J'Den Cox, senior psychology major and recent Olympic bronze medalist
Clockwise from top left: History major Conor Fagan; military science sword ceremony, 1938, C:1/141/6, courtesy of University Archives; recent Broadway production in which alumna LaCreta Ross appeared.
From the Dean

Home to some of the world’s oldest and newest academic majors—classical studies, mathematics, and music, on the one hand, and film studies and digital storytelling, on the other—the College of Arts and Science has long known how to balance tradition and innovation. It’s central to our teaching and research. We build upon the work of scholars and teachers who have come before us, at the same time that we continually seek innovative ways to teach and to solve problems.

This issue of *Mosaics*, which focuses on the college’s engagement with innovation and entrepreneurship, is itself grounded in a similar balance. Much of the work featured here was led by Michael O’Brien, who joined the MU faculty in 1980 and served as dean of the college from 2006 until this past summer, when he accepted the position as provost of Texas A&M, San Antonio. Mike left a strong legacy in the college, and we all wish him well in his new position. As I write this, I, too, feel that tug between the familiar and the new. This year marks the beginning of my 27th year as a faculty member at MU. It’s also day 40 in my role as interim dean.

Throughout this issue you’ll find plenty of evidence that the College of Arts and Science is deeply engaged in fostering an entrepreneurial spirit among our students and faculty. As large as this college is—the largest at MU—we can’t do this work on our own. Instead, we nurture entrepreneurs by developing strong and innovative partnerships. Some of these partnerships—with the Missouri Innovation Center, the Mizzou Venture Mentoring Service, and the Entrepreneurship Alliance—exist within MU. Others—with the Cortex Innovation Community and Pipeline—are with external partners. All are central to our success.

In addition to the feature articles on entrepreneurship, you’ll also find plenty of updates in this issue about the good work our faculty, students, and alumni are doing, including the new diversity course requirement that helps students be prepared for the diverse and global world in which we all live and work, 100 years of ROTC, and MU’s newest Olympic medalist J’Den Cox.

The balance between innovation and tradition continues.

—Patricia Okker

*Interim Dean, College of Arts and Science*
Keeping the Lights on

The Missouri Innovation Center is an entrepreneurial “hotel” that helps embryonic companies grow successfully

BY JORDAN YOUNT
At some point in our lives, most of us have probably had an idea to improve a product or service or to fulfill a need or desire that is not being met. We might even share that idea with friends or a significant other, but that’s as far as it goes. We pat ourselves on the back for coming up with a brilliant idea, and then go back to mowing the lawn or preparing dinner. We’re just too busy with our careers and our lives to pursue the idea, and we wouldn’t know where to begin if we did decide to follow through. How would we raise money? How would we find collaborators? What legal issues would arise? Is there even a market for this new product or service? All of those questions and more can be answered at the Missouri Innovation Center (MIC).

Supporting Economic Development
The MIC started as a small, non-profit operation in 1984 geared toward creating economic development support systems by utilizing Missouri’s universities. The goal was to translate research into profitable technologies, processes, and products that benefit society. In 2009, the MIC was tapped by the University of Missouri to operate the Life Science Incubator at Monsanto Place, leasing space to technology and bio-tech start-up companies and providing mentorship to entrepreneurs. The MIC is affiliated with the Trulaske College of Business but provides commercialization advice to all colleges, schools, and departments on the MU campus.

Bill Turpin, the president and CEO of the MIC, says the facility is like a hotel. “An entrepreneurial hotel, but we’re called an incubator, because we try to provide everything they need here at the hotel—we help them raise money, we help them with their presentations, we introduce...
them to partners, and we find other collaborators,” Turpin says. “We try to help them when they are embryonic companies to become successful adolescent companies, and then they move on.”

Turpin has more than 30 years of experience as an entrepreneur and investor in technology-based companies. For example, one of his start-ups pioneered the use of dynamically created web pages and invented the JavaScript programming language. Turpin has been the founding CEO of four start-up companies and served as a senior executive at companies including Netscape and Borland. He moved back to Columbia in 2014 to help build the entrepreneurial ecosystem in central Missouri.

It Takes a Team
Turpin says getting a company started, particularly a technology-based company, involves a lot of moving parts and usually requires a team of people to accomplish.

“With us being the flagship university in Missouri, a lot of great research is done here, and a lot of interesting scientific discoveries are made here, but typically the scientist who discovers it does not have the skills to start a company and grow it to be successful,” Turpin says. “We work to help figure out what the interesting technologies are here, and in some cases we can train the scientist to become more of an entrepreneur, but often what we find—this is where the College of Arts and Science and the business school fit in—we often find we have to augment the scientists with additional people to form a complete team that can go out and raise money, do the right legal things and all of that to start a company.”

Expanding the Mission
Turpin says when he arrived at the MIC two years ago, the facility was basically a life sciences incubator focusing on human and animal medicine, plant science, and energy. However, his background is in computers and the internet, so the MIC is in the process of creating the Mid-MO Tech Accelerator, geared toward helping computer and software developers commercialize their products. Turpin says that will open up the process to faculty, staff, and even students from a variety of disciplines. The accelerator will provide seed money ($25,000–$50,000) to start-ups to help them get to the point where they can apply to Centennial Investors, an angel investment group based in mid-Missouri, to grow their company.

Turpin says the MIC has 30 resident clients and 30 non-resident clients.

