wilding said the time at which patients will be enrolled is not certain. The study will need to go through several review processes, including the university's, the NCI's and the UWCCC.

Those who are interested should call the UW Cancer Connect line, 1-800-622-8922 or in the Madison area, 262-5223.

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WisconsinWeek

For Faculty and Staff of the University of Wisconsin-Madison

February 24, 1999

UW research fuels growth in spinoff, startup companies

Brian Mattmiller

Research at the university has fueled a swift rise in new technology-based business ventures in Wisconsin during the past five years, according to a recent study of spinoff and startup companies.

The study, focusing on a 40-year period, was conducted by the University-Industry Relations office at UW-Madison. It identifies 172 Wisconsin companies that have some fundamental connection with the university. Of that total, 62 began in the last five years.

The total number is a dramatic increase from the first study conducted in 1993, says Philip Z. Sobocinski, associate director of UIR and author of both studies. This time around, he was able to identify three times as many companies with close university ties.

"This study shows what a dramatic effect UW-Madison has on Wisconsin's present and future economy through new business creation," says Sobocinski.

"We have more researchers than ever

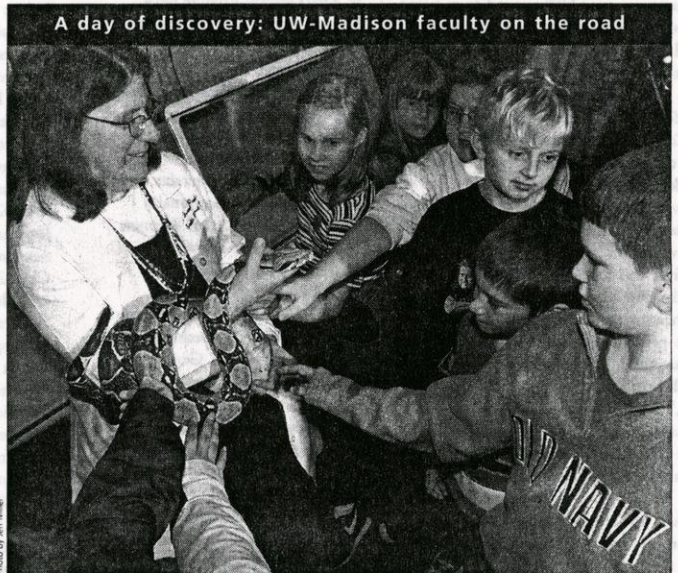
before giving thought and effort to the applications of their work," he adds. "There's also more peer acceptance in academia today for starting a commercial venture."

The findings reinforce a priority in Gov. Tommy Thompson's 1999-2001 budget recommendations. Thompson proposed creating a not-for-profit venture capital company and a new state position to facilitate more technology transfer between UW-Madison and the private sector.

"These new businesses are helping put research innovations to work right here in Wisconsin," Thompson said. "This study shows we're making great progress, but we can do even more to encourage technology transfer."

Sobocinski says the business-university connection is defined in two ways. A spinoff company develops products or services that stem directly from research on campus and often are using a license from a UW-Madison patent. The second are startup

continued on page fifteen



A day of discovery: UW-Madison faculty on the road

Veterinary medicine professor Joanne Paul-Murphy, with help from "Slim" the boa constrictor, gives school children at the Milwaukee Public Museum a sense of what scaly snakeskin feels like. The visit was part of UW-Madison's outreach program Feb. 16 at the museum, called "Whys and Wows." For details of this sesquicentennial event, the first of a series that will put Madison faculty "on the road" around the state, see page 16.

Policy: Hands off special equipment

Erik Christianson

Because of her disability, a rare genetic mutation that causes some of her muscle and soft tissue to turn to bone, Heather Niles needs to sit in a padded chair during her classes at UW-Madison.

But a special chair provided to her by the university was stolen from a classroom in Van Hise Hall last semester. The theft forced Niles to sit in a regular desk, which put pressure on her back and caused five new bones to form.

"Somebody thought it was more comfortable than a regular desk and took it," says Niles, a freshman from Rio who is planning on majoring in psychology. "A couple of people in my class searched all over Van Hise for it, but it was gone."

The theft of Niles' chair, and complaints from other students with disabilities, has prompted university officials to issue a policy related to classroom accommodations for students with disabilities.

The policy, distributed widely across campus, reminds students and instructors that tables, chairs and other equipment provided for

students with disabilities must not be utilized for other uses in classrooms.

Marcia Carlson, facilities access coordinator for UW-Madison Facilities Planning and Management, adds that people can be charged with theft if they remove such items from classrooms.

"What it does is put students with disabilities at a disadvantage," says Carlson. And it raises liability concerns as well, because the Americans with Disabilities Act requires the university to provide accommodations for students and employees with disabilities.

There are approximately 1,000 students with disabilities being served by the university's McBurney Disability Resource Center. Students must identify themselves as disabled to receive services.

Niles says the theft of her chair not only injured her back but also forced her to take more medicine to manage her pain, which affected her ability to study and attend classes. She now has another chair.

"Hopefully it won't happen again," she says. ■

Race matters

UW expert works to uncover bias in medicine

Dian Land

A new study on race and medicine may sadden and anger UW Medical School's Vanessa Northington Gamble, but it doesn't surprise her. Professionally and personally, she knows all too well that skin color and cultural background figure in medicine, as in every other aspect of American life.

Gamble learned a few weeks ago that a study to be published in the New England Journal of Medicine Thursday, Feb. 25, shows doctors are less likely to order cardiac diagnostic tests for blacks

than for whites, even though all patients noted exactly the same symptoms of heart problems.

"This meticulous study shows us once again that — consciously or subconsciously — race and ethnicity shape the expectations, beliefs and sometimes the practices of physicians," says Gamble, director of the UW Center for the Study of Race and Ethnicity in Medicine.

She will appear on several news programs, including ABC's "Nightline," this week, commenting on the study and offering her perspective as a nationally known expert on race and medicine.

"For a long time, people have mistakenly believed that doctors are above racism;

that since their job is to heal people, they simply can't be prejudiced," she says. "This study is one of many to remind us that the medical profession is not immune to this difficult issue of race, and that disparities based on race exist in medical decision-making."

Gamble's life work is dedicated to the arduous task of getting people to honestly think about, discuss and try to understand the insidious role racism can play in interactions between doctors and patients. Her efforts were rewarded most in spring 1997, when President Clinton formally apologized to the remaining survivors of the Tuskegee Syphilis Study.

The 40-year, federally sponsored study may have been the most compelling and sobering example of racism in American medicine, says Gamble, who served as chair of the legacy committee that sought the

continued on page fourteen

Inside

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Postcards from UW's past
Page 5



Vanessa Gamble

University to take tough stance on sweatshop labor

The university will push for a tougher code of conduct for companies that produce university-licensed products as a result of an agreement between the chancellor and students.

The agreement, meant to prevent UW apparel from being produced in sweatshops, ended four days and four nights of protest by students and others who slept outside the chancellor's office during a "sit-in" in Bascom Hall.

UW-Madison plans to endorse a proposed code of conduct drafted by a task force of universities that contract with Collegiate Licensing Co. The code would make demands on subcontractors about the conditions of their factories and treatment of their workers.

Much of the controversy surrounding the code's draft language concerned the lack of specific detail related to harassment, discrimination, wages and other provisions. According to Casey Nagy, the university's negotiator with the CLC, the task force planned to develop an appendix to further explain these terms after first hearing from the various campuses.

"In this sense, the protest activity helped to heighten awareness of details that the UW-Madison community feels strongly about and will help focus the next round of discussion for the task force," Nagy says.

Specifically, UW-Madison will:

- Insist on full public disclosure of company names, owners and other information for all facilities that produce licensed articles.
- Convene a symposium and sponsor institutionally funded research to determine "living wage" requirements. The amount of research funding will be determined by the specific proposals, which will be reviewed by the Graduate School Research Committee.
- Submit the findings for inclusion in the code, unless the results are widely disputed by the university community. If other universities don't agree to alter the code to require payment of living wages as determined by these findings within three months of their submission, UW-Madison will withdraw from the code.
- Include specific provisions about women's rights in the university's negotiating stance. The administration has agreed that if those provisions and others are not added to the Collegiate Licensing Co. code, the UW will withdraw its support.
- Sponsor annual community meetings on the code and establish a CLC Task Force Advisory Committee of students, faculty and staff. ■

1999-2000 Sabbaticals

At the December Board of Regents meeting, 1999-2000 sabbaticals were approved for the following UW-Madison faculty:

Sandra Adell, Afro-American Studies; Ramon Aldag, Business; Emily Auerbach, Liberal Studies & Arts/English; Anatole Beck, Mathematics; Mark Beissinger, Political Science; Norman Berven, Rehabilitation Psychology & Special Education; Alda Blanco, Spanish & Portuguese; David Bordwell, Communication Arts; Patricia Boyette, Theatre & Drama; Susan Brantly, Scandinavian Studies; Paul Bredeson, Educational Administration; Rachel Brenner, Hebrew & Semitic Studies; Mark Browne, Business; David Burgett, English; Martin Cadwallader, Geography; James Callen, Engineering Physics; Salvatore Calomino, German; Claudia Card, Philosophy; Noel Carroll, Philosophy; Francesco Cerrina, Electrical & Computer Engineering; Tsai Cheng, East Asian Languages & Literature; Hardin Coleman, Counseling Psychology; John Coleman, Political Science; Jane Collins, Sociology/Women's Studies; Harold Cook, History of Medicine/History of Science; Mark Courtney, Social Work; Jack Damer, Art; James Dannemiller, Psychology; Martine Debaeisux, French & Italian; Werner DeBondt, Business; Dennis DeMets, Geology & Geophysics; Raymond Deneckere, Economics; Sharon Derry, Educational Psychology; James Dillard, Communication Arts; Randall Dunham, Business; Charles Dyer, Computer Sciences; Elmer Feltskog, English;

Lewis Friedland, Journalism & Mass Communication; Rajit Gadh, Mechanical Engineering; Samuel Gellman, Chemistry; Harold Hill Goldsmith, Psychology; Linda Graham, Botany; Sabine Gross, German; Robin Harris, Soil Science; Robert Hawkins, Journalism & Mass Communication; Jan Heide, Business; Michele Hilmes, Communication Arts; Karen Holden, Consumer Science/LaFollette Institute; Yu Hen Hu, Electrical & Computer Engineering; Linda Hunter, African Languages & Literature; John Kennan, Economics; Jonathan Mark Kenoyer, Anthropology; Laura Kiessling, Chemistry; David Knipe, Languages & Cultures of Asia; James Knox, Geography; John Kutzbach, Atmospheric & Oceanic Studies; Gloria Ladson-Billings, Curriculum & Instruction; Jo-Anne Lazarus, Kinesiology; Richard Lehrer, Educational Psychology; Geoffrey Letchworth, Animal Health & Biomedical Sciences; Yafei Li, Linguistics; Yu-Sheng Lin, History; Mark Linzer, Medicine; Vladimir Lumelsky, Mechanical Engineering; Judith Maloni, Nursing; Rodolfo Manuelli, Economics; Gerald Marwell, Sociology; Herbert Maschner, Anthropology; Laura McClure, Classics; M. Lorrie Moore, English; Frances Myers, Art; Gilbert Nathanson, Chemistry; Michael Newton, Biostatistics/Statistics; John Nitti, Spanish & Portuguese; Garrett O'Keefe, Agricultural Journalism; James Pawley, Zoology; Robin Pemantle, Mathematics;

Suzanne Pingree, Agricultural Journalism/Consumer Sciences; Carol Pylant, Art; Raghu Ramakrishnan, Computer Sciences; Mark Ready, Business; Andrew Reschovsky, Agricultural & Applied Economics/LaFollette Institute; Joel Robbin, Mathematics; Stephen Robinson, Computer Sciences/Industrial Engineering; Gary Rosenshield, Slavic Languages; Boyd Rossing, Continuing & Vocational Education; Eric Rothstein, English; Patrick Rumble, French & Italian; Jackie Rutledge, Animal Science; Karen Ryker, Theatre & Drama; Prospero Saiz, Comparative Literature/Chicana/Chicano Studies; Uli Schamloglu, Slavic Languages; John Scharer, Electrical & Computer Engineering; Leona Schauble, Educational Psychology; Elaine Scheer, Art; John Scholz, Economics; Michael Shank, History of Science; Lawrence Shapiro, Philosophy; James Shilling, Business; Robert Smith Jr., Civil & Environmental Engineering; Paul Sondel, Pediatric Hematology & Oncology; David Sorkin, History; William Tate, Curriculum & Instruction; Robert Turner, Mathematics; John Valley, Geology & Geophysics; William Van Deburg, Afro-American Studies; Paul Voss, Rural Sociology; Jerry Weygandt, Business; Marvin Wickens, Biochemistry; Terry Wiley, Communicative Disorders; Franklin Wilson, Sociology; Thongchai Winichakul, History; Arun Yethiraj, Chemistry; Virginia Young, Business; Dieter Zeppenfeld, Physics; and Sarah Zimmerman, English. ■

UW research

continued from page one

companies, which are technology-based business ventures started by faculty, staff, students or alumni.

Virginia Hinshaw, dean of the UW-Madison Graduate School, notes that the companies are rooted in some of the university's most innovative research, in areas such as new materials development, biotechnology, biopharmaceuticals, medical imaging, power electronics and software development.

"This partnership between research at UW-Madison and Wisconsin business is an exciting growth area that benefits both partners," says Hinshaw. "It is also becoming a source for higher-wage, highly skilled jobs that will keep our graduates in Wisconsin."

Over the last five years, the study showed that an average of 12.4 new companies were started each year. That's nearly a 50 percent increase in the growth rate found in the previous five years, from 1989-1993.

Why the recent surge? Sobocinski attributes it to a number of factors. There has been an increase in technological innovations at UW-Madison that have strong commercial potential. There is also more availability of federal "seed" capital through

programs such as the Small Business Innovation Research (SBIR) program.

The three arms of UW-Madison technology transfer — UIR, the Wisconsin Alumni Research Foundation and University Research Park — have more joint ventures today to encourage and assist new business creation, he adds.

Other key findings from the study:

- More than 92 percent of the firms identified as created over the past several decades are still in business.
- The vast majority of these high-tech firms stay in Wisconsin. Less than 2 percent of non-acquired firms chose to relocate outside of the state.
- These are truly small-business ventures, with the majority of them (66 percent) having fewer than 10 employees. Only 8 percent employ more than 100 people. Most (71 percent) have estimated revenues of less than \$1 million annually.
- From fiscal 1983-1997, Wisconsin firms received \$58 million in SBIR and Small Business Technology Transfer (STTR) grants from the federal government. Of that total, 67 percent, or \$38 million, went to UW-Madison spinoffs and startups.
- The companies are distributed in 13 Wisconsin counties, but the vast majority are located in Dane County. ■

Some high-tech firms with UW-Madison ties

From promising new treatments in gene therapy to nanometer-scale instruments, many laboratory advances from UW-Madison are the foundation of recent business ventures. Here are a few examples of companies developed in the past five years:

- **The Mirus Corporation.** This company was founded in 1995 by a research team led by Jon Wolff, a pediatrics professor, and the PanVera Corporation. In his research, Wolff developed chemical reagents that are essential ingredients in gene therapy work. They are compounds that help genes penetrate cells. They also manufacture chemicals that help scientists track the transferred genes. Mirus Corp. is making these compounds available to other university-based laboratories and companies that do gene therapy work. It is also on the trail of a "universal" gene transfer reagent that could work on all applications.
- **Piezomax Technologies, Inc.** Founded in 1997, this company is developing the research of materials science Professor Max Lagally and researcher James MacKay in nano-scale devices. A nanometer is one billionth of a meter. The company is developing new precision-motion devices that use piezoelectric materials, which expand and shrink when voltage is applied. Precise motion at the nanometer scale is important for applications such as lithography, optical communications and microscopy.
- **Bioassay, Inc.** This 1997 company, founded by zoology Professor Stanley Dodson, is developing a simple test that can determine whether new and existing chemicals may cause endocrine disruptions. Christine Merritt, a former postdoctoral researcher in zoology, is the company's president. The technology has an interesting connection to UW-Madison history. In the late 1800s, zoology professor and lake studies pioneer Edward Birge surveyed plankton in Lake Mendota, including a species called daphnia. Referencing Birge's data, Dodson and others recently discovered a significant decline in the percentage of male daphnia, indicating the species may be sensitive to the increased amount of chemicals in the lake. The test uses daphnia as a test organism to predict whether a chemical can have endocrine-changing effects.
- **ProCetus BioPharm, Inc.** This company is based on the research of William Fahl, an oncology professor and researcher with UW-Madison's McArdle Laboratory for Cancer Research. ProCetus is developing products that can help alleviate some of the painful side effects of chemotherapy, such as hair loss, bone marrow suppression and weakened immune systems. It is also developing probiotic strains of bacteria that can protect newborn livestock from some lethal infections.

FOR IMMEDIATE RELEASE 2/24/99
CONTACT: Philip Sobocinski, (608) 263-2840

UW RESEARCH FUELS GROWTH IN SPIN-OFF, STARTUP COMPANIES

MADISON - Research at the University of Wisconsin-Madison has fueled a swift rise in new technology-based business ventures in Wisconsin over the past five years, according to a new study of spin-off and startup companies.

The study, focusing on a 40-year period, was conducted by the University-Industry Relations office (UIR) at UW-Madison. It identifies 172 Wisconsin companies that have some fundamental connection with the university. Of that total, 62 began in the last five years.

The total number is a dramatic increase from the first study conducted in 1993, said Philip Z. Sobocinski, associate director of UIR and author of both studies. This time around, he was able to identify three times as many companies with close university ties.

"This study shows the effect UW-Madison has on Wisconsin's present and future economy through new business creation," said Sobocinski. "We have more researchers than ever before giving thought and effort to the applications of their work."

The findings reinforce a priority in Gov. Tommy Thompson's 1999-2001 budget recommendations. Thompson proposed creating a not-for-profit venture capital company and a new state position to facilitate more technology transfer between UW-Madison and the private sector.

"These new businesses are helping put research innovations to work right here in Wisconsin," Thompson said. "This study shows we're making great progress, but we can do even more to encourage technology transfer."

Sobocinski said the business-university connection is defined in two ways. A spin-off company develops products or services that stem directly from research on campus, and often are using a license from a UW-Madison patent. The second are startup companies, which are technology-based business ventures started by faculty, staff, students or alumni.

Virginia Hinshaw, dean of the UW-Madison Graduate School, noted that the companies are rooted in some of the university's most innovative research, in areas such as new materials development, biotechnology, biopharmaceuticals, medical imaging, power electronics and software development.

"This partnership between research at UW-Madison and Wisconsin business is an exciting growth area that benefits both partners," said Hinshaw. "It is also becoming a source for higher-wage, highly skilled jobs that will keep our graduates in Wisconsin."

Over the last five years, the study showed that an average of 12.4 new companies were started each year. That's nearly a 50 percent increase in the growth rate found in the previous five years, from 1989-1993.

Why the recent surge? Sobocinski attributes it to a number of factors. There has been an increase in technological innovations at UW-Madison that have strong commercial potential. There is also more availability of

federal "seed" capital through programs such as the Small Business Innovation Research (SBIR) program.

The three arms of UW-Madison technology transfer -- UIR, the Wisconsin Alumni Research Foundation and University Research Park -- have more joint ventures today to encourage and assist new business creation, he added.

The information from Sobocinski's study will be included in an upcoming publication called "UW-Madison Technology Transfer and Entrepreneurship: Creating High-Tech Business Growth in Wisconsin." The book will take stock of the ways UW-Madison makes its mark on the marketplace.

Other key findings from the study:

* More than 92 percent of the firms identified created over the past several decades are still in business.

* The vast majority of these high-tech firms stay in Wisconsin. Less than 2 percent of non-acquired firms chose to relocate outside of the state.

* These are truly small-business ventures, with the majority of them (66 percent) having fewer than 10 employees. Only 8 percent employ more than 100 people. Most (71 percent) have estimated revenues of less than \$1 million annually.

* From fiscal 1983-1997, Wisconsin firms received \$58 million in SBIR and Small Business Technology Transfer (STTR) grants from the federal government. Of that total, 67 percent, or \$38 million, went to UW-Madison spin-offs and startups.

* The companies are distributed in 13 Wisconsin counties, but the vast majority located in Dane County.

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-- Brian Mattmiller, (608) 262-9772

FOR IMMEDIATE RELEASE 2/24/99
CONTACT: Philip Sobocinski, (608) 263-2840

Key-
Cancer

EXAMPLES OF RECENT HIGH-TECH FIRMS WITH UW-MADISON TIES

MADISON -- From promising new treatments in gene therapy to nanometer-scale instruments, many laboratory advances from University of Wisconsin-Madison are the foundation of recent business ventures.

Here are a few examples of startup or spin-off companies developed in the past five years:

The Mirus Corporation. This company was founded in 1995 by a research team led by Jon Wolff, a pediatrics professor, and the PanVera Corporation. In his research, Wolff developed chemical reagents that are essential ingredients in gene therapy work. They are compounds that help genes penetrate cells. They also manufacture chemicals that help scientists track the transferred genes.

* Mirus Corp. is making these compounds available to other university-based laboratories and companies that do gene therapy work. It is also on the trail of a "universal" gene transfer reagent that could work on all applications.

* Piezomax Technologies, Inc. Founded in 1997, this company is developing the research of materials science Professor Max Lagally and researcher James MacKay in nano-scale devices. A nanometer is one billionth of a meter.

The company is developing new precision-motion devices that use piezoelectric materials, which expand and shrink when voltage is applied. Precise motion at the nanometer scale is becoming important for applications such as lithography, optical communications and microscopy.

* Bioassay, Inc. This 1997 company, founded by zoology Professor Stanley Dodson and researcher Christine Merritt, is developing a simple test that can determine whether new and existing chemicals may cause endocrine disruptions.

The technology has an interesting connection to UW-Madison history. In the late 1800s, zoology professor and lake studies pioneer Edward Birge surveyed plankton in Lake Mendota, including a species called Daphnia. Referencing Birge's data, Dodson and others recently discovered a significant decline in the percentage of male Daphnia, from 50 percent to about 2 percent. The surveys indicate the species may be sensitive to the increased amount of agricultural chemicals in the lake.

The test uses Daphnia as a test organism, akin to a "canary in a coal mine," to look at the effects of various chemicals on the next generation.

* ProCertus BioPharm, Inc. This company is based on the research of William Fahl, an oncology professor and researcher with UW-Madison's McArdle Laboratory for Cancer Research.

* ProCertus is developing products that can help alleviate some of the painful side effects of chemotherapy, such as hair loss, bone marrow suppression and weakened immune systems. It is also developing probiotic strains of bacteria that can protect newborn livestock from some lethal infections.

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-- Brian Mattmiller (608) 262-9772

Wisconsin Ideas



What UW researchers have in store for your health, environment, job and family

2-6-97 By Gwen Carleton ■ The Capital Times

Stephen Babcock transformed Wisconsin's dairy industry with his butterfat test.

Harry Steenbock helped wipe out rickets in America.

Thomas Brock discovered the organism that founded the modern biotechnology industry.

And all that was before University of Wisconsin researchers paid much attention to the commercial value of their work.

For 150 years, UW laboratories have had a major impact on local lives. The tradition dates back to the university's earliest days: to the Wisconsin Idea, which encouraged researchers to view "the boundaries of the university as the boundaries of the state," and to an emphasis on extension work that blended theoretical and applied science for the public's benefit.

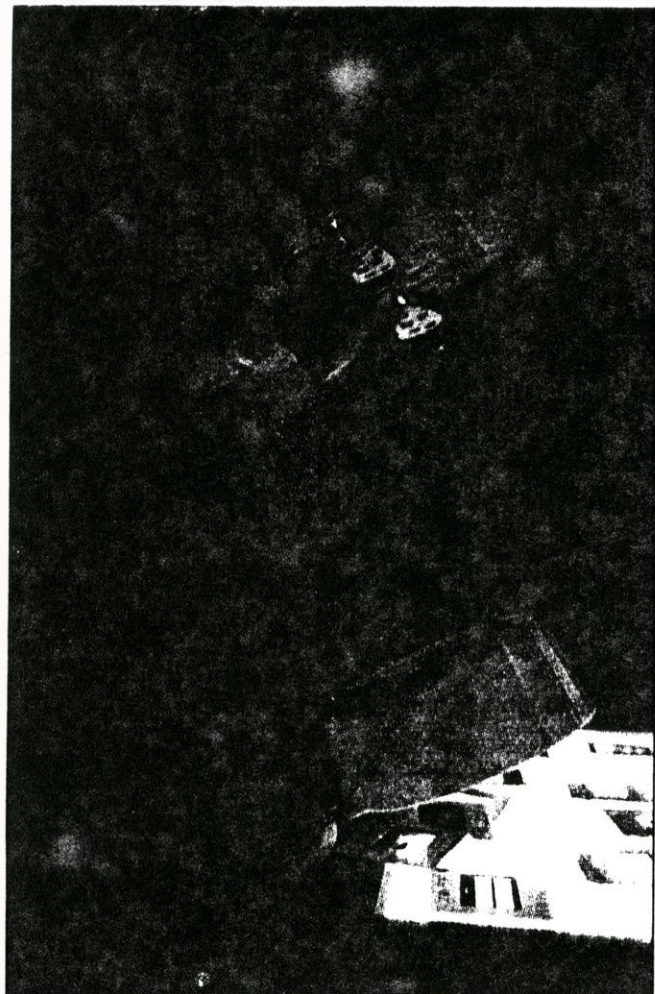
Back then, commercialization of academic research was considered inappropriate — when it was considered at all. Babcock gave away his revolutionary butterfat test to the farmers of Wisconsin in 1890. Steenbock had to fight to get his vitamin D discovery patented to the university. As late as 1966, Brock gave his discovery of

the *Thermus aquaticus* bacterium to the public, allowing others to earn millions from its applications in DNA fingerprinting, medical diagnosis and elsewhere.

