BIOPHILES

Biological Sciences | Missouri S&T | Spring 2018

S&T OBTAINS FIELD RESEARCH STATION

page 2

LILLY GERMEROTH: A PASSIONATE CONSERVATIONIST

page 5

iGEM TAKES SILVER

By designing a new protein for a common plant, Missouri S&T students may be able to identify contaminated groundwater in the environment to assure homeowners their drinking water is clean from pollutants like industrial solvents.

Missouri S&T's chapter of iGEM, the International Genetically Engineered Machine Foundation, presented its research findings as part of the iGEM 2017 Giant Jamboree held Nov. 9–13 in Boston. The S&T team competed with over 200 other collegiate teams from around the world to earn a silver medal, for the second time in the team's history.

At the competition, the team gave an oral presentation of its research project to a panel of judges and exhibited a poster for review. Teams were then individually ranked based on their work. The competition was not head-to-head, so theoretically every team competing could earn the highest rating available.

The Missouri S&T project, titled "Detectable Bio-Sensing Processes in Arabidopsis," used thale cress (Arabidopsis thaliana), a common weed in Europe and Asia, as a model plant to biologically sense groundwater contaminated by the chemical trichloroethylene.

The team designed a protein that binds across a plasma membrane in the plant's cells to trap trichloroethylene. The plant detects the chemical contaminant and then turns "colorless" to indicate exposure. These plants could be planted around factories to verify that proper decontamination standards are being met or could be house plants to assure the cleanliness of drinking water.

The iGEM Team is one of 18 student-run teams in Missouri S&T's Student Design and Experiential Learning Center (SDELC). The SDELC, housed in the Kummer Student Design Center, provides real-world team-based operations, including computer design laboratories, a manufacturing shop, office space and logistical support. Design teams mirror small start-up companies that plan large-scale projects, organize into departments, raise funds, communicate their ideas and solve open-ended design challenges. Most teams compete annually against other collegiate teams from around the country and the world. To learn more about the teams, visit **design.mst.edu**.

Ryan Baumann, a junior in biological sciences from St. Louis; **Ben Bleitz**, a senior in biological sciences from Eureka, Missouri; **Kent Gorday**, a senior in physics from Foristell, Missouri, and **Erin Nischwitz**, a senior in chemistry from Wildwood, Missouri, represented Missouri S&T's iGEM team in Boston.

HONORING **NORD GALE** ON DARWIN DAY

Darwin Day is an international event when biologists around the world gather to celebrate their achievements in life sciences. This year, on Feb. 12, it was also a day to honor **Nord Gale**, founder of Missouri S&T's biology and life sciences academic disciplines.

The celebration included a luncheon at Hasselmann Alumni House followed by presentations, anecdotes and individual comments from alumni, faculty, administrators and students, all commemorating Gale's 50 years in Rolla.

Gale joined the faculty in 1968 and reintroduced biology to the university after S&T's biology curriculum was abandoned in the 1940s. The initial courses were offered as part of the chemistry curriculum. Eventually, a life sciences department was formed in 1983.

Gale served S&T for 32 years. He was life sciences chair from the department's inception until his retirement in the 1999–2000 academic year. Under his leadership the department grew from a faculty of only himself and his early partner, **James Hufham**, to 11 full-time academic positions.

Upon coming to S&T, Gale's research area was in bacterial physiology, but he soon became involved in research on heavy metals in aquatic organisms in Missouri's Lead Belt. He was well known among rural Missouri residents for his efficient method of sampling streams and ponds by "electrofishing."

Gale was a pioneer in engaging undergraduate students in research. He was rarely seen working on any project without a team of students nearby, whether in the field or lab.

During his time at S&T, Gale received 18 Outstanding Teaching Awards, the Governor's Award for Excellence in Education and was named Curators' Distinguished Teaching Professor. One of Gale's final accomplishments before retiring was writing the proposal that was ultimately successful in establishing a graduate biology program.

