



**MU News Bureau**

*Daily Clips Packet*

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(AAU science news website; 1.9 million unique visitors per month)

## [New way to erase tattoos requires less aim](#)

Posted by [Jeff Sossamon-U. Missouri](#) April 11th, 2017

### **Generated from News Bureau press release: [Laser-Based Dermatological Procedures Could be Revolutionized with New Technique](#)**

A new system for the removal of birthmarks, port-wine stains, and tattoos transmits laser light into the tissue through direct contact, which could make it more accurate.

The first laser treatments used to treat skin conditions like benign vascular birthmarks and port-wine stains were developed more than 40 years ago. Recently, dermatologists have seen a rise in demand for minimally invasive laser-based treatments, like tattoo removal.

However, because the laser light is held at a distance from the skin, getting only the targeted birthmark or tattoo to perfectly and selectively absorb it can be difficult.

Laser techniques come with risks, including eye damage. Open-air transmission, in which the doctor holds the laser at a distance from the patient, is the typical procedure but can pose a hazard to both patients' and doctors' eyes.

**“The system we developed uses ultrasonic pulsation in conjunction with a clinical laser to alter the properties of skin tissues during the procedure,” says Paul J.D. Whiteside, a doctoral candidate in the food systems and bioengineering division at the University of Missouri.**

“We’ve named the technique ‘sonoillumination’ and we’re hopeful that the procedure will be available widely in the near future.”

Researchers tested the technique using pig skin tissue samples using various amplitudes and pulses, and showed promise for the clinical setting.

“Pork skin samples are very close to human skin samples, so the initial results we saw are promising for human applications,” says Heather K. Hunt, assistant professor of bioengineering. “Sonoillumination will be extremely beneficial for clinicians.”

“Our goal is to provide patients with safer, more effective treatment options that potentially lower the number of treatments needed,” says Nicholas Golda, associate professor of dermatology and director of dermatology surgery at the MU School of Medicine. “This new technology may also provide physicians with a safer, more controllable option for treating patients.”

Whiteside presented the paper, which the journal *Lasers in Surgery and Medicine* has selected for publication, at the annual conference of American Society for Laser Medicine and Surgery. A 2015 Fast Track grant from the University of Missouri System funded the work.



(Technology news magazine, more than 6 million unique visitors per month)

## [Researchers use a pair of robotics platforms in hopes of developing drought-resistant crops](#)

by *Brian Heater* (@bheater)

### **Generated by News Bureau press release: [Fighting World Hunger: Robotics Aid in the Study of Corn and Drought Tolerance](#)**

**A team of researchers at the University of Missouri are using a pair of robotics platforms and a \$20 million grant from the National Science Foundation to develop a system for identifying crop strains resistant to heat, drought and flood. The research is part of an ongoing attempt to cross-breed hearty crops in order to maintain food production in the wake of severe conditions brought on by climate change.**

The system developed by the team is comprised of two primary robots — a mobile tower that stands watch at the edge of the crop and a roaming ‘bot deployed by the system to take a closer look. The resulting data includes 3D scans of the plants (corn and sorghum at present), along with temperature, humidity and light intensity readings taken at different heights — each of which tend to vary greatly, due to an increasing tendency to plant crops closer together.

Gui DeSouza, an associate professor at the school and one of the co-authors of a paper about the project, tells TechCrunch that the system was deployed in lieu of one of the increasingly popular UAV (drone) monitoring systems for a number of reasons.

“A flying UAV is a little cumbersome,” he said. “You have to have a pilot to fly it, you have to have a flight plan that has to be filed. Most of the time UAVs can’t fly at night.” The towers, while designed to be stationary, are still reasonably portable and can be moved from area to area. They also can work in tandem to cover more ground.

Each is equipped with a trio of cameras offering up 3D models of the plant along with biomass volume and thermal readings. They're capable of examining plants within a 60-foot radius and are mounted on a spinning platform in order to take in all of their surroundings.

The mobile system, deemed Vinobot, meanwhile, goes in for a closer look, collecting insight into the crop's growth, yield, resistance and tolerance. At present, the Vinobot has to be piloted, but DeSouza says the team is working on an autonomous version that can automatically gather data in tandem with the tower.