Today, as UW-Madison celebrates its Sesquicentennial, all that has changed. The Wisconsin Alumni Research Foundation, which manages patents and licensing agreements on UW inventions, now keeps a close eye on promising developments campuswide. Researchers who patent through WARF keep 20 percent of gross royalties, with WARF distributing the rest throughout the Graduate School. Or researchers can pursue patents on their own, an option enjoyed by few other university scientists in the world.

The result is a university atmosphere that is savvy to real-world research needs, and able to capitalize on them quickly.

"UW inventions help the people and the economic base of the state," said Hector DeLuca, a former student of Steenbock's who holds more than 100 active patents on vitamin D derivatives. "Things have begun happening faster and faster."



HENRY A. KOSHOLLEK/THE CAPITAL TIMES

UW researcher Hector DeLuca, who has more than 100 active patents, prepares slides for a lecture abroad. Says DeLuca: "UW inventions help the people and economic base of the state. Things have begun happening faster and faster."

DeLuca
Cancer

■CONCERT from page 1

first, with the rest of the marching band flooding in from all directions. The lights turned red as the crowd enjoyed an assortment of university fight songs, including "On Wisconsin" and "The Budweiser Song." During the campus favorites, audience members participated by dancing in the aisles.

The UW Jazz Ensemble followed, featuring the much-anticipated Duke Ellington piece, the "U Wisc Suite."

Ellington composed the suite during a week-long visit to the UW in 1972. Sunday's performance was only the third time Ellington's suite

has been performed in Madison, according to Joan Wildman, a professor of music and chairperson of the School of Music's Jazz Studies Area, Wildman described "The U Wisc Suite" as having three very different movements.

"One of them includes a polka," Wildman said. "It's a jazzy polka, but it's a clearly recognizable polka."

Wrapping up the event, the UW Symphony Orchestra performed Tchaikovsky's "1812 Overture." The musicians weren't the only ones dynamic in style — the song came equipped with blinding firecrackers to emulate the atmosphere of battle.

"I think it's fair to say they're

smoking," Schaffer exclaimed afterwards.

Freshman Erin Blicharz agreed with Schaffer's description.

"It was great how the crowd got into it — the fireworks were impressive," she said.

Michael Paré, facilities manager for the school of music, worked with RES Pyrotechnics of Minneapolis to achieve the enhancing and safe sound effects. UW put a tremendous amount of work into making sure all explosions were at a reasonable sound level, Paré said.

For the concert's finale, the UW Marching Band joined the orchestra and the audience for a "Happy Birthday" rendition of "Varsity."

UW plans sesquicentennial celebration

Feb. 5
1999

The University of Wisconsin-Madison will display an array of teaching and learning initiatives and highlight undergraduate research Wednesday, Feb. 10 during the campus sesquicentennial celebration.

The Teaching and Learning Showcase and the Undergraduate Research Symposium will be held concurrently in the Memorial Union's Great Hall, 10 a.m. - 3 p.m. The events, which are open to the public, will highlight advancements in the core missions of the university and possible future directions. Chancellor David Ward will begin the events with an address at 10 a.m.

Free shuttle rides for UW concert

WSJ-2-6-99

Colorfully decorated buses will provide free shuttle rides Sunday between Camp Randall Stadium and the Kohl Center for UW-Madison's sesquicentennial concert.

Shuttles will begin picking up concertgoers at Camp Randall at 11 a.m. The first stop is on Monroe Street across from the fire station and the second is in Lot 17 near the McClain Center entrance. Riders will be dropped off and picked up in front of the Kohl Center on West Dayton Street.

The concert, which begins at 1 p.m., will reflect musical trends throughout the university's 150 years. Tickets are \$5 for general admission, \$3 for students 13 through college-age, and \$2 for children 12 and younger. For more information, call the School of Music at 263-1900.

Free buses for Kohl Center concert

CT 2-6-99

Specially decorated buses will shuttle passengers between Camp Randall parking lots and the Kohl Center for the UW Sesquicentennial Anniversary concert on Sunday.

The rides will be free for the occasion.

Shuttles will begin picking up concertgoers at Camp Randall at 11 a.m. The first stop is on Monroe Street across from the fire station, and the second is in Lot 17 near the McClain center entrance. Riders will be dropped off in front of the Kohl Center on West Dayton Street, and picked up in that same location. The buses will run for approximately

one hour after the concert.

The Sesquicentennial Anniversary Concert begins at 1 p.m. The program will feature the UW-Madison Marching Band, Symphony, Concert Choir, Jazz Ensemble and the university-community Choral Union.

Tickets are \$5 for general admission, \$3 for students 13 through college, and \$2 for children 12 and under. They are available at the Kohl Center or through Ticketmaster outlets.

For more information, contact the School of Music at 263-1900.



New frontiers of medicine and health

2-6-99

By Gwen Carleton ■ The Capital Times

Listen to many UW scientists, and they will tell you: The century of physical science is drawing to a close, and the century of

biotechnology is about to dawn.

The Madison campus plans to be ready. Researchers in chemistry, biology, agronomy and engineering are creating new alliances. The Wisconsin Alumni Research Foundation is teaching scientists about the emerging biotech field. And last April, the state Legislature provided a \$1.5 million grant devoted solely to making possible more interdisciplinary work in the biological sciences.

The burst of activity has led to a hand-

ful of new ideas that promise to directly affect ordinary people, primarily by helping them live longer, healthier lives.

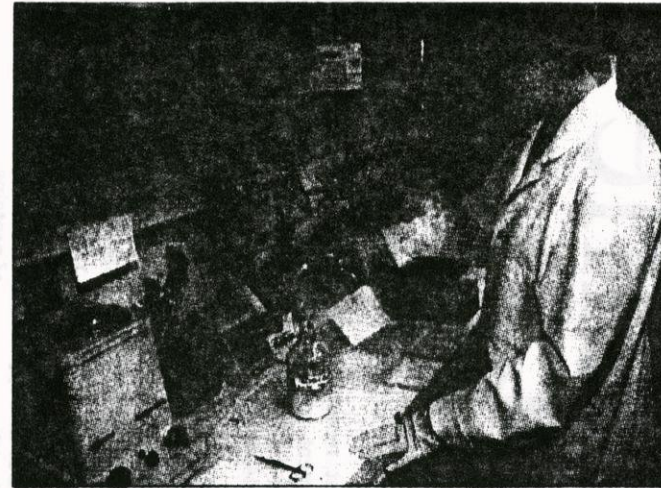
Stem cells: master key to drugs and tissue

For decades, scientists have tried to find a way to keep embryonic stem cells, which can develop into any cell or tissue, alive and healthy in the laboratory.

In November, UW's Dr. James Thomson announced he had taken that step. He and his colleagues had developed a way to maintain the cells indefinitely, Thomson reported, without destroying their ability to differentiate into specialized cells later on.

Stem cells should prove useful to sci-

See NEW FRONTIERS, Page 6A



FILE PHOTOS

Research assistant Karen Kritsch conducts dairy research on low-fat milk, continuing in the tradition of UW-Madison pioneer Harry Steenbock (above left), who first synthesized vitamin D.

New frontiers of medicine and health

Continued from Page 1A

ence in three ways, Thomson said. First, researchers can use them to study human development, something that should prove immediately useful because until now science has had to base almost all its developmental research on mouse cells.

Second, researchers will better be able to screen new drugs.

"This will speed up the drug discovery process immensely — within five years, I expect such screenings will be in place," Thomson said.

Finally, scientists should one day be able to manipulate the cells into producing custom tissues for disease treatments and transplantation. But that application, he added, will take at least a decade.

"The potential is enormous," he said. "But a lot of basic research is still required."

Enzymes that soothe, bacteria that protect

Another line of UW biotech research promises to lessen cancer chemotherapy's devastating side effects and to help the body resist bugs ranging from *E. coli* to salmonella.

Dr. Bill Fahl, a UW oncologist, has spent 20 years studying how enzymes, proteins that start specific chemical reactions in the body, can be manipulated to improve human health.

Fahl's current focus is on an enzyme that helps the body filter toxins known as glutathione S-transferase or GST. Humans have about eight different genes that make GST, Fahl explained.

"All we've done is take those genes and engineer them in a way that we can make them extra efficient at detoxifying certain molecules," he said.

When given to cancer patients, the modified enzymes allow bone marrow to detoxify more quickly than normal after absorbing chemotherapy drugs, reducing side effects ranging from hair loss to nausea.

In another project, Fahl is using "friendly" probiotic bacteria to a similar effect. He is genetically altering the bacteria to make them grow in the digestive tract, where they would detoxify a variety of invading organisms.

The bacteria, which could be consumed either in food or in a pill, could be programmed to fight specific health threats ranging from *E. coli* and salmonella bacteria to the organisms responsible for dysentery and crypto-sporidium outbreaks.

The technology has promising applications for live-

stock as well, Fahl said, noting that about 20 percent of cows and pigs die of gastrointestinal infections in their first two months of life.

Fahl created the firm ProCetus BioPharm last May to license the new products.

Consumers can expect to see food products enhanced with the pro-biotic bacteria within three years, he said, while the cancer and other medical treatments should take about six years to develop.

Cancer-fighting proteins

Like Fahl, biochemist Ron Raines is working to enhance natural disease-fighting mechanisms — in his case, with a focus on the power of proteins.

One of Raines' projects involves a common protein called ribonuclease, which has the natural ability to kill cells. The exact function of ribonuclease is not yet understood. But Raines and his colleagues have been able to teach the protein to single out cancer cells, bypass their defenses and kill them. The result is a potentially powerful weapon against cancer that does not damage healthy cells and tissue.

"We need to give physicians as many weapons in



Kiessling



Mackie



Raines



Fahl

their arsenal against cancer as possible, and this is a new one," Raines said.

A second recent breakthrough involves collagen, the most common protein in the body and the basis for connective tissue found in skin, bone, ligaments and cartilage.

Current collagen treatments and research rely heavily on cow collagen, which has limited uses in humans, Raines said. But now, with a small molecular change, Raines and his colleagues have learned to make the human protein more stable, making it easier to work with and study in the laboratory. The discovery raises hopes for new, more effective treatments for arthritis, cirrhosis, tissue damage and a variety of other common, devastating conditions.

If all goes well, the ribonuclease cancer treatment could be approved within five years, Raines said. Commercial applications of the collagen treatment

Continued



UW transplant research is focusing on antibodies that will keep the body from rejecting a new organ, without compromising the body's ability to fight other invaders.

FILE PHOTO

treatments, Thomas "Rock" Mackie is working to ensure more effective, precise treatments for cancer patients today.

He has developed a tungsten device consisting of a series of adjustable leaves that fits on the machine commonly used to deliver radiation treatments. The device allows physicians to aim the radiation more precisely and from more angles, significantly

decreasing damage to sensitive structures surrounding the tumor.

"It's like a smart bomb, trying to avoid collateral damage," Mackie said.

Mackie's original device was patented through WARF in 1994, and now is in use at more than 60 U.S. hospitals and clinics nationwide.

University Hospital and Clinics will join that list sometime in the coming months, when it installs a new, improved version of the device, Mackie said. Among other things, the new device will be faster than the original and will be able to offer verification that radiation has been delivered correctly.

Helping transplants survive, thrive

Elsewhere on campus, surgeon Stuart Knechtle is building on UW's vibrant legacy of transplant research with two new substances that promise to improve a transplant organ's chances for survival.

Knechtle and his colleagues are working with the antibodies anti-CD154 and immunotoxin, both of which help prevent the activation of T-cells, the disease-fighting cells responsible for organ rejection.

CD154 has successfully prevented rejection in non-human primate trials, and its first human trial was scheduled to begin in late January or this month, Knechtle said. Immunotoxin, which is still being tested in primates, has yet to be scheduled for human trials.

"These two drugs are actually quite novel, because they work on tolerance," Knechtle said.

Tolerance, or the body's acceptance of the transplanted tissue even as it continues to fight other invaders, has long been a goal of transplant immunology. Most existing drugs that prevent the body from rejecting transplanted organs also reduce the body's resistance to other diseases, making patients susceptible to a wide range of illnesses.

If all goes well, the drugs could be eligible for FDA approval after completing about three clinical trials, Knechtle said. Clinical trials can take anywhere from one to several years each.

are likely to take at least 10 years.

New weapons against pain, Alzheimer's

A substance that fights serious inflammation while preventing further pain is among two promising projects currently under way in the lab of Laura Kiessling, a UW chemist.

Inflammation is the body's response to irritation, infection or injury. It begins when white blood cells, in the process of fighting infection at an injury site, spill their toxic contents onto adjacent cells, causing swelling and pain.

Treatments such as aspirin and ibuprofen fight the problem by inhibiting the inflammation reaction inside the affected cells. But a molecule Kiessling has developed works from the outside, decreasing the number of white cells that bind to healthy cells in the first place. The result is less toxic spillage, and less pain.

The molecule would be appropriate for treating extreme cases of inflammation such as arthritis and lupus, as opposed to everyday bumps and muscle aches, she said.

"It's a different strategy that could be much more powerful," she said, not only relieving pain but also preventing future pain in the affected area.

A second project involves disrupting poisonous plaque deposits in the brains of Alzheimer's patients that scientists believe contribute to memory loss.

To disrupt the collection of the sticky proteins that form the plaque, Kiessling and chemical engineering professor Regina Murphy synthesized "inhibitor molecules" that prevent the protein from hardening.

If all goes well, the inflammation research could be in clinical trials within a few years, and available to the public within a decade. The Alzheimer's work also is preliminary, Kiessling said, but if all goes well, it too could lead to new medicines within the decade.

Precision bombing against tumors

While his colleagues develop 21st century cancer

Advances for the environment

By Gwen Carleton ■ The Capital Times - 2-6-99

Our well-being is intricately tied to the health of our air, water, soil and food. UW-Madison scientists with expertise in everything from bacteriology to forest ecology are working to better understand that environment and protect it from current and future threats.

Natural pesticides

For decades, the multimillion-dollar biological pest control market has been dominated by *Bacillus thuringiensis*, or Bt. Bt is considered safe and natural, but its effectiveness is slipping, the result of growing resistance among pests after nearly three decades of continuous use.

Now a UW discovery is poised to offer a badly needed alternative. Last summer a group of UW scientists published their findings about the

poisonous properties of *Photorhabdus luminescens*, a bacterium capable of infecting and killing insects. They also learned to purify and clone the toxins produced by the bacteria, a key step toward using them as insecticides.

In nature, the bacteria work in conjunction with nematodes, tiny parasitic flatworms that burrow into pests such as caterpillars, beetles and cockroaches. Once inside the insect, the nematodes release the bacteria producing the toxin, killing the host.

Now the scientists are working to engineer the genes that create the toxin directly into crop plants, eliminating the need for the nematodes.

"We've isolated the genes for the bacteria, and moving these genes into the plant seems to be the most attractive option at this point," said David Bowen, a staff scientist working on the project.

The Racine firm S.C. Johnson Co. is now poised to commercialize the bacteria's household applications, while DowElanco, a sub-

siary of Dow Chemical Co., is focusing on the potential multimillion-dollar agricultural market.

"If things continue to go as well as they are now, we could be seeing some products out of this in two to five years," Bowen said.

Cheaper, cleaner paper

Take a walk through the woods and you will see fungi at work softening and recycling dead wood. Now scientists from UW and the USDA Forest Service, Forest Products Laboratory are harnessing this natural decaying process to save the world paper

industry millions in energy and chemical costs.

After more than a decade of work, the scientists have learned that a common Wisconsin forest fungus, *Ceriporiopsis subbermispora*, can be used to

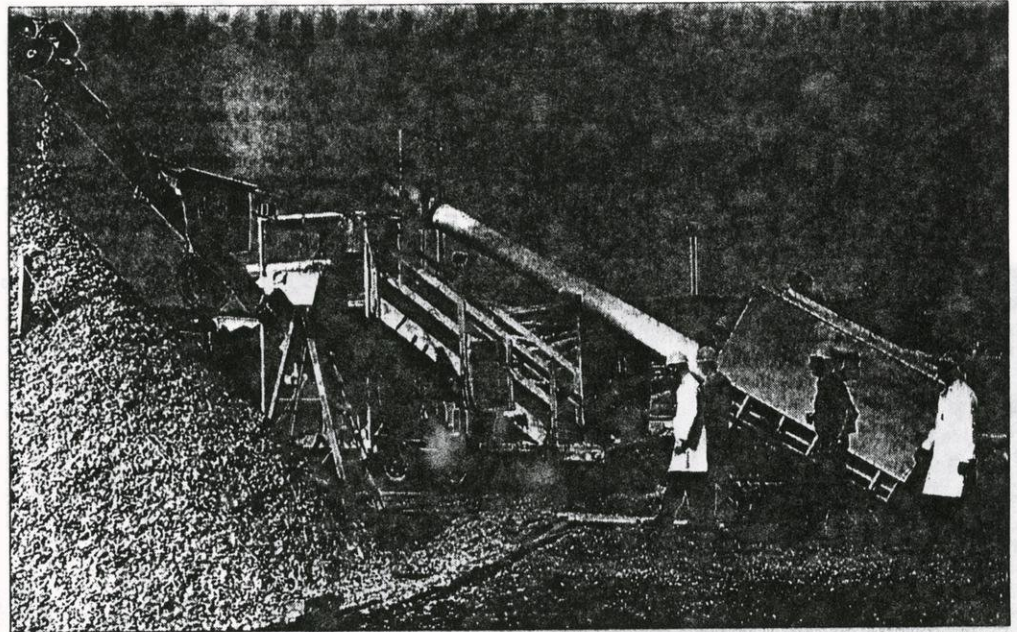
soften wood chips before they are processed into paper. The application of the fungus, called biopulping, naturally digests the chips without breaking up the cellulose needed for paper.

In experiments, biopulping has cut electric processing costs by up to 30 percent, said Masood Akhtar, vice president of Biopulping International, a Madison company that has grown from the technology.

"Electricity costs roughly \$10 million a year to run a single plant producing 300 tons per day for newsprint," Akhtar said. "So this has tremendous benefits."

Biopulping also increases the quality of the paper fiber, lessening the industry's need for costly and environmentally damaging chemical enhancers, Akhtar said.

A successful large-scale trial in a regional paper mill ended in October, clearing the way for implementation of the technology worldwide, Akhtar said. Currently, mills in Wisconsin — which employ about 52,000 people statewide



FILE PHOTO

UW and Forest Products Lab researchers are using fungus to help decompose wood chips slated for the paper plant. Called biopulping, it saves electricity needed to process the chips and produces a better quality paper.

— are showing interest in applying the technology, as are mills as far away as Europe and India.

Natural warning systems

Not all of UW's new discoveries promise to make millions for WARF and corporate licensees. A few, such as the work of Stanley Dodson, have much more modest financial prospects — but could mean a tremendous amount for the health and safety of U.S. citizens.

Dodson is studying endocrine disruptors, chemicals that can mimic or block animal hormone systems, causing different reproductive disorders. In recent years, a series of global anomalies — from low sperm counts in men around the world to feminized alligators in Florida and mink in Michigan — have raised fears about the substances in our air and water. But the topic remains complex and controversial, with little agreement about the size of the problem or which chemicals or combinations of chemicals are responsible.

Zoologist Dodson has developed a simple test to detect such disruptors in the environment. The test uses daphnia, flea-sized crustaceans that normally serve as food for fish.

The test exposes the tiny creatures to a sample of water or soil and observes the results on their reproductive cycle. If the treated daphnia's offspring have an unusual ratio of males to females, a disruptor likely is present.

The test is quick and simple thanks to the daphnia's three-day reproductive cycle and the ease with which they reproduce in the lab, said Christine Merritt, a UW zoologist. And it is cheaper than the only other available tests, which observe the reproductive cycles of vertebrates.

"It's like the canary down the mine shaft," said Merritt. "If our test shows any indication of endocrine disruptive activity, people can go ahead with longer and more specific tests."

Merritt founded BioAssay last year with the help of a federal Small Business Innovation Research grant. Since May, she has assembled a small staff and successfully field tested the product. The company now is applying for a grant to develop a test kit for a wider market.

If all goes well, she said, the test could be widely available within five years. The test could be more significant given the likelihood of new federal standards in the next decade.

"This is a quite complex, very controversial, very hot topic," Merritt said.

Not all of UW's new discoveries promise to make millions for WARF and corporate licensees. A few have much more modest financial prospects — but could mean a tremendous amount for the health and safety of U.S. citizens.



Fresher food and better bodies

By Gwen Carleton ■ The Capital Times 2-6-99

UW-Madison nutrition researchers hope to prevent problems and improve human health with the help of nutrients commonly found in everything from meat and cheese to exotic fruits.

The substances created by these scientists are called nutraceuticals, and a handful created by UW researchers already are drawing widespread attention.

More muscle, less hunger

It's the stuff of nutraceutical dreams: a natural, essential fatty acid that seems to help humans and animals build muscle, decrease their appetites and shun fat.

Michael Pariza, head of UW's Food Research Institute, discovered conjugated linoleic acid's healthful potential about 10 years ago.

The substance's applications fall under three broad categories: dietary supplements, animal feed and food additives.

Currently, UW researchers are focusing on CLA's potential to do everything from prevent muscle loss in cancer patients to cut farmers' feed costs.

Early animal trials offered remarkable results: again and again, Pariza and Mark Cook, a UW animal scientist, saw pigs and mice lose fat, gain lean muscle and decrease their food intake, all without negative side effects.

A human trial conducted last year indicated that CLA does not melt fat from overweight adults, as some had hoped. But when used as a nutritional supplement, CLA does seem to reduce

the body fat and appetite levels of average-sized adults.

"CLA doesn't appear to have a tremendous effect in loss of body fat, but it does block the uptake of fat," Cook said, adding that he takes the substance himself and is convinced of its health benefits.

CLA already is selling briskly as a nutritional supplement — a largely unregulated field — in more than 2,700 stores nationwide. The substance also is close to appearing in many types of animal feed, Cook said, where it promises to create healthier animals while saving farmers money.

Federal regulations mean that it could take longer for CLA to show up in human food products, said Ken Johnson, a former WARF licensing associate involved with the project.

"But because this is a naturally occurring product, and because business is very interested, our assumption is it will be a few years instead of a few decades," Johnson said.

Earth's sweetest secret

In its native Brazil, the fruit is simply called "J'oublie," or "I forget." The reason? Brazilians believe its exquisite sweetness makes the taster forget what he or she was doing.

Now two UW scientists have become intrigued with the chemistry behind the tropical fruit's remarkable taste. Several years ago biologist Goran Hellekant learned that the substance responsible was not a sugar at all, but an unusual protein 2,000 times sweeter than sucrose. He named it brazzein, after the obscure vine that produced it.

Last year, biochemist John Markley identified the protein's complete chemical structure. Brazzein, he explained, offers the opportunity to unlock a scientific mystery: why cells in the tongue perceive some substances as sweet.

Meanwhile, several companies have licensed with WARF to add the gene

that produces brazzein to crops ranging from cranberries to corn. A Texas company called Nektar Inc. also is producing brazzein as a food additive.

The substance appeals to industry, Markley explained, because of its unique nutritional properties.

"As a protein, it provides good nutrition to foods and doesn't add the calories sugar does," he said. "It really has very pleasant taste — we taste it regularly in the lab."

It could take six or seven years for brazzein to receive regulatory approval. But WARF officials say like CLA, brazzein's natural beginnings and its corporate support have the potential to move it into U.S. grocery stores and kitchens in record time.

Keeping foods fresh longer

New crops of flavor- and nutrition-enhanced foods may soon last longer on grocery shelves, thanks to yet another UW invention.

UW engineer Marc Anderson developed a system that cleans air of ethylene, a substance that causes plants to wither and spoil, for a series of plant-growth experiments aboard the NASA space shuttle.

But now a Georgia-based company is tapping the technology's applications as a way to help retailers prevent the earthly problems of yellowed broccoli,

rusty lettuce and mushy fruit.

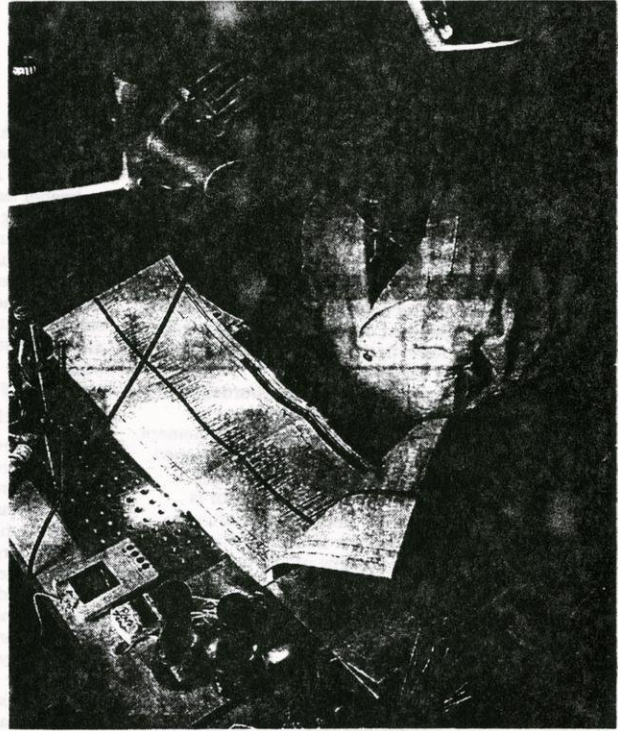
The device, which Georgia's KES Irrigation Systems has named Bio-Kleen, uses ultraviolet light and titanium dioxide to break ethylene down into the harmless byproducts of carbon dioxide and water vapor.

Unlike current removal systems that filter or collect ethylene, Bio-Kleen needs virtually no maintenance. The ultraviolet lights also reduce bacteria, molds and odors from storage rooms, according to Anderson, a professor of environmental engineering and materials science.