DEAR ALUMNI AND FRIENDS

Welcome to the 2018 Biophiles newsletter. I am happy to be the newest member of the biological sciences faculty, taking over the role of department chair for this vibrant and rapidly growing program. We are so proud of the accomplishments of our alumni, faculty and students, and we wish to tell you all about them!

Let me introduce myself. I grew up in the St. Louis area, and I have family living in the Ozarks region. I earned my bachelor's degree from Drury University in 1992 and my master's degree from Saint Louis University in 1994 before completing my Ph.D. at Virginia Tech in 1998 where I studied the genetics of Death Valley pupfishes. After a postdoctoral fellowship in Drosophila species population genetics at Stony Brook University, I was appointed to my first faculty position at Southern Illinois University–Edwardsville. There, I built an NSF-funded research program in fish population genetics and evolutionary ecology. I served as department chair for the last four years before joining the S&T faculty in Rolla in 2017.

Many attributes of the program and the campus attracted me to this position. First among them is the emphasis on quality undergraduate education and the extraordinary commitment of all our faculty to the research experience and professional development of our students. I am a big advocate for student research, having mentored many undergraduate and master's-level researchers myself. And for many years I have supported organizations and initiatives that promote the undergraduate research experience.

There are many challenges to maintaining excellence in our undergraduate educational program. Quality student research opportunities require strong, productive faculty research programs, which require a sustained investment of resources. The improvement of our facilities through the completion of the interdisciplinary Biosciences Complex project remains an important need for the department, and ongoing renovations to Schrenk Hall will add about 5,000 sq. ft. of much-needed lab research space. The university is working hard on our behalf to make the completed Biosciences Complex — which will include a new, state-of-the-art building for research labs and classrooms — a reality.

We are also excited about the progress of the S&T Field and Research Station, located about 20 minutes from campus in the Mill Creek Watershed, and we are in the process of hiring a founding director. We look forward to big, new opportunities for our students and faculty to engage in field-based research and education there.

I assure you that your support for the biological sciences program will be invested directly into our students by helping to fund student research initiatives, support opportunities for students to travel and disseminate their scholarly work, and to promote the great things we do in biological sciences on the Missouri S&T campus!

Warm Regards,

David Duvernell
Chair, Biological Sciences

IN THIS ISSUE

S&T OBTAINS FIELD RESEARCH STATION

Missouri S&T now has a field station in Phelps County for teaching, research and outreach activities. The biological sciences department is actively using the station which is also available to other departments and organizations.

In 2017, the university reached an agreement with the Missouri Department of Conservation (MDC) to use an historic, two-story log cabin near Mill Creek and the Bohigian Conservation Area. Surrounding the cabin is a 10-acre campus that includes several spring-fed ponds, access to Mill Creek and proximity to public lands of the MDC and Mark Twain National Forest.

The biological sciences department has already taught academic classes at the station and used it for field trips. The field station has also been used as a base for student research projects on ants and local streams and ponds.

"The field station is a great resource for students who can take several field classes based at the station in May," says **Dev Niyogi**, associate professor, biological sciences. "The local area is also a prime spot for research, including Mill Creek. This spring-fed stream stays cool and supports a blue-ribbon trout fishery that draws trout fishermen from far away."

The field research station has living quarters for about eight researchers or students, including a nice kitchen and educational space for teaching courses onsite. The campus hopes to add a larger wet lab and classroom building in the near future.

Missouri S&T recently received a planning grant from the National Science Foundation's program for Field Stations and Marine Laboratories. "We will develop a five-year strategic plan for the field station after meeting with other station directors here and making visits to their stations in Missouri and elsewhere," says Niyogi.

A group of seniors from biological sciences hosted an open house at the field station in October.

13TH ANNUAL UNDERGRADUATE RESEARCH CONFERENCE AWARDS

The 13th annual Undergraduate Research Conference at Missouri S&T was held on April 11 on campus, with a focus on oral and poster presentations. Students made 56 presentations in four research categories: arts and humanities, engineering, sciences and social sciences.

