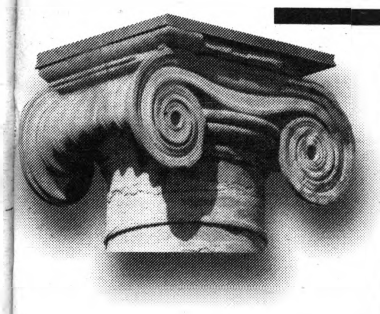
MizzouWeekly

Oct. 14, 2010
University of Missouri
mizzouweekly.missouri.edu



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With federal grant, MU center joins nationwide research on botanicals

MIZZOU ADVANTAGE

Interdisciplinary studies to gather data on safety and efficacy of botanicals

Americans spend $25 billion a year on over-the-counter dietary supplements and, according to industry forecasts, sales will increase about 19 percent over the next five years. Yet there is little scientific evidence to date that the popular supplements, known as botanicals, are effective — or whether they are even safe.

With a $7.6 million grant from the National Institutes of Health, a new research center at the University of Missouri will begin gathering data that could lead to more definitive human trials on the health benefits of botanicals.

The Center for Botanical Interaction Studies is one of five in the country selected to lead interdisciplinary and collaborative research on botanicals. The MU center, led by Dennis Lubahn, a professor of biochemistry and child health in the School of Medicine and College of Agriculture, Food and Natural Resources, will focus on five different plants and their abilities to help prevent strokes and prostate cancer, and to improve resistance to infectious diseases.

At an Oct. 7 press conference at the MU School of Medicine, Lubahn said that despite the widespread use of botanicals, their safety and efficacy have never been adequately studied.

"This grant will help us answer important questions about botanicals and gain new insight into how they work," he said.

The botanicals that will be studied are soy; garlic; sutherlandia, a common medicinal plant in Africa; Picrorhiza, an herb that grows primarily in the Himalayan mountains; and elderberry, which has been used as a folk remedy around the world for its antioxidant qualities.

"In fact," Lubahn said," I've been telling people that instead of the long Botanical Interaction Studies [name], our nickname will be the 'Elderberry Center.'"

The research on botanicals will involve a team of more than 20 scientists in human, animal and plant sciences at MU. Project leaders are faculty members in the School of Medicine; College of Agriculture, Food and Natural Resources; College of Engineering; College of Arts and Sciences; Bond Life Sciences Center; and College of Veterinary Medicine.

Project leaders include Grace Sun, a biochemistry professor who will lead a team of neuroscientists in investigating how botanicals may suppress stroke damage in the brain. Kevin Fritsche, professor of animal sciences, nutritional sciences and molecular microbiology and immunology, will study how the antioxidant properties in plants help the immune system.

"Plants contain an array of chemicals that help our bodies cope with oxygen and oxidative stress," Fritsche said. "Oxygen is essential for life, but when it's handled inappropriately by the body's cells, oxygen can have damaging toxic effects to body function and lead to disease."

MU Chancellor Brady Deaton said the new center embodies the ideals of Mizzou Advantage, which promotes collaborative research on issues related to food, medicine, energy, the media and technology.

The grant, Deaton said, "calls attention to the extraordinary interdisciplinary nature and community of scholars that exists on this campus . . . The 'One Health, One Medicine' initiative in the Mizzou Advantage could not be reflected any more clearly than it is in this grant."

Because of variations in the individual plants that will be studied, researchers are cultivating their own — including 600 types of soybean seeds to study different concentrations of the same compounds to see how they might work to prevent prostate cancer. MU also is growing 60 types of elderberries to study the plant's possible role in boosting the immune system against infection and fighting cancer and inflammation in the body.

Researchers at the MU DNA Core Facility will use the facility's mega-sequencing technology to take a portion of the plant DNA, sequence and analyze it. The facility can simultaneously sequence 240 million pieces of DNA. The data will then be sorted by the MU Informatics Institute to determine if the same functions are occurring in

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Lana Eklund photo

FIELD WORK Dennis Lubahn, director of the Center for Botanical Interaction, will lead a research team in a study of the safety and effectiveness of botanicals, funded by a new $7.6 million federal grant.

Provost warns campus that 'business as usual' is no longer an option

FISCAL CHALLENGES

Foster details discussions on budget challenges ahead

The University of Missouri must make "serious modifications" in the way it operates to offset future reductions in state appropriations, Provost Brian Foster told MU employees in an e-mail late last week.

In the e-mail, Foster shared details of recent discussions with campus deans about MU's fiscal challenges. Those discussions have resulted in several "interventions" that will go into effect immediately, including a "near total freeze" on new hiring requests and a halt to new programs that do not generate new revenue or meet "compelling mandates."

Foster said "there are few easy targets for funding cuts." However, the campus cannot continue "business as usual" if it wants to meet its obligations to students and maintain its stature. Nor can campus leaders wait for the UM System or the state to act before reaching "some very important decisions."

Foster stressed that MU is looking beyond 2012. He said there is "no sight line" to increases in state appropriations and that, because of a state law that strictly limits tuition increases at Missouri's public universities, MU has no straightforward way to increase revenue on its own. He said, the university must "establish well thought out priorities for everything we do: hiring, curriculum, research facilities, workload, degree programs, and so on.

"Moreover," he continued, "all of these matters must be considered together, since they all interact in profoundly complicated ways."

In comments at last week's General Faculty meeting, Tim Rooney, MU's budget officer, predicted that the state could cut between 5 percent and 15 percent of the campus budget. That would mean a loss of between $10 million and $31 million for MU. State law limits tuition increases to increases in the Consumer Price Index, which rose just 1 percent in the first 8 months of 2010.

That would not allow for a large enough increase to offset the loss in state revenue, he said. The university plans to request a waiver from the Coordinating Board for Higher Education to raise tuition beyond the CPI, as required by the law. But there are limits to what MU can charge without compromising enrollment.

Federal stimulus funding accounted for 4.4 percent, or about $9 million, of MU's $206 million budget in 2011. In addition to the expected cuts in state funding, campus departments face a significant increase in benefit costs, which will hurt already lean budgets. Enrollment "has saved our budget in recent years," Rooney said. He projected a net gain in new students on campus next fall, but enrollments will likely be less robust in the coming years.

SEE BUDGET on Page 8

Missouri Honor Medal winners announced

Five leading journalists, an advertising executive and two international organizations will receive the Missouri Honor Medal for Distinguished Service in Journalism.

The 2010 medalists are: JamesBalog, founder and director, Extreme Ice Survey and Earth Vision Trust; Cathleen Black, chairman, Hearst Magazines; Dorothy J. Gaiter, wine columnist and author; Myron Kandel, financial journalist; Sandy Rowe, editor; Larry Postaer, co-chairman, Rubin Postaer & Associates; The Foundation for the Freedom of the Press (FLiP), Bogota, Colombia; and ZETA Weekly Newspaper, Tijuana, Baja California.

Medalists are selected by the faculty of the MU School of Journalism on the basis of lifetime or superior achievement and distinguished service.

The Missouri Honor Medal activities will be held Oct. 28. Each medalist will present a master class to students during the day. The medals will be presented during a banquet that evening.

For information about the master classes and banquet, please contact Suzette Heiman at heimans@missouri.edu.

Walk a Hound, Lose a Pound

Want a little exercise while helping out local shelter dogs? The Walk a Hound, Lose a Pound Program meets at 8, 9 and 10 a.m. every Saturday at the Central Missouri Humane Society at 616 Big Bear Blvd.