Bio-Kleen, which hit the market last year, should be able to increase the shelf life of perishable items by more than a week. It now is available around the world, Anderson said.

Food preservation is just one use of the technology, he added.

"The same kind of thing can be used to clean air, particularly in confined spaces," he said. New uses for the technology could be ready for market within the year, Anderson said.



FILE PHOTO

UW biologist Goran Hellenkamp discovered the secret of sweetness in a Brazilian plant: a substance that is not a sugar but is 2,000 times sweeter.



Pariza

A look at the next Internet

By Gwen Carleton ■ The Capital Times

2-6-99

Thirty years ago, when computers were still hulking mainframes, Larry Landweber began wondering about how he could help the machines communicate.

That interest led him to develop an early e-mail system, and to help develop the Internet-precursor CSNET. Finally, with a small group of colleagues nationwide, he contributed to the development of the Internet itself.

But now the Internet, overburdened as it is, is no longer enough, Landweber says. So now he is working to supplement it with a newer, faster network designed to connect universities nationwide.

The computer science professor is chairman of the Network Research Liaison Council for Internet2. The network will be capable of moving data at speeds ranging from roughly 155 to 622 million kilobytes per second — dramatically faster than speeds available on the original Internet.

Such speeds will open whole new possibilities for the researchers using the network and for the corporations that paid for it, Landweber said.

"The network gives academics this wonderful facility, but the scientists also will be guinea pigs, learning how to do things better," he explained. "It is basically giving a lot of these companies the opportunity to test out the next generation of equipment — things which are not ready for prime time yet."

That new generation should include equipment capable of distinguishing between audio, graphic and video data, and prioritizing how they are sent. Once networks can make such distinctions, Landweber said, technologies ranging from digital libraries to high-speed telemedicine, virtual reality and interactive video should follow close behind.

Just a vision two years ago, the Internet2 is moving ahead with remarkable speed. This month, workers laid the final link in a fiber-optic backbone for the network that stretches from Seattle to New York. UW, one of the network's 34 original members, recently connected with the network but is still in the testing phase. An "official" launch of UW's connection is scheduled for March.

Internet2's existence promises to dramatically relieve congestion on the original Internet. And before long, Landweber said, the public likely will begin reaping the project's benefits even more directly, in the form of new high-tech equipment and services.

"What we're doing now is taking research done over the last 20 or 30 years and putting it onto Internet2," Landweber said. The next step, he added, "is to begin thinking what Internet3 is going to look like."

Computers vault disabilities

Have you ever thought about how you would use technology if your eyesight failed, your motor control slipped or your arm was in a sling? In fact, much modern technology would accommodate you, largely due to the efforts of Gregg Vanderheiden.

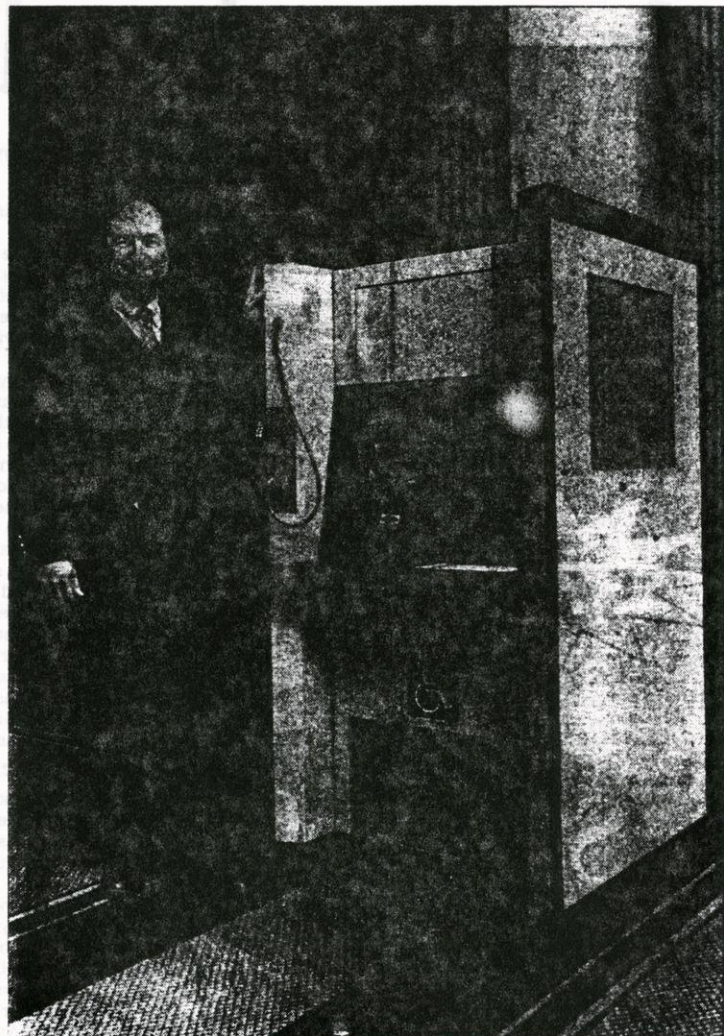
Vanderheiden directs the Trace Research and Development Center, a research institute dedicated to making computer systems accessible to people with a wide range of physical limitations. Thanks to Trace, features to accommodate people with motor problems, deafness, low vision, missing limbs and other limitations have been standard in most major computer operating systems for years.

But that was just the beginning, according to Kate Vanderheiden, the center's program manager. Today, Trace's projects include the development of accessible telephones and telecommunications equipment, information kiosks and World Wide Web sites, she said.

Industry, which is working to broaden the versatility of its products and meet federal access laws, has shown considerable interest, said Kate Vanderheiden, who is Gregg's wife. So has the U.S. government. In mid-January, her husband demonstrated a variety of Trace technology at the White House for President Clinton and Vice President Gore, she said.

Industry executives regularly travel to Madison for training at Trace, and can obtain detailed technical information from the center's Web site.

<http://www.trace.wisc.edu>. And at least



UNIVERSITY OF WISCONSIN-MADISON

one major product, a voting booth that allows people with disabilities to vote independently, should appear in many municipalities within the year.

"It's very exciting right now," Kate Vanderheiden said. "The idea is, over time, that we're not shutting people out."

Researcher Gregg Vanderheiden exhibits a computer kiosk designed for people with disabilities.

Better readers, writers and viewers

CT 2-6-99

UW-Madison humanities researchers' work may not attract the patents and corporate interest that their counterparts' efforts in science and engineering do.

But their research in learning and how we process culture will have a direct impact on us and our children.

Coping with television

The work of one UW humanities researcher, in fact, may already be making an appearance in your living room.

Joanne Cantor is among the nation's leading experts on the influence of television on children. A communication arts professor, Cantor testified before a congressional committee about TV ratings in February 1997, and addressed Congress again in the spring of 1998 in response to a series of school shootings around the nation.

Cantor's research has made some surprising discoveries: for example, that it



Professor Joanne Cantor is a national authority on television's influence on children.

is the context of violence, not necessarily the type or amount, that determines children's reactions. Her research into the new television ratings system concluded that age-based ratings were as likely to attract as deter young viewers from sexual or violent material.

Currently, Cantor is focusing on the "V-chip," a computer chip capable of blocking selected programs that will begin appearing in many new television sets this year.

"Television's not covering this, so it's hard to get information out to parents," she said. "But they're really interested in getting products to help them screen out things they don't want."

As for research, she plans to continue her ratings studies and to add a new focus area: a look at how depictions of sex on television influence the attitudes of children, especially teens.

The keys to literacy

In another part of the university, English professor Martin Nystrand is studying how students learn in an increasingly complex and technical world.

Nystrand is director of the National Research Center for English Learning and Achievement, a federally funded national project designed to discover what specific teaching methods improve students' success from kindergarten through 12th grade. The project is probing how reading, writing and discussion affect learning in a variety of subjects, and also exploring how teaching is complicated by everything from a more diverse student population to the computer revolution.

One study in eighth- and ninth-grade classrooms, for example, showed that classroom discussion affected students' writing abilities, with students who discussed a topic, read about it and then wrote about it producing much more sophisticated analyses than those who learned via other methods.

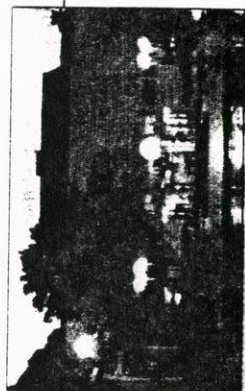
"We found students in those classes were superior not only for their depth of understanding but also for their recall," Nystrand said.

Other studies include how the acquisition of literacy has changed over the century and how American Indians and immigrants learn and express literacy. UW English professor Deborah Brandt, for example, has discovered that becoming literate now requires more time, money and ingenuity than it did a century ago.

The researchers are publishing their findings widely and disseminating the information directly to teachers. The project also has an interactive Web site, www.wcer.wisc.edu/cela, where educators can learn about the latest findings and ask questions of the researchers.

- Gwen Carleton

150 years of cultural life at the UW



Elvehjem Museum of Art opened in 1970.

creative writing program in English Department
1984: Writer Loria Moore hired by UW
1985: First volume of "Dictionary of American Regional English," edited by UW professor Frederic Cassidy, is published
1985: Bingham Prize in Poetry established
1997: UW professor Nellie McKay co-edits best-selling "Norton Anthology of Afro-American Literature"
- Jacob Stockinger

to have historian Jan Vansina help decipher his genealogy
1969: WHA is first public TV station to win an Emmy
1969: Wisconsin Center for Film and Theater Research opens
1970: Elvehjem Museum of Art opens; it is now second largest museum in the state
1973: Song "You've Said It All" first performed by UW Band
1978: Ron Wallace and Kelly Cherry establish

1939: Wisconsin Union Theater opens; black contralto Marian Anderson sings at UW shortly after she is denied access to Constitution Hall in Washington, D.C.
1940: Belgium's Pro Arte String Quartet, exiled by World War II, becomes artist-in-residence at UW. The quartet is active at UW today
1954: WHA-TV goes on the air
1959: "On Wisconsin" becomes state song
1962: UW art professor Harvey Littleton forges nation's first glass art movement. Program produces Dale Chihuly, whose sculpture is in Kohl Center
1967: "Roots" author Alex Haley comes to UW

alumnus Carl Beck
1917: 9XM, the first public radio station in the nation, starts experimental broadcasts
1922: Call letters of 9XM changed to WHA
1922: UW music professor Edgar "Pop" Gordon performs sing-along on WHA, gives nation's first music class on the airwaves
1926: UW alumna and professor Margaret H'Doubler opens first college dance program
1934: Band leader Ray Dvorak adds arm swing to "Varsity"
1936: Painter John Steuart Curry becomes the nation's first artist-in-residence
1937: UW Press releases first book

1851: Memorial Library opens; today, it's the biggest single book collection in the state
1875: Glee Club founded; becomes Choral Union in 1893
1885: UW Band founded
1895: School of Music founded
1898: "Varsity" reworked from a tune by French composer Charles Gounod with words by UW alumnus Henry Dyke Sleep
1909: "On Wisconsin" composed by Chicago composer William T. Purdy, with words by



Reinvented Wisconsin Idea must address real problems

By Donald F. Kettl
WSS - 2-7-99

Imagine a television special on the future of the University of Wisconsin. It begins with a close-up of a baby, just hours old on New Year's Day 2000, crying in her bassinets. The announcer asks, "What kind of state will this baby inherit in 2020? What will Wisconsin need from her for the state to meet its 21st century potential? What must Wisconsin do now to guarantee that she'll be ready?"

At the launch of the university's 150th birthday party in September, Gov. Tommy Thompson framed just such a picture. He asked us to identify the five big challenges facing the state — and what we will do to meet them. It's a mighty tall order. But thinking about the question in terms of a soon-to-be-born baby —



Kettl

Kettl is a UW-Madison political science professor. He is to speak at 11:45 a.m. Tuesday at Tripp Commons in the Memorial Union, 800 Langdon St., on "The Future of State-University Relations: Charting a Course for UW-Madison in the New Century." Registration is required to attend the speech, which is a University of Wisconsin Sesquicentennial event. The cost is \$8. For more information, call 265-2447.

GUEST COLUMN

where Wisconsin has been and where we want her to be — provides a way of stretching our imaginations into the future.

To develop a strategy for how the university can help meet these challenges, the La Follette Institute ran two focus groups in Milwaukee and Madison. The participants in our focus groups concluded several things.

Wisconsin is a special place, beyond Rose Bowls and Super Bowls and cheese and a clean environment. Wisconsin is a state of mind — a state where people take important ideas seriously. Badgers understand that the state's future depends on building its intellectual capital and that the storehouse of that capital is its university. Wisconsin without the University of Wisconsin would be... well, it wouldn't be Wisconsin.

For Wisconsin to stay Wisconsin, however, we must solve five big puzzles. First, the changing economic framework: How will Wisconsin cope with the rapid transformation of its traditional commodity-based industries (especially dairy and pulp and paper)?

Second, the information age: How will Wisconsin position itself to benefit from the emerging information-based, computer-driven, global economy?

Third, shifting demographics: With more retired baby boomers and a work force less white and male, how will Wisconsin deal

with a population that, 20 years from now, will look very different?

Fourth, social challenges: How will Wisconsin forge new strategies to deal with emerging social issues — prisons and welfare, children and senior citizens?

Finally, the role of government: How can Wisconsin's state and local governments rise to solve these challenges?

To solve them, our focus group participants also concluded that the university must build on the century-old Wisconsin Idea — putting the university's resources to work in service to the state. But as one senior state official once told me, "The bridge between the state and campus has long been an important one. But there's a sense that a couple of the planks have fallen out of that bridge."

One of Wisconsin's future governors is now in diapers. A future corporate leader is managing her playpen. What must the university — and, therefore, the state — do now to prepare them for the world they will inherit? Here's a strategy:

■ Strengthen the liberal arts. The last millennium shows that the future has always belonged to those who think sharply and communicate well. The issues that shaped society in the past provide the surest sense of what will matter tomorrow; students well-grounded in the liberal arts will be best prepared to lead Wisconsin's future.

■ Build faculty-community ties.

Tackling the big problems means linking the university's reservoir of intellectual capital — especially its faculty members — with citizens. The ties must be direct and personal.

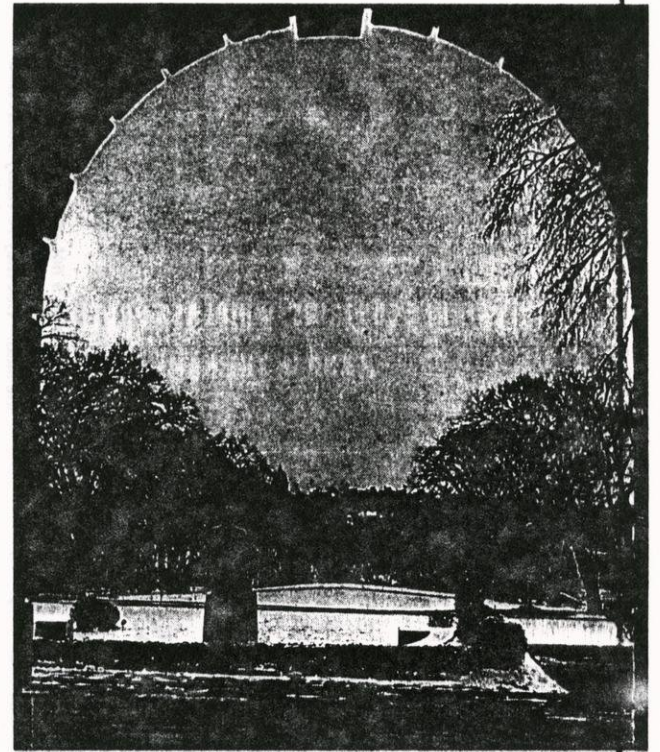
■ Construct an institutional presence. The university ought to devise a formal strategy to forge and sustain links between the university's resources and the state's problems. An institutional presence would identify the university's commitment to attacking these problems.

■ Listen. The reinvented Wisconsin Idea must begin by focusing on the problems that citizens believe most need to be solved. The university needs to listen carefully and direct its efforts accordingly.

■ Encourage cross-disciplinary contributions. No academic discipline can "own" any problem that really matters. The university faces the challenge of strengthening its core disciplines while linking them to help solve problems that pay no attention to disciplinary boundaries.

■ Stimulate lively debate. The reinvented Wisconsin Idea ought to provide lively debate on keenly troublesome issues. Stimulating careful thinking about knotty issues is the best way the university can grow its own — and the state's — intellectual capital.

Our focus group participants worried about the state's ability to remain a special place if it could not solve the five big problems. They concluded that solving them required the commitment of the



File photo

For a century the Wisconsin Idea has connected UW-Madison's Bascom Hall with the state Capitol and points beyond. Will the Wisconsin Idea of using the university to serve the state be reinvented to help solve the problems of the next century?

university — and a commitment of the state to the university to make it possible. They were excited about the potential. But they fretted about the implications if the state and the university did not both rise to the challenges.

Rebuilding the bridge between the state and its university provides a way to meet this challenge — and the challenge our soon-to-be-born baby faces. Reinventing the Wisconsin Idea charts the path to renewing the compact.

RESEARCH DIGEST

Trace center grant UW-Madison's Trace Center has been awarded a five-year, \$6.75 million grant to make information technology more accessible to people with disabilities.

The grant, awarded by the National Institute on Disability and Rehabilitation Research, will support new approaches by the Trace Center in making next-generation information technology usable by everyone. Trace, part of the College of Engineering, will receive \$1.35 million per year to support student, staff and faculty projects.

The center focuses on making technologies such as kiosks, automatic-teller machines, hand-held electronic devices, computers and the Internet more accessible to people with all types of disabilities.

"The goal of the Trace Center is to level the playing field for people with disabilities and people who are older, by allowing them to use the same products as everyone else," says center Director Gregg Vanderheiden.

For information about the Trace Center's work, contact Rachael Bower, 263-5697; or visit: trace.wisc.edu.

Electronics center The College of Engineering will share with five universities a new national center for power electronics aimed at achieving dramatic savings in electric power consumption.

UW-Madison will join Virginia Tech University, Rensselaer Polytechnic Institute, North Carolina A&T State University, and the University of Puerto Rico at Mayaguez in a new National Science Foundation Engineering Research Center for power electronics.

UW-Madison's effort will receive \$500,000 per year during five years. In

Therapy shows promise fighting melanoma

Brian Mattmiller

In treating dogs for a highly aggressive form of melanoma, a UW-Madison research team is having success with a new cancer vaccine that could benefit human cancer-fighting efforts.

Professor Gregory MacEwen and research scientist Gary Hogge of the School of Veterinary Medicine have developed a method of gene therapy that helps the animal's immune system recognize and attack cancer cells. In the September issue of the journal *Human Gene Therapy*, the researchers reported the vaccine helped some animals live longer and shrunk the tumor in about 20 percent of animals treated.

"This is important work with melanoma, because there are no other treatment alternatives," says MacEwen. "Melanoma is resistant to chemotherapy drugs, and surgery doesn't always help because melanoma's spread is so aggressive. We're trying to establish this as a standard of care."

The study details the treatment of 16 dogs that had advanced stages of melanoma that could not be successfully treated through surgery or drugs. The cases were referred to UW-Madison by veterinarians from around the country.

To develop the vaccine, the researchers began by surgically removing as much of the tumor as possible. They extracted and purified individual cells from the tumor and injected DNA into those cells that accelerated production of chemicals called cytokines. Cytokine molecules stimulate production of certain white blood cells in

the body. The altered cells are then injected back into patients in the form of a vaccine.

The vaccine is administered with a "gene gun," a unique tool that helps scientists insert genetic material into cells. With air pressure, the gun can shoot millions of microscopic gold beads coated with DNA into cells, which are then injected back into the patient. In cells

that are penetrated by the beads, the new genetic material becomes integrated into the cell and the cytokine is produced.

With this therapy, the animal's immune response is improved by the increase in cytokine production. The cytokines "train" the immune system to recognize and kill tumor cells, Hogge says.

Cancer vaccines and gene therapy, which have become widely studied in the past decade, could provide a new approach to fighting cancer with fewer side effects than chemotherapy or radiation therapy. This study is unique, Hogge says, because the gene therapy can produce a broad range of immune responses against surviving tumor cells in the patient.

"This is a way to trick the immune system and get the body to fight the tumor," Hogge says.

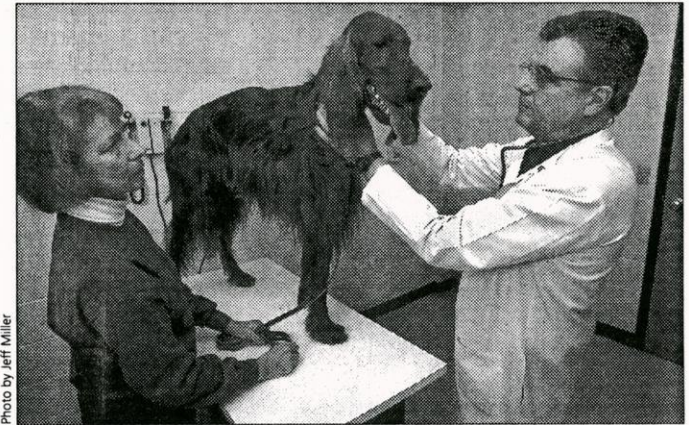


Photo by Jeff Miller

Marilyn Putz helps calm her dog, Tegan, for an examination by Gregory MacEwen. Tegan is part of a long-term study of cancer-fighting drugs.

MacEwen says this study closely parallels work in human gene therapy to treat cancer, and provides additional information that benefits those projects. "We try to target a lot of the research we do so it will benefit the development and design of human clinical trials," he says.

Dogs provide a good model for understanding cancer in humans, MacEwen says, because of their large size and biological similarity. The causes and behaviors of cancers in humans and dogs are also very similar.

Melanoma is a common type of oral cancer in dogs. While oral melanoma is rare in humans, there are roughly 35,000 cases of melanoma skin cancer reported in America each year, and it remains one of the deadliest forms of cancer because of its ability to spread rapidly, MacEwen says. ■

Courts most admired by users, study says

Wisconsin Week
Leg-Cancer
September 9, 1998

Des -
cancer

EMBARGOED FOR RELEASE 5 P.M. EST, MONDAY, AUG. 31
CONTACT: Ronald Raines, (608) 262-8588

HOW A COMMON PROTEIN BECOMES A CANCER KILLER

MADISON - In one of nature's remarkable flukes, scientists in 1991 discovered a protein in frog eggs that proved to be a potent killer of cancer cells. Now a new study by a University of Wisconsin-Madison biochemist finds that a "cousin" of that frog protein found in mammals has the same cancer-fighting potential.

Biochemist Ron Raines reports in the Sept. 1 Proceedings of the National Academy of Sciences that ribonuclease A - a digestive protein made by the pancreas - could be genetically altered to kill cancer cells. The finding opens a door to creating a new class of "natural" drugs aimed at fighting cancer, without the side effects of standard chemotherapy, he said.

"The greatest advantage could be as a potential new pathway for cancer therapy," Raines said. "With this finding, we can also begin to think about tailoring proteins to work more effectively against specific forms of cancer."

Raines' research questions begin with the 1991 discovery that a ribonuclease protein in the Northern leopard frog possesses anti-cancer properties. The New Jersey-based biotechnology firm Alfacell Corporation, which is credited with the discovery, is manufacturing a drug called Onconase that is currently in phase-three clinical cancer trials.

Delivered to patients intravenously, Onconase has shown promising results in treating malignant mesothelioma, an asbestos-related cancer. In recent years, a National Institutes of Health (NIH) study also found that Onconase inhibits the replication of the HIV virus.

Raines set out to answer an essential question about Onconase: What makes this frog-derived protein such an effective cancer toxin, compared to its genetically similar "cousin" in humans? Raines found the answer by comparing the molecular structure of the protein produced by frogs with a similar ribonuclease protein in cows. Bovine ribonuclease is very similar to the human form.

Raines found the two proteins differ in their ability to bind with a ribonuclease inhibitor (RI). This inhibitor is found in nearly every cell in the body, and keeps ribonuclease from attacking and breaking down cellular RNA.

"The RI protein acts as a sentry inside the cell, protecting the cell's RNA against invasion by ribonuclease," Raines said. "But Onconase does not bind effectively with this inhibitor, which makes it free to seek out and kill other cells."

Raines said it is not entirely clear why the ribonuclease attacks only cancer cells, yet is otherwise gentle to healthy human cells. One possibility is there are unique receptors on the outside of cancer cells that bind more tightly to ribonucleases.

The researchers were then able to create, with a bovine form of ribonuclease, two variant strains of the protein that did not bind tightly to the inhibitor. Those variants that evade RI were proven in laboratory tests to be lethal to cancer cells.

"We've been able to show in this study that there is no special property of Onconase that makes it distinctly different from related ribonucleases," Raines said. "In fact, human ribonuclease has everything needed from a molecular standpoint to be cytotoxic to cancer."

This is a valuable insight for producing a new class of cancer-fighting medications that, unlike other chemotherapies, act as "biocompatible toxins" that kill cancer cells without causing secondary damage in patients, Raines said.

His lab is currently working on creating variant strains of human ribonuclease that can produce the same cancer-fighting effects. Using a human protein is less problematic than integrating a substance that is foreign to the human body, he said.

Raines' lab is funded by the National Cancer Institute, an affiliate of NIH, to investigate the novel properties on Onconase.

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- Brian Mattmiller, (608) 262-9772

Res-
Cancer

FOR IMMEDIATE RELEASE 9/3/98

CONTACT: Gregory MacEwen, (608) 263-9815; Gary Hogge, (608) 263-1143

GENE THERAPY SHOWING PROMISE IN FIGHTING MELANOMA

MADISON - In treating dogs for a highly aggressive form of melanoma, a University of Wisconsin-Madison research team is having success with a new cancer vaccine that could benefit human cancer-fighting efforts.