Biological sciences had an excellent showing, with students receiving awards in both categories:

Sciences oral presentation winners

- **First place — Alexander Ayres**, a senior in chemical engineering from Defiance, Missouri, for research titled "Effects of Phosphorylation on Dbf2," research advisor, **Katie Shannon**, associate teaching professor of biological sciences.
- **Third place — Madison Mara**, a senior in biological sciences from Rolla, Missouri, for research titled "Comparing Phenotypes of IQG1 Mutants," research advisor, **Katie Shannon**, associate teaching professor of biological sciences.

Sciences poster presentation winners

- **First place — Mason Donnell**, a senior in biological sciences from Willard, Missouri, for research titled "Investigating Cytokinetic Protein Homologs in Yeast," research advisor, **Katie Shannon**, associate teaching professor of biological sciences.
- **Second place — Madison Morris**, a senior in biological sciences from Tulsa, Oklahoma, and **Greg Evans**, a senior in biochemical engineering from Blue Springs, Missouri, for research titled "Altering the Behavior of Flies Using Optogenetics," research advisor, **Matthew Thimgan**, assistant professor of biological sciences.

First-place winners received a cash prize of $750, and second- and third-place finishers received $500 and $250, respectively. Congratulations to our winning students on doing such a great job!

ADVANCING THE NEW DRUG OF CHOICE: BIOACTIVE GLASS

As Group of 20 (G20) health experts met in 2017 to discuss the need for new antibiotics to combat drug-resistant bacteria, Missouri S&T researchers were looking to an unusual material — glass — to limit the spread of drug-resistant bacteria in humans. The glass is "bioactive," meaning it has an effect on living tissue. One type of bioactive glass developed at Missouri S&T is a cotton candy-like fiber used to speed the healing of chronic wounds.

Dave Westenberg, associate professor of biological sciences, is studying the anti-bacterial properties of this and other bioactive glasses to understand how they can potentially reduce the possibility of infection by drug-resistant "superbugs."

On Feb. 27, 2017, the World Health Organization (WHO) published, for the first time, a list of antibiotic-resistant families of bacteria that pose the greatest threat to human health. This list is designed to promote the research and development of new antibiotics to address growing global resistance to antimicrobial medicines.

The use of bioactive glass treatments could prevent the spread of bacteria. "The advantage of these glasses is that we don't see infections in wounds during the treatments," says Westenberg, who is also a research investigator in S&T's Center for Biomedical Research. "If we can prevent infections in the first place, we don't have to rely so much on antibiotics to treat infections."

Missouri S&T researchers are also looking at other uses for bioactive glasses. They include designing glass implant materials that could minimize infection, coating implant materials with glass or metal ions that help prevent introducing bacteria into the patient, and creating glass-coated surfaces for use in hospitals and nursing homes, where drug-resistant bacteria pose a particular threat.

The bioactive glass fibers were developed by **Delbert Day**, CerE'58, Curators' Distinguished Professor emeritus of ceramic engineering and founder of Mo-Sci Corp., a Rolla-based company that custom designs and manufactures advanced glass products.

Morgan Long and **Dalal Abduljaleel**, both biological sciences majors, recieved a Miner Tank Award for their proposal on "Borate Dental Impants" created in the BioDesign and Innovation class.

"WHAT IF ...?" STUDENTS STRETCH CREATIVITY AND ENTREPRENEURSHIP TO SOLVE REALISTIC BIOLOGICAL NEEDS

Science is creative in much the same way that art, music, or literature are — scientists must use their imaginations to come up with explanations that are well informed and not mere guesses — but there is no escaping the fact that they are ultimately products of the imagination.

In the fall 2017 re-designed BioDesign and Innovation class, six student innovation teams had the opportunity to create novel projects for relevant biological solutions by using their imagination to ask "What if ...?". **Julie Semon**, assistant professor of biological sciences and laboratory director for regenerative medicine, directed the course.