“We’ve had a pretty good track record so far,” he says, “We’ve had a few fail, but at least half of the companies that go through here go on to be successful. The cool thing for me is there is a lot of really great technology here at MU. We haven’t been great at promoting it, but we should be proud of all of the basic science that we do here and how applicable a lot of it is.”
Glossary

Accelerator (ak’sel’ә rә tәr), n. An organization that helps early-stage companies ramp up their developmental plans, usually by pairing them with mentors.

Angel investor (әn’jәl in ves’ tәr), n. A wealthy individual who agrees to invest in a start-up company that has little access to capital. Must be a Securities Exchange Commission–accredited investor.

Incubator (in’kyә bә’ tәr), n. Similar to an accelerator except that it offers a longer time horizon, usually a year or more as compared to the few months typically offered by accelerators.

Pitch competition (pich), n. A gathering in which entrepreneurs with new business ideas each make a pitch—quickly and creatively—in order to win seed money for their projects.

Start-up (start’up), n. A fledgling business venture that is still in the beginning stages of securing funding, developing its business plan, and creating a product or performing a service.

Venture capitalist (ven’chәr kap’i tәlist), n. An investor, often a firm rather than an individual, who provides funding to start-up businesses or small companies in need of capital for expansion.
Nurturing Start-ups

One of the biggest impediments entrepreneurs have in commercializing their product or service is a lack of capital. These budding business owners can often get seed money to develop their ideas or their research into a prototype or a beta version from an organization such as the Entrepreneurship Alliance at the Trulaske College of Business. Once that product or service is ready to be marketed, the next step for the entrepreneur is finding investors willing to take a risk. At that point, an “angel” investment group like central Missouri’s Centennial Investors might step up to the plate.

Centennial Investors was created in 2006 in conjunction with the centennial celebration of the Columbia Chamber of Commerce. The group of roughly 60 members, all of whom are accredited investors with the Securities Exchange Commission, is willing to assume a certain amount of risk to provide start-up capital to early-stage companies to help them gain traction in the market in the hopes of growing the company. Bruce Walker, who served as dean of the College of Business for 20 years and then served as a faculty member of the college before retiring last year, has been president of Centennial Investors for the past five and a half years. He calls angel investing an alternate form of investment.

“I think a secondary motivation—besides hopefully earning a strong return on investments over a long period of time—would be to contribute to the economic vitality in mid-Missouri and the entire state by helping start-ups get off the ground,” Walker says. He says members who invest in a company typically receive an equity stake in the new company or a debt instrument such as a convertible note.

Helping Entrepreneurs Take the Next Step

Walker says about one-third to one-half of the projects Centennial Investors has backed are located in central Missouri, most of them in Columbia, and about one-quarter of those investments have supported projects coming directly from the University of Missouri. But he says Centennial Investors is not an entrepreneurial support organization.

“Inventors and scientists with an idea would first turn to the Missouri Innovation Center, and that’s where they could get some initial support,” Walker says. “Once they have a prototype or a beta site for software and a plan to get to market, then they would apply to Centennial Investors for funding. There may be costs associated with added personnel, marketing, protection of intellectual property, or with sample testing. They are at a point where they would say, ‘I need this money to be able to make this company viable and hopefully to grow it.’”

Members who invest in a company typically receive an equity stake in the new company or a debt instrument such as a convertible note.
To secure funding, an entrepreneur applies to Centennial Investors for capital. Proposals that pass a rigorous screening process are then presented to Centennial Investors at one of their monthly meetings at the Missouri Innovation Center. At that point, it is up to each member of Centennial Investors to decide whether or not to invest in the company and to determine how much to invest. Walker says the group prefers that a proposal generate interest from 10–15 members with a potential interest in investing at least $100,000 as a group before moving forward and performing the time-consuming due-diligence part of the process.

**A Record of Success**

Newsy, or the Media Convergence Group, is the first successful exit for Centennial Investors. Scripps Media bought the fledgling company for more than $30 million in 2014. Walker says the early investors in Newsy were very pleased with the return they received when Scripps bought the company. He says there have been four other exits, but those were companies that failed. However, Walker says Centennial Investors’ track record is above average.

“The guideline, based on angel investing across the country, is that if you go to bat 20 times in angel investing, you will have maybe 15 strike outs—companies that are going to fail or that turn into a lifestyle business that’s not interested in growing,” he says. “Then maybe you’ll have two singles where you get your money back, and maybe a double or a triple. A home run would be earning 20 times your original investment. I’m very pleased—and, I must admit, somewhat surprised—that 15 of our more than 20 investments are still operating with different degrees of vitality, and some have a lot of promise.”

Some of the start-up companies Walker says have the potential to grow and succeed include:

- **Elemental Enzymes**, which produces enzymes specifically designed for survival and activity in harsh conditions. Co-founders Brian Thompson, MS ’08 biological sciences, and Katie Thompson, BS ’04, PhD ’11 biological sciences, began production in 2015 in the St. Louis area.
- **Equinosis**, whose mission is to assist and equip the equine practitioner by developing and providing wireless-sensor solutions for collection of biological data useful in the diagnosis of equine disease.
- **Every Event Gives**, founded by Sean Spence, BA ’93 history, makes it easy to sell and market tickets to events, online. They allow sellers to create an event page that is hosted by EveryEventGives, and then ticket buyers can use that page as the point of purchase for an event. For every ticket sold on the site for an event, 50 cents is donated to charity.
**Mizzou Venture Mentoring Service**

**Showing Entrepreneurs the Ropes**

**BY JORDAN YOUNT**

It is much easier to follow a well-worn path through the wilderness than it is to blaze a new trail. That’s the basic philosophy guiding the Mizzou Venture Mentoring Service (VMS), which officially launched in fall 2015 under the leadership of co-directors Gloria O’Brien and Greg Tucker.