Walkers are matched by walking speed with a shelter dog from the Humane Society or Columbia Second Chance. Leashes and dog treats are provided. Four-week sessions run through October. The participation fee of $10 includes a T-shirt and is a donation to the CMHS. Special group rates are available. To register, call the Columbia Parks and Recreation Department at 573-874-7460 or log on to www.GoColumbiaMo.com. Walk-ups are also welcome.

The program is a cooperative effort sponsored by the MU College of Veterinary Medicine and Research Center for Human-Animal Interaction, Columbia Parks and Recreation, Columbia Second Chance, Central Missouri Humane Society and the Department of Health and Senior Services.

T-Shirt project addresses violence against women

Started on Cape Cod, Mass., in 1990, the Clothesline Project allows women affected by violence to express their emotions by decorating a shirt. They then hang the shirt on a clothesline to be viewed by others as testimony to the problem of violence against women.

This powerful demonstration, co-sponsored by The Shelter, a Columbia safe-haven for battered and abused women, will be at Lowry Mall, Tuesday, Oct. 19, from 10 a.m.-2 p.m. The

Fall conditions are ripe for a blooming spring garden

BEDS TO BULBS

MU expert shows how to keep your daffodils happy

Fall ushers in football, cooler temperatures and the perfect time for planning next year's garden.

Spring flowering or Dutch bulbs, including daffodils, tulips and hyacinths, need a chilling period of at least 12 weeks to develop a primordial flower, says David Trinklein, associate professor of plant sciences. They also need time dig in and develop some roots while the soil is still warm. "Any time in October or the first two weeks in November is ideal for planting Dutch bulbs," he says. "If we don't get them in early enough, the flower won't develop in a timely fashion, and blooming the next spring will be arrested and, honestly, disappointing."

In Missouri, daffodils are the most dependable as repeat bloomers in successive seasons because they can tolerate warm temperatures. Tulips and hyacinths, however, do not bloom as vigorously the following seasons. It is a good idea to replant them each year, Trinklein says.

The good news is most of the Dutch bulbs are usually pest free, partly because they are up and blooming before many of the insects have broken dormancy. "When we talk about low-maintenance gardening, spring flowering blubs are the way to go," Trinklein says.

Before heading for the garden, consider these helpful tips.

•**Buying bulbs:** Buy large, hardy bulbs that are firm and have no signs of rotting, softness or external damage like cracks and deep scratches. Also pass on bulbs that already are growing roots or shoots.

Keep bulbs in a cool, dry location without direct sunlight until you are ready to plant them.

•**Choosing a site:** Remember that spring flowering bulbs need well-drained soil, which can be a problem in some locations in Missouri. Bulbs can be subject to decay and rot, though the addition of organic matter to the area can help ease drainage. If that isn't possible, plant in berms or raised beds. Never plant bulbs in poorly drained settings, Trinklein says, or they will not survive the first winter.

•**Setting up the site:** To prepare the planting beds, work up the entire area as opposed to using bulb planters or drills to plant bulbs one at a time. "If the soil is good to begin with or if it is an established bed that has been amended, those tools are a quick way to plant bulbs," Trinklein says. "But if we are dealing with soil that is tight and heavy and poorly drained, then it is best to dig up the soil."

For the first year, the bulbs contain all the nutrients needed for next season's bloom. If the bulbs are to bloom year after year, Trinklein advises gardeners to incorporate some fertilizer into the bed before planting. "Adding a substance like bone meal that is organic and slow in releasing and doesn't have a tendency to burn the root system as it develops is a good idea when planting the bulbs in October," he says.

•**Determining the depth:** The rule of thumb is to plant bulbs at a depth that is three times their height, Trinklein says. For example, if daffodils or tulips are two inches tall, plant them six inches deep. Space the bulbs apart at a distance that is three times the width of the bulb.

Position the bulbs so that the end where the foliage and flowers will emerge is pointing upward. The flatter, larger end goes on the bottom of the hole.

Water the bulbs after planting.

•**Keeping critters at bay:** During the first year, there is a danger that rodents like voles and field mice will feed on the bulbs. "They love tulips," Trinklein says, adding that they won't bother daffodils or hyacinths. Some people encase their bulbs in wire mesh to protect them, but he says it's not often a serious problem.

•**Protecting post-blooming bulbs:** As the bulbs grow in the spring, they use up their storehouse of food and energy and need to produce more. Gardeners can help by letting the foliage grow as long as it can so the bulbs can feed themselves for the following year's blooms.

Once the blooms are gone, cut off the stalks but let the leaves remain until they have turned yellow, usually around mid-June.

Daffodils spread further with each bloom season. When they become overcrowded, they will need dividing — usually every three to five years. "After they have bloomed and the foliage has turned yellow, dig them up, divide them and store in a cool, dry place until fall," Trinklein says. "Replant them in October."

MizzouWeekly
Volume 32 No. 9
mizzouweekly.missouri.edu

A publication for the faculty and staff of the University of Missouri, published every Thursday during the academic year and twice a month during the summer by Publications and Alumni Communication, 407 Reynolds Alumni Center, 882-7357. News deadline is noon Thursday the week before publication.
Annual subscriptions are available for $30.

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Designer/writer Sue Richardson

display includes shirts created over the past several years.

Documentary captures plight of North Korean refugees

Each year North Koreans flee their country due to human rights abuses and starvation to reunite with their families, creating an emergency situation that is absent from the public eye. The documentary *Hiding* tells the story of a group of refugees attempting to find freedom in a modern day underground railroad — or face being caught and sent back to a life of hard labor and even execution.

The film will be shown at 7 p.m., Wednesday, Oct. 20, in 114 Arts & Science Building. The screening will be followed by a discussion led by members of MU chapter of Liberty in North Korea (LiNK), who will provide additional information about the North Korea crisis.

For more information about *Hiding* and to see the trailer, visit www.linkglobal.org/hiding/

Tiger Training offers nutrition seminars

Tiger Training, the personal training program at the Mizzou Student Recreation Complex, is offering a series of nutrition seminars this fall. Taught by dietitian Heidi Williams, the classes are aimed at helping students, faculty and staff meet their dieting goals through education.

- Carbs, Protein & Fat: What Your Body Really Needs (Oct. 27)
- Managing Your Meals: Does Your Plate Look Like It Should? (Nov. 3)
- College Eating 101: Between Meal Eating (Oct. 20)
- Holiday Eating: Strategies for Success (Nov. 10 and Nov. 17)

All sessions are held in the Aquatics Classroom, across from Brewer Station. For more information, contact Tiger Training at 573-882-7842 or email umcrectigertraining@missouri.edu.

Dry cleaning, laundry service opens on campus

Need something dry cleaned, but don't know where to go? The new Mizzou Dry Cleaning & Laundry Service provides discounted prices for students, faculty and staff.

Services include wash-and-fold laundry for $1.35 per pound and standard dry cleaning, including suede and leather and home and bedding materials. Weekly and bi-weekly laundry plans are available each semester.

Mizzou Dry Cleaning & Laundry Service is located at the Bookstore customer service counter in the MU Student Center. Visit unions.missouri.edu/dry_cleaning for more information.

Nuked plants near Chernobyl have adjusted to radiation

PLANT GENETICS

Research suggests plants can shrug off contamination

Scientists studying the ecological legacy of the 1986 nuclear disaster at the Chernobyl nuclear power station have found surprising evidence that some plants can adapt and even flourish in a highly radioactive environment.