Professor Gregory MacEwen and research scientist Gary Hogge, of the UW-Madison School of Veterinary Medicine, have developed a method of gene therapy that helps the animal's immune system recognize and attack cancer cells. In the September issue of the journal Human Gene Therapy, the researchers reported the vaccine helped some animals live longer and shrunk the tumor in about 20 percent of animals treated.

"This is important work with melanoma, because there currently are no other treatment alternatives," said MacEwen. "Melanoma is resistant to chemotherapy drugs, and surgery doesn't always help because melanoma's spread is so aggressive. We're trying to establish this as a standard of care."

The study details the treatment of 16 dogs that had advanced stages of melanoma that could not be successfully treated through surgery or drugs. The cases were referred to the UW-Madison school by veterinarians from around the country.

To develop the vaccine, the researchers began by surgically removing as much of the tumor as possible. They extracted and purified individual cells from the tumor and injected DNA into those cells that accelerated production of chemicals called cytokines. Cytokine molecules stimulate production of certain white blood cells in the body. The altered cells are then injected back into patients in the form of a vaccine.

The vaccine is administered with a "gene gun," a unique tool that helps scientists insert genetic material into cells. With air pressure, the gun can shoot millions of microscopic gold beads coated with DNA into cells, which are then injected back into the patient. In cells that are penetrated by the beads, the new genetic material becomes integrated into the cell and the cytokine is produced.

With this therapy, the animal's immune response is improved by the increase in cytokine production. The cytokines "train" the immune system to recognize and kill tumor cells, Hogge said.

Cancer vaccines and gene therapy, which have become widely studied in the past decade, could provide a new approach to fighting cancer with fewer side effects than chemotherapy or radiation therapy. This study is unique, Hogge said, because the gene therapy can produce a broad range of immune responses against surviving tumor cells in the patient.

"This is a way to trick the immune system and get the body to fight the tumor," Hogge said.

MacEwen said this study closely parallels work in human gene therapy to treat cancer, and provides additional information that benefits those projects. "We try to target a lot of the research we do so it will benefit the development and design of human clinical trials," he said.

Dogs provide a good model for understanding cancer in humans, MacEwen said, because of their large size and biological similarity. The causes and behaviors of cancers in humans and dogs are also very similar.

Melanoma is a common type of oral cancer in dogs. While oral melanoma is rare in humans, there are roughly 35,000 cases of melanoma skin cancer reported in America each year, and it remains one of the deadliest forms of cancer because of its ability to spread rapidly, MacEwen said.

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- Brian Mattmiller, (608) 262-9772

Res. - Cancer

COLON CANCER LINKED TO GENES, NOT LIFESTYLE

MADISON - Colon cancer and many other geriatric diseases in primates appear to be natural outcomes of aging, rather than being caused by outside factors, a scientist at the University of Wisconsin-Madison has found.

The findings, reported recently in *Age and The American Journal of Primatology*, adds to evidence that how we age may be linked more to our genes than our lifestyle.

"The simple lives of captive-born, aged rhesus monkeys result in minimal or no exposure to the varying environmental and lifestyle factors that affect humans," said Hideo Uno, senior scientist at the Wisconsin Regional Primate Research Center and adjunct professor of pathology and laboratory medicine. "Yet the monkeys still get many of the same geriatric diseases people get."

From 1980 to 1994, Uno compiled autopsy data from 175 monkeys, all aged 20 to 37 years, roughly the equivalent of people in their 50s to 80s. The animals, which were used for breeding rather than scientific experimentation during their lifetimes, either died spontaneously or were euthanized due to severe illness.

Autopsy data revealed that most of the diseases appeared to be brought on by old age and predisposing genetic factors, versus environmental or lifestyle factors. Colon cancer, coronary sclerosis, degenerative joint disorders, and cerebral amyloid plaque (a component of Alzheimer's disease), were among the disorders, Uno said.

Despite a simple diet of high-fiber monkey chow and fruit, a relatively nonstressful environment, lack of exposure to known carcinogens, and good veterinary care—old monkeys often get colon cancer, Uno discovered. "As in humans, the incidence of colon cancer dramatically increases with aging," he said.

Colon cancer is the third most common cancer in men, following prostate and lung cancer, and the third most common in women, following breast and lung cancer. In captive rhesus monkeys it appears to be the most common.

Uno's data did show, however, that certain other geriatric diseases are much less common in monkeys than in humans. "Lung and prostate cancers in elderly people are extremely common, for example, but those two cancers are very rare in our monkeys."

Rhesus monkeys share 93 percent of the human genome, which makes them the prime animal model for researchers seeking answers to human diseases like cancer, AIDS and diabetes.

"We have only now been able to study colon cancer and other aging-related diseases more closely in monkeys and compare it to that in humans," said Uno. "Few populations of aged monkeys were in captivity up until about 15 years ago."

Uno said the data will be valuable to scientists working on preventive or experimental studies related to geriatric diseases in humans.

The UW Primate Center is one of seven primate research centers in the U.S. supported by the National Center for Research Resources at the National Institutes of Health. It is a base for local, national and international research in biomedicine and conservation biology and has an annual operating budget of approximately \$25 million.

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- Jordana Lenon, Primate Center media relations specialist, (608) 263-7024

For questions or comments about UW-Madison's email
news release system, please send an email to:

New facility supports an illustrious research legacy

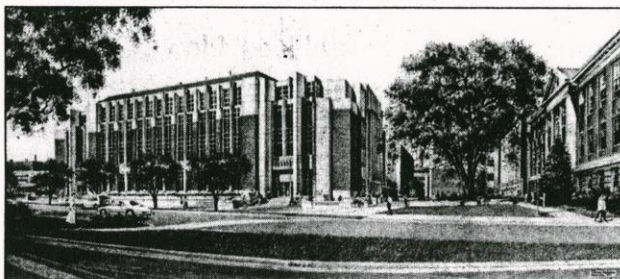
Biochemistry building will be gateway to campus along Babcock Drive

Bob Cooney
Agricultural Journalism

Biochemist Harry Steenbock would be happy. Seventy-one years after he established the Wisconsin Alumni Research Foundation (WARF), some of the patent royalties from that foundation have come home to roost.

On April 8, ground will be broken for a Biochemistry building. The building project is funded by WARF, UW-Madison and the State of Wisconsin.

Scheduled participants at the 2 p.m. ceremony include Gov. Tommy Thompson, Chancellor David Ward, Provost John Wiley, and Roger Wyse, dean of the College of Agricultural and Life Sciences.



The five-story building will house up to 23 faculty members and their research groups. There will be 198,000 square feet of laboratory, meeting and support space, including plant-growth chambers, an animal-holding facility, departmental library and a 60-seat auditorium. A national nuclear mag-

An architect's rendering shows the Biochemistry building as viewed from the intersection of University Avenue and Babcock Drive.

netic resonance resource facility, one of only two in the nation, will be housed in an adjacent 22,500-square-foot suite.

Flad and Associates designed the building, while the mechanical, plumbing, and electrical systems were designed by Affiliated Engineers, Inc. The general contractor is J.P. Cullen and Sons, Inc.

Two atriums introduce natural light, inviting communication and circulation outside the research areas. The building will occupy a prominent site, anchoring a major gateway to the campus on Babcock Drive. The exterior design complements the architecture of surrounding buildings. It incorporates traditional materials of brick, stone and clay roof tiles, combining them with modern curtainwall glazing systems.

Steenbock discovered an irradiation pro-

cess that activated Vitamin D in milk and other foods. When commercialized, this process led to the near-elimination of rickets, then a common disease. Believing that the rewards of patents should accrue to the university, Steenbock established WARF in 1925. More than 3,000 discoveries have been disclosed to WARF. Based on these disclosures, WARF has obtained nearly 1,000 patents and has granted the university more than \$316 million in royalties.

The Biochemistry Department is one of the oldest departments of its kind in the nation, and it remains among the most highly regarded. Included among past and present faculty are one Nobel laureate, 19 members of the National Academy of Sciences and one Howard Hughes investigator.

The department continues to build on an illustrious history that started with the Babcock butterfat test, which facilitated the development of the dairy industry. Vitamin research carried out in the department early in this century eliminated the threats of pellagra and childhood rickets. Investigation of the toxic effects of spoiled sweet clover led to the development of anticoagulants still in widespread use. Other major advances have been contributed to the elucidation of the genetic code; and understanding anemia, endemic goiter, and the mechanism of protein synthesis on ribosomes, cellular energy coupling, mechanisms, nitrogen fixation, the structure of muscle proteins, virus research and enzyme reaction mechanisms.

These efforts continue today in the laboratory of the department chair, Hector DeLuca, and others. The faculty excels in its research mission, as well as in postdoctoral, graduate and undergraduate training.

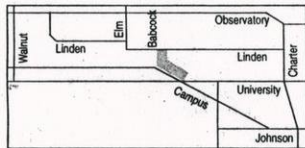
Section of Babcock Drive will close for project

The start of construction next week on the new Biochemistry building means that an important campus access point will be closed to all vehicle, bicycle and pedestrian traffic.

Babcock Drive from University Avenue to Linden Drive will be closed to all traffic starting on or about April 8. The street will be closed until the new building is completed in 1998.

The current "sneak-around" route that allows traffic to access Linden by traveling behind Babcock Hall will not be accessible, meaning that motorists will need to use new access routes to enter the central and near-west areas of campus.

Charter Street, Park Street, Walnut Street, and Highland Avenue are all possible access points.



RESEARCH: Breast cancer

Answers on the Net

Test project explores popularity of information site

Scott Hainzinger
UW Comprehensive Cancer Center

Will breast cancer patients and others take a spin on the World Wide Web to get information about the disease and its treatment? Researchers at the UW Comprehensive Cancer Center and the National Cancer Institute think so.

They created the "Breast Cancer Answers" electronic home page as a practical test of their theory. The home page (<http://www.biostat.wisc.edu/bca/bca.html>) lets computer users around the world find answers about the disease, learn what to ask when cancer is suspected or diagnosed, or quickly tap into other approved Internet cancer information sources. During the two-year test project, residents of Wisconsin, Minnesota, Iowa, North Dakota and South Dakota can use a special link on the home page or their own electronic mail services to get personal answers to questions about breast cancer. Questions can be submitted to the Internet address bca@cis.wisc.edu.

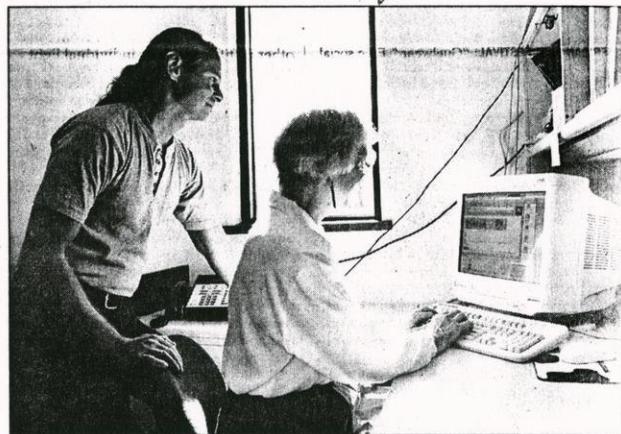
"Breast Cancer Answers is the only readily accessible, computer-based service providing personal 'e-mail' responses by NCI-trained cancer information specialists," says project director Robyn Davis. Breast Cancer Answers is not a substitute for professional care, she says, but is designed to provide information.

In 1996, an estimated 184,000 American women will be diagnosed with breast cancer and more than 44,000 will die from this disease. Cancer researchers estimate that about one-third of all deaths could be avoided with screening and early diagnosis.

As one of 26 National Cancer Institute-designated comprehensive cancer centers, the UW Comprehensive Cancer Center is a regional resource for information. Material for Breast Cancer Answers comes from NCI's

Cancer Information Service, a nationwide network that uses a toll-free telephone support system and regional outreach specialists to provide accurate cancer information to the general public and underserved populations. The Region 11 CIS, serving Wisconsin, Iowa, Minnesota, North Dakota and South Dakota, is a program of the UW Comprehensive Cancer Center and Mayo Cancer Center supported by the NCI. For information, call 1-800-4-Cancer (1-800-422-6237).

Tim Wedeward, left, and Jan Sullivan work on the "Breast Cancer Answers" home page at the UW Comprehensive Cancer Center.



Marc Kemper

Survey: No link between stress, breast cancer

Scott Hainzinger
UW Comprehensive Cancer Center

Many women and some researchers believe stressful events such as a loved one's death or a divorce help promote breast cancer, but a new study by researchers at the UW Comprehensive Cancer Center refutes that theory.

The study of more than 870 Wisconsin women, reported in the March 15 edition of the American Cancer Society journal *Cancer*, found no link between stressful life events and breast cancer. Women with and without breast cancer reported nearly identical experience with potentially stressful events.

"Although women with breast cancer often attribute the development of their disease to stress or depression, we found no evidence of such an association," said Felicia Roberts, a UWCCC researcher and the study's lead author.

Interviewers asked 614 randomly selected women without breast cancer and 258 breast cancer patients to recall their experience with a dozen significant events during a five-year period.

Whether researchers looked at the number of events or the severity of reported events, exposure to stressful events was nearly identical for both groups, Roberts said.

Among life events studied were the death of husband, friend or close family member; recent marriage, separation or divorce; a change in job or financial status and an illness or injury other than cancer.

Dr. Paul Carbone, who directs the center, said while stress and cancer "are common aspects of our adult lives," the study suggests that any relationship between them is probably coincidental.

"Stress arises from many life events. Each year cancer will be diagnosed in one of three

Americans over age 65," said Carbone. "No one disputes the fact these two problems often occur coincidentally. However, the causal relationship between the two is questioned."

"Roberts' study suggests that people who get cancer should not feel that stress in their life caused the cancer," Carbone said.

The UWCCC team began the research after some of the 10,000 women in a multi-state study of breast cancer risk factors said they believed a death or divorce contributed to their breast cancer, Roberts said.

"Though there is growing evidence for a link between stressors and physical health, this study should reassure women that exposure to difficult life events does not necessarily increase their risk of breast cancer," he said.

In addition to Roberts, the study, funded by the National Cancer Institute, included UWCCC staff members Polly Newcomb, Amy Trentham-Dietz, and Barry E. Storer.

"It was heaven to work with these teachers," says Ladson-Billings. "They really want to improve their practice. But the ethos of their school environments didn't support their efforts, so my research project was unique to them." Like many experts, she says they operate on a level of "automaticity," and relates a story about a baker of fantastic cornbread who, when pressed to write down the recipe, says one should "beat the ingredients until they look right." It's not until another chef watches the baker in action, or in this case, watches fellow educators of African American children, that the secret touch of the expert is revealed.

Previously, one of the only known experts in educating inner city children was Marva Collins. She has been profiled in *Time* magazine and on "60 Minutes" and in dozens of newspapers for twenty-some years. "Give me any class in any city," Collins has challenged. "Give me the lowest averaging students. Tell me nothing about those students, not even what they're studying, and I can go into that classroom and connect with those students."

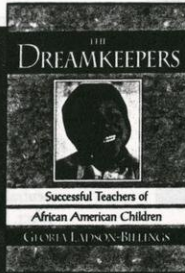
Follow-up studies of this outspoken founder of Chicago's Westside Preparatory School show that she's been more than able to fulfill her promise. "According to the statistics on Collins' student population," says Ladson-Billings, "so many of them should now be in prison, so many should be dead, so many should be on welfare, and so on. But guess what? When '60 Minutes' did a follow-up story, they weren't in prison, they weren't dead, they weren't on welfare. They were doctors and lawyers and successful people who'd been to college."

The teachers in Ladson-Billings' study do not necessarily adhere to the content of Collins' instruction. But just as Collins' great success is said to be her ability to motivate children, so too does Ladson-Billings' research show that it's the way teachers *care* about children, even those from the worst streets of America, that makes them excel.

"I told the teachers in my study that in three years, I didn't once hear them refer to a kid from a single-parent household or AFDC," Ladson-Billings notes. "I know that was the situation for many of the kids in those classrooms. The teachers said to me, 'What difference is that supposed to make, if they have ten parents or no parents? I can't change that. The thing I can change is how I can help children learn.'"

What it comes down to is pedagogy, and by that Ladson-Billings means what it takes to engage a learner.

"Pedagogy is often thought of as instruction, but I think of it as action and the intent of teachers as they attempt to teach, the setting up of teachable moments. Great teachers believe that every moment is a teachable moment." In the schools she studied in northern California, a teacher would put up posters of say, Matisse or Monet, waiting until somebody would notice. Finally, a student would say, "What do you think that's all about? What are all those squiggles?"



"I told the teachers in my study that in three years, I didn't once hear them refer to a kid from a single-parent household or AFDC... The teachers said to me, 'What difference is that supposed to make?'"

The teacher would then say, "I don't know. Let's find out," remembers Ladson-Billings. "Here's a book about Matisse's life." Every question would lead to another. And even when the kids groaned, "More work!" they'd do it well, gaining confidence along the way.

"The good teachers are architects of how knowledge is constructed," Ladson-Billings discovered. "They don't teach as much as apprentice. By apprenticing, what you do is treat children like they know something."

The professor and mother of four relates this to the notion of teaching kids at home. "We don't give out a worksheet on how to make the bed," she says. "We treat our children like they are competent. The first time they make the bed, it's bumpy and lumpy, but what do we tell them? We tell them they did a great job, what a great help they were to us. We expect them to soon learn and get better at the task."

The problem in America's schools, Ladson-Billings surmises, is that teachers of African Americans do not believe the children are up to the task. Even open-minded graduate students at UW-Madison, some of the best Ladson-Billings has ever worked with, bring with them perceptions that can thwart successful education.

For example, in one of her classes she distributed an article on Joe Clark, the megaphone-and baseball-bat-carrying school principal upon which the main character of the film *Lean on Me* was based. She asked the group to rate whether they strongly agreed or disagreed that he'd be a great principal on a scale of one to five, with one being "strongly agree" and five being "strongly disagree." "The white students stood between one and two, and the African American students between four and five," says Ladson-Billings. "How could there be such a big split among the group? When the white students were asked whether Joe Clark, who was also known to use strong language, would be a good principal in their high school, the whites all said no. 'Yet somehow they perceived that this same model would be good for African American students.'"

As the first tenured African American woman in the School of Education (a fact that brought applause from the Cabinet 99 audience, but caused this forthright but gentle individual to say, "Please don't applaud, I think it's sad"), Ladson-Billings is not surprisingly a collaborator on other race-related research with faculty from many backgrounds. She is working with Bill Tate, a mathematics educator, on the issue of property rights and education (why bad schools are in bad neighborhoods, and why schools in high property tax districts command the marketplace for the best teachers). She is also co-director of the "Teach for Diversity" program, a graduate of which is now instructing this innovator's own child in Madison ("meaning that I now have all the more at stake in the program's success!" Ladson-Billings laughs).

Of all the research she's come across, she finds most telling a project in Kansas City where the children reported on what makes a good teacher: They said it was someone who looks them in the eye, who greets them in the hall, and who says please and thank you.

"It was heartbreaking," says Ladson-Billings, "because what they were describing was civility."

In *The Dreamkeepers*, the author explores how teachers relate to their students, nurturing in them a sense of self-worth and an appetite for learning. One of the teachers featured is Pauline Dupree, who explains to her students why they, too, should consider being teachers, even though it's true that teachers don't earn as much money "as basketball stars."

Dupree: "There really is more to work than earning money."
Male student: "Like what, Mrs. Dupree?"

Dupree: "Like getting the chance to work with the most important people in the world."

Female student: "Who?"

Dupree: "All of you. Every weekday morning when I wake up, I know I'm on my way to work with the most important people in the world. Do you know why you're the most important people in the world?"

(Silence.)

Dupree: "Because you represent the future. How you turn out will have consequences for us all. What you decide to do with your lives can help make this community and the world a better place."

It is the extent to which we believe in this dream, concludes Ladson-Billings, that determines whether African American school children will, or will not, succeed. □



CABINET 99

SYMPOSIUM

Judith Stitt, Medicine

"It involves a woman's family, the life cycle issues, other systemic and medical issues ... and hormone levels. It's a larger issue than. 'Do I have breast cancer?'"

Fighting for Women's Lives

"You've come a long way, baby." The words were scrawled across the T-shirt of a hip female figure drawn with shoulder length hair. Only upon closer examination, the figure was really more of a skeleton, teeth bared, withering in the fumes of a smoldering cigarette.

Lung cancer is the deadliest of cancers affecting women in this country, says Professor of Medicine Judith Stitt, one of the showcased faculty presenting at WAA's Cabinet 99 symposium. There are 70,000 new cases a year and 56,000 deaths. Yet breast cancer — her specialty — affects far more women, 182,000 a year.

R. Carker

"Eighty percent of women who develop breast cancer have no family history of the disease," she says. "Simply being a woman and getting older puts you at risk for developing breast cancer."

It's the kind of news no one likes to hear, but that draws one simultaneously forward in one's chair to catch every word. Stitt has a pragmatic voice with a current of compassion; she presents an image that is smoothly authoritative, yet feminine. She is the director of UW-Madison's new Breast Center, one of the few such centers in the country, and perhaps one of the very few to be directed by a woman. In an instant, you can't help but imagine yourself in her consulting room, steeling yourself for the worst. And you know that you wouldn't want the news to come from anyone else.

At the Breast Center, housed in the UW Hospital and Clinics with connections to the UW Medical School and UW Comprehensive Cancer Center, you'd be sure to hear the good news, too. The five-year survival rate for localized breast cancer has risen from 78 percent in the 1940s to over 90 percent today. That means that while there are hundreds of thousands of new cases reported each year, there are only forty-six thousand deaths. Most of these are women ages fifty to eighty. What's more, treatment is now much more localized — lumpectomy plus radiation treatments versus mastectomy — with the same likelihood of recurrence: less than 4 percent.

Twice a week, Stitt brings together a team recruited from an extensive range of disciplines for the Comprehensive Breast Clinic. Referrals come from many corners of Wisconsin and the rural Midwest, as well as from the UW Women's Health Center in Madison and the UW's family health clinics in Wausau, Beloit, and Freeport, Illinois.

"We do a lot of second opinions," Stitt says, "where the patient doesn't want to transfer care, but wants to discuss options." At the Comprehensive Breast Clinic, there's no question they've come to the right place.

On hand is Stitt, a radiation oncologist, as well as a surgical oncologist, medical oncologist, pathologist, geneticist, and nurses and counselors offering educational and emotional support.

"A strong part of our clinic is the fact that we have people with different training coming together on behalf of the patient," explains the team's medical director. "We're far more involved than — 'You've got a breast lump, I'll schedule a biopsy tomorrow.'" In fact, the clinic team is more likely to say, "This is what we're going to do here and now."

"The first thing we commonly want to do for a woman who has a mass is a fine needle aspiration, or FNA," Stitt says. On a typical morning, five patients might go through this procedure. If there's fluid, then the breast mass is diagnosed right there as a cyst, which puts the patient in with the majority of women.



"We're far more involved than — 'You've got a breast lump. I'll schedule a biopsy tomorrow.'"

"Eighty percent of lumps in the breast are benign. Most are cysts or fibroadenoma." It takes a while for the good news to sink in, Stitt continues, because patients are "just panicked, and for good reason." So later on, after they're dressed and reassembled with family members, when they "can hear you again," the clinic team goes over educational material and questions. Does a benign growth predispose you to having cancer? (The answer is no). Will these conditions likely reoccur, and do they run in families? (The answer to both is yes).

Part of the comprehensive nature of the clinic is that there's a geneticist on hand to help patients explore how their family might be at risk if they have the BrCa-1 gene. There's counseling along with management options. "And certainly," Stitt says, "we have patient cases where the pathologist looks at the FNA cells and says they look like they're malignant. That's when we go back in the room and say, 'There are malignant cells in this fluid, we need to go further, and here are some of the options for you to think about.'"

Now and again, a family member will come to Stitt and say, "Let's step into the rest room, and by the way, we really don't want Mom to know that she has cancer," Stitt says, "We can't not tell what we know, I'm duty bound. But people can comply more easily if they know what the situation is."

When you come to the Comprehensive Breast Clinic, you begin, essentially, a lifelong relationship. Every year, patients meet with members of the team individually at intervals to review, as needed, their situation. Then once a year, they meet again with the entire team for a complete update. In 1994, 1,534 women with a diagnosis of breast cancer, one third of them new, were seen during 8,437 visits to the UW Hospital and Clinics.

"Breast cancer really lends itself to a unified approach," Stitt adds. "It's much more than diagnosing a benign or malignant disease. It involves a woman's family, the life cycle issues, other systemic and medical issues, predisposition to osteoporosis or cardiac disease, and hormone levels. It's a larger issue than, 'Do I have breast cancer?'"

Although the Comprehensive Breast Clinic has been in existence for several years, it's just one of the many facets of the new Breast Center. In addition to the clinic, Stitt will be directing research staff, outreach activities for education and counseling, and the evaluation of treatment outcomes.

"The most important thing to remember," Stitt said at the conclusion of her Cabinet 99 presentation, "is that early detection through regular mammograms translates directly into a survival benefit." Two members of the audience then stood up to endorse Stitt's work, revealing that they were grateful breast cancer survivors. Their vibrancy gave Stitt's speech a whole new life — and meaning. □ —S.P.



BEVERLY MORAN, LAW



Expanding the Limits of the Law

Beverly Moran is well known around the Law School. The third-year law class elected her to deliver their Commencement address, and minority students voted her "Teacher of the Year." But perhaps her most prestigious award came from recent law graduates who, five years after entering the real world, looked back and ranked the professors who really taught them what they needed to know. Their "Teacher of the Year" was none other than Beverly Moran.