"The idea is to correlate how the plant is developing with the family, so we understand which family is tolerating the stress better than the others and ultimately to identify the gene that makes those families more or less resistant to those stresses," says DeSouza.

That information can then be used to cross-breed the most resilient plants, in order to create crops that are more resistant to the changing climate.



*CBS Affiliate in Lincoln, NE*

## **Mizzou Study Looks at How Corn Grows in Drought Conditions**

Generated from News Bureau press release: [Fighting World Hunger: Robotics Aid in the Study of Corn and Drought Tolerance](#)

Watch the story: <http://mms.tveyes.com/PlaybackPortal.aspx?SavedEditID=53d992e6-ad93-4f37-8709-cb682e514d3a>



## College students gun-shy about campus carry bill

Watch story: <http://krcgtv.com/news/local/college-students-gun-shy-about-campus-carry-bill>

By Garrett Bergquist

**COLUMBIA — Students on the MU campus on Tuesday said they didn't think a proposal to allow concealed carry on campus was a good idea.**

A state House panel was scheduled to vote Tuesday evening on a bill that repeals Missouri's ban on carrying concealed firearms on college campuses, in bars and within 25 feet of a polling place. Bill sponsor Rep. Jered Taylor, R-Nixa, said there is no way police can respond in time in the event of an active shooter.

"The average response time for police in the state of Missouri is 10 minutes," he said. "Plenty of time for a criminal to inflict harm without being stopped."

MU student Max Whitter said he understands the arguments supporters make for campus carry but he doesn't think it would be an effective deterrent. Whitter said he doesn't trust the average CCW permit holder to have the training necessary to respond to an active shooter.

"Just because you have a gun on you, doesn't mean that if someone runs into a room or something and starts shooting at you, that you'll have the reaction time or the ability to stay calm," he said.

Other students were more receptive of the idea. Will McClannahan said he personally wouldn't carry a concealed firearm on campus, but he felt other students should be allowed to carry them if it makes them feel safer.

But graduate student Dillon Falk agreed with Whitter. He stated the idea of students carrying concealed guns doesn't make him feel safe.

According to the National Conference of State legislatures, Missouri is one of 17 states that explicitly ban carrying a concealed weapon on campus. Nine states have laws that specifically permit carrying guns on campus.

Missouri last year became a permitless-carry state, but Taylor said his bill would require you to have a permit if you carry a weapon on a college campus.

# MISSOURIAN

## Senate gives UM System some hope for funding restorations

DYLAN JACKSON

JEFFERSON CITY — **The Senate has signaled a possible funding respite for the UM System, which stands to sustain \$40 million in cuts next year, according to previous Missourian reporting.**

In the Senate's first budget hearing Tuesday, Senate Appropriations Chair Dan Brown, R-Rolla, recommended reducing the UM System's core funding cuts to 6.5 percent while leaving the other higher education institutions at the 9 percent cut Gov. Eric Greitens recommended in his budget.

The House has recommended the opposite: cutting the UM System by 9 percent, and the other higher education institutions by 6.5 percent.

The Senate's proposal would mean reducing the proposed UM System cut by about \$10 million.

But these numbers are fluid. The Senate's funding swaps were a technical move meant to ensure that the higher education appropriations are discussed when the House and Senate meet to compromise on respective budget differences in what is called a conference committee.

In the end, Brown said, UM's cut will likely range from 6.5 to 9 percent.

"The plan is to level out UM cuts with the others," said Brown.

John Fougere, a spokesman for the UM System, had previously said he hoped the Senate would restore cuts made by the House.

"We are extremely pleased that the Senate Appropriations Committee restored \$10.9 million to the UM System's core funding, and are especially appreciative of the leadership provided by Sen. Dan Brown, the chair of the committee, in moving our budget forward," Fougere said.

When the Senate appropriations committee is done reviewing the budget, it will send it to the full Senate to be voted on. After, the conference committee, made up of five legislators from each chamber, will meet to hash out differences. Once the committee agrees on a budget, the new spending plan must be sent back through the House and Senate for votes and land on the governor's desk by May 5.