An international team of scientists, including researchers from the University of Missouri, grew flax plants in a high radiation environment near the abandoned Chernobyl site and compared the seeds produced to those from plants grown in non-radioactive control plots.

The scientists found that the plants had adapted well to the radiation exposure. In fact, the exposure seemed to have relatively little effect on them, including protein levels that were only about five percent different from control plants, said Ján Miernyk, adjunct professor of biochemistry and research molecular biologist with the U.S. Department of Agriculture's Agricultural Research Service.

The research results — recently published in the American Chemical Society's Environmental Science & Technology journal — suggest that plants can adapt their internal chemical processes to shrug off radioactivity.

Martin Hajduch, a plant biotechnology expert with the Slovak Academy of Sciences, primary author of the study and a former member of the MU Interdisciplinary Plant Group, noted that the plants have shown a surprising and unexpected ability over time to adapt to an environment contaminated with radiation – a particularly significant finding given the scope of the disaster in its first few years.

The April 26, 1986, accident at Chernobyl was the world's worst nuclear disaster. Four hundred times more radioactive material was released than in the atomic bombing of Hiroshima. Fallout was detected over most of Europe.

Among the 134 emergency workers who immediately responded to the explosion and fire, 28 persons died in 1986 due to Acute Radiation Syndrome and 19 more persons died in 1987-2004 from various causes, according to the World Health Organization. The WHO estimated that between 1991 and 1998 that there were 4,995 additional deaths.

After the disaster, four square kilometers of pine forest in the immediate vicinity of the reactor turned reddish-brown and died, earning the name of the "Red Forest."

Miernyk said that the latest research builds on earlier studies of soybeans grown in the Chernobyl area. These tests showed that the agricultural plants adapted to the contaminated soil through relatively minor changes in their seed composition.

The biggest difference between plants from the radioactive wasteland versus the non-contaminated soil was that levels of hundreds of proteins known to be involved in storage of reduced nitrogen in seeds had been lowered. In some cases, these altered characteristics stayed consistent for at least three generations of new plants, while other characteristics reverted back to pre-radiation exposure levels.

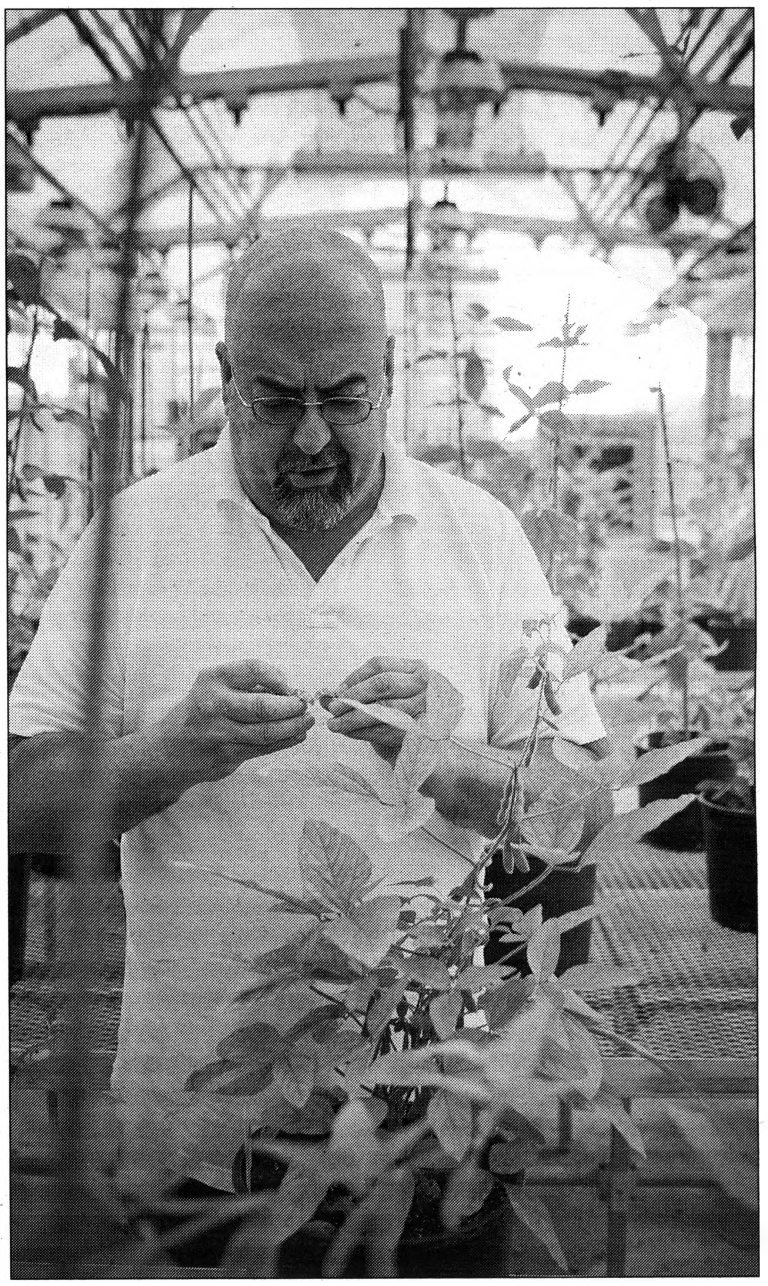
In the recent test, seeds of a local flax variety, Kyivskyi, were sown in radio-contaminated fields of the Chernobyl region while control plants were planted in non-contaminated soil. The scientists employed two-dimensional electrophoresis and tandem-mass spectrometry to compare seed proteins from the two groups of plants.

Flax responded to the radioactive environment differently than did the soybeans. While soybean plants took up a small amount of radioactivity and distributed it fairly evenly throughout the plant including the seeds, the flax plants seemed to exclude some of the radioactivity from the seeds.

The exact mechanisms for the adaptations are still largely unknown, Miernyk said. Further tests will be needed to identify more information on how the plants adapted and how these biochemical alterations may be used to help areas recover from nuclear disasters.

The plants grown in contaminated soil also functioned similarly to conventionally grown plants, he said, save for relatively minor changes in their protein composition, stress responses and synthetic "machinery." Miernyk, a co-investigator in the study, said that this research builds on earlier studies of soybeans grown in the Chernobyl area.

— *Randy Mertens*



Keith Montgomery photo

ADAPTABLE PLANT LIFE Ján Miernyk, adjunct professor of biochemistry and research molecular biologist with the U.S. Department of Agriculture's Agricultural Research Service, is part of a research team that discovered that plants that were exposed to radiation following the world's worst nuclear disaster have adapted to the contaminated soil through minor changes to their seed composition.

BOTANICALS from Page 1

the brain, the immune system and the prostate, Lubahn said.

"With the technology we have at MU, the potential for large impact, novel discoveries is tremendous," he said.

The new $7.6 million grant is the third federal award MU has received from the NIH's National Center for Complementary and Alternative Medicine, which leads research on health care practices and products that are not generally considered part of conventional medicine. The first NIH Botanical Center award was received in 2000.

In 2006, MU researchers received a $4.4 million grant to study the potential healing properties of African plants, including sutherlandia, in partnership with the University of Western Cape in South Africa. Dr. Robert Churchill, dean of the School of Medicine, credited the lead investigator on that project, Bill Folk, professor of biochemistry and senior associate dean for research at the School of Medicine, with laying the groundwork for the botanical research grant.