“The research indicates that an entrepreneur is more likely to succeed if he or she is teamed with experts with proven expertise in a certain field,” Tucker says. “In the entrepreneurial world, we find a problem or a need, and we fill that need—and we’ve identified a need for expertise, mentors, to help entrepreneurs with great ideas stand a better chance of succeeding.”

O’Brien says the Mizzou VMS program was the brainchild of Interim Chancellor Hank Foley when he was serving as senior vice chancellor for research, graduate studies, and economic development. A group of individuals was discussing entrepreneurship in the context of the fourth mission of the university—economic development—and the group identified a gap in the entrepreneurial ecosystem being developed in central Missouri. That gap was in the area of mentoring.

**Filling the Gap**

When Mizzou VMS launched in October 2015, O’Brien, who recently retired from the university, says the organization had recruited two companies willing to serve as “guinea pigs,” as well as 13 mentors. Today, 17 companies have partnered with VMS, and they utilize the services of 26 mentors.

“We’ve had nice, slow, steady growth, and that’s exactly what we wanted, because it’s about the quality of the experience, not the quantity,” O’Brien says. “The other thing we focus on is ‘the next five weeks.’ We don’t focus on a three-to-five year strategic plan, because you don’t know what’s going to happen in three to five years. Entrepreneurship is a very quick process—you have to be agile, you have to meet the changing climate—so we focus on, ‘How can we help you through the next five weeks?’”

**Success Breeds Success**

The mentors, all of whom are highly successful business and community leaders, commit to a monthly mentor meeting at the Missouri Innovation Center. During those 90-minute sessions, an entrepreneur gives a 10-minute pitch to the mentors, followed by a brief question-and-answer session. The entrepreneur then leaves the room and a “call for mentors” is put forth. The team members then choose whether or not to become mentors based on their time, availability, and interest in the project. A successful pitch will result in at least two mentors and up to as many as six, depending on the needs of the entrepreneur. O’Brien says she has been astounded that no potential mentors have declined to participate in the program.

“The reason they want to mentor is because it is their way to give back,” she says. “They can have a positive impact on the entrepreneur that makes the entrepreneur successful within the community, so everybody wins. And the thing that surprises entrepreneurs is the fact that this is a service program—there is no fee associated with it. But there is an expectation that if they do all of the hard work, and they have a certain amount of success, they will then come into the VMS program as a mentor, and that is their way of giving back.”

O’Brien says if an entrepreneur is incredibly successful as a result of their VMS experience, “if it’s the next Gatorade® or something,” the organization would appreciate a financial contribution to keep the program viable. O’Brien says MU made a three-year commitment of support to VMS, and Chancellor Foley has extended that commitment, but she and Tucker hope to make the organization self-sustaining.

Tucker says it’s important to understand that since VMS is considered an educational program, a failure is not a failure as long as the entrepreneur learns something.

“As you know, most new ventures or products do not make it,” Tucker says. “However, another variation or another product might come from that entrepreneurial mind, and they’ll have the tools they need to pursue it. But the key reason behind all of this is to develop an ecosystem and to keep those bright, entrepreneurial minds right here in mid-Missouri.”
A&S Alumni Succeed with VMS Assist
Fighting Imposter Phenomenon

BY JORDAN YOUNT

Have you ever had the sensation—or fear—that someday your boss is going to discover that you really don’t know what you are doing? Do you worry she may find out you are a complete fraud who has just been pretending all this time? That sensation is quite common, and a pair of A&S alumni have created a business to help academics cope with and eventually overcome those fears. Jonathan Cisco, MA ’10 political science, PhD ’15 education, says he discovered during graduate school that neither he nor his peers were really prepared for the rigors of academia.

According to research Cisco conducted for his dissertation, roughly 90 percent of graduate students experience something called “imposter phenomenon,” an overwhelming feeling of being an intellectual fraud. Cisco argues that this common affliction may be one of the reasons nearly half of all graduate students drop out. During his research for his dissertation in literacy in higher education, Cisco found that clinical psychologists in the 1980s and ’90s had found a number of ways to decrease feelings of imposter phenomenon.

“To decrease impostor feelings, you have to name it for what it is, you have to group imposter phenomenon victims together, and you have to take it seriously because it has tremendous consequences from insomnia to substance abuse. Most importantly, you have to teach specific skill sets,” Cisco says.

“So I thought if I could teach these skills to graduate students, I could decrease those feelings. I found through my dissertation research that in the span of a month—in this case four workshops—I could decrease imposter phenomenon feelings by an average of 25 percent and dramatically improve the students’ success in their graduate studies.”

Helping Academics Navigate Academia
Cisco and his wife, Jayme, MA ’10, PhD ’15 anthropology, decided to create a consulting business featuring a workshop they call The Grad Academy, which teaches graduate students how to overcome imposter phenomenon, think like successful academics, read academic research, conquer academic writing, and be efficient.

“We knew there was a need for this, having just finished graduate school and being imbedded in that system, knowing what our peers were struggling with. But how do you take it from an academic idea to a business with all of the legal and marketing challenges?” Jayme asks.

They got a lot of the answers they were looking for from the mentors at Mizzou Venture Mentoring Service (VMS).

“My initial temptation was to share the validity and reliability of my research results, but that wasn’t their language. They are looking for things like scalability, viability, and so on,” Cisco says. “What Greg Tucker and Gloria O’Brien helped us with was in navigating those terrains to help us learn how to think like entrepreneurs.”