*Andrew Kessel contributed to this report.*

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# MISSOURIAN

## [As Senate begins digging into state budget, more changes are coming](#)

DYLAN JACKSON, 12 hrs ago

JEFFERSON CITY — Last week, the Missouri House passed its version of the state's budget — a culmination of nearly two months of debate and revision to Gov. Eric Greitens' initial proposal. By the end of the week, Senate Appropriations Chair Sen. Dan Brown, R-Rolla, was already pointing out potential changes he and his colleagues in the Senate will make in a series of meetings this week.

The following Tuesday, Senate appropriations met at 8:30 a.m. to begin that process.

Such is the meticulous process of creating Missouri's \$27 billion spending blueprint. The budget evolves at each stage of the process. But what can't and will not change, though, are two things: There must be nearly half a billion in cuts from current spending levels, and it has to be on Greitens' desk by May 5.

The budget has come a long way. Its earliest iteration was just two pages. Near the bottom of the page, printed in bold, was the number that has driven months of cuts and deliberations included in the now several hundred page budget. The line read "ending cash balance," and to its right was the figure: - \$456,355,126 — the projected deficit Missouri was facing in the coming year.

Slow revenue growth and rising health costs have wreaked havoc on Missouri's budget. And though revenues have risen in the few months since that original deficit number was released, Missouri is still facing a shortage. In each budget hearing and floor debate, the spirit of the bolded number still drives each and every conversation.

In February, almost a month later than is traditional, Greitens released his budget. That original bleak report could be felt through the 9 percent core budget cut to universities; the loss of 188 state jobs; the \$36 million cut from K-12 transportation; the \$52 million cut to in-home nursing care for seniors.

In his budget announcement in Nixa, Missouri, Greitens characterized the cuts as necessary, blaming politicians and special interests for the budget situation enumerated on those first two pages.

"Too often, people in government forget who they serve," he said. "Career politicians often talk about what they want and forget about what the people need. Too often, politicians believe the taxpayer money is their money, doling it out to special interests."

Since receiving the governor's budget two months ago, the House budget committee and subcommittees have poured hundreds of hours into crafting the budget. The committee version was then sent to the full floor last week, where tweaks were made before the budget was voted out of the Missouri House on Thursday.

Unlike on the federal level, Missouri has a constitutional requirement that the budget be balanced, meaning expenditures may not exceed revenues. Because of this, the governor's budget and the House

budget totals do not significantly differ. As of now, the two budgets are \$24.6 million apart, and the House Budget Chairman, Rep. Scott Fitzpatrick, R-Shell Knob, expects the final version and the governor's budget to differ by only about \$10 million.

Because of this requirement, any differences between the budget drafts means that another program has to be sacrificed.

For example, the House version spends \$70-plus million more than the governor's budget on K-12 education and transportation. To pay for these additional funds for the Department of Elementary and Secondary Education, the House had to cut several other items included in Greitens' budget. According to Fitzpatrick, the education funding was paid for by cuts to Missouri's statewide employee benefits, healthcare and the Missouri Technology corporation, a public-private partnership aimed at encouraging growth in the emerging technology sector.

**Also included in the House budget is \$22 million in funding respite for universities, reducing the core cuts from 9 to 6.5 percent. The University of Missouri System, though, did not receive this restoration to its core budget, instead seeing the new money go to cooperative programs. According to a UM spokesman, the system is not happy about this.**

In addition to higher education funding, the House also looked to plug Greitens' proposed \$52 million cut to an in-home nursing program by repealing a tax-credit for seniors who are renting a home. The bill carrying this repeal, sponsored by Fitzpatrick, passed by a razor-thin margin in the House. Many on the House floor decried that cutting one senior benefit to fund another is a false choice .

Yesterday, the budget began its trek through the Senate, starting with the Senate appropriations committee, chaired by Brown. This process gives the Senate an opportunity to make changes to the bill. In a press conference on Thursday, Brown indicated that there will be several.

He also pointed to the House's decision to fully fund the Foundation Formula, a K-12 funding program passed in 2005. The formula takes into account factors like daily attendance and local cost of living when calculating the amount of state funding each school will receive. The goal is to provide poor and rural school districts with funding on par with wealthier schools.