"Bill has been on the plant agenda for some number of years," Churchill said. "This grant is sort of building on things that he has been steadily involved in for a long, long time."

Churchill noted that the botanical research grant is the second largest federal grant received by the School of Medicine this year. In October alone, the medical school has received $13 million in grants from the National Cancer Institute and the National Institutes of Health, and has established a record for awards in a single year.

"I'm not sure why this is happening," Churchill said. "I think what we're trying to do is promote an atmosphere here that really fosters good research. In spite of the fact that we are kind of limited in the resources and infrastructure that other big places have, I think we have turned the corner and I think we've started to be recognized nationally and internationally for the good work that goes on here."

calendar

Concerts & Plays

Thursday, October 14

UNIVERSITY CONCERT SERIES: Full of rich lyrical content and memorable music, *Fiddler on the Roof* will be presented at 7 p.m. in Jesse Auditorium. For ticket information, call 882-3781.

Tuesday, October 19

FACULTY RECITAL: Christine Seitz, soprano, will perform at 8 p.m. in Whitmore Recital Hall.

Thursday, October 21

UNIVERSITY THEATRE SERIES: *How I Learned To Drive*, by Paula Vogel and directed by David Crespy, will be presented at 7:30 p.m. today through Oct. 23 and Oct. 28-31 in the Corner Playhouse. For ticket information, call 882-PLAY or visit theatre.missouri.edu.

Saturday, October 23

STUDENT RECITAL: Tyler Walton, horn, and Natalia Bolshakova, piano, will perform at 3:30 p.m. in Whitmore Recital Hall.

Conferences

Wednesday, October 20

2010 MIZZOUDIVERSITY SUMMIT: Gather with fellow students, faculty, and staff and administrators for "Taking Ownership for an Inclusive Campus: What's My Role? Where Do I Fit In?" This two-day summit at Memorial Union is intended to further progress toward a more inclusive and welcoming Mizzou. The MizzouDiversity Summit is free. For a schedule of workshops, panel discussions and speakers, visit http://mizzoudiversity.missouri.edu.

Courses & Workshops

Thursday, October 14

COMPUTER TRAINING:
- "Access 2010 Forms & Reports" will be offered at 1 p.m. in N3 Memorial Union.
- "Photoshop CS4 1: Selections & Layers" will be offered at 1 p.m. in 4D11 East Ellis Library.
- "Excel 2010 Charts & Graphics" will be offered at 8:30 a.m. in 4D11 East Ellis Library.

Registration is required online at training.missouri.edu or call 882-2000.

Friday, October 15

COMPUTER TRAINING:
- "XHTML 2: Tables" will be offered at 8:30 a.m. in N3 Memorial Union.

Registration is required online at training.missouri.edu or call 882-2000.

Tuesday, October 19

COMPUTER TRAINING:
- "Dreamweaver CS4: CSS Projects & Publishing" will be offered at 1 p.m. in 4D11 East Ellis Library.
- "Webinar: Excel Macros" will be offered at noon through the website http://doit.missouri.edu/training/webinar.html.
- "Access: Fields & Tables" will be offered at 1 p.m. in N3 Memorial Union.

Registration is required online at training.missouri.edu or call 882-2000.

Wednesday, October 20

COMPUTER TRAINING:
- "Photoshop CS4 2: Colors & Image Size" will be offered at 1 p.m. in N3 Memorial Union.
- "Formatting with Cascading Style Sheets" will be offered at 8:30 a.m. in 4D11 East Ellis Library.
- "Excel for Starters" will be offered at 8:30 a.m. in N3 Memorial Union.
- "Excel: Worksheets & 3-D Formulas" will be offered at 1 p.m. in 4D11 East Ellis Library.

Registration is required online at training.missouri.edu or call 882-2000.

Thursday, October 21

COMPUTER TRAINING:
- "Dreamweaver CS4 1: Getting Started, Images & Links" will be offered at 8:30 a.m. in N3 Memorial Union.
- "Basic PHP Programming" will be offered at 1 p.m. in 4D11 East Ellis Library.
- "Flash CS4 4: ActionScript Fundamentals" will be offered at 1 p.m. in N3 Memorial Union.

Registration is required online at training.missouri.edu or call 882-2000.

Exhibits

BINGHAM GALLERY: "Second Annual Alumni Exhibition: Sabra Tull Meyer" features the work of the MU alumna and prolific sculptor known for larger-than-life busts of famous native Missourians. The exhibit will be on display from Oct. 18-Nov. 4. A reception will be held Oct. 22 from 5-7 p.m. The museum, located in the Fine Arts Building, is open from 8 a.m.-5 p.m. weekdays.

MUSEUM OF ANTHROPOLOGY: "Mizzou Digs Missouri," an exhibit featuring the history of Mizzou's contribution to Missouri archaeology and highlighting finds from excavations on the MU campus and across Missouri, will be on display through Oct. 29. The museum, located at 100 Swallow Hall, is open from 9 a.m.-4 p.m. weekdays.

MUSEUM OF ART & ARCHAEOLOGY: • "Ancient Glass from the Permanent Collection" highlights the Museum's finest ancient glass vessels, representing various techniques of manufacture including core-formed, free-blown and mold-made examples. • Ongoing. "Ancient Bronzes of the Asian Grasslands from the Arthur M. Sackler Foundation" explores the art and life of the nomad cultures that flourished across the Asian grasslands from Central Asia to Mongolia and northern China from October 16 through December 23. "Equine Art" reveals a passion for the horse that can be found around the world throughout time.

The museum, located in Pickard Hall, is open from 9 a.m.-4 p.m. Tuesday-Friday and from noon-4 p.m. Saturday and Sunday.

STATE HISTORICAL SOCIETY: "Picturing the Way West: Landscapes from the Pacific Railway Survey" is on display in the corridor gallery on the east side of Ellis Library through Nov. 30. Gallery hours are 9 a.m.-4:30 p.m. Tuesday-Friday, and 9 a.m.-3:30 p.m. Saturday.

Lectures & Seminars

Thursday, October 14

DIVERSITY IN ACTION LECTURE: Dennis Kelley, department of religious studies, will present "The Sound of the Drum will Revive Them and Make Them Happy: Embodied Practice and Spirituality among Urbanized Native Communities" at noon in S206 Memorial Union.

NUTRITION & FITNESS SEMINAR: Katie Mikus, PhD candidate, will present "Restoring Glycemic Control and Insulin-Mediated Blood Flow in Type 2 Diabetes: Exercise as Treatment" at 4 p.m. in Acuff Auditorium, MA217 Medical Sciences Building.

Saturday, October 16

SATURDAY MORNING SCIENCE: Andrew Mienyk will present "Are We Just Meat Machines or Something More?" at 10:30 a.m. in the Life Sciences Center's Monsanto Auditorium.

Tuesday, October 19

BIOLGOICAL SCIENCES SEMINAR SERIES: Supria Srinivasan, The Spripps Research Institute, will present "Neuroendocrine Mechanisms of Energy Regulation in *C. elegans*" at 3:30 p.m. in the Life Sciences Center's Monsanto Auditorium.

Wednesday, October 20

RELIGION LECTURE: Author David Krieger, founder of the Nuclear Age Peace Foundation, will present "The Nuclear Challenge: From Omnicide to Abolition" at 7 p.m. in Gannet Hall.

DIVISION OF BIOLOGICAL SCIENCE SERIES: Sam Cushman, U.S. Forestry Service, will present "Gene Flow in Complex Landscapes" at 4 p.m. in Room 106 Lefevre Hall.