The students were allowed to work alone, with a partner, or in a group of up to three persons to apply the biological knowledge they've gained at Missouri S&T to an original innovation.

As they sought out-of-the-box solutions that would offer both health and economic benefits to society, students found inspiration from the exorbitant cost and lack of availability of certain current healthcare treatments. Their projects — some utilizing bioactive glass — included market evaluations, research designs, and costs of proof of concept. Although a new design was required, they were not required to perform proof-of-concept experiments, enter competitions or apply for patents.

On their own accord, several teams have already taken their concepts outside the classroom. To date, one team's post-design research has been funded by the Miner Tank, and another has partnered with BioSTL, a leading Midwest innovation center. Four teams plan to file patent disclosures or sell their products directly to companies, and most are looking for additional funding to advance their research.

The class is a testament to Missouri S&T's commitment to its mission to integrate education, research and application to solve the world's great challenges and its vision to be a leading technological research university for innovation and creativity.

The re-designed BioDesign and Innovation course was offered for the first time this semester from an innovation grant from the Center for Educational Research and Teaching Innovation (CERTI). CERTI provides faculty resources such as professional development events, educational research assistance, and observation and feedback of classroom teaching.

IT'S HARD TO EQUAL SEQL

Since 2004, Missouri S&T has been hosting the Science Education and Quantitative Literacy (SEQL) program on campus with funding from the Missouri Department of Higher Education.

SEQL is a professional development program to train teachers of elementary and middle school students in the use of inquiry-based methods for teaching mathematics and science. They use fun activities from an experienced instructional team to demonstrate how teachers can use the synergy between the two subjects to enhance student learning to meet grade-level expectations.

Dave Westenberg, associate professor of biological sciences, has co-directed the Missouri SEQL program since 2009. Science and mathematics faculty from Missouri S&T work together to ensure that both scientific and mathematical aspects of activities are emphasized. The program serves 40 or more teachers from south-central Missouri per project — more than half come from high-needs schools.

Participants receive three hours of graduate credit for the summer institute, a stipend for attending the workshop and follow-up meetings, math and science books and kits, and field-tested instructional materials, including classroom-ready lesson plans.

The goal is to identify the special needs of participating schools and areas that need emphasis within the mathematics and science curriculums.

LILLY GERMEROTH

A PASSIONATE CONSERVATIONIST

Growing up in Rolla, **Lilly Germeroth**, a sophomore in biological sciences, knew Missouri S&T's biological sciences department had a great reputation. But she had no idea how much her view of the university would change when she became a student.

"The biological sciences department is full of professors who are willing to talk to you about their research, and their time as a student and would love to give you advice on the class you're taking," she says "It's not just a convenient choice, but it's a campus that I really enjoy being part of."

Last fall, Germeroth put her conservation knowledge and passion for nature to use in a paid internship at the U.S. Geological Survey Missouri Water Science Center in Rolla, one of three locations in the state. As a student hydrologist, she analyzes streamflow data and helps with discharge measurements of sites in the field.

"The practice of hands-on learning is very important here," she says. "I certainly have learned lots from this job that I can apply to my field and help broaden my knowledge base."

Germeroth hopes to use her degree to take care of public land and resources.

"I'd like to start locally with making sure people can go to conservation areas or state parks and learn about why nature and the world around us is so worth saving," she says. "Once lots of people get that mindset, the social shift needed to help the environment will be much easier to tackle."

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BIOLOGICAL SCIENCES GRADUATE CHOSEN AS COMMENCEMENT SPEAKER

Madison Morris, BSci'17, represented the College of Arts, Sciences, and Business as one of four featured student speakers at Missouri S&T's winter 2017 commencement ceremonies with an original speech about her S&T experience. Centered on the theme of "greatness happens here," Morris cited her S&T opportunities for the gift of education, research and athletic participation.

Morris minored in chemistry and history and plans to attend medical school. While a student she conducted optogenetics research and was member of the Women's Soccer Team, Zeta Tau Alpha and Phi Sigma.