Brown said if the current funding recommended by the House stays in the budget, early childhood education programs written in the bill would automatically kick in next year and would have to be paid for.

"If we fully fund the formula," said Brown, "and we create a \$62 million hole for next year in public education, we haven't done a lot of favors to people."

He said Sen. Jay Wasson, R-Nixa, is working on a bill that would phase in the amount of children receiving the early childhood education, which would spread the cost out and lessen the fiscal load.

Fitzpatrick disagrees with that approach.

"I don't think we should be afraid of fully funding the formula because of a bill that we passed," he said. "How do I go home and explain to my constituents that we didn't fully fund the formula because we didn't want to fund a bill we passed years ago?"

And while Brown has signaled support for the Fitzpatrick's tax-credit repeal bill, he admitted that some Senate members are strongly opposed.

The General Assembly has 14 legislative days to get the budget to Greitens' desk by the constitutional deadline of May 5. In the relatively short span, the budget must go through the Senate budget committee; be debated and amended in the Senate (last week, filibusters largely held the Senate at a standstill for two days); approved by the Senate; get sent to a conference committee where changes are reconciled between the House and Senate; be passed by again by the House and Senate; and finally, get signed by the governor.



## New Report Shows Integral Role of Libraries in STEM Education

By Elena Rivera

The American Library Association (ALA) released their 2017 report Monday on the state of libraries in the United States. The report highlighted national trends for library programming and focused on the increased role of STEM (science, technology, engineering and math) education at libraries across the country.

**In Columbia, both Ellis Library at the University of Missouri and the Daniel Boone Regional Library have increased STEM programming to help children and young adults expand their curiosity and creativity.**

Sarah Howard is the youth and community services manager for the Daniel Boone Regional Library. She said the library has an integral role to play to help students expand math and science learning beyond the classroom. She said STEM classes at the library are teaching students more than just computer skills.

“STEM actually counts as clipboards and crayons and markers,” said Howard. “Any tool could support this work, as well as all the electronic things that people hear about.”

Howard said not every student who participates in library programs will go on to be an engineer, but the programs help students learn about teamwork and equip them with skills for a variety of job fields.

Howard says the Daniel Boone Regional Library’s most popular program is called Sphero-nauts.

The program helps a group of about ten students learn the basics of computer programming and robotics. The students use an iPad to program a robotic ball to accomplish different challenges, like knocking over a set of bowling pins.

Howard said classes like Sphero-nauts are limited to small groups because of the availability of the technology, but the library does provide drop-in classes that engage students in other STEM tasks.

Ellis Library at MU is also helping students to find resources in STEM fields.

“It’s a growing area for our campus and for the whole country,” said Shannon Cary, communications officer for the MU library. “We’ve always had a strong program dealing with those fields and we know we need to support them.”

Cary said there are specific librarians for science, engineering and math that can help students find relevant readings and databases for their research. Librarians work in collaboration with faculty and staff in STEM departments to stay up to date.

Both Cary and Howard said libraries provide a space for students to develop their interest and knowledge in STEM fields to help their future careers.



## Judge denies appeal in Columbia arson case

By Zachary Farwell

COLUMBIA, Mo. - A Columbia man convicted of arson will not have his appeal request approved.

ABC 17 News confirmed on Tuesday that a federal judge denied Christopher Kelley's request of a re-trial. Kelley was previously found guilty of setting fires inside two buildings on Columbia college campuses.

**Kelley was sentenced in 2014 for arson after he set 10 fires inside Ellis Library on the University of Missouri campus.** A fire started inside a Stephens College classroom in May 2011 is also blamed on Kelley.

The judge listed the evidence used against Kelley and addressed Kelley's argument that his attorney had a conflict of interest.

Kelley received the maximum sentence of six and a half years in prison, although prosecutors had pushed for a minimum of 10 years.