LOUIS BRYANT MEMORIAL UNION: Mignon Moore, Ph.D., University of Missouri-Los Angeles, will present "Invisible Families: A Three Year Study of Gay Identities, Relationships and Motherhood Among Black Women" at 3 p.m. in Ellis Auditorium.

COMPLIANCE & QUALITY MONTHLY SEMINAR: Rebecca Bergfield, MA, University of Missouri, will present "Safety in the Laboratory" at 1 p.m. in Acuff Auditorium.

Thursday, October 21

NUTRITION & FITNESS SEMINAR: Dr. Judy Muller-Delp, University of Florida, will present "Age-induced Dysfunction of Vascular Smooth Muscle in Coronary Arterioles: A Role for AMP-activated Kinase" at 4 p.m. in Acuff Auditorium, MA217 Medical Sciences Building.

CREATIVE WRITING EVENT: Nick Flynn, author of *Another Bullshit Night in Suck City*, will read from his newest book, *The Ticking is the Bomb: A Memoir of Bewilderment*, at 7:30 p.m. in Reynolds Alumni Center.

Friday, October 22

CREATIVE WRITING EVENT: Nick Flynn, author of *Another Bullshit Night in Suck City*, will read from his newest book, *The Ticking is the Bomb: A Memoir of Bewilderment*, at 4 p.m. in 106 Pickard Hall.

ROMANCE LANGUAGES & LITERATURE LECTURE: Pau Alabajos, Catalan cantateur, will present "Concert Talk" at 4 p.m. in Memorial Union South 304.

Saturday, October 23

SATURDAY MORNING SCIENCE: Frank Booth will present "Why You Should Exercise, and What Happens When You Don't" at 10:30 a.m. in the Life Sciences Center's Monsanto Auditorium.

Special Events

Saturday, October 16

MISSOURI CHESTNUT ROAST: "Eighth Annual Chestnut Roast," held rain or shine, is a harvest festival, a family day out, a Missouri specialty product showcase and a chestnut extravaganza. The Chestnut Roast will be held at the MU Horticulture and Agroforestry Center in New Franklin from 10 a.m.-4 P.M. For more information, visit http://www.centerforagroforestry.org.

Sunday, October 17

SYMPOSIUM EVENT: To stimulate cross-disciplinary interaction, a regional symposium and faculty workshop on "Integrin Signaling in Physiology and Disease" will be held to bring together scientific leaders, both external and internal to MU. The symposium will be held through Oct. 19 in the Bond Life Sciences Center.

Saturday, October 23

LITERARY EVENT: Stephens College English-Creative Writing Department and the Missouri Center for the Book present "Fiction's Landscape: Genre and the Power of Story," featuring presentations by several Missouri authors from 12:30 to 6 p.m. at Columbia Foyer and Dudley Hall, Stephens College. Registration is $25 at http://www.missouribooks.org/node/881 or call 751-1821 for more information.

Personal outreach brings more minority faculty to MU

Rob Hill photo

CLASSROOM DIVERSITY Rebecca Martinez, an assistant professor in Women's & Gender Studies, says having a Chicano professor in college helped her reach her goals. MU brought 15 new minority faculty members to campus this fall.

CAMPUS DIVERSITY

Increasing the pool of qualified candidates is starting to pay off

When Rebecca Martinez teaches her students about poverty, she brings a perspective to the subject that few other tenure-track professors at the University of Missouri can — the actual experience of being poor.

Martinez grew up as a second-generation American in suburban Orange County, Calif. Her father, who was chronically ill and often out of work, struggled to support his family until his death when Martinez was in high school. Her mother made flowers and collected a small Social Security check to make ends meet. Yet she insisted her daughter, the youngest of her five children, go to college.

Martinez was a good student — she says she was the only kid in her third-grade class whose reports included a bibliography — and was accepted at the University of California at Irvine, where she continued to do well. But it wasn't until a new professor arrived on campus that she recognized the range of possibilities before her.

"He was Chicano, and I thought, 'I never had a professor who was like me before,'" Martinez recalls. "So I took the class — it was on immigration — and I loved it. It was about my own family's history, and that was enlightening."

The professor became her mentor, allowing Martinez, who did not own a computer, to work in his office at night. He encouraged her to apply to graduate school and later became her PhD adviser.

So when you ask Martinez, an assistant professor in Women's & Gender Studies, about the importance of a diverse faculty, she points out that it was her own exposure, however small, to diversity on a college campus that helped her reach her goals.

"I can be a role model, not just for minority students, but for all students," she says. "They can see somebody who can speak to them from a perspective they may not be familiar with and they can learn something that they might not be able to learn from somebody else."

Putting more underrepresented minority faculty in MU's classrooms has been a priority of the Chancellor's Diversity Initiative since it was launched in 2006. This fall, the effort paid a record dividend, when MU welcomed 15 minority faculty — eight Hispanics and seven African-Americans — to campus. That's more than double the previous high of seven, in 2007.

Moreover, MU hired seven women in the science, technology, engineering and mathematics fields this year — as many as the previous three years combined.

Leona Rubin, chair of MU's Faculty Council, said increasing diversity will make the university stronger while offering students a broader perspective on the world beyond the campus. "Direct, personal experience with people of different races, religions or cultures facilitates respect and understanding," she said, "and is essential as the world becomes smaller."

Roger Worthington, MU's chief diversity officer, said that for years, the university was only hiring enough new minority faculty members to replace those who were leaving. Since being appointed assistant deputy chancellor for diversity in 2006, Worthington has been working with deans, department chairs and search committees across campus to take a more aggressive approach to recruiting minority faculty.

"One of the things we have tried to overcome is the notion that if you place an ad you'll get an adequate pool of applicants," Worthington said. "Placing an ad is a very passive way of developing an applicant pool."

Worthington has been urging more direct contact with prospective hires. That includes telephone calls, chatting up qualified candidates at conferences and written invitations to specific candidates to apply for a position at MU.

"Sometimes people might know somebody at another institution and they'll call and say, 'Hey who are the stars in your doctoral program who are interested in coming out and being faculty? Can we get them to apply?'" Worthington said, "Sometimes people meet talented graduate students at conferences and start to develop relationships with them earlier in their careers."

That kind of personal outreach helped bring Noelle Witherspoon Arnold to MU from Louisiana State University. Arnold had made contact with academics at MU's Educational Leadership and Policy Analysis program, in the College of Education, at academic conferences. When program chair Jay Scribner reached out to her about joining ELPA, Arnold did some research and liked what she discovered.

"For me, it was the amount of support," said Arnold, whose research interests include religion, spirituality and ethics in education. "To have your work valued, I felt that here."

Arnold also said MU's commitment to attracting minority students, especially African-Americans, and improving the campus climate for minority groups played into her decision to join the faculty this fall. "When I visited the Black Student Center, it's just a beautiful facility," she said. "It may not mean anything, but in many places, something like that would be an afterthought. It caught my attention."

Indeed, Worthington said that the record increases in minority student enrollment the past few years have helped efforts to recruit minority faculty. "I think the two probably build on each other pretty nicely," he said. "When faculty are considering MU as a potential place to work and they do a little research and see stories like that, the institution gets a reputation for being a more welcoming place.

"And it can work both ways," Worthington continued. "As we make advances in minority faculty, hopefully students will take note and want to come here."