To be chosen as a student commencement speaker, graduating seniors submitted anonymous applications with their proposed speech and a resume for a selection committee to review and choose finalists to audition. A speaker from the College of Arts, Sciences and Business and from the College of Engineering and Computing was selected to speak at each of the two ceremonies.

BIOLOGY PROFESSOR HONORED AS ST. LOUIS SCIENCE EDUCATOR OF THE YEAR

Dave Westenberg's passion for educating school-aged children was recognized with the Academy of Science of St. Louis' Science Educator Award during the 23rd Annual Outstanding St. Louis Scientists Awards Dinner on April 6.

The award is given annually to "a distinguished individual on the basis of outstanding contributions to science education or to the public understanding of science, engineering, or technology." Westenberg is associate professor and past interim chair of biological sciences, having joined the university in 1997. He often reaches out to schools in the Rolla area and around the state as an organizer and volunteer who provides hands-on science activities at conferences and events across the country.

During a speech at the ceremony, Westenberg said his inspiration for science education always has been, and always will be, his daughter, Erica, who now attends graduate school in Germany. He says he began doing outreach activities as a way to bond with her and be a part of her life.

"From helping with her science events in kindergarten, to being 'the germ guy' in first grade, to dressing up as the plague doctor for the middle school Quest program, I have loved sharing my passion for science, and microbiology in particular, with her, and now kids of all ages," Westenberg said during his speech.

Westenberg says the outreach activties that he and his S&T colleagues provide are especially important in a rural area like Rolla, where not every child has the opportunity to visit the cultural institutions and museums that larger cities offer.

"When my daughter was growing up we were fortunate to be able to take advantage of the opportunities available in St. Louis from the science center, the zoo and the art museum and all the programs they offer," Westenberg says. "Unfortunately, many kids in Rolla don't have those opportunities, so I've always enjoyed trying to bring those opportunities here."

Westenberg was nominated for the award by **Julie Semon**, assistant professor of biological sciences at S&T and one of his longtime colleagues.

"Being nominated by a colleague shows that my colleagues recognize the value in what I do," says Westenberg. "However, I don't do these things for recognition. I do them for the kids of all ages I get to interact with. I think this is particularly important in our community."

Westenberg is also chair of the American Society for Microbiology Committee for K12 Outreach, where he supports education by developing classroom activities and hosting symposia at national teacher conferences, inviting prominent scientists to talk about their research in the context of education. As chair, he also plans, develops and participates in ASM exhibits for the USA Science and Engineering Festival.

DAVE WESTENBERG
Associate professor of biological sciences

PROJECT LEAD THE WAY MAKING INROADS FOR STEM EDUCATION

Terry Wilson, biological sciences associate teaching professor, hosted eight Project Lead the Way (PLTW) biomedical core training workshops for 140 high school teachers during June and July.

The intensive two-week courses included principles of biology, human body systems, medical interventions and biomedical innovations in a program focused on activity-, project- and problem-based learning. The teachers were trained to teach at least one course from this curriculum.

PLTW is a national, not-for-profit education program whose goal is to get more youth interested in and prepared to study science, technology, engineering and mathematics in college.

As a leading PLTW affiliate university, Missouri S&T provides summer teaching programs and professional development opportunities for teachers, counselors and administrators in the midwest. Since 2009, Missouri S&T has trained over 600 science teachers, including more than 350 from Missouri. One-hundred four Missouri schools now offer PLTW biomedical programs across 68 districts, ranking the state as third in the nation for number of PLTW programs offered.