But when this acclaimed professor spoke at the Cabinet 99 symposium, she chose not to highlight her own scholarly specialties, taxation and international law, but chose instead to focus on colleagues, past and present, who've changed women's lives through the law.

Take for example Margo Melli and June Weisberger. "They're the ones who wrote Wisconsin's marital property act," Moran says. "They not only wrote it, they lobbied for it, and they're the ones who got it through." Thanks to their efforts, a married woman in this state may own not only the property she brings to her marriage, but also half of all that is acquired between her husband and herself during their marriage. "It used to be that if a husband earned income and his wife didn't, all property would be owned by the husband."

Moran credited Carin Claus for authoring a number of briefs aimed at companies that were keeping women out of certain higher-paying jobs. "In the case of Johnson Controls, the company wouldn't allow women in a position because it involved higher levels of lead, which they claimed might damage a woman's unborn child," Moran explains. "It was a practice that, number one, didn't keep everyone safe — What about the men getting exposed to higher levels of lead? How would that affect their fertility? — and number two, it was a practice that kept women out of higher — paying jobs." Professor Claus helped change the law to make the workplace safer, with more equal opportunities for everyone.

In her presentation, Moran also highlighted the work of Wisconsin Supreme Court Justice Shirley Abrahamson, who teaches the Law School's judicial internship program and its judicial writing class, and the work of Pat Williams, who made a great impact while she was at Wisconsin. Her specialty is in critical race theory, which examines laws that seem racially neutral, but upon closer inspection, are not neutral in their effect. Moran's own scholarship draws on the application of critical race theory to taxation.

"For example, income taxes are considered a good thing, and not a bad thing, because they're based on economic class," Moran explains. "But what I've shown is that even if blacks and whites have the same income, whites pay less tax because the mortgage deduction is geared for whites who are homeowners." Why can't blacks make use of these same deductions, you ask? "They can," Moran insists. But because of an historic series of barriers — red-lining, racial steering, restrictive covenants, and lending patterns that tend to favor whites, she says, the end result is that fewer blacks own homes, and therefore pay higher taxes.

This professor of law likes to joke that nobody is interested in the interworkings of jurisprudence, yet she's able to engage an audience with her resonant voice and inclusive style. Her leadership skills have not gone unnoticed: she's also been chosen to head the university's new effort to create a combined degree in law and business with a focus on international studies.

"In Chancellor David Ward's future vision statement, he suggests that the university should become a global university," Moran says, reasoning that just as state businesses export goods abroad, so too should the university increase its profitable exports: in this case, the training of internationals and the education of Wisconsin students who want to become more competitive in the international market.

"We already have the expertise here," Moran notes, giving kudos to her colleagues in African and European studies and in programs that specialize in the Pacific Rim and in international trade and taxation issues. However, she then brings up a national study, which ranks Wisconsin as one of the five best law schools for women. Instead of being elated, Moran finds this to be disheartening news because so many women law faculty leave UW-Madison not long after they arrive.

"What seems to be true is that women are leaving before their tenure decision," notes Moran. "We need to perhaps hire more women at the tenure level, and help junior professors get the mentoring they need."

What stays closest to this Teacher of the Year's heart is the happiness and success of her students. "Wisconsin may be a relatively good place for women students," she says, but the law curricula still tends to favor a learning pattern that's dependent upon combat and humiliation, which most women students do not thrive on. "Our challenge," concludes Moran, "is to find ways to teach women so that they can also continue to excel in law." □ —S.P.

Campus master plan generates ideas

'We're seeing some excellent participation and input from a range of constituencies.'

Springboarding from fruitful idea-gathering sessions held in early December, the people crafting UW-Madison's Campus Master Plan say they are ready for more ideas.

"You're never sure how people will react when they're given an opportunity to put forth their own ideas about the future of an institution as complex as UW-Madison, but we're seeing some excellent participation and input from a range of constituencies," says Robert Hendricks, UW-Madison's assistant director of planning and construction and campus point person on the 19-month project. "This is really helping the plan's consulting team and steering committee as they gather information and start assembling a framework that will become the Campus Master Plan in 1996."

The steering committee's next planning session is in early February and the group will continue to explore key areas including: alternative planning approaches for vehicular circulation and parking, transit, pedestrian and bicycle circulation, open space, utilities and future building development.

About 50 to 60 people — students, faculty, staff members and campus neighbors — attended the first of four two-hour open public forums Dec. 9. Participants suggested the plan should consider:

- Designing, constructing and renovating facilities to comply with the Americans with Disabilities Act.
- Creating more vehicle and bicycle parking spaces.

Consultant facts mirror what has been known about campus parking for years: there is tremendous

demand but, virtually no available spaces — especially for visitors. Consultants say there is a daily parking shortage of at least 1,500 spaces on campus.

Consultants say about 20 percent of commuters to campus use the bus, compared with about 11 percent at peer institutions.

When it comes to bicycle use, consultants note that UW-Madison's is the "most intensively used bicycle system" they have ever encountered.

- Developing a light rail system linking the western and eastern portions of campus and, in the future, possibly the downtown area and other points off campus.

- Studying how neighborhoods and traffic patterns will be impacted by future campus development — especially on the western edge.

- Managing vehicular, bicycle and pedestrian traffic along major arteries like University Avenue, West Johnson and Park streets near campus more efficiently. Also, better overall traffic

management at major "conflict points," such as the intersections of Babcock and Linden drives, Charter Street and University Avenue, Park Street and University Avenue, and Langdon Street/Observatory Drive and Park Street.

- Conducting a thorough traffic/neighborhood impact study before building a new basketball arena/convention center on or near campus.

- Constructing a system of overpasses and/or tunnels to allow pedestrians to cross Park Street, University Avenue and West Johnson Street more easily.

- Devising a policy of maintaining green space during campus construction projects.

- Installing more signs to allow campus visitors to better identify university buildings — especially those that house galleries, theater halls and auditoriums.

- Constructing better-designed and designated building entrances to accommodate people with disabilities who use the Paratransit shuttle service.

- Designing new instructional facilities in concert with new technology for teaching and learning.

- Maintaining the integrity of historical buildings on campus — especially those on or near Bascom Hill.

Consultants note that half of the campus was built between 1900 and 1950. And, between 1950 and 1979, the size of the campus doubled. Many of these buildings need major renovations and expansion work.

- Looking at ways to add more public art in open areas.

— Bill Arnold

More open meetings

There will be more opportunities for faculty, staff and students to get involved in the campus master planning process. The project's lead consultants — Johnson Johnson & Roy, Ann Arbor, Mich. — have scheduled the following open meetings:

- April 28, noon to 2 p.m.
- Sept. 15, noon to 2 p.m.
- March 15, 1996, noon to 2 p.m.

Ideas are also welcome via e-mail at badger@access.tsgroup.com (no period after com).

Waisman project back on track

By Bill Arnold

Thanks to a large commitment of private money, a major expansion project at UW-Madison's Waisman Center is moving forward.

Shelved last year because of a lack of private funding and because it didn't seem viable within the 1995-97 budgetary time frame, the proposed building project was revived with the commitment of about \$10 million in private funds.

Last month, the UW System Board of Regents amended the System's 1995-97 capital budget request to include the project, which will be constructed without any state funds. A revised scope and budget for the project was passed unanimously by the Campus Planning Committee.

The centerpiece of the two-phase project is the construction of a seven-story addition to house the center's new gene therapy research center and two of the components of the new Waisman Early Childhood Research Center. The project will eventually expand Waisman Early Childhood Program's (WECP) enrollment from 50 to 150 children, providing more research and training opportunities in the field of child development.

The addition will connect to each of the floors in the existing building. Three programs will be housed in the new space:

- **The Waisman Human Gene Therapy Research Center.** This new center will interface directly with existing gene therapy research activities at the Waisman Center and will share existing specialized laboratory and support services. Expansion will increase the capability to conduct the kind of gene therapy research that can potentially lead to cures for some of humankind's most widespread and insidious diseases and disabilities.

- **Research advances at UW-Madison,** focused at the Waisman Center, have played a major role in rapidly developing gene therapy opportunities. "Parkinson's Disease and Duchenne's Muscular Dystrophy are two current targets of gene therapy research here," says Charles Read, interim dean of the Graduate School. "Genetic therapy can be effective even with diseases that are not inherited; it may turn out to be one of the major tools of medicine in the 21st century."

Read says that the new gene therapy research center will allow the development of the specialized laboratories and research services needed to bring some of the advances to the stage of actual clinical intervention to cure the diseases.

- **TRAC Research and Development Center.** New space for offices, clinics and support.

- **Bridges for Families/Early Intervention Programs.** New office and support space.

The TRAC and Bridges for Families programs — components of the Early Childhood Research Center — will be moved from existing space in the Waisman Center Annex. The second phase of the project will include renovating the annex to accommodate a greatly expanded WECP.

Private funding sources have not been identified for the project's second phase.

John Wiley, interim provost and vice chancellor for academic affairs, says the expansion project is the first step "in a major strategic initiative on campus designed to meet the growing demands of faculty and staff for quality child care."

Waisman Center Director Terrence Dolan says the early childhood program's potential contributions to service, research, training and outreach makes it a top choice for expansion in the overall campus child care initiative. Dolan says the expansion will help the child care situation because there are no center-based services on campus for children under 18 months. There are also very limited services for young children with disabilities and for school-age children — kindergarten through third grade — during school holiday, breaks and vacation periods.

Dolan says groundbreaking for the addition could take place early in 1996.

Computer program enhances breast cancer prognosis

By Brian Mattmiller

A UW-Madison computer program created to diagnose breast cancer is now helping researchers take a bigger leap: Predicting the disease's future course.

A new application of the "machine learning" program used with 187 test cases was able to predict more accurately than current methods whether the disease would recur, said surgery Professor William Wolberg.

"If what we are observing now is proven with further study, I think it will be a great step forward," said Wolberg. "We are getting clues very early as to whether this is going to be a 'good' cancer that's going to be cured, or a 'bad' cancer that's going to recur early."

The results, reported last month to a meeting of the Western Surgical Association, are medically important for two reasons, he said. First, the technique could improve peace of mind for breast cancer patients by offering a more accurate prognosis. Second, the program could eventually replace the need for surgery to remove lymph nodes from under a patient's arm — now the required method for breast cancer prognosis.

Wolberg said those current methods are only 62-63 percent accurate in predicting whether a malignant cancer will recur in five or 10 years. "That's only slightly better than flipping a coin, but that's the best available approach we have at this point," he said.

The program, initially set up to diagnose whether cell samples were malignant or benign, was applied this summer to the more complicated issue of prognosis. Using information from 187 malig-

nant cases, Wolberg said the computer was able to predict which cases would recur and when, with a margin of error of 13 to 18 months.

The advantage to patients, he said, is in assigning a probability from one month to 10 years that the cancer might recur.

Wolberg and co-researchers Olvi Mangasarian and Nick Street in the computer science department have taken an unconventional approach to these issues. While current diagnoses rely on studying the size of the tumor and the presence of cancer in lymph nodes, this work focuses on information gleaned from a sample of 100 or fewer cancer cells.

This method employs fine-needle biopsies, in which the cell samples are removed from the breast tumor. Key features of those cells, such as the nucleus size, shape and texture, are computed by the program and compared against a base of hundreds of known cases.

The most dramatic successes in this five-year effort with diagnosing breast cancer were reported a year ago to the American Cancer Society. By training the computer on cell samples from 569 patients, the computer was able to accurately diagnose whether a cancer was benign or malignant with 100 percent accuracy in 128 cases.

Breast cancer remains the most common and second most deadly form of cancer among women, Wolberg said. Despite strong educational campaigns stressing early detection and increased research, the mortality rate has remained stubbornly level over the past 20 years. Survival rates have improved, he said, but are offset by an increased number of cases.

The next step for the UW-Madison group is to expand its data base by collaborating with other doctors. One recent connection is expected to double their total number of cases. Grace T. McKee, a cytopathologist with Royal Surrey

County Hospital in Guildford, Surrey, England, has agreed to share her fine-needle samples with the UW group.

Mangasarian, a computer science professor, said the theory behind machine learning is that computers can be "trained" to recognize objects, structures and patterns. Applications are common in the fields of financial investment and robotics. Programs start with a "training set" that feeds numerous patterns into the computer. This process "teaches" the computer to recognize or discriminate between patterns it has not seen previously.

The breast cancer program is actually a variation on a program Mangasarian created 27 years ago to help oil prospectors pick the best locations for well drilling.

With computer images of cells on a standard workstation computer, the researchers draw an outline around cell nuclei they want examined by the computer program. The program will then compute the size, shape and texture of those cell nuclei and give researchers a scale of probability that they are benign or malignant, or will recur.

For this technique to gain acceptance in medicine, Wolberg said the technology needs to be either commercially developed or folded into a national clinical study. "There is some reluctance to accept it," he said. "The way we have gone about our diagnoses through machine learning is entirely foreign to much of the medical community."

Nonetheless, the researchers are enthused about other possible applications in medicine. One recent test already showed potential. Street, an assistant researcher, recently ran a quick analysis of 20 thyroid cancer cases supplied by the University of California-Los Angeles and discovered — to his surprise — the computer accurately diagnosed all of them.

"The methodology is very solid and could work with almost anything," Street said.

Program offers peace of mind, and could eventually replace surgery



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UNIVERSITY OF WISCONSIN-MADISON

Office of News and Public Affairs
28 Bascom Hall • 500 Lincoln Drive
Madison, Wisconsin 53706-1380

Phone: 608/262-3571
Fax: 608/262-2331

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CONTACT: William Wolberg, (608) 263-2521; Olvi Mangasarian, (608) 262-6593

COMPUTER PROGRAM ENHANCES BREAST CANCER PROGNOSIS

MADISON — A University of Wisconsin-Madison computer program created to diagnose breast cancer is now helping researchers take a bigger leap: Predicting the disease's future course.

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-more-

Breast cancer research – Add 1

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Breast cancer research -- Add 2

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###

Providing fast, free information when people face tough decisions

When you're told that you or someone you love has cancer, information is at a premium. Suddenly, you want to know all you can about the disease and its treatment.

Fortunately, help is just a telephone call away at UW Cancer CareLine, a toll-free, anonymous hotline that provides fast, accurate information to approximately 200 callers per month.

"We spend a lot of time explaining the basics of diagnosis and treatment and defining terms like 'clinical trial,' 'oncologist,' and 'chemotherapy,'" says Jan Sullivan, CareLine's supervisor and one of three clinical cancer counselors.

She attributes CareLine's effectiveness to accessibility and anonymity. "Even in a hospital bed, you have a phone," she says, adding that counselors receive calls from as near as the lobby of UW Hospital and Clinics and as far away as California.

Knowing they need not give their names, callers feel more comfortable expressing their fears or questioning the care they receive.

For example, one caller was told he probably had cancer and should have radiation treatment. But a physician couldn't obtain a positive biopsy proving that the problem was cancer and another physician refused to provide treatment until the cancer was positively identified.

Counselor Jane Malz referred the caller to Dr. David Mahvi, a surgical oncologist at the University of Wisconsin Comprehensive Cancer Center, who persevered until he confirmed the presence and location of the cancer, a large malignant pancreatic tumor. "By the time he had shown symptoms, the cancer would probably have spread to other parts of his body," says Malz. Instead, the

caller received relatively early treatment at UW Hospital and Clinics. Malz, who rarely hears back from callers, was glad to know that this conversation led to an improved quality of life, if not life itself.

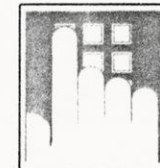
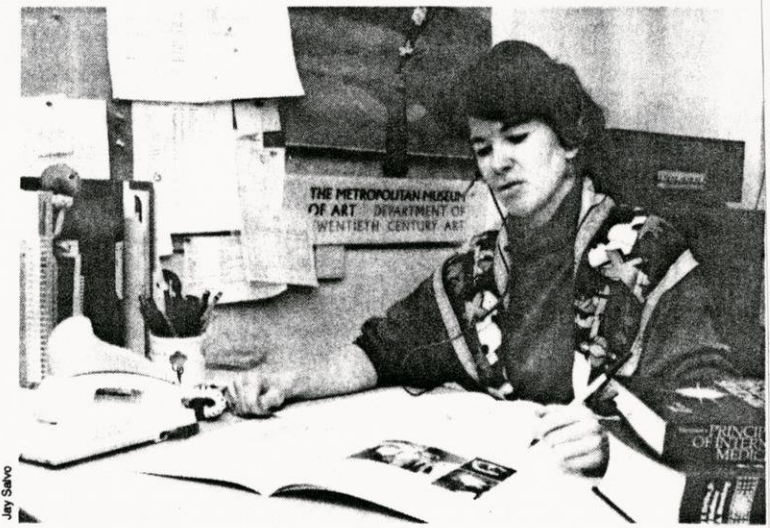
CareLine callers also seek help in finding nutritionists, hospice services, pain management advocates, even the source of information about available wigs for patients who have lost their hair during treatment. And counselors frequently confront the fears callers have about cancer, a word many associate with certain death.

"Callers often have preconceived notions, many of which are wrong, and they may be very frightened," says Betta Owens, a CareLine counselor for seven years. "The essence of our service is providing accurate information and helping them find their way through the system."

If the counselors' experience and the bulging office library don't provide an answer to a caller's query, the counselors turn to Medline, the National Library of Medicine's on-line index to medical, nursing and dental research, and to Physician's Data Query, a source for information on new treatment approaches being tested in the U.S.

"For some people, we're the only resource they have, certainly the only one that will coach them on how to get information from their doctor, help them arrange for a second opinion or inform them about alternatives outside their immediate locale," says Sullivan. "We're there with information as people face tough decisions."

The UW Cancer CareLine is sponsored by UW Hospital and Clinics and UW Comprehensive Cancer Center.



University of Wisconsin
Cancer CareLine
1-800-622-8922
In Madison, 262-5223

Betta Owens takes a call from one of the more than 200 people who call each month seeking the best information about cancer and its treatment.

UWCCC, taxol hearten Woodruff woman

WOODRUFF—It's unusual for a 31-year-old woman like Pat Wimme to have breast cancer—and frightening when it keeps coming back.

Wimme has lost both breasts to cancer; she doesn't want to lose her life. She and her doctor turned to the UW Comprehensive Cancer Center for advice on the newest, most effective treatments for breast cancer.

The cooperation between Wimme's local oncologist, Dr. David Jenkins of Wausau Regional Cancer Center, and UW medical oncologist Dr. James Stewart is an outgrowth of a partnership that has existed between Wausau Hospital and UW Hospital and Clinics since 1987.

It's also an example of a crucial UWCCC role: providing second opinions and consultative services to local physicians.

The call to the UWCCC last fall continues a long-standing participation by the UWCCC on Wimme's behalf. Jenkins and other physicians who've assisted her since 1988 have each sought the advice of UWCCC specialists.

"Ever since I've been back in Wisconsin, my doctors have been in contact with Madison, beginning when I lived near Green Bay," Wimme says. "They (UWCCC specialists) have known of me for a while."

"I've felt good about that all along," she says. "My doctors have been aggressive

and really willing to seek a second opinion or to consult with Madison," Wimme says. "Medicine isn't just a science. There's an art to it, and it's helpful when a physician can discuss it with someone else and get another opinion."

Her doctors have used a variety of methods to battle the breast cancer, which she discovered as a suspicious lump on one breast in late 1988. She has since had two modified radical mastectomies in which most of each breast has been removed along with cancerous cells, surgery to treat a cancer-related obstruction, radiation treatments and several chemotherapy combinations. Each treatment has improved her condition—for awhile.

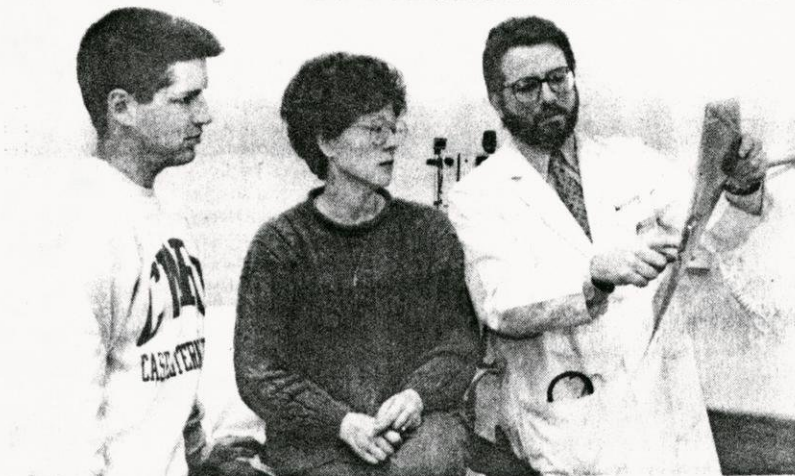
After surgery in October 1992 to alleviate complications caused by an abdominal tumor, Wimme asked Jenkins to look into new treatment options. That inquiry brought her to Stewart at the UWCCC. Stewart, Jenkins and Wimme agreed to try taxol, a drug primarily used against advanced ovarian cancer.

"The chemotherapy I had before the taxol appeared to have stopped working," Wimme says. "My husband and I said: 'We're not ready to give up, we're ready to try other things out there.' And that's when they called Madison to see if I would be eligible for the taxol protocol."

Wimme was eligible and every three weeks, she checks into UW Hospital and Clinics overnight to receive a dose of taxol. She's encouraged by improvements she attributes to taxol.

"I had a lot of problems breathing because cancer cells had spread to the lining of my lungs. And I've definitely seen an improvement in my breathing," Wimme says. "I know it's not a miracle drug, but I'm definitely better now than I was before I started the taxol."

Kristopher and Patricia Wimme of Woodruff discuss her options in fighting breast cancer with Dr. James Stewart, a UWCCC medical oncologist.



Chris Frazee

R: cancer

Research links laboratory and clinic

"Research flourishes best in an environment where a number of people are intently engaged in interesting, fruitful fields of activity."

Harold P. Rusch, 1983

Harold Rusch knew research and researchers; he created two of the nation's most productive cancer research centers, the McArdle Laboratory for Cancer Research and the University of Wisconsin Comprehensive Cancer Center.

While Rusch would probably be interested in most of the 80-plus cancer-related research projects now under way at the UWCCC, it's a sure bet he would heartily enjoy its pacesetter successes with tamoxifen and growing model tumors in the laboratory.

From bench to bedside and back

Few medical research ventures are as rewarding as the UWCCC's involvement with tamoxifen, the most widely used treatment for breast cancer.

"I like to think of tamoxifen research as a conversation between the lab and the clinic," says Dr. V. Craig Jordan, the UWCCC researcher whose leadership in bringing the drug to the forefront of breast cancer recently brought him awards from three prestigious international medical societies.

Jordan, a UW Medical School professor of pharmacology and human oncology and director of the UWCCC Breast Cancer Research Program, has been called "The Tamoxifen Man" and "Father Tam" in recognition of more than two decades devoted to investigating and promoting the drug, first individually, then as a UWCCC researcher and leader.

After proving in the lab that the drug stopped breast cancer, Jordan inspired a UWCCC physician-researcher to bring the drug into the clinic and show that it worked in patients. That done, a UWCCC team revealed tamoxifen's potential as a breast cancer preventive—and laid the groundwork for the recently begun international trial with 16,000 women.

Tamoxifen's success even surprises Jordan: "It's sort of exploded. In 1969, there were probably only two or three scientists in the world working on tamoxifen, and a handful working on anti-estrogens, while today there must be hundreds of people around the world working on tamoxifen and anti-estrogens. I can't keep up with the number of requests to do talks or write papers."

The UW tamoxifen connection begins in a laboratory in England, where Jordan was examining the drug's cancer-fighting capabilities as part of his doctoral studies. As an anti-estrogen, tamoxifen acts as a "chemo-suppressive," depriving cancer cells of the estrogen they rely upon for growth. A simple concept, but difficult to study.

Tamoxifen's biological properties are complex and often perplexing; it is an estrogen in the mouse, an anti-estrogen with estrogenic properties



"I like to think of tamoxifen research as a conversation between the lab and the clinic."

Dr. V. Craig Jordan



Tom Yeager, a molecular biology graduate student, examines a genetic change under the watchful eye of Dr. Catherine Reznikoff and Dr. Chinghai Kao, a postdoctoral student.

in the rat and human, and a complete anti-estrogen in the chick," Jordan says.

Nevertheless, he eventually proved that tamoxifen could inhibit the growth of breast cancer in rats. In 1977, while visiting Madison on an extended lecture tour, Jordan and UWCCC physician-researcher Dr. Douglass Tormey talked about trying the drug in humans. Tormey translated Jordan's research into treatment, demonstrating over a 10-year period that the drug kept breast cancer from recurring in women who'd had mastectomies. Tormey's pacesetter study also demonstrated the long-term safety of tamoxifen and provided basic data on effective drug amounts.

In 1980, Jordan joined the UWCCC and set up a laboratory program to closely study tamoxifen: how it works, how it is handled by the body, and its long-term effects. Together, Jordan and Tormey refined a system of using tamoxifen in combination with other drugs to prevent breast cancer from recurring.

Meanwhile, another UWCCC researcher was uncovering other advantages of tamoxifen. From 1986-1990, Dr. Richard Love, di-

rector of the UWCCC Cancer Prevention Program, examined the effects of tamoxifen on women. Love found that tamoxifen lowered cholesterol levels and lessened the risk of heart disease. A year later, Love published a study showing that tamoxifen preserved bone. He found that half the women taking tamoxifen suffered from menopausal-like symptoms, but nearly all of these women kept taking the drug.

UWCCC's tamoxifen-related research continues in several studies:

- The five-year international study, known as the Breast Cancer Prevention Trial, that will assess tamoxifen's effectiveness as a cancer preventing agent and examine reported side effects. Jordan directs the UWCCC portion of a study that will involve 100 women whose family history and other factors place them at a high risk of developing breast cancer.

• Jordan and pharmacologist Dr. Timothy Mulcahy are studying the interaction between tamoxifen and radiation.