Business Takes Flight
Since Cisco’s initial pitch to the VMS mentors, the couple has received advice on networking, on branding their consulting business, and on determining a fair price for their services. Jayme, who recently completed her PhD in anthropology, worked for the Health Sciences Department last semester but turned down a contract for an adjunct position there to work full time for Cisco Consulting. A few days after turning down the adjunct position, the company secured its first contract for services with MU. Other contracts have followed, and they envision expanding across state lines and developing e-courses for their workshops in the future. For now, they are happy to be working together.

“We’re always trying to find opportunities to work together,” Jayme says. “We are partners for life.”

More information on The Grad Academy and Cisco Consulting can be found at ciscoconsulting.org.
Students who enroll in Greg Bier’s Entrepreneurship Alliance (EA) at the Robert J. Trulaske College of Business do not spend a lot of time in class. You are more likely to find Bier’s students ziplining in eastern Missouri, navigating a high ropes course at Venture Out on MU’s Epple Field, or perhaps taking the stage at Columbia’s Museao to practice their acting chops and develop improvisational skills.

“We really try to work on developing that sense of self-confidence, or giving students the guts to pursue their ideas for a new product or service,” Bier says. “You can’t teach guts in a classroom—you can’t do it with a PowerPoint® presentation. Entrepreneurship is an uncomfortable, ambiguous thing, so we do those things on purpose—to tell the students the answers aren’t always in the textbooks. Those textbooks will provide a foundation, but I want to make them comfortable being uncomfortable. When we go ziplining, I push them outside their comfort zone, and the more I do that, the more their boundaries expand, and they realize they can do all kinds of different things.”

Room to Grow
For each of the past five years, the Entrepreneurship Alliance has accepted 50 students per year, although Bier says the
program expanded this fall to enroll 50 students each semester. Interest in the program continues to grow, so he’s been seeking financial support to help the EA expand its offerings. Bier says the EA is unique because it’s not just for students enrolled in the business school. The program is open to every student on campus, and about 40 percent of EA students come from outside the College of Business. Bier says some students who apply to the EA have ideas for a product or service and some don’t, but all of them are interested in entrepreneurship.

“There are several studies that find the real impediments students have to getting involved in entrepreneurship is a lack of guts, a lack of seed money, and a lack of a support network,” Bier says. “That’s where the Entrepreneurship Alliance comes in—that’s where Mizzou takes entrepreneurship to a whole different level.”

Stronger Together
Bier says the team-building exercises are designed to teach students that everyone has particular strengths and weaknesses, and that by working together as a group, they can accomplish their goals. When the class takes a field trip, they often are divided into smaller teams, and those teams stay together in the same hotel room. Bier says that helps students bond with one another and makes them comfortable sharing their ideas with other members of the team without the fear someone will steal their ideas.

“If I can get that marketing student in the ropes course with a journalism student, amazing things happen,” Bier says. “My role is to facilitate these scenarios, and then get out of the way.”

Bier earned his bachelor’s, master’s, and doctorate in engineering management at Missouri University of Science and Technology. In addition to serving as director of the Entrepreneurship Alliance, he teaches Management 4720: Experiential Entrepreneurship for business. But Bier believes a big part of the “secret sauce” that makes the EA work is getting students out of the classroom.

“There are students who want to get their degrees by sitting in the back of the class and just checking off all of the boxes, but we are doing a disservice to students who will become our best alums if all we provide are classroom experiences,” Bier says. “You can’t do a PowerPoint on risk—you have to feel that in the pit of your stomach when you’re on the ropes course. You’ve got to feel what risk is and then realize you can conquer it—that you can push yourself outside of your comfort zone, and then your comfort zone gets bigger and bigger.”

prepares student innovators for success

BY JORDAN YOUNT

A&S Alumni Praise Entrepreneurship Alliance
Preston Owen likes working with plants. As an MU student, Owen, BS ’14, majored in biological sciences and worked in a plant research lab with Professor of Biological Sciences Mannie Liscum. In his junior year, Owen started a small, six-acre farm near his home in Kansas City with borrowed machinery. About that same time, Augie Grasis, the father of one of Owen’s high school classmates, told Owen and his friend Foster Honeck, BA ’15 economics and political science, about the Entrepreneurship Alliance (EA) at the Trulaske College of Business. Grasis serves on the EA’s advisory board and suggested the pair talk to EA Director Greg Bier.

“We had never heard of the Entrepreneurship Alliance,” Owen says. “It was kind of like a small Dead Poets Society with Dr. Bier serving as Robin Williams.” Owen and Honeck went through the EA interview process and were admitted to the class. “It’s a really great course and a fun class—almost anyone would want to take it. You go ziplining, you do acting, and you get to travel across the country if you have an idea and you’re pitching it to investors.”

“It was absolutely the best thing I ever did at Mizzou, without question” Honeck says. “It’s both a class and an organization. We had a few lectures, but other than that, everything was some sort of field trip, or we would have a speaker come talk to us. Basically, Greg thought the best way to learn was to go out and do stuff, and there’s no doubt in my mind he’s right about that.”

Owen and Honeck came up with an idea to connect farmers to landowners—an auction-based website called The Farming Spot. They secured seed money from the EA and developed a beta version of the website. Owen says the project initially gained a lot of traction but then ran into technical difficulties. They are in the process of recruiting a chief technology officer for the project. What advice would he give to students enrolled in the Entrepreneurship Alliance?