BIOLOGY IN THE NEWS

ALUMNI HONORS

- Dr. **Paul Stricker**, LSci'82, who is board-certified in both sports medicine and pediatrics was named to the Dean's Leadership Council for Missouri S&T's College of Arts, Sciences, and Business. In 2000, he was selected as one of the physicians to represent the United States at the Olympic Games in Sydney. He is the author of Sports Success Rx, a book for parents and coaches, and has received Missouri S&T's Award of Professional Distinction and Alumni Achievement Award. He is a member of the Academy of Miner Athletics and the Missouri S&T Athletic Hall of Fame.
- Dr. **Laurie Behm**, LSci'84, who practices physical medicine and rehabilitation as a staff physician with the Freeman Health System in Joplin, Mo., was inducted into the Missouri S&T Academy of Miner Athletics. She was inducted into the MSM/UMR/ Missouri S&T Athletic Hall of Fame in September 2000, and the S&T Women's Hall of Fame in 2005. She also received an Award of Professional Distinction in biological sciences from Missouri S&T in 2001.
- **Rachel Rodgers**, ChE'09, a former member of the S&T iGEM team, recently published her master's thesis completed at SIUE under the mentorship of David Duvernell, before he joined Missouri S&T. Her paper is titled "Phylogenomic analysis of Fundulidae (Teleostei: Cyprinodotiformes) using RNA-sequencing Data."

STUDENT RECOGNITIONS

- **Lisa Gutgesell**, a senior in biological sciences, from Germantown, Illinois, received an Opportunities for Undergraduate Research Experiences (OURE) Fellows Award of $1,500 for a project titled, "Healthy and Diabetic Mesenchymal Stem Cells and Bioactive Glass Fibers Increase Angiogenesis." It will shed light onto the differences between wound repair in diabetic and non-diabetic patients. Gutgesell was also selected as an Amgen Scholar at Washington University in St. Louis.
- **Jordan Powell**, BSci'17, was named Missouri S&T's 2017 Renaissance Student of the Year and received a $1,000 award.
- **Melissa Cambre**, a graduate student in biological sciences, co-authored a paper titled "The Toxicity of Nanoparticles Depends on Multiple Molecular and Physicochemical Mechanisms" with **Yue-Wern Huang**, biological sciences professor and director of laboratory of environmental toxicology

STUDENTS IN SUMMER RESEARCH PROGRAMS

- **Kent Gorday**, a senior in physics, from Foristell, Missouri, and member of the iGEM team, spent his second summer as an intern at the Oak Ridge National Labs focused on synthetic biology research.
- **Veronica Lee**, Bio Sc '17, from Troy, Missouri, had a great experience working with Ozark hellbender salamanders at the St. Louis Zoo. Lee helped with the zoo's captive breeding and rearing program, leading to the release of hundreds of young hellbenders to streams in the Ozarks.
- **Natalie Holste**, BSci'17, from Romeoville, Illinois, participated in a summer internship at the Monsanto research facility in San Diego, investigating the soil microbiome.

FACULTY ACHIEVEMENTS

- **Katie Shannon** was selected for the 2017 Faculty Achievement Award in honor of her commitment to the personal successes of our students. Her work impacts almost every student majoring in biological sciences.

- **Ron Frank** was honored with the 2017 Faculty Teaching Award for his dedication to student learning and innovative teaching methods employing advanced classroom technologies.
- **Dev Niyogi** received the 2017 Faculty Service Award in recognition of his oversight of the department chair search and for leading the department and the college in a successful bid for an NSF planning grant for the field station.
- **Matt Thimgan** and colleagues have been awarded a large NIH grant, "Mathematically modeling sleep in a model system." The proposal uses mathematical and statistical techniques to identify patterns in how individual fruit flies transition between sleep and wakefulness. These patterns are correlated with lifespan to determine underlying molecular changes that link sleep and the health problems that result from lack of sleep. This approach may reveal a target protein or metabolic pathway that can be manipulated to mitigate the deleterious effects of sleep deprivation.
- **Chen Hou** was promoted to associate professor with tenure.
- **Terry Wilson**, M.S., received the Student Council Extraordinary Faculty Award.
- The Mars Rover Design Team, advised by **Melanie Mormile**, won the 2017 University Rover Challenge.
- **Dave Westenberg** was quoted and the Missouri S&T iGEM Team research was mentioned in a recent report by U.S. News and World Report on how synthetic biology could one day cure diabetes. Westenberg also received an Experiential Learning Award for his support of undergraduate research.
- General Biology Lab (BioSci 1229) was featured in an article in Inside Higher Education on how laboratory courses are adapting to increasing student enrollment.