But while the numbers suggest MU's efforts to recruit more minority faculty are working, it needs to do more to retain those faulty members once they've arrived, said Robert Weems, professor of history and a former associate vice chancellor of equity. Weems, author of a 2003 paper published in the Journal of Black Studies, "The Incorporation of Black Faculty at Predominantly White Institutions," said the reasons why so many black faculty have left MU in recent years — 10 since 2006, according to Worthington — needs to be addressed.

"It's one thing to recruit a faculty member, it's another to retain them," Weems said. "One problem is, I don't think there has been a systematic effort to ascertain why they are leaving. There's a reaction to say, well, salaries are low or it's Columbia. But if it was that bad, they wouldn't have come here in the first place."

Arnold and Martinez echo Weems' concerns about retention. Arnold said that, because there seems to be a healthy dialogue between faculty, staff and students about the importance of a diverse campus, she's optimistic.

Martinez said the Chancellor's Diversity Initiative and events like the upcoming Diversity Summit, Oct. 20-21 at Memorial Union, is proof of MU's commitment to creating a healthy, inclusive environment on campus. The high number of minority faculty hires this year is an opportunity, she said, to address what she sees as the low number of black and Hispanic professors who are on the tenure track.

"Having the cohort that we have this year is an important step," she said. "We have to work on retention and figure out why people leave and why people might not make it past the assistant professor level. But it's on people's radars, and that's important."

Worthington acknowledges that retention issues have created a "revolving door" for minority faculty. But he's excited about the increase in new black and Hispanic hires at a time when other universities are competing for top minority talent in order to diversity their own campuses. He believes that the trend here will continue.

"I think this is just the leading edge of our efforts beginning to pay off," he said.

Modern stone-age research elevates dinosaurs

PREHISTORIC ANATOMY

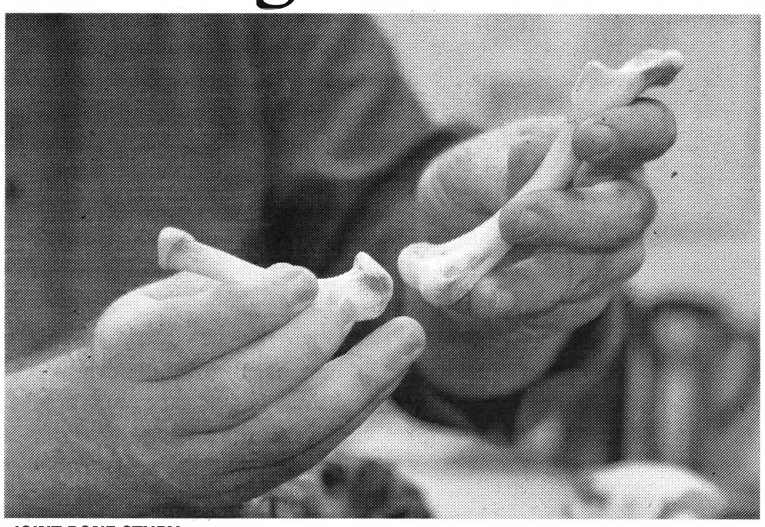
"Cartilage correction" offers new data on height

Researchers at the University of Missouri and Ohio University have found that dinosaurs may have been considerably taller than previously thought. In a study published last week, Casey Holliday, the lead author and an anatomy professor in the MU School of Medicine, found that thick cartilages between the joints would have added significant height to certain dinosaurs.

Holliday and Lawrence Witmer, a professor of anatomy at the Ohio University College of Osteopathic Medicine, studied ostriches and alligators, the closest, modern-day relatives of dinosaurs, and then studied the fossilized limbs of different dinosaurs including Tyrannosaurus rex, Allosaurus, Brachiosaurus and Triceratops.

The team determined that the lengths of alligators' and ostriches' limbs included between 6 percent and 10 percent cartilage.

Using a "cartilage correction factor," Holliday determined that many theropod dinosaurs, such as Tyrannosaurus, were only modestly taller, while ornithischian and sauropod dinosaurs, such as Triceratops and Brachiosaurus, may have been 10 percent taller or more. For example, Brachiosaurus, previously thought to be 42 feet tall, may actually have been more than a foot taller with the additional joint cartilages.



JOINT BONE STUDY Dinosaurs were taller than previously thought, say researchers from the University of Missouri and Ohio University. The team studied alligators and ostrichs, the closest modern-day relative of dinosaurs, and found thick cartilages between the joints that would have added significant height to certain prehistoric creatures.

"The ends of many dinosaurs' long bones, which include leg bones such as the femur or tibia, are rounded and rough and lack major articulating structures like condyles, which are bony projections," Holliday explained. "This indicated that very thick cartilages formed these structures, and therefore the joints themselves. This study offers new data into how and why reptiles, and mammals, such as humans, build their joints with such different amounts of bone and cartilage."

Witmer said the dinosaur bones mounted in museums don't accurately reflect what the animals actually had in their bodies because the cartilage caps were lost along with the other soft tissues. Analyzing the bones inside dinosaurs, including the cartilage, could shed light on how the creatures moved. While an increase in limb length typically means a taller dinosaur, it could also mean a faster or slower animal, depending on how it affects the skeleton.

"Knowing how much cartilage was lost allows us to better restore the structure of a living dinosaur bone, which then allows us to better understand how dinosaurs moved and lived," Wimer said.

Dinosaur bones are different than the bones of mammals, including humans. Mammals have small protrusions at the end of each bone that connect it with another bone at a joint, like two puzzle pieces. The bones are linked by a very thin layer of cartilage, which provides padding in the joint, but often wears down leading to painful conditions like arthritis. Dinosaur bones have rounded ends and no obvious way to connect one bone to another. Soft tissue like cartilage and muscles leave marks on bones, which enable paleontologists to make sophisticated determinations about a dinosaur's physical attributes.

Alligators have smooth, rounded bones while young ostriches have rough surfaces on their bones that mark where blood vessels feed large cartilaginous structures in the joints. Both characteristics are similar to dinosaur bones.

Holliday's team dissected the alligator and ostrich bones and made casts of the bones with cartilage. The team then removed the cartilage and compared the bones to the casts. The bones without the cartilage were 4 to 10 percent smaller. From the evidence, Holliday and his research team concluded that certain dinosaurs had a significant amount of cartilage, and thus, were taller than original estimates. In the future, Holliday hopes to collaborate with MU veterinarians to study how and why different vertebrates build their joints with different proportions of cartilage and bone.

Holliday and Witmer led a research team that included Ryan Ridgely from Ohio University and Jayc Sedlmayr from Louisiana State University. The National Science Foundation and Ohio University provided funding for this research.

Noted science educator to be honored with memorial service

REMEMBERING A COLLEAGUE

Sandra Abell, who died in August, was committed to better science teaching

If you want a sense of how Sandra Abell changed the way people thought about science education at the University of Missouri, stop by a monthly gathering called "The Abell Conversations About College Science Teaching."

When Abell started the group almost a decade ago, it attracted no more than a handful of regulars to Tucker Hall. Today, several dozen faculty members and doctoral students from every science-related department and school on campus drop by the Life Sciences Center to talk about how to become better science teachers.

Abell, a member of the faculty in the Department of Learning, Teaching and Curriculum and the Division of Biological Sciences, will be remembered at a memorial service at 2 p.m. Saturday in the Reynolds Alumni Center. An internationally recognized scholar and director of the University of Missouri Science Education Center, or MUSEC, Abell died Aug. 24 of ovarian cancer at her home in Columbia. She was 54.