• Jordan and Dr. Henry Pitot of the McArdle Laboratory for Cancer Research are testing tamoxifen and several of its analogs in both short- and long-term toxicity studies in rats. By comparing these compounds, they hope to find clues telling them how to alter the drug's structure to increase its effectiveness and eliminate toxicity.

The UWCCC's Breast Cancer Program seeks to develop new laboratory leads and to take the resulting ideas to the clinic. The breast cancer program is just one aspect of the UWCCC multidisciplinary

approach to cancer, which combines laboratory and clinical research, treatment and education in fulfilling its objective of reducing the incidence of and mortality from cancer. One floor below Jordan's labs, another UWCCC research team is exploring the basic building blocks of life in experiments with exciting clinical potential.

Green thumb fosters experimental growth

When admirers praise Dr. Catherine Reznikoff's "green thumb," they're talking about something much more significant than her begonias. Reznikoff, a UW Medical School associate professor of human oncology, grows bladder cancer in her fertile laboratory.

While that may sound unglamorous, even mundane, the lab-grown tumors allow researchers around the world to study cellular and genetic mechanisms that may apply not only to deadly bladder cancers, but to other common human cancers.

"A longstanding clinical question in bladder cancer research is whether superficial bladder tumors are forerunners of aggressive bladder cancers or a separate, less-aggressive disease," Reznikoff says. "Despite recent advances in chemotherapy, many patients with metastatic bladder cancer cannot be cured."

Reznikoff hopes that her lab-grown tumors will provide new insights into cancer. The model in many ways duplicates the development and progression of cancer in people. That sequence, called carcinogenesis, "is a multi-step process that occurs over many years, maybe many decades," Reznikoff says.

The project, now in its 14th year, demonstrates how researchers with diverse specialties can positively shape an experiment. For example, Dr. Michael Newton, a biostatistician, was consulted when Reznikoff's scientists wanted a quantitative assessment of reams of data describing the chromosomes affected as the tumors developed. Newton analyzed the data mathematically and identified three chromosomes most frequently affected. Reznikoff then learned that another research team obtained similar

"Together we can ask questions that may eventually come over into the clinic to help in prevention, diagnosis and prognosis."

Dr. Catherine Reznikoff

results in a study of human colorectal cancers. That team, led by Dr. Bert Vogelstein's group at Johns Hopkins University in Baltimore, was looking for a laboratory system to test the biological significance of the loss of those genes. Together, the two laboratories accomplished a goal neither could achieve alone. "Together we can ask questions that may eventually come over into the clinic to help with prevention, diagnosis and prognosis," Reznikoff says.

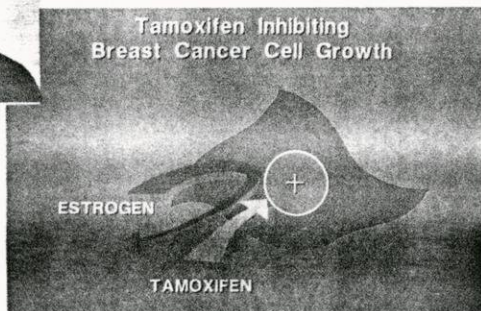
Her experiment started in the laboratory with urinary tract epithelial cells, representative of the type of cell from which 90 percent of human cancers develop. Left alone, the cell would die.

But Reznikoff added DNA from the human papilloma tumor virus or the simian virus 40, which "immortalized" the cell, or gave it the ability to thrive in tissue culture.

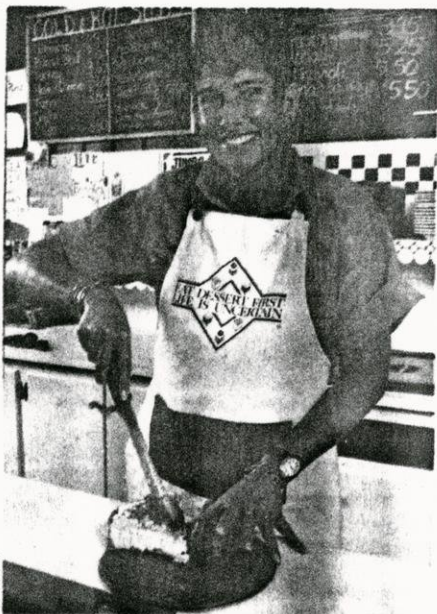
Once immortalized, the viral cells were exposed to environmental carcinogens, substances known to cause cancer. The immortalized cells then grew uncontrollably and formed tumors in a way Reznikoff describes as "having the accelerator switched on and the brakes taken off."

Reznikoff's research team has "generated" more than 100 experimental lab tumors, all from a single immortalized cell. The team studies the common genetic changes in these tumors using cytogenetic and molecular genetic techniques.

This study has shed new light on the chromosome regions and genes altered in human cancers. Reznikoff's lab has identified a region on Chromosome 9 that may house a gene whose loss is important in early stage bladder cancer. Dr. Chinghai Kao is attempting to clone this candidate tumor suppressor gene.



UWCCC researcher Dr. V. Craig Jordan, upper left, is the world's leading expert on the breast-cancer blocking drug tamoxifen, now being studied as a cancer preventive.



Stephanie Brand

STEP

DELAFIELD — Fighting ovarian cancer once left Stephanie Coe Brand too weak to climb stairs to her apartment.

"My goal for an entire year was to climb four flights of stairs without stopping or crawling," Brand says. "When I finally made it, I started screaming and yelling. All of the other tenants came out of the building to see what was wrong."

Today the 40-year-old cheesecake and specialty baker is a ball of energy, but her victories over the stairs—and the cancer—are bittersweet. In the four years that she has been cancer-free, the disease has killed many people she loves, including her mother and two close friends.

That's why Brand spends her spare time helping new cancer victims.

"I'm a cancer survivor and my heart is there. I got four years of wonderful life out of my determination to survive. I feel very serious about giving my time, my story and my support to the next person..."

"I know from experience that it helps to have someone looking after you, getting a laugh and a smile."

For Brand, that special supportive "someone" was a role shared equally by her mother and University of Wisconsin Comprehensive Cancer Center (UWCCC).

Brand thought the flu was causing the nausea and weakness that interrupted her work in newspaper ad sales in February 1988. But her gynecologist, Dr. Alan Gustin of the Wilkinson Medical Clinics in Oconomowoc, discovered that her problems were actually due to a malignant ovarian tumor. Gustin removed the tumor and recommended that she immediately begin chemotherapy to lessen the chance of recurrence.

The cancer and rapid turn of events were a surprise to Brand, who was a health conscious swimmer, hiker and boater. And there was no history of cancer in her family.

by STEP

"The shock, the anger and the fear are overwhelming. They keep many people from relating to doctors and medical people," Brand says. "Since the cancer was very advanced, I wanted to know as much as possible. I had a zillion questions and a million emotional traumas."

Brand told her doctor that she wanted more information about cancer and her alternatives. Gustin referred her to Dr. Dolores Buchler, a UWCCC gynecologic cancer specialist and Gustin's mentor while he was a gynecologic resident at UW Hospital and Clinics in the mid-1970s.

"Dr. Buchler is the best physician I've ever seen," says Gustin. "And UW is at the cutting edge of each major area of treatment: chemotherapy, radiation and surgery. They have a team approach and are comprehensive, multifaceted."

Buchler and others explained to Brand in detail what was occurring in her body and discussed her treatment options. The UWCCC team designed a chemotherapy treatment plan that was administered by an oncologist in Oconomowoc.

"The people at UW helped me along medically and emotionally," Brand says. "They let me know that I had options, that I could make decisions about my care. That's really important since you feel like you have so little control over your life when you have cancer."

Brand's mother, Nancy Coe Heaney, was extremely supportive. The two women talked by phone "at least three times each day." Brand frequently spent weekends at her mother's home in Oshkosh.

The powerful chemotherapy drugs caused Brand to feel ill and to lose her hair. "I used to stand on my balcony and brush my hair and it would fall out in clumps. We joked that all of the bird nests around our house were lined with my hair," Brand says, laughing. "If you don't have a sense of humor going through cancer, you'll go out of your mind. But you can't pull your hair out—there's none there."

The chemotherapy treatments ended in July. But during a "second look" surgery in September, Dr. Gustin found and removed small residual tumor lesions. Brand was referred to Dr. Marcia Richards, a former UW oncologist with a practice in Milwaukee. Brand received radiation treatments in Milwaukee five days a week for eight weeks. Her yearn-



Dr. Dolores Buchler

ing to take control of her life led her to make the 50-minute drive alone despite fatigue and nausea from the radiation.

When radiotherapy ended, Brand went to work as a retail buyer. Things went well until December 1989, when she developed peritonitis and her appendix "blew up to balloon size." She again consulted UW Hospital and Clinics and spent four months recuperating there. During the long hospitalization, she developed lasting friendships with many UW nurses and aides: "They were wonderful to me."

Brand returned to work two months later, but her association with UW and cancer didn't end. In September 1991, her mother was diagnosed with Burkitt's lymphoma, a rare and extremely aggressive cancer that affects a patient's white blood cells. Brand insisted her mother be cared for at UW.

It was then that Brand and her mother met Helen Whitman-Obert, an oncology nurse supervisor who leads a weekly support group at the

hospital for cancer patients and their families. "They come in—IVs, catheters, wheel chairs, bald heads and all," Brand says. "It was there that my mother and I realized our emotional differences and the irony of our position. First she was there for me, then I was there for her."

"Support is very important. A person can't possibly do this alone; there are too many unknowns, too much fear, too much anxiety."

Brand's mother outlasted the odds, living a year and one week after the Burkitt's diagnosis. "I firmly believe my mother lived a lot longer than she

should have statistically because of the collective skills of her team of doctors and caregivers. And I was there spurring her on, always putting a carrot at the end of the stick—just like she'd done for me.

"I've lost a parent and many friends but I haven't lost my spirit," Brand says. "Without my personal struggle with cancer, I never would have realized the strength of humankind—its greatness, its capability, its endurance through thick and thin—and I do mean thin."

Brand recently joined the UWCCC Advisory Board, which helps with development and community relations for the center.

"I've survived three life-threatening experiences for some reason. I feel that reason is to help people get through what otherwise is an unbearable circumstance."

"The people at UW helped me medically and emotionally. They let me know that I had options and that I could make decisions about my care. That's important since you feel like you have so little control over your life when you have cancer."

Stephanie Brand

History...

Continued from page 3

1986

UWCCC takes part in the first clinical trials with DFMO, (difluoromethylornithine), a potential cancer-preventing agent that slows an enzyme that stimulates tumor growth. The early trials were done by Drs. Paul Carbone and Richard Love. UWCCC researchers are currently examining the drug's effectiveness against bladder, prostate, colorectal and skin cancers.

1986

Under the leadership of Dr. Paul Sondel, UWCCC conducted the first study on the safest, most effective dosages of interleukin-2, a natural substance that

Stopping cancer long before it starts

An ounce of prevention

On a Thursday evening, seven strangers meet in a sterile white room in the basement of UW Hospital and Clinics. They've gathered to close the door on a habit that, in many cases, has ruled their lives: tobacco smoking.

Three have been smoke-free for seven weeks, another for about one. The others have selected their quit date for the following week. Dr. Tim Baker, a clinical psychologist who leads the smoking cessation clinic, lends words of encouragement.

Almost immediately, those ready to quit begin launching questions at those who've crossed the smoke-free line. "How crabby did you get when you stopped?" "Did the nicotine patch make it easier?" "What do you like about not smoking?" The discussion turns to the reasons people reach for a cigarette. "Smoking can mask a lot of feelings," Baker explains. "It's also a way of coping that can kill you."

In a number of ways. Studies show tobacco use can cause cancers of the lung, mouth, throat, stomach, kidney, pancreas, cervix and bladder. "Tobacco use accounts for 130,000 deaths a year," says Dr. Michael Fiore, director of the UW Medical School's Center for Tobacco Research and Intervention and assistant professor of medicine. "All are preventable."

Since the U.S. Surgeon General first detailed its dangers in 1964, tobacco use has declined. However, 27 percent of Wisconsin adults still

smoke; and for every person who quits, one child begins. "If we're going to prevent tobacco-related deaths, we have to stop that from happening," says Fiore.

Despite the long-running campaign against smoking, the move toward cancer prevention actually began after a 1986 *New England Journal of Medicine* report suggested deaths from the disease were increasing and that researchers weren't making progress in fighting it. "The National Cancer Project in the '70s suggested that investing in biological research would pay off. That hasn't happened," says Dr. Richard Love, director of UW Hospital's Cancer Prevention Clinic.

Biggest bang for the buck

With health care reform in the future, prevention is quickly becoming the buzzword when talking about cancer, heart disease, AIDS and other costly medical problems. "To get the biggest bang for our buck in terms of the total population, we have to focus on prevention," says Love, who is also a professor of human oncology, medicine and family medicine at the UW Medical School. "Smoking is a frustrating problem, but so is lung cancer. It can't be cured. If we put a fraction of the money into anti-smoking programs that we put into finding a cure, we'll see progress."

Love has witnessed some progress firsthand. He's worked with more than 600 families who are at risk for cancer over the last 10

years in the Cancer Prevention Clinic. At the clinic, Love and colleagues evaluate each individual's medical history, family health history and life-style. They then discuss changes a person can make to help prevent the disease. Their suggestions may include breast feeding, which is believed to ward against breast cancer later in life, not smoking, making dietary changes or wearing sunscreen and a hat on sunny days.

While preventive medicine has its advantages, it won't guarantee a person can avoid cancer. Love compares the disease to a car accident, explaining that a number of factors may have led to the crash. Pinpointing one factor or a combination of several isn't always possible. "We know a lot about the causes of cancer," he says, "but we don't know how they fit together."

Chemoprevention

Investigators at UW Comprehensive Cancer Center (UWCCC) and McArdle Laboratory are moving toward chemoprevention — a method by which they look for drugs that can attack characteristics of developing cancer cells. One agent they're studying, DFMO, slows the enzyme that stimulates tumor growth. Love says they're currently examining the drug's effectiveness against bladder, prostate, colorectal and skin cancers.

Although physicians still stress the importance of early detection — doing breast self-examination, look-

ing for changes in moles, and being examined for growths in the rectum and lower colon, for instance — Love says true early detection can be difficult. "Cancer takes a long time to develop. It can take 10 years before you can diagnose it. So taking preventive measures is really the best thing you can do."

Smoking is #1 cancer cause

Still, when discussing ways to avoid the disease, Fiore and other experts continue to emphasize the effect of smoking, which is believed to cause 30 percent of all cancer deaths and more than 80 percent of lung cancer deaths, not to mention deaths from heart disease, emphysema and other illnesses. Through the Center for Tobacco Research and Intervention, Fiore and colleagues continue to lobby for increasing the excise tax on cigarettes, advocating health insurance discounts for non-smokers, banning advertising and promotion of cigarettes, and barring smoking in public places. They also help people quit by conducting programs like the weekly smoking cessation clinics.

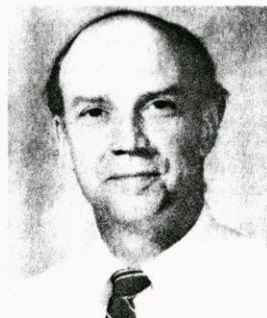
As the seven members prepare to leave, Baker reminds the Thursday night group how harmful the habit can be and how easily they can let their minds seduce them when they get the urge to smoke. "One puff and odds are 90 percent you'll return to smoking," he says. "Then you'll once again open that door you've worked so hard to close."

"If we put a fraction of the money into anti-smoking programs that we put into finding a cure, we'll see progress."

Dr. Richard Love



Dr. Michael Fiore



Dr. Richard Love

Prevention's no buzzword at UWCCC

Over the years, researchers at the UW Comprehensive Cancer Center (UWCCC) and the McArdle Laboratory for Cancer Research on the UW campus have been pioneers in finding ways to prevent forms of cancer. For example:

- In the late 1950s, Dr. Roswell Boutwell helped establish the link between a high-calorie diet and cancer. He later conducted landmark research that determined that vitamin A and aspirin could prevent skin cancer in laboratory mice. He also discovered an enzyme called ODC that set off a chain reaction stimulating tumor growth.

- In the 1970s, Dr. Derek Cripps developed a method of rating sunscreens for effectiveness. His work laid the foundation for the U.S. Food and Drug Administration's adoption of the sun protection factor (SPF) ratings.

- More recently, Drs. V. Craig Jordan and Douglass Tormey discovered that the drug tamoxifen could prevent breast cancer from recurring in certain women who have previously had cancer. Tamoxifen blocks the action of estrogen, which accelerates cancer cell growth. Their findings laid the groundwork for a current national tamoxifen study.

All-star physician team joins Eric's battle

MADISON - Eric Wolfe's battle with brain cancer has involved an all-star team of medical professionals.

Brain cancer specialists at the UWCCC teamed up with top guns from medical facilities in Milwaukee, Minnesota and Texas to identify Wolfe's brain tumor as a rare and aggressive mixed histology cancer.

And Wolfe's treatment at the UWCCC involved an equally impressive team: radiation and medical oncologists, radiotherapists, pharmacists, nurses and a variety of technicians—more than a dozen professionals.

Wolfe considers Dr. Minesh Mehta, a soft-spoken UWCCC radiation oncologist, the team MVP.

"Dr. Mehta was very welcoming. I had the feeling that he was taking me under his wing and would get me through this," Wolfe says. "He explained what was going to happen and how it was going to work, so that I knew what was going on. I never left feeling that I couldn't call him with more questions."

It was almost Christmas 1991 when Wolfe, 23, began experiencing brief sensations of disorientation that left him with an overpowering headache. Wolfe thought the attacks were due to stress. It was finals week at UW-Madison, and he was busy with a graduate design project and his work as a designer at Hoot Communications in Madison.

By the time he got home to Menomonee Falls for the semester break, however, he was having what he

called "little episodes" five times a day. On the day after Christmas, he consulted a Milwaukee neurologist and was hospitalized for three days of extensive testing.

The tests revealed an unidentified growth in his brain just behind his right temple. When doctors there were not convincing in their treatment strategies, Wolfe explored other options by getting a second opinion. When doctors at a second medical center recommended radiation treatment, Wolfe chose the UWCCC. He wanted to be treated in Madison, where he could keep working and attending classes—and be close to his family and friends.

Wolfe is one of nearly 400 people whose brain tumors were reviewed by Mehta and his colleagues during 1992. After studying Wolfe's medical records, the UWCCC team concluded that his tumor was more complex and harder to treat than most. Further testing and a flurry of phone calls, faxes and special deliveries were required to convince other members of Wolfe's multi-state, multidisciplinary medical team.

"It was a 'diagnosis by committee,' which happens rather frequently," Mehta says. "We recognize that, although we are a big and comprehensive cancer center, we don't have expertise in all areas. We'll go out of our way to seek other opinions. Our advantage as a big center with national connections is knowing where to go and whom to ask."

With the diagnosis clarified, the focus shifted to

identifying the most effective treatment for the unusual tumor. Mehta searched cancer journals and studied reports until he found a preliminary Canadian study recommending both radiation and chemotherapy. Mehta and UW medical oncologist Ian Robins, who together planned and carried out Wolfe's treatment, chose to begin the attack against the brain tumor with radiation, since its powerful cancer-killing effect often lingers after treatment ends.

Wolfe's radiation treatments were planned using three-dimensional treatment planning, an approach available at only a handful of hospitals. This system combines MRI scans and a powerful minicomputer to create life-like images of patients and tumors. The system allows a radiotherapy team to fine-tune the duration and angle of radiation beams used in treatment before the beams themselves are ever turned on—minimizing radiation's impact upon "friendly" tissue.

"I had a few concerns since the tumor was so close to my eyes—as a designer they're my livelihood," Wolfe says. "But my doctors told me all about the 3-D planning and how they were able to stay pretty tight to the tumor itself."

During the treatments, Wolfe benefited from the UWCCC's use of the immobilization mask, a technique brought to the UWCCC from Arizona by radiation oncologist Dr. Paul Harari. A custom-made plastic mesh cast of Wolfe's face and head was used to anchor him to the treatment table, providing precise targets to guide the radiation beams. Without the mask, Wolfe's head would have been taped down during treatment, with indelible ink "target marks" on his face and head throughout the six weeks of treatment.

"With the mask, I was in position almost immediately," Wolfe says. "It's just a matter of lining the laser beam up with targets on the mask."

"People were amazed at how well I appeared to get through radiation," he adds. Wolfe experienced some side effects, but got through with humor and flair. For example, when he lost the hair on the sides of his head during radiation, he improvised: "I gave myself a five-inch Mohawk to make it look like I had done this on purpose. You'd be surprised what a UW-Madison student can get away with..."

He also lost most of his energy. "I started joking that I was basically good for one task a day," Wolfe

says. "If it was Saturday and I had to do laundry, that was my day."

But there were positives: Halfway through radiation, the seizures declined from several each day to one or two a week. "It was a nice break," he says. "There were actually times when I forgot about my head."

When Wolfe finished radiotherapy, Mehta used an experimental imaging system called proton spectroscopy to study the chemistry of Wolfe's tumor. "We got

results that we had not seen in any other cancer," Mehta says. "That verified that this was not a run-of-the-mill tumor."

More importantly, the examination showed that the growth had shrunk slightly.

"I was surprised and happy to see that the first time through," Wolfe said. "I had come to believe that when—if—the tumor was going to respond, it wouldn't show up on a scan for months, even years."

So Wolfe started chemotherapy with an emotional boost. Robins placed Wolfe on a three-drug regimen with one drug given daily and two others given on alternate weeks.

He received the drugs every other month for six months, finishing in September. Subsequent tests showed the size of the tumor had dwindled still more.

Wolfe, who sees Mehta and Robins every four months for follow-up testing, is positive about his treatment at UWCCC.

"Cancer is a long-term disease, so the care is more hands-on," Wolfe says. "Your doctors and nurses are

more familiar with you. People remember your name as you walk by. Small things like that make it a more pleasant day—if you can consider going to a hospital every day pleasant.

"I was getting the best care right here, which is very fortunate on my end, because I live here," Wolfe says. "And so does my strength: my girlfriend Michelle, Mom, Dad, Cara and The Boys—my roommates."

"This whole thing really hasn't taken me that far out of my game or life-style," says Wolfe, (a racquetball player who snuck in games during treatment despite his doctors' recommendation.)

"I'm feeling better all the time and I look forward to moving ahead with my life. The last year has been a physical trial and an emotional awakening to what is important to me, my relationships with loved ones, my faith as a Christian and my desire to live."

When he lost the hair on the sides of his head during radiation, he improvised: "I gave myself a five-inch Mohawk to make it look like I had done this on purpose. You'd be surprised what a UW student can get away with."

Eric Wolfe



Dr. Minesh Mehta and Eric Wolfe of Madison discuss the results of a powerful test.

How do you whip cancer?

"It's not the new gadgets that make the difference, it's the expertise of the health care team and the way in which you utilize that cumulative expertise." Dr. Timothy Kinsella

T • E • A • M • W • O • R • K

Dr. Timothy Kinsella, an internationally recognized radiation oncologist, can talk technology with the best of them. Asked about the UWCCC's success, however, he goes straight to the heart:

"It's not the new gadgets that make the difference, it's the expertise of the health care team and the way in which you utilize that cumulative expertise," says Kinsella, chairman of the human oncology department whose professors provide much of the drive to the UWCCC chariot. "The advancements are coming from the pooling of human resources."

A major strength of a comprehensive cancer center like the UWCCC, particularly one attached to a major academic institution, is its ability to quickly gather experts from diverse medical fields. This "gathering of experts" occurs both in the clinic, where patients come for treatment, and in the laboratory, where the goal is to develop, test and apply new knowledge for the clinic.

UW Hospital and Clinics and the UWCCC have created several multidisciplinary clinics so that an existing team of experts is available to quickly and efficiently provide diagnosis and treatment. Clinical teams are in place for six tumor sites and one disease, and more are being organized.

These clinics offer advantages not only to patients, but to physicians in private practice. Dr. Alan Gustin, an Oconomowoc gynecologist, says he feels like "part of the team" when he refers patients to the UW Hospital and Clinics and the UW Comprehensive Cancer Center.

Gustin identifies the problem, refers the patient to the appropriate team of specialists and is advised of the treatment given and its ramifications upon the patient's continued care. Gustin says he resumes his role as the primary doctor once the therapy is completed and does all follow-up care.

"The UW is at the cutting edge of each major area of cancer treatment: chemotherapy, radiation and surgery," Gustin says. "They have a team approach and are comprehensive, multifaceted."

The multidisciplinary theme is common to many UWCCC endeavors. The center's organization ensures that doctors who treat patients with a particular type of cancer, colon cancer for example, interact with members doing research that affects that area.

Frequently, the same physicians who treat cancer are studying ways to improve treatment or prevent cancer from starting. For example, smoking has long been tapped as a major cause of cancers, particularly of the head and neck. And research released in January showed that continued smoking interferes with radiation treatment for these cancers.

The news may have surprised the general public, but UWCCC radiation oncologists, tobacco intervention experts

and psychologists had already pooled their expertise for a successful program to encourage people with head and neck cancers to stop smoking.

That's the proactive approach that Kinsella likes to see. "It's not enough just having a team of experts and providing a high standard of care... Comprehensiveness, to me, means all this is done in a caring environment," Kinsella says.



Dr. Timothy Kinsella

"Multi-D" provides team of experts

The best way to identify and treat cancer is to pool the knowledge and resources of a variety of experts. The UW Comprehensive Cancer Center and UW Hospital and Clinics operate several multidisciplinary, or "Multi-D," clinics that offer patients and referring physicians the advantage of shared insights and offer diagnostic and treatment options that aren't readily available elsewhere.