INDUCTEES INTO S&T ATHLETIC HALL OF FAME

Dr. **Paul Stricker**, LSci'82, a member of the Miner swimming team

Jason-Scott Holly, BSci'02, a member of the Miner basketball team

Molly (Balke) Lincoln, BSci'04, a member of the Miner softball team

Heather Maggard, BSci'05, a member of the Miner softball team

NEW FACULTY

MEET THE CHAIR

David Duvernell, professor of biological sciences, was appointed chair of the department on Aug. 1, 2017, coming to Missouri S&T from Southern Illinois University in Edwardsville (SIUE) where he served as department chair of biological sciences.

Duvernell took over from Dr. David J. Westenberg, associate professor of biological sciences, who has served as interim chair since Sept. 1, 2016.

Duvernell is a population geneticist with interests in ecological genetics, speciation and genome evolution. His active collaborations involve studies of the evolutionary ecology of a group of topminnow species found throughout the midwest and southern United States, and molecular studies of the evolutionary dynamics of retrotransposable elements in fish genomes. Says Duvernell, "Topminnows serve as great models for fundamental research in ecology and evolution as they are widely distributed and locally abundant in our natural environments, making them easily accessible to researchers and students alike."

Duvernell joined the SIUE biological sciences faculty as assistant professor in 2000, was promoted to associate professor in 2006 and to full professor in 2012. In 2013 he was appointed department chair. During his tenure there, he brought in nearly $1 million in sponsored research support. His post-doctoral work was at Stony Brook University in the department of ecology and evolution. He has authored or co-authored more than 30 articles in peer-reviewed publications and more than 100 presentations and published abstracts.

"At Missouri S&T, in addition to providing an exceptional core science education, our biological sciences faculty is committed to providing a strong, hands-on research experience for the professional development of our undergraduate and graduate students. I am both pleased and honored to serve as chair of biological sciences and excited to face new challenges," Duvernell says.

DAVID DUVERNELL
Chair, biological sciences

MEET DR. NING SUI, ASSISTANT TEACHING PROFESSOR

In 2017, **Ning Sui** joined the biological sciences department as assistant teaching professor.

Sui's research expertise is in plant hormone gibberellins that regulate plant growth and development. Published in 2017 by Nature Chemical Biology, Sui is co-first author of the first study to identify O-fucosylation of nuclear proteins.

Sui holds a Ph.D. in plant biology from Duke University. Sui earned both master's and bachelor's degrees in biology from Tsinghua University in Beijing. She was also a research assistant at the Chinese University of Hong Kong while a graduate student.

At Missouri S&T, Sui teaches lecture and lab courses in general biology, genetics and plant biology. "Dr. Sui brings a creativity and enthusiasm to her classes that the students love, and her expertise in plant molecular biology is an important addition to our program. We are very fortunate to have her in our department," says David Duvernell, professor and chair of the biological sciences department.