“Utilize the connections that the university and alumni offer,” he says. “And don’t let a few hundred or a few thousand dollars be a barrier to entry. The great thing about the EA is they are able to provide seed money to get you started. The other thing is patience. Just be patient, because nothing is built overnight.”
In 2002, a group of St. Louis civic leaders toured a biotech innovation hub in Boston known as Kendall Square. Initially funded by the Massachusetts Institute of Technology, the innovation district replaced an area of the city that had become blighted. The St. Louis leaders recognized the potential for a similar innovation district in the Gateway City and began talking to potential partners. Later that year, Washington University, the University of Missouri–St. Louis, St. Louis University, BJC Healthcare, and the Missouri Botanical Garden joined forces to create the Cortex Innovation Community (CIC) in the heart of the city.

Since its inception, Cortex has completed or is in the process of rehabilitating one million square feet of space totaling $350 million of investment and generating 2,500 technology-related jobs. The Cortex master plan calls for more than 4.5 million square feet of mixed-use development, including research, office, clinical, residential, hotel, and retail space with 13,000 permanent technology-related jobs.

A&S Joins the Team
Seeking a greater presence in the metro St. Louis region, the University of Missouri’s College of Arts and Science opened an office on the CIC campus in fall 2015, led by former Mizzou football star Howard Richards, BA ‘88 communication.

“Mizzou is the state’s flagship university,” says Richards, who was a first-round pick of the Dallas Cowboys in the 1981 NFL draft and worked 13 years for the Central Intelligence Agency after retiring from professional football in 1987. “We’ve needed to have a greater presence in Missouri’s largest city so that we can strengthen relationships, better connect with underserved populations, and grow our research partnerships.”

Cortex CEO Dennis Lower calls the relationship between Cortex and A&S mutually beneficial.

“It’s very important that we connect with our academic partners all across the state,” Lower says. “We have a lot of Mizzou graduates here, so the connection between those MU grads and our start-up companies is important since we are a technology innovation district with over 200 companies. It’s all about intellectual infrastructure, and it’s all about talent acquisition and recruitment. I think we are just at the beginning of exploring this relationship.”

Hanging on to Talent
Lower says one aspect of that exploration is fostering relationships with innovation centers across the state, including the Missouri Innovation Center in Columbia. The Missouri Innovation Center started as a small organization, but in 2009 the center was selected by the University of Missouri to operate and maintain the MU Life Science Incubator at Monsanto Place. Lower says growing the number of technology-related
Legal Clinic Prepares Students, Helps Entrepreneurs

One of the main hurdles entrepreneurs have in creating a new business is navigating the legal shoals that can quickly sink a new venture. Intellectual property rights, licensing, regulatory requirements, and employment issues are among the most-common legal questions confronting those who want to take their ideas to the marketplace. Innovators within the university’s entrepreneurial ecosystem can now receive free legal advice from the School of Law’s Entrepreneurship Legal Clinic (ELC), run by Jim Niemann, JD ’93. “We’re a service-based offering, and like medical schools use residents, we use upper-level law students. So we’re providing hands-on training for students while providing free legal help to clients,” Niemann says. During each of the spring and fall semesters, Niemann recruits eight upper-level law students to participate in the ELC, and each student receives three credit hours for his or her work that semester (soon to be increased to four credit hours). During the summer months, the ELC is staffed by six students.

A Vision for Growth

At some point, Niemann would like to see the ELC expanded to become a collaborative campuswide resource responsible for facilitating the innovation and entrepreneurial efforts of every college on campus. In fact, two of the clinic’s earliest clients work in the College of Arts and Science. Niemann says Exploring Physics®, founded by physics professors Meera Chandrasekhar and Dorina Kosztin, created a milestone with the ELC by being the clinic’s first clients to achieve trademark registration of their business name. “You’ve got very entrepreneurial people in Arts and Science—scores of them, and connecting them with people who have the legal mindsets and the technical or business mindsets—that’s the recipe,” Niemann says. “The recipe is not staying in your silos; it’s getting everybody together.”

In spring 2016, A&S hosted the first in a series of panel discussions at Cortex called “Beyond Campus—Bringing MU to St. Lou.” The interactive series is designed to raise awareness and foster collaboration with the St. Louis entrepreneur and corporate communities and with individuals who have an interest in the college’s educational endeavors. Programs focus on topics of importance to the St. Louis region and create a space where the natural synergies of talented entrepreneurs, business professionals, faculty, and students can come together to take advantage of what each has to offer.
Nearly half of us will experience a diagnosable mental disorder in our lifetimes—often something common such as depression or anxiety. Some people may require therapy or treatment, while others find ways to cope until the disorder goes away. Now, imagine a time when your therapist or mental health professional could send you a text message before you become depressed or anxious reminding you to practice the coping skills you learned. Tim Trull, a Curator’s Distinguished Professor of Psychological Sciences, is working with colleagues to develop an iPhone application to bring that vision to fruition.

iPhone as Medical Tool
Trull and his team recently learned they were selected as one of five semifinalists in the Mood Challenge for ResearchKit, an open-source software framework designed by Apple. The five semifinalists each proposed new ways to use iPhone sensors to help researchers gather data more frequently and accurately from participants using iPhone apps. Trull’s team developed the Mood Toolkit, which provides mental health researchers with a configurable toolkit to study daily emotional health and well-being. Their study will combine biometric data from external sensors such as heart-rate monitors with user surveys and computer algorithms to generate personalized diagnoses and treatments.