Brain cancer clinic Provides diagnosis, treatment and consultations on brain tumors as a service to patients and physicians. Its services are popular with primary physicians seeking a second opinion; the UWCCC brain tumor board, which includes specialists from several medical fields, reviewed more than 370 tumors last year.

Breast cancer clinic Provides diagnostics, information and options for women confronted with breast cancers or breast abnormalities. Provides fine needle biopsy and immediate pathologic interpretation, mammographic diagnosis and interpretation, surgical intervention and postoperative radiotherapy or chemotherapy. Offers services of medical, radiation and surgical oncologist.

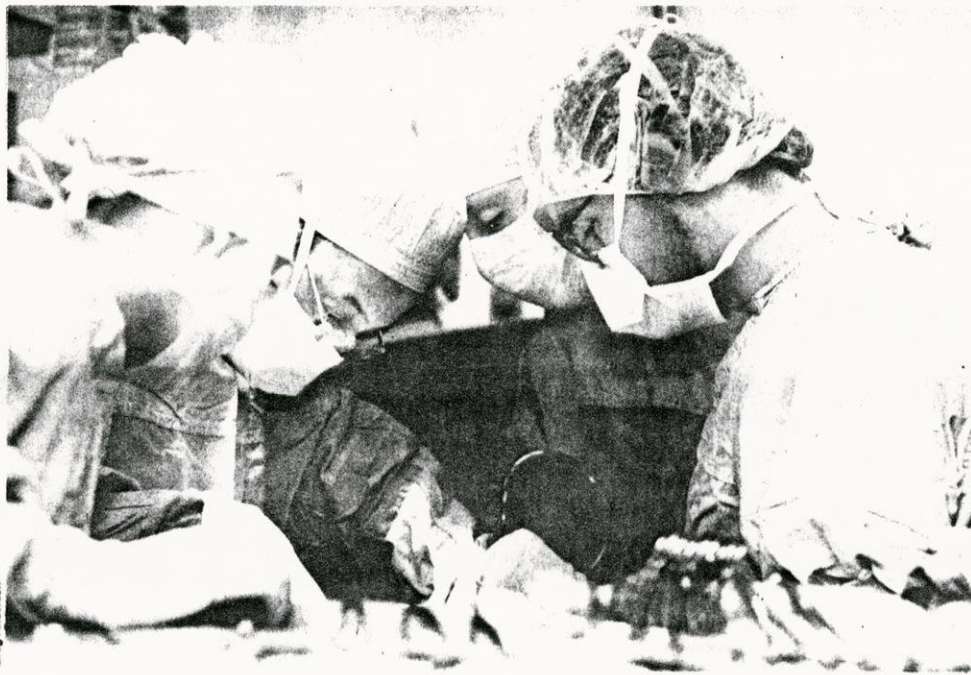
Children's cancer clinic Diagnoses and treats, or makes treatment recommendations for infants, children and adolescents with leukemia, other blood disorders and solid tumors. Helps parents understand and participate in their child's care. Collaborates with pathologists, radiologists, surgeons and radiotherapists. Participates in a national group involving 28 major pediatric oncology centers.

Gynecologic tumor clinic Serves patients with tumors of the vagina, cervix, uterus and ovary. Provides multidisciplinary team and advanced treatments such as high-dose-rate inter-cavitary radiation, where radiation is delivered directly to the tumor source.

Head and neck cancer clinic Evaluates cancer of the face and neck, skin, eyes, ears, nose, mouth, throat and neck. Oncologists and appropriate specialists, such as ear, nose and throat specialists; dentists; plastic surgeons; speech and swallowing experts and therapists review patient information (records and test results) and make recommendations each Friday. Treatment may be pursued at UWCCC or with the patient's primary physician.

Lung cancer clinic Physician team reviews new patient's records every Wednesday to recommend treatment or provide second opinions. Team includes a medical and radiation oncologist, a thoracic surgeon and a clinical nurse specialist. Treatment plans may include the use of innovative radiation treatments, such as brachytherapy, where a short, powerful dose of radiation is administered as close as possible to the cancer site, or unique treatments combining surgery, radiation and/or chemotherapy.

Prostate cancer clinic Focuses on providing answers to people with questions such as what PSA results mean or what to do when a biopsy shows small traces of cancer. Enhances existing interaction among UWCCC urologists, medical oncologists and radiation oncologists. A single clinical setting is being pursued so that patients see specialists and obtain X-ray and other radiology examinations during one visit. Enables patients to seek examinations and/or second opinions for a suspected, but unconfirmed diagnosis of prostate cancer, or discuss treatment options.



Comprehensive cancer centers like the UWCCC can quickly gather experts from diverse medical fields.

Greg Anderson

A history of making history

UW-Madison's prominence in cancer research, treatment and education arises from more than five decades of diligence and discovery by UW Medical School professors, especially those working at the McArdle Laboratory for Cancer Research (McArdle) and the UW Comprehensive Cancer Center (UWCCC):

1930s

Dr. Frederick Mohs, professor of surgery, developed a surgical technique to remove external tumors, such as mouth, lip and skin cancer. Mohs Micrographic Surgery relies on careful small dissections instead of the gross removal of tissue, allowing surgeons to work precisely, sparing normal tissue.

1936

The University of Wisconsin's first formal foray into cancer research came with the university's sponsorship of a conference of American and European investigators.

1939

Dr. Harold P. Rusch, professor of oncology and human oncology, showed that a high-fat or high-calorie diet accelerated the production of cancer in mice. In 1941, he found the wavelength of ultraviolet light that produces skin cancer.



Rusch played a singular role in elevating UW to world renown in cancer research and treatment; he was the founding director of both the McArdle Laboratory for Cancer Research (in 1940) and the UW Clinical Cancer Center (in 1973)—forerunner to UW Comprehensive Cancer Center.

1951

Dr. Van R. Potter of McArdle Laboratory developed the concept of combination drug therapy, now the most widely used form of chemical treatment for cancer. Potter correctly surmised on the basis of his own experiments that administering several drugs, chosen according to knowledge of the chemistry of the cell, could be more effective than single-drug therapy.

1950s

Studies by Dr. Roswell Boutwell of McArdle Laboratory shed light on the mechanisms by which control of caloric intake protects against cancer, especially breast cancer.

1957

The anti-cancer drug fluorouracil was synthesized by Dr. Charles Heidelberger of McArdle Laboratory. Known as 5-FU, the drug is used extensively to treat a variety of cancers.

1950s, '60s

Drs. Elizabeth and James Miller of McArdle Laboratory markedly advanced understanding of how certain chemicals cause malignancy. The Millers found that many known carcinogens must be "activated" in the body to initiate cancer.

1960s

The research and advice of Dr. Derek Cripps, professor of medicine, laid the foundation for the U.S. Food and Drug Administration adoption of "Sun Protection Factor" ratings, now found on suntan and cosmetic products.

1968

A team of UW Medical School researchers led by Dr. Richard Hong, professor of pediatrics and medical microbiology, discovered how to predict the success of bone marrow transplants, giving new hope to patients with leukemia and immune deficiency diseases.

1969

Dr. George T. Bryan, professor of human oncology, found evidence linking cancer in laboratory animals with saccharine and cyclamates, artificial sweeteners used in soft drinks and other foods. Both substances were subsequently banned.

1970

Dr. Howard M. Temin of McArdle Laboratory and his coworker discovered reverse transcriptase (independently discovered by Dr. David Baltimore). This enzyme explains how retroviruses cause cancer and AIDS. Temin's work in this area led to his selection as a co-recipient of the 1975 Nobel Prize in medicine.



1970s, 1980s

Dr. Douglass Tormey, former UW professor of human oncology and medicine, explored the use of anti-estrogen drug tamoxifen that decreases the chances of breast cancer recurring. Tormey's findings drew upon research begun in the 1970s by Dr. V. Craig Jordan, UW professor of human oncology and pharmacology.

1973

UW Clinical Cancer Center was established as the focal point for cancer care coordination and clinical and laboratory research, as well as public, professional and student education for the UW and surrounding region. The UWCCC is a comprehensive center recognized nationally and internationally for research in biologic therapies, biostatistics, pain and symptom control, and prevention research. Its physicians are recognized as national experts in treatment of breast, prostate, kidney, brain and lung cancer.

1976

Dr. Paul P. Carbone comes to Madison to chair the Human Oncology Department. In 1978, he became director of the UWCCC. Madison became the headquarters for Eastern Cooperative Oncology Group (ECOG), an organization that links 200 hospitals for national clinical testing.

1979

UWCCC and ECOG develop pioneering new studies involving adjuvant therapy, administering treatment when cancer is suspected but cannot be proven, for the treatment of breast cancer using tamoxifen and chemotherapy after surgery.

1980s

Under Dr. Ernest Borden's leadership, UWCCC performed the first clinical trials using two types of interferon produced by recombinant DNA. Interferon is a natural substance that helps stimulate the body's defense mechanisms to fight cancer.

1980s

Dr. Ian Robins, an associate professor of human oncology, medicine and neurology, developed a safe system to treat cancer with systemic hyperthermia. This approach to heating patients (to 107 F) using radiant heat technology was successfully used for the first time with radiation and immunotherapy.

1984

UWCCC investigator Dr. Donald Trump conducts one of the first studies determining the safest, most effective dosage of taxol, a cancer-fighting drug derived from the bark of Pacific yew trees.

1986

Dr. Richard Love, associate professor of human oncology, medicine and family medicine and practice, directed the first study in the U.S. to determine the long-term effects of the drug tamoxifen on postmenopausal women who have had cancer.

1986

UWCCC takes part in the first clinical trials with DFMO, (difluoromethylornithine), a potential cancer-preventing agent that slows an enzyme that stimulates tumor growth. The early trials were done by Drs. Paul Carbone and Richard Love. UWCCC researchers are currently examining the drug's effectiveness against bladder, prostate, colorectal and skin cancers.

1986

Under the leadership of Dr. Paul Sondel, UWCCC conducted the first study on the safest, most effective dosages of interleukin-2, a natural substance that bolsters the body's immune system.

1986-1992

Dr. Edward Messing, professor of urology and human oncology, is the first to document that home screening for blood in the urine is a feasible way to detect early stage urologic malignancies.

1987

Dr. Catherine Reznikoff, associate professor of human oncology, transforms commonly found human cells into an immortal, cancer-like growth in the laboratory.

1987

Dr. Timothy Kinsella is named chairman of the department of human oncology, a department of the UW Medical School that includes many UWCCC physician researchers. Kinsella, a nationally recognized radiation oncologist, expanded the center's research initiatives in radiation oncology and clinical radiotherapy.

1990

UWCCC medical physicists develop the belly board, a new, inexpensive device that helps minimize harmful side effects (weight loss, nausea) caused by radiotherapy treatment of pelvic and abdominal cancers.

1991

Following more than 20 years of research into the carcinogen dioxin, Dr. Alan Poland and his McArdle team cloned the cDNA for a soluble cellular protein, Ah receptor, that binds and transports dioxin and like-acting carcinogens. The research provides new clues to the mechanisms of dioxin's effects on the cell.

1992

Dr. Ian Robins, associate professor of human oncology, medicine and neurology, successfully combines chemotherapy and systemic hyperthermia in a way that increases effectiveness without increasing side effects.

1992

Drs. Judith Stitt and Dolores Buchler of the UWCCC, describe the results of high dose rate brachytherapy for the treatment of cervical cancer with outpatient radiation therapy.

Future

UWCCC researchers are pursuing exciting new areas, seeking ways to overcome drug and hormone resistance, to strengthen patients' immune response to cancer, to develop safe and effective methods to prevent cancer and most importantly, to decrease the pain and stress and other effects of cancer upon patients.

Taking 'The Wisconsin Idea' to the world

MADISON, Earth—The UW Comprehensive Cancer Center is a place without boundaries, geographical or otherwise.

UWCCC caregivers and researchers frequently expand "The Wisconsin Idea," a philosophy urging university programs to serve the entire state, by sharing their scientific and clinical advancements with colleagues across the nation and throughout the world.

Even so, Wisconsin residents are usually the first to benefit from the center's innovative services and research. UWCCC activities in Madison provide easy access to and from Wisconsin's major population centers. And UW physicians, researchers and educators use a variety of methods to make UWCCC initiatives available to communities and physicians throughout Wisconsin.

Cooperative agreements like those with Wausau Hospital in Wausau and Beloit Memorial Hospital in

Beloit bring UWCCC physicians, staff and services directly to outlying communities. For example, findings at national and international physician conferences.

UWCCC radiation oncologists travel to Beloit each day to treat patients and to confer with local physicians. Patients benefit by having the expertise of UWCCC cancer specialists close to home.

Just as important as its local presence are the UWCCC's regional and national activities. UWCCC staff are active as officers and members in more than a dozen national and international organizations. The center's participation in the Eastern Cooperative Oncology

Group, for example, unites as many as 200 hospitals across the nation and throughout the world. And UWCCC specialists are frequently asked to share their



including societies of cancer researchers, nurses, medical oncologists, and radiation therapists.

The Wisconsin Cancer Pain Initiative, a frequent

"The whole purpose of this cancer center is to make the latest technology available to the people of this state, the Midwest and the nation," says Dr. Paul Carbone, UWCCC director.

Sometimes, the cancer center sparks the growth of new organizations which join in the fight against cancer. For example, the UWCCC played a lead role in the creation of Wisconsin Cancer Council, which unites more than 50 statewide cancer organizations,

UWCCC collaborator, has attracted worldwide support and attention for its crusade to develop programs that will spread knowledge about effective pain treatment. The WCPI, chaired by UW pharmacologist June Dahl, is the first state effort recognized by the World Health Organization. The WCPI is a national demonstration site for a role model program that teaches teams of health care providers how to manage cancer pain.

The UWCCC also has excellent relations with the state Department of Health (DOH), providing expert help when needed, as well as supporting the DOH in developing statewide activities in pain control, smoking cessation, tumor reporting and more.

The UWCCC Advisory Board, comprised of community leaders from throughout the state, helps the center with patient and community relations and securing private financial support.

UNIVERSITY OF WISCONSIN-MADISON

News and Information Service

19 Bascom Hall, 500 Lincoln Drive
Madison, Wisconsin 53706
(608) 262-3571

Krisztina Morvai ...

(Continued from page 1)

"No lawyers are educated in civil rights in Hungary," she says. "The idea of protecting the individual from government is alien to our system. So a group like ACLU would represent the individual on issues like free speech, women's rights and labor rights."

Though Morvai's impassioned defense of individual liberties puts her in the mainstream of American legal thought, it shunts her to the fringe of Hungarian jurisprudence.

"I'm considered crazy at my law school," she says, where the tradition of presumptive guilt and weak-kneed defense persists, despite the departure of the Communists.

For example, Morvai once proposed to her dean that the school establish a clinic for the study of civil rights. His unwittingly ironic answer: She needed to get permission from the Ministry of Justice.

"I refused to do it on principle," she says.

Her department head once personally tested Morvai's students to make sure, as he told them, that they were studying Hungarian law, not Krisztina Morvai. But she's dead set on training a new generation of lawyers who will rise to their feet in vigorous defense of their clients.

Morvai has been raising a ruckus since the first day she practiced law in 1986. She shocked everyone when she gave a speech in court for her client, an 18-year-old charged with drunken driving. She lambasted the prosecutor's request for a jail term as completely unwarranted, given the nature of the offense and the absence of a previous record.

"Madam," I was told by the judge, "you better learn right now you're not in law school anymore." But she didn't.

"I had fights with the police and prosecutors all the time," she says. "At one point, under the Communists, I was advised to leave the bar by the bar itself. Today, the same officials who pressured me to leave the bar are now 'human rights activists.'"

Morvai's fiery defense of individual freedom is a family tradition. "I was raised in a home of passionate anti-Communists," she says. Her father was one of the first private entrepreneurs under Communism and regularly discussed at home what he heard *sub rosa* over Radio Free Europe.

During the 1956 Hungarian revolution against the Communists, Morvai's uncle composed, signed and posted poems about freedom. For that, he was thrown into maximum security prison for three years.

Morvai's grandmother was considered an enemy of the state because she was the widow of a Greek Catholic priest. (For many years the Communists regarded religion as a den of subversive inquiry.)

As a high school student Morvai wanted to be a special education teacher until the day she first visited a courtroom. "The defense lawyers looked bored," she says, and acted more like set pieces than warm-blooded advocates.

On the spot, she chose law for a career. "I felt like I was born to be a lawyer," she says. She believed she had the inner drive and talent necessary to be a good lawyer and wanted to bend that talent to the use of people deprived of their civil rights.

Morvai attended law school at Eotvos University, clerked for the Supreme Court of Hungary and earned a master of laws degree at King's College of the University of London. She now is associate professor at Eotvos Law School, where she has taught criminal law since 1987.

Since 1991 Morvai has been a lecturer on law for the Budapest branch of a study-abroad program offered jointly by UW-Madison and the University of California. Last fall she met the program director for that semester, Raymond Anderson, professor of journalism and mass communication at UW-Madison.

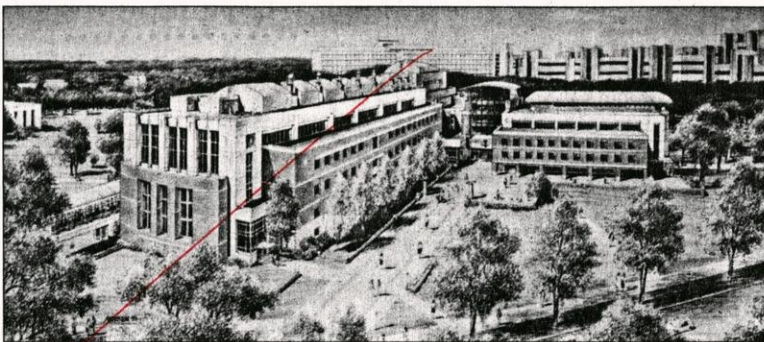
Anderson was immediately impressed with Morvai's effect on her students. "She has such energy, enthusiasm and intellectual focus that her students are caught up in her courses," he says. "It's called being a great teacher."

As a Fulbright scholar Morvai could have chosen any of several institutions in the United States. She came to UW-Madison for good reason, she says:

"Through my exposure to UW-Madison faculty and students in Budapest, I learned that this campus is friendly, multicultural and concerned about civil liberties. And the Law School is famous for not seeing law in a vacuum, but instead preparing lawyers to work in society."

This semester Morvai is doing research and giving a series of noontime lectures in Room 147 of the Law School on law and post-Communist transitions in Eastern Europe. She'll give her last talk Tuesday, Dec. 7, on "Homosexuality and the Law."

Next semester she'll teach courses on civil rights and the democratic transition in Eastern Europe and on sexuality, gender and the law in that region.



The School of Pharmacy's proposed \$50 million building, which will replace outdated facilities in Chamberlin Hall, will be centrally located on the west end of campus.

School of Pharmacy receives \$2 million grant

The Oscar Rennebohm Foundation of Madison has awarded a \$2 million grant to go toward the construction of the proposed School of Pharmacy building.

"We are pleased to offer this help and encouragement to the School of Pharmacy, which has gained such an outstanding national and international reputation," said Lenor Zeeh, vice president of the Rennebohm Foundation. "The construction of new state-of-the-art facilities will help Dean Don Witaiak and the school meet many of the health challenges we face today and those of the 21st century."

The UW School of Pharmacy has announced plans for a new building to be constructed on the west end of the campus near the University Hospital and Clinics. The new facility will house basic science research, clinical practice, instructional and administrative activities of the school, as well as general purpose classroom and lecture hall space. The proposed 126,000-square-foot building will be centrally located near other health sciences facilities, allowing for eventual completion of an integrated complex involving medicine, nursing and other disciplines.

"There is an urgent need to replace Chamberlin Hall," Witaiak said of the current home of the School of Pharmacy, adding that existing space does not meet the stricter safety standards required for research personnel passed in the 1990s by the American Council on Pharmaceutical Education accreditation board and the federal government.

The facility was built in 1939 and was originally

designed to house programs unrelated to pharmacy.

The proposal for the new facility calls for raising between \$10 and \$15 million in private funds to go toward the estimated \$50 million construction cost. With the \$2 million Rennebohm grant, gift pledges raised thus far total more than \$5.5 million.

"This is another example of the wonderful support we continue to receive from the Oscar Rennebohm Foundation," said Chancellor David Ward. "We are most appreciative of their deep interest and participation in a wide variety of programs and activities on the campus."

"A new pharmacy school facility will allow for expansion of faculty and student enrollment not possible in the current building," said Andrew A. Wilcox, president of the UW Foundation, which received and will administer the grant. "With the growing personnel needs of the health-care industry, it is vital that the school expand its programs to meet these needs. A new facility will not only attract the best and brightest faculty and students but also will make it possible to increase the numbers of scientists produced."

The Oscar Rennebohm Foundation was organized in 1945 to support the UW-Madison and other educational, health, religious and social services activities in Dane County. Its founder, Oscar Rennebohm, was the owner of a chain of 20 drug stores in the Madison area and served as lieutenant governor and governor of Wisconsin. He also was a member of the University of Wisconsin Board of Regents.

— Lynne Johnson, UW Foundation

Mice provide new clues to colon cancer puzzle

By Dian Land, Center for Health Sciences

A unique strain of mice first identified three years ago by UW Medical School researchers is helping scientists unscramble the puzzle of human colon cancer.

Using the newest gene "map" of mouse chromosomes and genetic information obtained by mating the tumor-prone mice with other strains, scientists have discovered a gene that reduces the severity of a disease that often develops into colon cancer. Knowing the identity of the gene may lead to new tests capable of identifying people at highest risk for colon cancer, as well as better treatments.

The collaborative effort involved researchers from UW's McArdle Laboratory for Cancer Research, the Whitehead Institute for Biomedical Research and Massachusetts Institute of Technology.

The discovery, reported in the Nov. 19 issue of the journal *Cell*, showed for the first time that scientists can gain a clearer understanding of complex diseases by using sophisticated genetic techniques to study large families of individuals, some of whom carry genes that reduce the effect of other disease-causing genes.

Biomedical researchers are becoming accustomed to discovering mutated genes that cause disease. But a distinctive feature of this study is that it identified a type of gene that modifies the way other genes function, according to UW Medical School professor of oncology and medical genetics William F. Dove, project leader of the

Wisconsin group. Finding the modifying genes is far more difficult, he added.

Three years ago, McArdle researcher Amy Moser, a member of the Dove team, unexpectedly discovered a unique strain of mice that develops multiple tumors throughout the intestinal tract. The condition closely resembles the human disease called familial adenomatous polyposis, which can produce thousands of colon polyps and greatly increase a person's risk of colon cancer.

Dubbing the animal *Min*, for multiple intestinal neoplasia, the McArdle scientists showed that the mice carry a mutated gene that makes them highly likely to develop tumors. With researchers at Johns Hopkins University, they located the mutation on the mouse gene that is equivalent to the mutated human gene responsible for both familial and sporadic colon cancer.

In analyzing inheritance patterns of generations of the *Min* mice, the McArdle group also found that the number of intestinal tumors a mouse develops is strongly influenced by its genetic background, suggesting that some mice carry additional genes capable of protecting against the tumor-stimulating effect of the *Min* gene.

In the latest study, the McArdle and Whitehead groups collaborated to search for the protective gene. By comparing the Whitehead Institute's most complete genetic maps of the mouse genome — designating the chromosomal location of all currently known genes that make up the mouse — with the Wisconsin inheritance patterns, the scientists located the *Min*-modifying gene on mouse chromosome 4. They named the gene *Modifier of Min-1*, or *Mom-1*.

Collaborative studies are under way to pinpoint the exact location of the gene and determine its molecular structure.

"We then hope that the detailed analysis that has been possible with the *Min* mouse can be extended to corresponding human genes," said Dove.

R = cancer

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CONTACT: Richard Weindruch (608) 262-0788

UW SCIENTISTS EXPLORE THE LINK BETWEEN CALORIES, AGING AND CANCER

MADISON--The link between calories and cancer, a tie that offers tantalizing clues to the biological mechanisms that trigger many common malignancies in older people, will be explored by University of Wisconsin-Madison scientists.

Working under a two-year, \$212,000 grant from the American Cancer Society, scientists at the UW-Madison Institute on Aging will use middle-aged mice to test the idea that a low-calorie diet inhibits the development of cancer.

According to Richard Weindruch, a UW-Madison gerontologist who will lead the Wisconsin study, studies of animals on reduced meal plans have shown that nutritious low-calorie diets can extend life span and inhibit the development of cancers that frequently crop up in middle or late age.

"Most cancers, in large part, are diseases of aging," Weindruch said. "We're going to look at nutritional intervention and try to understand how that works."

Scientists at UW-Madison and elsewhere are finding in studies of research animals that a diet containing all the necessary vitamins and nutrients, but just 50 to 70 percent of the calories of the animal's usual diet, will extend life span by 50 percent or more.

But not only are the animals living longer, they are healthier, exhibiting

less cancer and other diseases, and more vigilant immune systems.

In many cases, said Weindruch, the animals with greatly extended life spans tend to die "clean": "We don't really know what kills them. What we are doing is stripping away the usual causes of death, including cancer."

To date, most research on caloric restriction has been conducted on animals beginning at an early age. Weindruch, who will lead the new UW-Madison study, said the new line of research will explore the effects of nutritional intervention initiated later in life on cancer.

Of particular interest in the mouse strain being studied are B cell lymphomas, Weindruch said. These cancers, according to the UW-Madison Medical School researcher, are believed to occur as our immune systems decline slightly with age.

B cells serve as the body's antibody factories, producing the agents that help fight diseases. It is thought that B cell lymphomas occur when the immune system becomes slightly off kilter with advancing age and the regulations of B cell numbers breaks down.

"It seems to be a case of good cells gone bad," Weindruch said. "What we want to do is learn the ways by which low-calorie diets act to oppose this process."

