University of Missouri

Mizzou Weekly

March 24, 2011 Volume 32, No. 25

Good chemistry: Water specialist forms tight bonds at MU

READY TO HELP Bob Johns keeps the university's water supply safe as MU Energy Management's water chemical specialist. When he's not on the job, Johns is volunteering in the community, teaching English to international students or helping low-income families prepare their taxes. "If anybody needs help," he says, "well, I just go help." Shane Epping photo

STAFF PROFILE

For Johns, volunteering is part of life’s mix

Bob Johns has always made the most of a challenge. During the Vietnam War, when his parents advised Johns to enlist, he became a medic and was trained by the Army’s top health-care professionals.

During undergraduate enrollment at the University of Missouri-Rolla, when a professor recommended science courses, Johns signed up as a chemistry major, graduated with a life-sciences degree and eventually earned top-level water operator and distributor certification.

Now, as MU Energy Management’s only water chemical specialist, a call about a water leak or a water-quality issue sends Johns into trouble-shooting mode.

“I love working here,” says Johns, an MU Power Plant staff member for 25 years. “I’m always around a phone, and if I get a call I can be here in a second.”

The same infectious excitement fuels Johns’ volunteer work. He has given his time to Habitat for Humanity, the Salvation Army and the Ronald McDonald House. He helps MU’s international community with English by leading conversation groups in an International Friends program, learning Mandarin and Russian for good measure.

When MU and the Internal Revenue Service offered tax-preparation training for volunteers, Johns took the course. He now spends tax season up to his elbows in paperwork as the most in-demand volunteer for two programs on campus.

“He’s a man of great intellect, and he uses it for the betterment of other people,” says Judy Todd, MU’s nonresident alien taxation specialist. “He embodies what Mizzou embraces. It isn’t just a job; it’s a community.”

Johns shrugs off his generosity, saying the undertakings are “fun” or “interesting.”

“If anybody needs help,” he says, “well, I just go help.”

Johns’ job provides frequent chances for him to expand his knowledge and his network. Every month he takes water samples from 40 locations across campus for testing. He checks MU’s five wells and inspects the power plant’s boilers and cooling towers daily.

“If something goes wrong here,” he says, “I take it personal.”

His diligence has paid off: MU hasn’t had a reportable water violation in more than two decades.

Because the campus houses major hospitals and research facilities, including a nuclear research reactor, MU’s water has to meet standards set by the Missouri Department of Natural Resources, the Environmental Protection Agency and the Nuclear Regulatory Commission. The newest regulations require a chemical monitoring system that eliminates 99.99 percent of the possibility of contamination by viruses or bacteria. MU enforces even higher standards.

Johns once performed most aspects of his job by hand. Now, the power plant’s water-monitoring system connects fiber-optically to campus water supplies. Chemical levels, flow rates, reservoir levels, pump pressure are all monitored by computers, automatically updating the numbers every six minutes and signaling alarms if variances occur.

But that doesn’t eliminate the need for Johns’ expertise, notes Don Harter, operations supervisor at the MU Power Plant.

“Even though we’ve automated a lot of the chemistry, you still have to understand the water-treatment process,” Harter says. “Bob is a real professional. You get him in a meeting and people start bringing up what the issues are, and soon his gears are rolling, thinking on a level that other people aren’t.”

Johns’ water knowledge and intellectual curiosity benefit MU operations outside the plant as well. When University Hospital had problems with spotting on sterilized equipment, for example, Johns helped identify the cause — it was the equipment, not the water. When a renovated wellhouse had chlorine evaporation problems, Johns used his chemistry training to figure out that the building temperature, set to 50 degrees to save on heating costs, was too low for the chlorine to volatilize.

“I guess I do things right,” Johns says, “because everybody invites me back.”

With tax season now under way, Johns’ wife, Joyce, a nurse at the Keene Family Medicine Clinic, won’t see as much of him. He’s helping international scholars and visitors with their taxes, and working with MU’s Volunteer Income Tax Assistance (VITA) program, a service MU extension offers to help low-income families with tax preparation.

Johns says he enjoys meeting people from all over the world, walking them through complicated regulations and helping them secure a good outcome.

“The whole process is intimidating to start with, so I try to put them at ease,” Johns says. “Sometimes it’s intense, but it’s fun.”

— *Karen Pojmann*

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MU researcher's $6.6 million study could lead to better corn plants

GENOME RESEARCH

Studying the transfer of sugars in plants

A University of Missouri researcher's study of the genes that regulate the transport of sugars in plants could someday lead to increased yields, larger, more drought-resistant plants and easier biofuels production.

David Braun, an associate professor in the **Division of Biological Sciences** (http://www.biology.missouri.edu/) in the College of Arts and Science, has received a $6.6 million grant from the National Science Foundation to lead a research team to study the genes that control the movement of carbohydrates in corn. Plants harvest energy through the process of photosynthesis, using sunlight to produce sugars. However, little is known about the genes that regulate the transport of sugars to build different parts of the plant.

"When corn produces carbohydrates in the leaves, it transports sucrose, a type of sugar, to other parts of the plant, including the ears and roots," said Braun, a member of the **MU Interdisciplinary Plant Group** (http://ipg.missouri.edu/). "By understanding how the movement of carbohydrates is regulated, we may be able to engineer plants that better meet the needs of farmers and consumers."