“People will have this app on their phone, and they’ll be prompted randomly to tell us what their mood is like, where they are, what they are doing,” Trull says. “We’ll also have wireless sensors they will wear so we can see how their body is reacting, so when they tell us, ‘I’m really angry right now,’ we can see the physiological data that corresponds to that emotional state.”

Trull says there is not a simple physiological sign that indicates sadness or anger or some other mood. Rather, he says, the working hypothesis is that it is context that matters—where one is, who one is with, even the weather. “If you are physiologically aroused, and you are in the middle of a disagreement with a friend, you might interpret that as anger, whereas if you are out at happy hour and you are (physiologically) aroused, you interpret that same arousal as happiness.”

Competitive Entrepreneurship
As a semifinalist, Trull and a member of his team, computer science student Will Morrison, visited Apple’s corporate headquarters for a boot camp to receive mentorship and instruction on developing the app. Following the visit to Apple HQ, the teams entered a “virtual accelerator” phase of the competition, in which they submitted another proposal outlining what they’ve accomplished and where they are headed. The semifinalists gave a presentation on their projects at the Robert Wood Johnson Foundation in Princeton, New Jersey, in September. The two finalists will be notified in October, and the winner will be announced in May 2017.

Trull and his team, Professor of Computer Science Yi Shang and their graduate and postdoctoral students, have already developed three software applications that have been used in federally funded research assessing mood and mood dysregulation in daily life. The two finalists of the Mood Challenge will receive $100,000 and develop their designs into prototypes that will be piloted with iPhone users.
When Bobby Campbell, BA ’99 English and political science, travels to the East or West Coast to meet with other entrepreneurs or to learn about emerging trends in digital technology, he often is greeted with a blank stare when he mentions he lives in Columbia, Missouri. “When they learn I’m from Columbia, the first impression is that I’m living in the middle of a cornfield with hogs out back,” Campbell says. “Unfair or not, that’s what I come up against. But the funny thing is I actually grew up in the middle of a cornfield with hogs in the front yard in Albany, Missouri.”

From the Farm to the Firm
Campbell left the farm and earned a degree in creative writing at MU with the hope of traveling to the West Coast to go to film school but says his grades were not good enough to enroll. So he moved to Texas to surf and tend bar while trying to determine his next step. He returned to Columbia, got a job, and later decided to start his own company. Campbell and a partner founded Division D with $20,000 in 2003. The company helps major advertisers plan and manage their marketing campaigns. He says the first year was successful, but by the fourth year he was not sure his new company would survive.

“I remember sitting down and looking at the bad numbers, and I decided that the advisers I had talked to didn’t understand my business the way I did, so I decided to make decisions on my own and let the company succeed or fail,” Campbell says. He started hiring people and the company started to turn a profit. Next year, he says, Division D is expected to gross $25–$27 million.

Division D also spawned Ad Karma, which originally managed display ads for publishers but later switched to video content, increasing its gross revenues more than tenfold. In May 2015 Campbell resigned his position at Ad Karma and began thinking about his next venture.

A Millennial Workforce
Campbell recruits heavily from the university, offering internships to students in the Department of Communication and the School of Journalism. His goal is to introduce these interns to a fun and creative work environment with an emphasis on community outreach and volunteerism and then hire them as employees once they graduate.

Campbell still owns Division D but has stepped away from the daily operations in order to focus on his new company, Good Wizard, which he says is built around the idea that the nature of how people consume news and entertainment has changed.

“You stream content where you want it—it’s not linear like appointment TV where the family gathers to watch their favorite show at a certain time each week,” Campbell says. “What has not changed is how content is made—but that will change. Content will become more of a two-way street, and you will interact with content more, such as fine-tuning your Netflix queue by rating each show you watch. So this new venture gets me back to where I originally wanted to be—film school.”
Jefferson City native Dale Prouty, BS physics, BS EE ’74, has been involved with more than 25 technology businesses during his career, but he believes his current company has the potential to change the world. Prouty is chief executive officer of Tri Alpha Energy (TAE), located in southern California, which is working to develop fusion-based electricity generation. According to the TAE website, “TAE is determined to deliver clean fusion energy technology that can provide sustainable, commercially competitive base load power and help achieve global energy independence. We are now confident we have sufficient science and engineering understanding to accomplish our goal.”

Fusion has long been in the realm of science fiction, featured in movies like Back to the Future II, but Prouty and his colleagues at TAE are convinced fusion will eventually meet the growing global demand for electricity. Prouty recently answered some questions that explore his career in science.

Q: While at Mizzou, you studied physics and electrical engineering. Have you always been attracted to science? Numbers were my thing when I was a kid. I used to sit down with a spiral notebook and just write numbers from one to a million. I was captivated by numbers, and math was pretty easy for me. When I got to high school, I had a physics teacher who made science a real challenge. That’s what first got me interested in it. At Mizzou I started in math, but I pretty quickly figured out that it was physics and electrical engineering that really stretched me, so I pursued degrees in both.

Q: After your time at Mizzou, you earned a PhD in applied physics from Caltech. Then when you began your career, you successfully combined your scientific background with the business world. Tell us how you transitioned from a “scientist” to an “investor.” What characteristics of a scientific mind have been particularly valuable in the world of finance/business?

While I was getting my PhD, I worked at Hughes Aircraft in the space and communications systems lab. One exciting project was NASA’s Galileo mission to Jupiter. There we were, designing a way for the orbiter and the probe to communicate in a harsh electromagnetic environment during the one-hour probe descent into the Jovian atmosphere, after more than a decade in transit.