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-- Terry Devitt (608) 262-8282

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EDITOR'S NOTE: Prior to Aug. 12, Weindruch is available for phone interviews and can be reached through Amy Toburen at the University News and Information Service, (608) 262-0925. William Ershler, a co-investigator on the study, is also available for comment and can be reached through the Institute on Aging at (608) 262-1818.

Science Report

Department of Agricultural Journalism
440 Henry Mall
Madison, WI 53706 608-262-1461

Research Division
College of Agricultural and Life Sciences
University of Wisconsin-Madison

*Research
Concern*

Release date: 12/11/87
For more: Michael Pariza
(608) 263-7777

CANCER INHIBITOR IDENTIFIED IN FRIED HAMBURGER

By George Gallepp
UW Ag Press Service

Madison, WI--Researchers at the University of Wisconsin-Madison have isolated and identified a cancer inhibitor in fried hamburger.

"We found it to be an effective inhibitor of skin cancer in mice," says

Michael W. Pariza, the project leader and director of the UW-Madison's Food Research Institute. "The treated mice developed only about half as many tumors as the controls."

The inhibitor, designated CLA (for conjugated linoleic acid), is a derivative of linoleic acid -- one of the fatty acids found naturally in many foods, including beef. "Although we isolated CLA from fried ground beef, we've also found it in uncooked beef and some dairy products, especially cheese," Pariza says.

Pariza and his coworkers, food toxicologists Yeong L. Ha and Nancy K. Grimm, are publishing their study in the December 1987 issue of the journal "Carcinogenesis."

Since 1977, scientists have known that cooking protein-rich foods, including ground beef, produces low levels of compounds that promote cancer. In 1985, Pariza and his research group discovered that extracts of fried hamburger also contained substances that inhibited cancer initiation in mice under certain circumstances. In the current study they identify CLA as one of the protective factors.

-more-

Cancer inhibitor in hamburger --add one

The UW-Madison scientists caution that it is too early to predict what effect, if any, CLA might have on the initiation of cancer in humans.

"We're not suggesting that people consider hamburger an anti-cancer food," Pariza says. "There really are no anti-cancer foods. The best advice still is to eat a well-balanced diet in moderation."

Soon, Pariza and his coworkers will begin studies on how CLA inhibits cancer and if it inhibits other types of cancer in mice. The ultimate aim of the research is to identify potential cancer inhibitors that might eventually help protect people, particularly those individuals known to be at high risk for certain forms of cancer.

The study was supported in part by grants from the National Cancer Institute, the U.S. Department of Agriculture, the American Meat Institute, McDonald's Corporation and the Wisconsin Milk Marketing Board.

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*Research
Cancer*

From the University of Wisconsin-Madison / News Service, Bascom Hall, 500 Lincoln Drive, Madison 53706 / Telephone: 608/262-3571

Release: Immediately

10/20/87

CONTACT: Albee Messing (608) 263-9191

ENGINEERED MICE PROMISE NEW INSIGHTS INTO PANCREATIC CANCER

By Carolyn Levi
UIR Science Writer

MADISON--For a major killer, cancer of the pancreas is poorly understood. Now, with a new, genetically-engineered strain of mice, it will be possible to study the disease from its very beginnings.

In the Oct. 9 issue of Science magazine, a team of scientists from three university laboratories announced that they have produced mice that always develop pancreatic cancer.

One of the authors, Albee Messing, a University of Wisconsin-Madison professor of veterinary medicine, said these mice will give scientists a powerful new way to study the disease.

Messing's co-authors were David M. Ornitz and Richard D. Palmiter from the University of Washington in Seattle and Robert E. Hammer and Ralph L. Brinster from the University of Pennsylvania in Philadelphia.

The pancreas is an organ that secretes digestive enzymes and hormones, including insulin. Cancer of the pancreas is the fourth most frequent cause of cancer death in the United States and is almost inevitably fatal. More than 95 percent of pancreatic cancer patients die within two years of diagnosis.

Because they didn't have experimental animals that consistently get the disease, scientists have been hampered in studies of why normal pancreatic cells turn cancerous. But through genetic engineering -- the ability to move

single genes from one organism to another -- Messing and his co-workers have produced a strain of mice that will make the disease much easier to study.

The scientists constructed the mouse strain by injecting an engineered cancer-causing gene into fertilized mouse eggs and implanting the eggs in a surrogate mother mouse. The young, so-called transgenic mice that result from the process always get pancreatic cancer.

Because the new genes become a permanent part of the transgenic mice's makeup, offspring inherit the genes and also develop cancer of the pancreas. Thus, the scientists have a continuous source of cancerous mice to work with.

"This is the first hereditary model for pancreatic tumor formation in the mouse," Messing said. "With these animals we can do many experiments that aren't possible with humans."

"One value of the mice is that they may allow us to define the changes that take place as pre-cancerous cells become cancerous," he added.

The scientists already have discovered at least two stages that transgenic mouse cells must go through before they turn cancerous. First, the added cancer-causing genes must become active. But then, Messing said, "other cellular events are clearly necessary to trigger cancer formation." This parallels the way scientists think some cancers occur naturally.

With the ability to supply active cancer-causing genes to the mouse pancreas, scientists now can begin searching for the yet unknown factors that, combined with the genes, trigger pancreatic cancer.

Messing explained that genes are long sequences of DNA. The techniques of genetic engineering allow scientists to cut and splice the sequences into novel combinations and then return them to living cells.

In this case, the scientists constructed the engineered gene by combining part of a rat pancreatic gene with part of a cancer-causing gene from the monkey virus, SV40. By linking the two together, Messing and his colleagues were able to generate cancer in just the organ they were interested in.

*Research -
Cancer*

All his life, Leland J. Allen

has been an active sportsman. That was until several years ago, when a deadly illness stopped him in his tracks. But Allen—"Jim" to his friends and family—has triumphed over a form of blood cancer called multiple myeloma.

Multiple myeloma is a system-wide abnormality of the plasma cells—the fluid part of blood—which deteriorates the bones. Allen was diagnosed with the disease in March of 1983. When two types of chemotherapy Allen received in Milwaukee failed to have an effect, Dr. Richard Hansen of the Milwaukee County Medical Complex referred him to the University of Wisconsin Hospital and Clinics for interferon treatments.

Allen agreed to participate in a standard interferon therapy protocol directed by Dr. Ernest C. Borden, professor of human oncology and medicine at the UW Medical School, and an American Cancer Society professor of clinical oncology. Borden, a pioneer in interferon research, hoped the use of the drug would inhibit cancer cell growth and stimulate Allen's immune system to kill malignant cells.

After a short stay at UW Hospital and Clinics, Allen received daily intramuscular injections of interferon at St. Mary's Ozaukee Hospital in Port Washington under the direction of his personal physician, Dr. Douglas B. McManus. Within a month, the therapy was halted because of adverse side effects that often accompany such treatment. Allen lost nearly 20 pounds and suffered from fatigue and nausea. "Sometimes I'd suddenly fall asleep. Nothing tasted good," Allen recalls.

As Allen gained weight, his therapy was resumed gradually; he received 150 interferon injections in all. Monthly check-ups at UW Hospital carefully monitored his progress.

Despite the disease and side effects Allen was fighting, he continued to operate the construction business he began in 1950, the Lee J. Allen Company. During his hospitalization, Allen amused members of the health care team

by spreading blueprints around his room. He scheduled his outpatient interferon treatments in the evening, hoping to sleep off the worse side effects and be able to work the next day.

Today Allen is cancer free. "He experienced a complete response to interferon therapy," explains Karen Sielaff, RN, BSN, interferon program coordinator. "Three years out, Mr. Allen is doing clinically well," Borden confirms. According to Borden, Allen's response was unusual because most other interferon successes



Dr. Ernest Borden is a pioneer in interferon research and treatment.

with multiple myeloma were in patients who had partially responded to chemotherapy.

Both Allen and his wife Helen credit not only the interferon therapy, but the health care professionals who cared for him at UW Hospital and Clinics. "We feel the staff went out of its way to help us with everything from inpatient care to making arrangements for visits to the hospital," Helen says.

Today, other patients are enrolled in a variety of interferon studies. "Interferon has been added as another weapon in the battle against cancer,"

says Borden. "In most instances, clinically and scientifically, interferons have been on target and are useful new modalities. Our best bet will probably be combining interferon with other kinds of cancer treatments."

Thus far, interferon has been effective in fighting some forms of breast, bladder, lymph and plasma cancer as well as leukemia. On the basis of favorable research results, the type of interferon Allen received was approved for use for hairy cell leukemia by the Food and Drug Administration in June, 1986.

Interleukin-2

Like interferon, interleukin-2 is a substance that can activate the immune system's ability to fight tumors. Such substances are called biological response modifiers (BRMs). Recent preliminary results with IL-2 from the National Cancer Institute have stimulated enthusiasm for further research. In these studies, the combination of IL-2 treatment with immune cells, or lymphocytes, has shown destruction of some tumors.

"We hope that by mixing these cells with IL-2,



Project specialist Debbie Minkoff assists interleukin-2 researchers Dr. Peter Kohler (left) and Dr. Paul Sondel.

Interferon is one of a host of innovative therapies under study at the UW Clinical Cancer Center, one of 20 multidisciplinary comprehensive centers in the country funded by the National Cancer Institute. Here, UW researchers are maintaining their reputation as leaders in treating breast and bladder cancers while diligently exploring new cancer therapies such as hyperthermia, bone marrow transplants for children with brain tumors, and immune modulators such as interferon and interleukin-2 (IL-2).

we'll see a much better response than by administering them separately," says Dr. Paul Sondel, a UW Medical School associate professor of pediatrics, human oncology and genetics. But UW Clinical Cancer Center researchers Sondel and his colleague Dr. Peter Kohler, a UW Medical School assistant professor of human oncology, are quick to caution that this approach is still in the experimental stage and will require extensive testing.

Sondel and Kohler began enrolling cancer patients in interleukin-2 studies in June of 1985. Their initial research goal is to learn how the

combined therapy of lymphocytes and IL-2 influences a patient's immune response, and to measure side effects.

"Substances such as interferon and IL-2 exploit the differences between cancer cells and normal cells, so the cancer cells can be selectively identified and destroyed," says Dr. Paul Carbone, director of the UW Clinical Cancer Center and professor and chairman of the human oncology department at the UW Medical School. He expects BRMs to be available beyond their current experimental stage within a few years. "The question is, will they be useful? I think we are proving that. We have reached a plateau with other cancer treatments. But this opens up a new area of exploration," he says.

Cancer Prevention

Dr. Richard Love has a different, though no less important, part to play in the cancer war—that of preventing the disease. As director of the UW Clinical Cancer Center's cancer prevention clinic, Love has two missions. The first—which has earned a national reputation—is education.

Public education centers around the relationship between a number of factors, such as heredity and occupational/environmental exposure to toxic materials, which can combine to form the disease in susceptible individuals. The cancer prevention clinic staff, including a nurse practitioner and coordinator, specializes in helping high-risk individuals and families who



Dr. Richard Love and Ellen Stroud, RN, prepare individual medical pedigrees to determine cancer risk.

have a familial or personal history of the disease break the cancer chain.

"We're always on the lookout for the family connection to cancer," explains Love, also a UW Medical School associate professor of human oncology, medicine, and family medicine and practice. After charting each family's medical history, Love writes diet prescriptions and lifestyle changes to lessen the likelihood of cancer. Teaching patients about early detection methods is also imperative. "Often, the earlier we can detect the disease, the better chance we have of curing it.

"The clinic's educational service is working well, but what's really exciting is our second mission—breast and colon cancer prevention research," Love insists.

"Currently we're working to identify women at increased risk of breast cancer and to develop non-toxic interventions to prevent breast cancer," Love says.

Love and Dr. David P. Rose, of the Naylor Dana Institute, an institute for disease prevention in New York, recently identified an abnormal form of prolactin in women at a higher risk of developing the disease. In other research, Robert Demars, Ph.D., UW Medical School professor of

genetics, hopes to identify the gene responsible for increased risk of breast cancer.

In the fall of 1986, Love and his colleagues began a three-year study of the anti-estrogen tamoxifen, which has proven effective in preventing the recurrence of breast cancer. They are trying to determine if the drug can be used to prevent the disease altogether.

Similar prevention research projects are also planned for colon cancer, including a study of colon and skin samples for the presence of ODC, an enzyme thought to be important in the development of this type of cancer.

Whether in treatment or prevention, the effectiveness of oncologists' work throughout the nation has been questioned during the last year. *The New England Journal of Medicine* printed an article charging that researchers are losing the war against cancer. But, UW researchers are quick to point out that how one assesses progress depends on what is used as a measuring stick. "It is clear we are making progress against some tumor types such as lymphomas, leukemia, breast and testicular cancer, and some forms of lung cancer," Borden concludes. "Many of the patients alive today wouldn't have been in the past." Just ask Jim Allen. ■



Karen Sielaff, RN, coordinates interferon trials and maintains patient records.

research news

*Research
Cancer*

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CONTACT: William Sonzogni (608) 262-8062

RISKS OF CANCER FROM GREAT LAKES CONTAMINANTS PUT IN PERSPECTIVE

CHICAGO--The lifetime risk of cancer from eating large Great Lakes sport fish is comparable to that from breathing the air in a large urban area or from drinking water from some of the nation's more polluted groundwater supplies, according to a University of Wisconsin Sea Grant water chemist.

"The Great Lakes states have made a considerable effort to advise anglers of the possible hazards of eating certain Great Lakes fish," UW-Madison water chemist William Sonzogni said. "However, these advisories do not compare the cancer risks of eating these fish with similar environmental health risks that the average person faces every day. Such comparisons can help put the risks of eating Great Lakes fish in perspective."

In a paper presented at the annual meeting of the American Association for the Advancement of Science here today, Sonzogni said that cancer from all causes affects about 250 out of every 1,000 U.S. residents. The maximum plausible lifetime risk from eating large sport fish from southern Lake Michigan is five to 30 additional cases of cancer per 1,000 anglers, he said, and the actual risk is likely to be much lower.

That estimate is based on the levels of four major contaminants (dieldrin, PCBs, DDT and toxaphene) in Great Lakes fish in the early 1980s, he said, and

-more-

Add 1--cancer risk

assumes an annual consumption of 33 pounds of sport fish by a 154-pound person over a 70-year lifespan.

The maximum lifetime cancer risk from eating a similar amount of Lake Superior fish is less than one per 1,000 -- less than the average U.S. citizen faces from eating half as much commercially caught ocean fish, according to Sonzogni, who is head of Environmental Sciences at the Wisconsin State Laboratory of Hygiene. And he said drinking raw water from the Niagara River -- one of the most polluted bodies of Great Lakes water -- poses less cancer risk than does the average U.S. groundwater supply serving 10,000 or more people.

To be safe, regulatory agencies like the U.S. Environmental Protection Agency and U.S. Food & Drug Administration generally use the highest, "worst case" estimated cancer risk available, according to Sonzogni, so the actual risks are unlikely to be higher than these agencies estimate and most likely are lower.

Cancer risk estimates are valuable for comparing the relative risks of different contaminants and for establishing pollution control priorities and regulations, he said, but they should not be regarded as indicating the actual effects of exposure to cancer-causing substances.

To date, more than 1,000 man-made chemicals have been identified in the water, sediment and biota of the Great Lakes, Sonzogni said. Seven Great Lakes states and the Province of Ontario recently issued a joint health advisory on eating certain Great Lakes fish, aimed largely at the estimated 2.8 million Great Lakes anglers. For the first time, the advisory also included some fish from Lake Superior, the most pristine Great Lake.

With UW Sea Grant support, Sonzogni and UW-Madison environmental policy analyst Kim Bro are developing a system of "proxy" numbers -- statistics representing the relative risks of exposure to cancer-causing contaminants in

Add 2--cancer risk

Great Lakes fish and water and a similar mix of contaminants in some of the nation's more polluted urban-industrial environments.

Sonzogni noted that the methods used to determine the lifetime cancer risks from chemical contaminants contain numerous uncertainties. Most cancer risk studies are based on the high-dose responses of relatively small numbers of laboratory animals, he said, and some kinds of animals develop more cancers than others given the same chemical. These animal studies are then used to calculate a chemical's low-dose human cancer risk, which can vary greatly depending on the mathematical method used, Sonzogni said. Further, the combined risk of several contaminants can only be assumed to be additive, he said, and the cancer risks of many contaminants are not known yet.

"Also, these studies are based on averages and assume constant consumption patterns and constant contaminant levels," Sonzogni said, "yet the levels of some Great Lakes contaminants, like PCBs, have been declining, and the cancer risk of eating Great Lakes fish can vary greatly depending on which lake it came from, the size and type of fish, and how it is cleaned and cooked."

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--Peyton Smith (608) 262-6393

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1/30/87

CONTACT: Kelly Clifton (608) 263-5344

CHERNOBYL DEATHS COULD BE FEWER THAN EXPECTED, UW-MADISON EXPERT SAYS

By JEFF GREGORY
UW Science Writer

MADISON--Cancer death rates in Europe linked to the Chernobyl nuclear power plant accident are likely to be surprisingly low, far less than one percent over normal rates, a University of Wisconsin-Madison researcher predicts.

Kelly Clifton, a radiation biology professor who studied the human health effects of wartime atomic bomb explosions at Hiroshima and Nagasaki, has been taking a close look at the number of new cancer cases that can be expected in the next 50 years from the recent Soviet accident.

There was some wild speculation about cancer deaths immediately following the April 1986 Soviet nuclear plant disaster. Clifton believes many of the early forecasted cancer death rates were not put in the context of the population's normal death-by-cancer rate.

Most people also didn't realize that the estimates represented deaths that would occur over several years or decades, rather than in the first days or weeks following the accident, Clifton said.

"Accurate estimates are always difficult in this kind of situation because we really don't know what happens to people at these low dose rates," he said. "We don't even know about effects on animals -- it's an enormously expensive and difficult problem to study."

Reasonable estimates are possible, however, largely based on research done at the Radiation Effects Research Foundation, a multinational cooperative located in Hiroshima and Nagasaki, where Clifton spent two years as chief researcher.

Clifton puts those affected by the Chernobyl accident into three categories according to their radiation exposure, or the number of "rems" they received. A standard chest X-ray exposes a patient to about 10 millirems, or ten thousandths of a rem. Natural background radiation, depending on location, can amount to about 100 millirems per year, or 10 times the exposure of the chest X-ray.

The first, or acute, exposure group consists of the 205 or so people who were at or near the Soviet plant. Most of the 28 known deaths from this group probably occurred within 50 days of the accident from rem levels of 650 to 1600, which are at least 60,000 times higher than a chest X-ray exposure, he said.

By averaging the radiation levels given by the Soviets for those 179 remaining near-plant victims, Clifton estimates only about five new cancer cases for that group.

"These figures will probably surprise many people," he said, "and that's one of the reasons the public should be made aware of them."

More than 100,000 people living within 30 kilometers of the plant make up the second group. These people were exposed to fallout, the direct radiation from the explosion's expanding plume, for an unspecified period of time before they were evacuated.

Basing his calculations on Soviet radiation exposure estimates of 30 to 40 rems for this group, Clifton said he might expect 160 more cancer deaths than normal. But he added "there are many people who believe the Soviet exposure figures in this case to be an underestimate by as much as a factor of two." This suggests that the cancer deaths could ultimately be higher among

Add 2--Chernobyl

Chernobyl's rural residents.

The third and largest group, consisting mostly of Europeans, was indirectly exposed to very low levels through contaminated drinking supplies, crops and livestock.

The radioactive cloud produced by the reactor explosion was not pushed high enough to get into the jet stream and dissipate more or less harmlessly. Clifton said. Low-level winds carried a substantially higher amount of fallout to many parts of Europe than might otherwise have been the case.

At least one West German researcher projected the number of new cancer cases for his country into the many thousands, he said.

"But, it's important to keep this kind of thing in perspective," said Clifton, noting that an increase of 20,000 deaths -- a figure that he questions -- in a population of 60 million that has a normal cancer rate of 20 percent is a small fraction of one percent.

Since the fatalities are expected to occur over a 50-year period, "it will be almost impossible to spot them statistically, so we'll never know Chernobyl's impact for sure," Clifton said. Most of the ailments will take five or more years even to begin to show up, he added.

To help put such cold statistics in perspective, 40,000 American women die of breast cancer each year, a significantly higher figure than any estimates for Chernobyl-caused deaths over the next 50 years.

Clifton bases his calculations on the Soviet Union's August 1986 report to the International Atomic Energy Agency and the reports of first-hand Western observers.

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-- Jeff Gregory (608) 263-2876

Release: Immediately

9/DD/86

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MEDICAL SCIENCE:

A UW-Madison researcher is testing a new way of effectively delivering a drug to dogs that help them fight deadly bone cancer. The treatment could have future applications for bone cancer in humans. 495 words.

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CONTACT: E.Gregory MacEwen (608) 262-9815

BIOLOGICAL THERAPY FIGHTS BONE CANCER IN DOGS

By DAVID TENENBAUM
UW Science Writer

MADISON--A University of Wisconsin-Madison researcher is testing a new way to administer a drug that stimulates animal immune systems to fight deadly bone cancers.

E. Gregory MacEwen treats dog cancer patients with muramyl tripeptide, or MTP, a drug that causes disease-fighting blood cells known as macrophages to produce an enzyme that destroys cancer cells.

MTP is a small molecule that, if given to mammals, is usually excreted before reaching the macrophages. To deliver the drug more effectively, MacEwen is putting it in a fatty carrier molecule called a liposome. MacEwen then injects the liposomes into sick dogs at UW-Madison's Veterinary Hospital, where he is associate professor of veterinary medicine and oncology.

The macrophages are scavenger cells that can recognize, envelop and destroy foreign substances, including the drug-bearing liposomes, in the blood. In the process of breaking down the treated liposomes, says MacEwen, macrophages absorb a dose of MTP.

The MTP stimulates the macrophages to produce substances such as

Add 1--dog cancer

interleukin 1, or tumor necrosis factor (TNF) -- that help to destroy cancer cells, but not normal cells. MacEwen hopes that the TNF-producing macrophages will kill the spreading cancer.

MacEwen said this form of "biological therapy" is non-toxic and does not appear to cause side effects. In contrast, chemotherapy can cause violent reactions in patients because the drugs kill both cancerous and normal cells.

MacEwen is collaborating on the research with one of the technique's inventors, Dr. Isaiah J. Fidler of M.D. Anderson Hospital in Houston. Fidler has used the treatment to shrink tumors in mice.

In March, MacEwen began experimenting on dogs suffering from a very malignant bone cancer called osteosarcoma. The usual treatment is to amputate the limb with the tumor. But that is only a stalling maneuver, said MacEwen, because the disease generally spreads to the lungs even before the initial detection.

"It's a tough cancer to treat," said MacEwen. "Most afflicted animals die within four to six months after diagnosis."

Dogs are referred by area veterinarians for the experimental treatment at the veterinary hospital. After amputation to remove the tumor, the animals get injections twice a week for eight weeks of a liposome containing MTP. The researchers do periodic lung X-rays and other tests to monitor the disease.

With 15 dogs in early stages of treatment, MacEwen called the results "preliminary, but promising." Follow-up observation will continue for about two years, after which the treated animals will be compared to "control" groups that got only an amputation.

MacEwen's ultimate goal is to find better treatments for cancer in humans. His work is one of many attempts to deliver cancer drugs exactly where they are needed. Such new drug delivery systems, he said, should have benefits beyond keeping the drug in circulation: "We want to target the drug so the rest of the body does not suffer the toxic effects of treatment."

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-- David Tenenbaum (608) 263-2876

Release: Immediately

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CONTACT: Herb Attix (608) 262-2170, Susan J. Engelhardt (608) 262-8769

UW MISSING SMALL RADIOACTIVE PELLETS

MADISON--Seven tiny radioactive pellets, used in a University of Wisconsin-Madison cancer treatment experiment at Charmany Farms on Madison's West Side, are missing and may have been lost, according to university safety officials.

The pellets, the size and shape of small pieces of wire, were surgically implanted in pigs as part of a medical physics experiment and probably were rubbed or jostled loose from plastic strips designed to hold the pellets in place.

It's probable, according to the university's radiation safety officer Susan J. Engelhardt, that the missing pellets were washed into the experimental farm's drainage system and may have entered the city's sewerage system.

However, Frank H. Attix, vice chair of the UW-Madison Radiation Safety Committee, said the pellets, made of iridium-192, pose no direct or indirect human health threat and are incapable of contaminating water or other parts of the environment.

Pellets similar to the ones lost at Charmany are routinely used in the clinical treatment of cancer.

The only threat to human health, he said, would be direct and prolonged handling of the pellets. "There's no way someone can get contaminated by these things and they're not going to end up in the water supply. They're probably in the muck somewhere where they'll decay relatively quickly."

Add 1--Radioactive Pellets

Attix noted the pellets have a half-life of 74 days and will eventually decay to very low levels of radioactivity. "Whatever hazard there is, it gets smaller and smaller each day," he said.

The difficulty in detecting the tiny pellets probably contributed to the pellets' loss, Attix said.

"These are weak sources, weak enough that they're hard to find," Attix said referring to the fact that the pellets can only be detected by Geiger counter at very close range. "Unless you get within a yard of them you can't detect them without very sensitive equipment."

The rooms where the pigs were held were, as a matter of course, routinely and vigorously cleaned. It was probably during cleaning, Attix said, that the loose pellets were hosed down a drain.

A total of 560 of the tiny pellets were used for the experiment. Initially, eight pellets were missing, Attix said, but one has since been found in the pens where the animals were kept.

According to Engelhardt, a six-person team of technicians has scoured Charmany Farm and the farm's drainage system in an effort to track down the missing pellets. However, none of the missing seven have turned up so far and the university has notified the Nuclear Regulatory Commission (NRC) about the missing pellets.

Engelhardt said the NRC, the federal agency charged with monitoring and regulating the use of radioactive substances in research settings, will wait for the university to submit a formal report before it responds.

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-- Terry Devitt (608) 262-8282