Braun said that the carbohydrate transport process for corn is similar to a highway system. Sucrose produced in leaves travels "down the road" toward an eventual exit, but it has points where the traffic does not flow properly and the "exit ramp traffic" backs-up into the roadway. Braun plans to find these bottlenecks, so future research can focus on increasing traffic flow towards these "exit ramps," such as the root system or ears of the plant. Getting more energy to these plant organs may enable the plant to grow larger or hardier.

In the future, researchers may be able to use this knowledge to engineer plants with certain qualities. For example, researchers could attempt to improve carbohydrate flow to ears to increase yield, or to the roots to make the plant more drought resistant.

"Carbohydrate transport is one of the least understood but most important factors in plant development," Braun said. "This research has the potential to have a great effect on corn farming, not just for increasing yield, but on so many other aspects."

Braun thinks this research also may enhance the production of biofuels. In addition to carbohydrates being transported throughout the plant for growth, some sugar is converted to cellulose, an organic compound that comprises the plant cell walls. Cellulose is more difficult for processers to convert into biofuel than sucrose. Braun's research may indicate ways that plants could be modified to store more of the carbohydrate as sucrose. With more sucrose in the plant, biofuels could become cheaper to produce, leading to increased use.

Braun leads a team of researchers from the University of Florida, Purdue University, the University of Nebraska-Lincoln, and St. Michael's College in Vermont. Funding for the project was provided by a grant from the Plant Genome Research Program of the National Science Foundation.

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Making government accessible

OPEN MISSOURI

Website tracks databases

Despite the enormous amount of information available on the Internet, many government records and data are not readily accessible to citizens and journalists. In an effort to improve the transparency in state and local government, David Herzog, a 2010-11 Donald W. Reynolds Journalism Institute Fellow, has created Open Missouri, a website that helps make more Missouri government data available to citizens, journalists and businesses.

Open Missouri has located more than 135 Missouri state government databases that do not exist anywhere on the Internet. Herzog says one of the most important aspects of the Open Missouri project is that it simply raises awareness that the information exists.

“It is really difficult for journalists and citizens to figure out exactly what data government agencies collect,” Herzog said. “We are hoping to raise awareness about this wealth of data and make it easy for people to access it.”

Open Missouri lists and describes dozens of offline databases. In its next phase, the site will make it easy for users to submit Sunshine requests to the government agency that holds the information. Open Missouri will create an automatic email Sunshine request addressed to the appropriate agency.

Herzog hopes this website will be a model for other states to open their records as well.

“We want to not only inform Missourians about all the data that exists, but also inspire journalists and citizens to seek out and use this information for the benefit of everyone,” he says.

The Open Missouri website, which launched March 17, is free and open to anyone at openmissouri.org.

Herzog, the academic advisor for the National Institute for Computer-Assisted Reporting, is the author of the book “Mapping the News: Case Studies in GIS and Journalism.” Before joining the Missouri School of Journalism in January 2002, Herzog spent five years as an investigative reporter at the *Providence Journal* in Rhode Island, where he used computer-assisted reporting to cover public corruption. Earlier, he was the editor for computer-assisted reporting at *The Morning Call* in Allentown, Pa., and a business reporter for *The Baltimore Sun*.

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Diversity course proposal moves forward

The UM Faculty Council has agreed on a proposal to require students to take a three-hour diversity-intensive course before graduation.

According to the proposal, diversity-intensive courses should focus on understanding differing social groups and explore social inequalities related to ethnicity, race, class, gender and religion. A subcommittee of the Committee on Undergraduate Education, made up of “qualified faculty members” from at least three MU colleges, will be created to develop criteria for courses that will be credited as diversity-intensive courses.

Faculty and student groups have been debating a diversity requirement since 2004. The proposal is subject to approval by the general faculty, which meets April 19.

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Construction ahead

Virginia Avenue at the intersection of Monk Drive will be closed April 15-May 23 while workers relocate the steam, stormwater and sewer lines beneath the VA Hospital parking lot.

Access to the Missouri Orthopaedic Institute and the south side of Parking Structure 7 will be from Hospital Drive and the east end of Virginia Avenue. All entrances to Parking Structure 7 and the MOI, including the patient drop-off, will remain open.

The infrastructure upgrades are necessary to support Missouri Orthopaedic Institute, the new patient care tower and other buildings on the southeast end of campus.

An electrical project on Champions Drive, near the intersection of Stadium Boulevard, will affect traffic March 28-April 4. Two-way traffic will remain at all times but drivers should be cautious.

Much of this year's spring and summer construction projects will affect roadways near the MU Health Care campus. Look for a summer construction projects map in the May 5 issue of *Mizzou Weekly* or at **www.cf.missouri.edu (http://www.cf.missouri.edu/pdc/)**.

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Planning for retirement

The UM Office of Human Resources is offering a series of seminars to help faculty and staff begin planning for retirement.

Aimed at employees who are no more than 10 years from retirement, the seminars provide an overview of financial aspects of retirement, including estate and financial planning, Social Security and an overview of the UM Retirement, Disability and Death Benefit Plan.

The seminars will be held at 5 p.m. April 7, 14, 21 and 28 at the Woodrail Centre, 1000 W. Nifong, in Building 7, Suite 210.

To sign up, visit **umsystem.edu/ums/hr/benefits/seminars/ (http://umsystem.edu/ums/hr/benefits/seminars/)**.

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