There were some really interesting people on that team. I got to know a very entrepreneurial guy named Rex Crookshanks—a brilliant man with about a hundred patents to his name. He was the one who got me interested in starting my own business. Certainly things I’d learned from my science background, like critical thinking and clarity of focus, have helped me as an investor and entrepreneur, but it was Rex’s passion for building companies that really inspired me to get involved in start-ups.

Q: In your career you’ve served as CEO, investor, board member, or operating director for more than 25 tech businesses. You’ve worked with global companies, government agencies including NASA, and investment firms. With such a diverse professional experience, what first drew you to Tri Alpha Energy and convinced you to become involved? It was the vision of creating fusion-based power plants with the potential to provide a virtually limitless source of carbon-free, safe, sustainable energy for the world, and helping solve an unsolved problem. It was obviously a very big idea with a monumental impact, more so than almost anything else I could think of. I did my due diligence. Even though the experimental science was very thin at that point, I came to believe in the people involved in the project—Norman Rostoker, Michl Binderbauer, Henk Monnikhorst, and others. It tapped my physics background, too, which I hadn’t used since Caltech.

I wasn’t intimidated by the challenges of an early-stage start-up. I had already had a lot of experience with small companies, so I knew how to do the things that start-ups have to do to get on a solid footing—things like building boards, getting the lawyers and auditors and, of course, raising money. I felt I could add value over a long period of time.

Q: You started at TAE in 1999 as a seed investor and have served as CEO since 2005. Can you explain for our readers the basic process of fusion? Fusion is the process that powers the sun and the stars. Here on earth it’s often called the “holy grail” of energy because of the qualities I mentioned earlier—carbon-free, safe, and sustainable. TAE’s unique approach will provide a virtually unlimited
supply of clean, continuous (base load) electricity.

The potential is truly world changing. This technology will substantially mitigate climate change impacts and cost-effectively address the growing global demand for electricity. It also will contribute to increased global competitiveness and improved national health. It would become one of the world’s preeminent energy sources, maybe the primary one.

Q: What does that path to fusion energy look like?
Historically, there have been two challenges to developing fusion-based electricity generation: sustaining fuel particles (plasma) long enough and at temperatures hot enough to validate the path to fusion power. We recently delivered a major science breakthrough that demonstrated our ability to sustain plasma life indefinitely, addressing the “long enough” challenge.

Now, we’re building a test machine to show that our approach scales to higher temperatures. We expect to have these “hot enough” results over the next three to four years. We’re also starting to work with utility and industrial partners to develop a commercialization plan.

Q: What impact did your time at Mizzou have on your career/life, and what would you tell our current students who have big ideas for making a difference with their lives?
Mizzou provided a great foundation for my education and began preparing me for the real world—I’m sure it is still doing that for students today.

To Mizzou students today: Focus on the biggest challenge you can find, and go after it. You will find like-minded friends. Maybe it’s building new astronomical systems to study exo-planets, or disease-curing drugs, or composing a new symphony to rival the masters, or cheaper/faster infrastructure for developing countries...whatever it is, grab onto it and find a way to contribute while you’re young, when you can more afford to take risk. It gets harder when you’re older, with more responsibilities. I encourage you to find the excitement in your life that will sustain you every day. Life flies by; it is only later that you look back. Take a chance.
Even as a child, Lacretta Ross says she wanted to be successful. She wasn’t sure what she wanted to be when she grew up—only that she wanted to work consistently and be successful.

By almost any measure, Ross, BA ’03, interdisciplinary studies, has been successful. The Mizzou graduate performed for more than two years with the first national tour of The Book of Mormon, she appeared as an extra on an episode of Law & Order: SVU, and in March she made her Broadway debut in the musical comedy Disaster!, which ran for several months at the Nederlander Theatre in New York City. Ross and the cast of Disaster! even made an appearance on NBC’s The Today Show to promote the musical. She performed in a couple of cabarets in June and then started rehearsal for a new work called Unexpected Joy, which ran for four weeks at an actors’ theater in Cape Cod over the summer.
A Winding Path to the Stage

Ross originally planned to follow her mother’s footsteps when she arrived at MU by going into medicine. Her mother was a labor and delivery unit secretary at the Research Medical Center in Kansas City, so Ross thought about becoming a cardio-vascular surgeon, or a neurosurgeon, and even a coroner until she realized she would have to deal with cadavers. “I am freaked out by dead things, even big dead bugs creep me out,” she jokes. She also toyed with going into journalism or education or social work. One day she was sitting in class and her instructor told her she could get a master’s degree in social work regardless of her bachelor’s degree.

“That sealed the deal,” Ross says. “I decided to go ahead and get a bachelor’s in music or theater, and then if things didn’t go well, I could always go back to school and focus on getting a degree in social work. That was 10–15 years ago; I still don’t have that master’s in social work, but I have one in vocal performance and pedagogy from the University of Iowa.”

While pursuing her bachelor’s degree in interdisciplinary studies at MU, Ross acted and sang in a number of productions at the Rhynsburger Theatre, including *The Taming of the Shrew* and *The Seagull*. She says performing at the Rhynsburger was magical because she had never been on a stage that large. She previously had performed at the Coterie Theatre in Kansas City, a children’s theater where the performers were at eye level with the audience. Those experiences helped her overcome her stage fright. While at MU, Ross also performed in the Mizzou on Broadway showcase, the only collegiate literary-theater showcase in New York in the early 2000s.

Learn a Lot, Work a Lot

She encourages students interested in theater to learn all aspects of the trade, whether they want to act, direct, or work behind the scenes on set, costume, or lighting design.