NING SUI
Assistant professor of biological sciences

MISSOURI S&T
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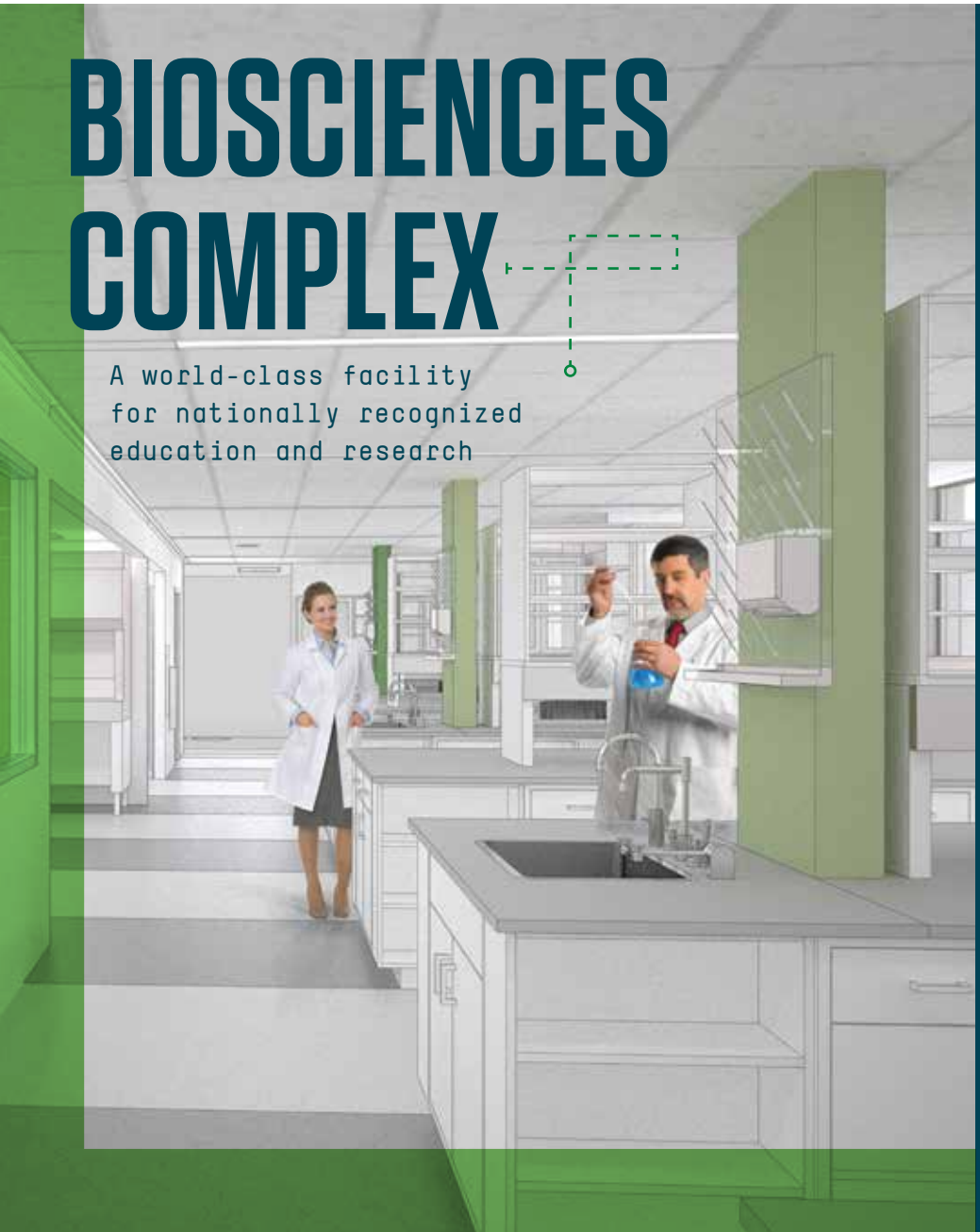
BIOSCIENCES COMPLEX

A world-class facility for nationally recognized education and research



Missouri S&T is well on its way to the completion of this interdisciplinary project — a strategic priority of the University of Missouri System's Board of Curators that will require a combined investment of private gifts and university and state funds.

The Biosciences Complex will help Missouri S&T attract high-potential students by elevating its ability to provide a premier educational and research experience in biological sciences, chemistry, and chemical and biochemical engineering.

To learn more about the Biosciences Complex project or how you can advance the STEM education of Missouri S&T's future leaders and researchers, please contact **Kristen Gallagher,** executive director of development, College of Arts, Sciences, and Business, at 573-341-6050, or **gallagherkr@mst.edu**.