"Her main mission was to influence how science was taught, and she did a lot to make that happen," said Mark Volkmann, Abell's husband and an associate professor of science education in the Department of Learning, Teaching and Curriculum. "She lived it in a lot of ways."

A native of St. Louis, Abell began her career as an elementary teacher in Norway, Iowa, where she taught science and reading to fifth and sixth graders. After receiving a master's in gifted and talented education from the University of Northern Colorado-Greeley in 1981, she taught in Iceland, at the Department of Defense Dependents School, and in Albuquerque, N.M., where she also pursued her interest in the life sciences at the University of New Mexico.

She returned to the University of Iowa and, in 1988, combining her dual interests in science and education, she earned her doctorate in science education.

Abell loved science, Volkmann said, but her passion was teaching. Abell recognized that to really teach science — to inspire a love for it rather than simply transmitting facts and theory — required connecting scientific knowledge to students' experiences with the natural world.

"Often what happens in a science classroom is that students don't connect scientific explanations to the world that's being explained," said Volkmann, who came to MU with Abell from Purdue University in 2000. "Sandi wanted teaching to begin with the experience of the students and connect that to the explanations she was helping them to understand."

By the time she arrived at MU, Abell had expanded her interest beyond elementary science education to the secondary and college level. As director of MUSEC, she developed new programs for recruiting and preparing high school science and math teachers, while helping science doctoral students improve their teaching. She also worked with faculty on funded projects aimed at developing new approaches to science teaching.

Kathryn Chval, an assistant professor in the Department of Learning, Teaching and Curriculum, remembered meeting Abell for the first time when Chval interviewed here in 2003. She describes Abell as a "powerhouse" with a strong intellect and a determination to make science education a priority at MU.

"Her ability to build relationships with people and promote research and teaching in science education kind of transformed the culture in many ways," Chval said. "At most institutions, it's really hard to establish communities across colleges and bring researchers together in different fields. Sandi was really good at that."

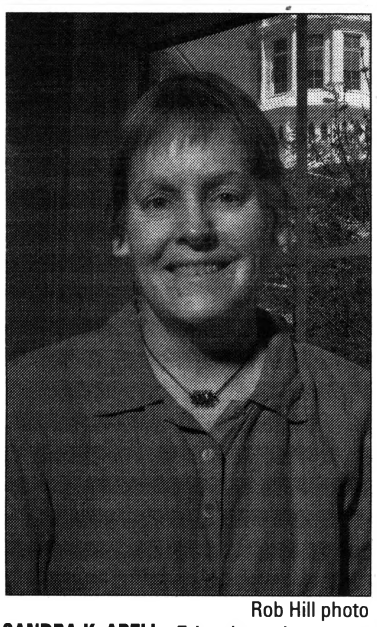
Pat Friedrichsen, whom Abell brought to MU on a joint appointment in biological sciences and the Department of Learning, Teaching and Curriculum, said Abell was an important mentor to junior faculty at MUSEC and held monthly meetings, dubbed the "Abell Research Group," at her home.

"Graduate education held a special place in Sandi's heart," Friedrichsen said. "She thought of her students as her 'academic children.'"

Deborah Hanuscin, associate professor in Learning, Teaching and Curriculum, said she came to MU, despite receiving better offers elsewhere, because of Abell. "The kind of mentoring she provided to me was priceless, and the community she created here among scientists and science educators is unique," Hanuscin said. "I know of no other institution with such an extensive interdisciplinary network in science education."

A prolific researcher, Abell presented more than 115 papers at national and international conferences, published dozens of journal articles, wrote 14 book chapters and edited three books. One, the Handbook of Research on Science Education, is aimed at policy-makers, as well as educators, and is considered the largest and most comprehensive resource on science-education research.

In 2006, Abell was named a Curator's Professor at MU, one of the campus's highest honors. She also served as president of the National Association for Research in Science Teaching and won numerous awards for mentoring graduate students, teaching and scholarship.



Rob Hill photo

SANDRA K. ABELL Friends and colleagues will remember the late director of the University of Missouri Science Education Center at a memorial service at 2 p.m. Saturday at the Reynolds Alumni Center.

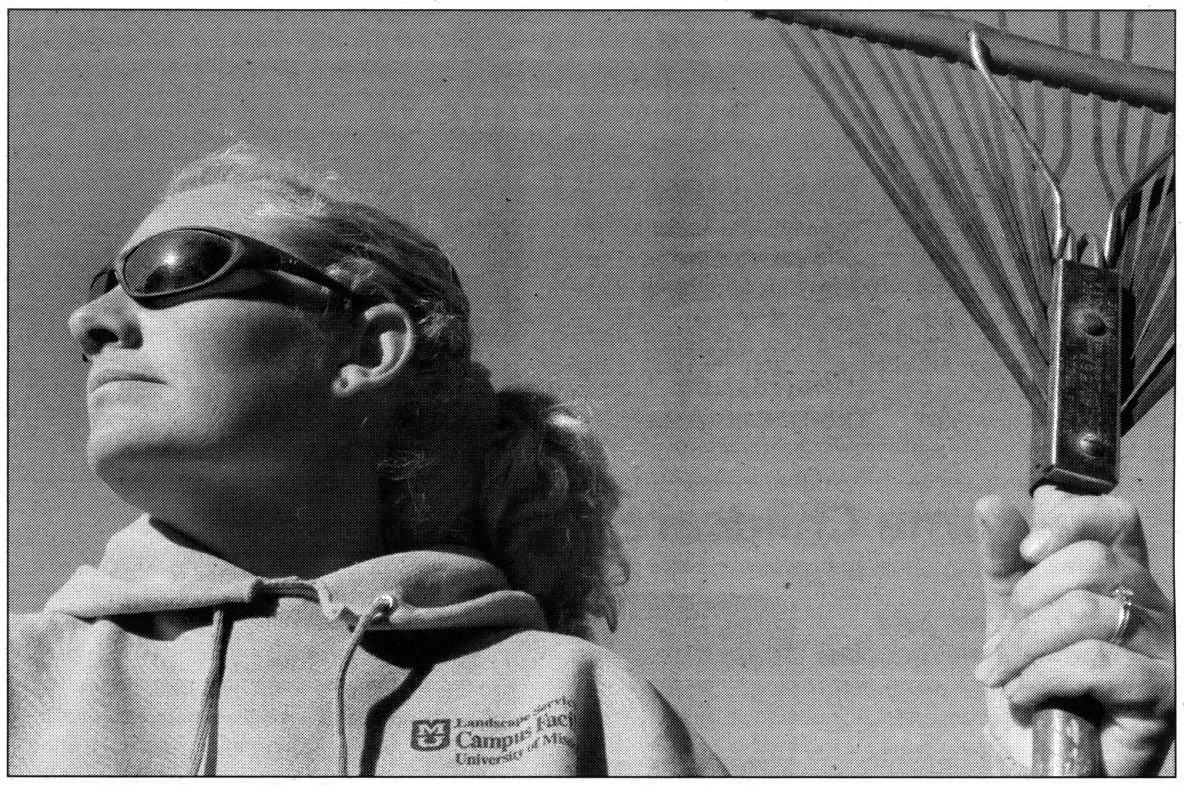
Shortly before she died, colleagues approached Abell about establishing a scholarship in her honor. Volkmann said Abell asked that the proceeds go to doctoral students in science-related fields who wanted to teach, and who exhibited a strong desire to do it well.