## Mizzou Wrestling Confirms Death of Former Student Athlete

Watch the story: <http://mms.tveyes.com/PlaybackPortal.aspx?SavedEditID=23644c49-c1f6-4d7c-a108-cf285a475e7d>

## THE CHRONICLE OF HIGHER EDUCATION

### DeVos Withdraws Obama-Era Memos Focused on Improving Loan Servicing

#### NO MU MENTION

*BY ADAM HARRIS APRIL 11, 2017*

Education Secretary Betsy DeVos on Tuesday withdrew three memos, issued during President Barack Obama's administration, that had been focused on streamlining the student-loan-servicing industry and improving customer service for borrowers.

Ms. DeVos described the move in a [letter](#) to James W. Runcie, chief operating officer of the Education Department's Office of Federal Student Aid.

The three memos, issued by John B. King Jr., a former secretary of education, and Ted Mitchell, a former under secretary, sought to make a series of [specific changes](#) to improve student-loan servicing for borrowers. They were part of the Obama-era Education Department's efforts to revamp the servicing industry, in part by laying out new requirements for the businesses that seek government contracts. The

changes included efforts to improve communication between servicers and borrowers, giving servicers economic incentives to aid borrowers, and expectations regarding the transparency of data related to the servicing industry.

In her letter, Ms. DeVos said the department's procurement process for the servicing industry had been "subjected to a myriad of moving deadlines, changing requirements, and a lack of consistent objectives." She said she was withdrawing the previous guidance documents to "negate any impediment, ambiguity, or inconsistency" in the department's approach to "cost-efficient and effective" loan servicing.



## Relying on Women, Not Rewarding Them

New study suggests female professors outperform men in terms of service—to their possible professional detriment.

### NO MU MENTION

*BY COLLEEN FLAHERTY APRIL 12, 2017*

Women shoulder a disproportionately large workload at home in ways that might [disadvantage them professionally](#). But are female professors also "taking care of the academic family" via disproportionate service loads? A new study says yes and adds to a growing body of research suggesting the same.

"We find strong evidence that, on average, women faculty perform more service than male faculty in academia, and that the service differential is driven particularly by participation in internal rather than external service," the study says. "When we look within departments -- controlling for any type of organizational or cultural factor that is department specific -- we still find large, significant differences in the service loads of women versus men."

All that matters because service loads "likely have an impact on productivity in other areas of faculty effort such as research and teaching, and these latter activities can lead directly to salary differentials and overall success in academia," the paper says. "In the urgency to redress not only

differences in time use but compensation imbalances, as well, the service imbalance is one that deserves to rise to the forefront of the discussion.”

[“Faculty Service Loads and Gender: Are Women Taking Care of the Academic Family?”](#)

published in *Research in Higher Education*, was written by Cassandra M. Guarino, professor of education and public policy at the University of California, Riverside, and Victor M. H. Borden, professor of educational leadership and policy studies at Indiana University at Bloomington. The authors considered data from the 2014 Faculty Survey of Student Engagement, a web-based national survey related to the National Survey of Student Engagement. The faculty survey included responses from nearly 19,000 faculty members at 143 colleges and universities, and asked about how faculty members spend their time (in addition to professors’ views on student engagement).

Guarino and Borden limited their analysis of the national survey to responses from tenured or tenure-track faculty members at four-year colleges and universities, or about 40 percent of the sample. The national survey asked only how many hours a week faculty members spent on service, not which kinds of service they did or how departments were run. So the authors supplemented that data with those from much more detailed yearly faculty activity reports from two research-intensive campuses (one flagship and one “urban”) of an unnamed Midwestern university. The latter data set, from 2012, pertained to about 1,400 tenured or tenure-track faculty members. They reported whether their service was “internal,” performed on campus, or the more visible “external” kinds of service performed off campus for professional associations and other groups or communities.

### **Women Do More**

In a first, basic crack at the data, the authors determined that women in the national sample performed 30 more minutes per week of service than men and 1.5 more service activities per year than men in the local sample, and that the difference was statistically significant in both cases.

To glean more meaningful results and control for a number of factors, they proceeded with a multiple regression analysis. In the national sample, women reported 0.6 hours more service per week than men, controlling for rank, race and discipline. Female full professors, in particular, reported significantly more time spent on service than male full professors -- though full professors of both genders spent the most time on service over all. Faculty members in business and some sciences appeared to spend less time on service than those in the arts and humanities.

*Story [continues](#).*