"This was something that was really important to her," Volkmann recalled. "Part of her work was to change scientists' way of thinking and to influence their teaching in reform-minded ways."

Landscape artistry on a campus canvas

CAMPUS FACILITIES

Katrina Monnig has zero tolerance for weeds



KEEPER OF THE GREEN
Among her duties as groundskeeper with MU's Campus Landscape Services, Katrina Monning maintains the "triangle gardens" on the north side of Jesse Hall. "I like being around people," says Monning, who joined the Landscape Services crew in 1999. "I hate snakes."
Shane Epping photo

If you get about campus, you've seen Katrina Monnig, a groundskeeper who oversees the care of plants in some of Mizzou's prettiest spots.

Hose in hand and hair held back in a thick, blonde ponytail, Monnig copes with the scorching heat, high humidity, occasional downpours and insects that accompany working outside in Missouri's summers.

Even with allergies to mold, grass and other growing things, Monnig can't imagine being confined to an office.

"It's a great job," she says.

Weekly medical shots temper the sniffles and sneezes induced by working in an allergenic environment. And Monnig has acclimated so well to the sweltering summer temperatures that an air-conditioned room at 78 degrees seems uncomfortably chilly to her.

She is one of five female groundskeepers and designers on the 40-person staff of the award-winning Campus Facilities Landscape Services crew.

Three to five groundskeepers maintain Mizzou's gardens of annual and perennial plants that draw fields of admirers. Visitors and parents in tour groups offer compliments; strolling professors and staff members pose questions; and students nod or smile as they walk to classes.

"I like being around people," Monnig says of those daily interactions, which often center on questions about plant care. Most frequently asked: What's the best time to prune/ fertilize plants?

Assistant Superintendant Charles Paxton of Landscape Services compliments Monnig's "zero tolerance" for weeds and calls her a "wonderful ambassador" for campus.

Monnig's work zone on Francis Quadrangle includes two "triangle gardens" on the north side of Jesse Hall, where variegated green and white grasses stand tall behind masses of coleus the color of Jesse bricks. Mounds of golden mums front the stunning, weed-free display.

A woman stops briefly with a question about the coleus: "What are these plants? Are they hard to keep alive?" Monnig identifies the plants and assures her the deep burgundy beauties require minimum care.

"Beautiful, as usual," another walker calls out with a wave as he passes. She recognizes him as a frequent commenter on the colorful displays.

Administrative Associate Linda Garrison of Art History and Classical Archaeology has admired Monnig's green thumb for years and stops often to chat and thank her. "I appreciate everything she does," Garrison says. "The campus is beautiful. We're so lucky to have that."

Every job has its drawbacks, but can you imagine these? There's heavy work, plant disease, insects, critters and other complications behind the picture-perfect beds of plants.

Such perfection requires endless weeding. Monnig shuns gloves for the chore, preferring to work by feel. With bare hands, she reaches into plants, checks the woodiness of stems and knows what plant material to pull. Of course, the possibility of running a sliver up a fingernail lurks as a painful side effect.

Other aches and pains come and go with the seasons. Mulching results in sore arms, and planting, which runs from spring through November, stresses the back. In addition to perennials, the groundskeepers plant several thousand annual flowers each year for summer and fall color. Then they mulch tens of thousands of square feet.

Rain is just an inconvenience, not a showstopper. Groundskeepers typically work through showers. Storms, however, drive them into Greenhouse 1 by Schlundt Hall to pot and prune the tender species being prepared for winter vacations.

Those coddled "tropicals" — ferns, bromeliads, colorful crotons, elephant ears, banana and palm trees — thrive in the steam heat and emerge as larger versions of themselves for summer residence in container gardens near Memorial Union, Jesse Hall, Ellis Library and Speakers Circle.

But there's no vacation for Monnig and colleagues at summer's end. "You'd be surprised how hard Katrina works in winter," Paxton says. Pruning chores amp up for trees, shrubs and perennials, and the inevitable storms require 12-hour shifts for snow and ice removal, starting at 5 a.m. The hardest part, Monnig says, is the cold.

For her own sake, Monnig fights mosquitoes and heavy doses of sun, and watches for aphids, white flies, mold and rust on plants. She's always alert for snakes.

Although snakes are relatively

SEE MONNIG on Page 8

MONNIG from Page 7

rare on the grounds, an encounter with a copperhead one day at Providence Point rendered Monnig speechless as it crawled over her boot. Less threatening are the harmless bull snakes that lunge at her as a territorial warning.

"I hate snakes," she says.

Small armies of moths fly out from mounds of mums as Monnig sprays fertilizer. They're no big deal even when they land on her face, but she stays a healthy distance from hibiscus plants, known for drawing ants. She learned the nesting habits of ants the hard way after the tiny pests once nearly covered her.

Because naughty squirrels nibble on the rubber irrigation lines, Monnig carries splices to make repairs. Like the rest of the Landscape Services crew, she ignores the big groundhog that lives in Peace Park, the oldest undisturbed land on the main campus.

Monnig joined Landscape Services in 1999 — the year MU's campus became the Mizzou Botanic Garden. She had earned an award of achievement and an advanced award after completing horticulture course requirements at State Technical Institute at Memphis, Tenn.

She attributes her plant passion to an aunt who was a superintendant at Shelter Gardens, where Monnig worked as a volunteer after finishing high school.

Monnig and her husband, Jason, a carpenter with MU maintenance, met at work when Katrina was dead-heading pansies in the Eighth Street Circle bed, and now they commute together from the house they built near Fayette.

Their new home includes an expansive lawn and nearly two acres of vegetable gardens. Soon they hope to install flowerbeds, which are on hold while Monnig finishes landscape designs for private clients.

Her other interests keep her indoors. She teaches piano lessons weekly and works monthly at a pet store and as assistant to a caterer. As a volunteer, she serves on MU's Staff Advisory Council and is president of an area chapter of the Missouri Federation of Music Clubs.

— *Story by Nancy Moen.*

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BUDGET from Page1

Foster acknowledged faculty and staff concerns over the budget situation, as well as fears that surround a review of 75 "low-producing" degree programs that is due to the state by Oct. 21. He said there are "currently" no plans to cut jobs based on the review, which is aimed at programs that fail to produce a three-year average of 10 undergraduate degrees, five master's degrees and three doctoral degrees per year.

At last week's Faculty Council meeting, reaction to the review was mixed. Chair Leona Rubin said the list of low-producing programs has been available for some time and that other criteria would be considered before a program was eliminated.

But Nicole Monnier, an associate teaching professor in Russian and German Studies, said that the short timeline for providing written justification for a program's future existence is "offensive."

"Things have stopped in my department for three days because we've had to gather data," she said.

Other council members said MU should look for other areas to cut expenses.

"There are lots of places where there are inefficiencies on this campus, but this list is just 180 degrees in the wrong direction of looking for them," said mathematics Professor Stephen Montgomery-Smith.

Foster has asked administrators to consider several measures to cut costs, including combining degree programs, developing new strategies to increase enrollments, and collaborating with other MU departments, system campuses and state universities.

The provost added that ongoing projects are already helping to shape MU's future, such as the shared services initiative, which targets redundancy in administrative functions; Mizzou Advantage, which promotes interdisciplinary research; and the use of classroom technology to increase distance learning.

But, he said, those efforts should be considered only the beginning.

"This is an exceptional time," he said, "and doing more with less is trending as the norm, not the exception, and we need to structure these efforts in a systematic and holistic way."

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