“There are going to be some people who just take off and move from school right to Broadway, but for the rest of us, acquire as many skills as you can,” Ross says. “If all you want to do is to work in theater, then you need to get into crew work because there is money to be made—you just have to have the skills to do it. When there is a lull between gigs, why sit around and starve?”

Ross has been performing as Lacretta Nicole, the stage name she chose while taking a film studies class with MU theatre Professor Heather Carver, but she says she is dropping her last name and her middle name (Nicole) to be known simply as Lacretta. While her name may be changing, her philosophy of working hard toward success remains.

“I’m hanging in there and working hard because there are a lot of good people at Mizzou and at the University of Iowa and back home who are very proud of me and cheering for me, and I don’t want to let them down.”

Lacretta Nicole (Lacretta Ross) takes center stage during a musical number in *Disaster!* on Broadway.

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University of Missouri Arts and Science students will be required to take three credit hours from courses in the undergraduate curriculum that are designated “DI” for diversity intensive. The proposed diversity course requirement was approved by 75 percent of the tenured and non-tenure track faculty who voted on the measure.

Students, faculty, and administrators have been calling for curriculum revision to include a diversity requirement for over two decades. In 1990, over 200 students met at Jesse Hall to hold a town hall meeting to discuss racism on campus and a proposal requiring all students to take one multicultural class. Although the proposal was debated for the next decade, no action was taken. Other proposals also fell short, but the events of fall 2015 forcefully demonstrated that the concerns students first raised in 1990 have not disappeared.

“It is important to note that this is not something that we whipped up in response to the events of last fall or the student protests,” says Elisa Glick, an associate professor of English and women’s and gender studies who chaired the diversity committee. “The proposal builds on decades of student activism and the work of previous diversity committees. I would be remiss if I didn’t acknowledge the work in particular of April Langley and Roger Worthington, whose campuswide diversity proposal we drew from in crafting our proposal.”

Choice & Flexibility Are Key

Glick says members of the committee felt strongly that in order for students to be able to engage with an increasingly diverse and global world, they need to have a more diverse educational experience. At the same time, she says the committee wanted to ensure the new requirement was flexible.

The college has a wide variety of departments that offer diversity-related courses, including anthropology, black studies, English, German and Russian studies, religious studies, sociology, and women’s and gender studies. A new standing committee has been created to approve courses that fulfill the diversity course requirement. Faculty members on the committee represent a range of disciplines from the humanities, social sciences, behavioral sciences, and natural sciences.

A Model for the Campus

Students will be encouraged to meet the A&S diversity requirement as soon as feasible, preferably in their first three semesters on campus.

Glick says in a world that is changing and becoming more diverse, part of the job of faculty is to help prepare students to enter more diverse workforces and more diverse communities.

“This requirement won’t take care of that in any sort of comprehensive way, but I think it’s one step toward that, and our hope is that it’s an introduction for students, because diversity is not checking a box, diversity education is a process,” Glick says. “We see this requirement as a starting point for students to develop a more nuanced and diverse educational experience.”
Garnett Stokes wants to meet you. The provost of the Columbia campus instituted traveling office hours in spring 2016 as a way to get to know the faculty, staff, and students at MU as well as familiarizing herself with the community she now calls home. Stokes, who recently wrapped up her first year as the chief academic officer for MU, says “I wanted to do something that was routine and that people could count on, and I also thought it was important for the leadership on campus to be visible and listening to people.” Stokes plans to continue hosting her traveling office hour events as long as people continue to attend.

Core Focus
Stokes says one reason she accepted the position of provost at MU is to help the university boost its research standing. She says she was excited for the opportunity to work with the deans and other campus leaders to improve Mizzou’s performance on various indicators of value in establishing MU as one of the best research universities in the country.

Another passion she brought to MU was a belief in the value of focusing on the student experience and student success. “I was involved at Florida State University in multiple programs intended to enhance the retention and graduation rates of our students but also helping to direct them into life after college—the world of work, helping them with career choices or graduate school,” she says.

Expanding the Mission
Stokes also says she is interested in helping facilitate the emerging entrepreneurial ecosystem being developed between the campus and the community. In fact, one FSU program that Stokes is proud of is the Entrepreneur in Residence program in which entrepreneurs are hired to work with faculty to help them bring their ideas to the marketplace. Those entrepreneurs also work with students to help them develop the skills, knowledge, and experience to be successful, whether they were majoring in the humanities or majoring in engineering. She says creating internship and other experiential learning opportunities is something the university needs to pay a lot of attention to because of rapid changes in the world of work.

However, Stokes expressed concern with too much focus on selecting majors solely based on job prospects immediately after graduation. “I believe in the value of majors in the humanities; we simply must make clear to our students that everything we do can lead to meaningful employment. The value of a degree in the liberal arts cannot be overstated.” After earning her doctorate in industrial/organizational psychology at the University of Georgia, Stokes served as a faculty member, then chair of the Department of Psychology, and eventually, dean of the Franklin College of Arts and Sciences. She then accepted an offer from Florida State University in Tallahassee to become provost and later interim president of FSU. It was during her time in Tallahassee that she began to hear great things about Mizzou, and when the position of provost became available, Stokes said she knew this is where she wanted to be.
Practical Side to a Music Degree

BY MELODY GALEN

Becoming the proud owner of a music degree does not necessarily lead one to an automatic career in education—about one-third of the graduates from the University of Missouri School of Music intend to become performers. Unfortunately, while the academic fields of music history and music theory are well covered in course work, the steps to launch oneself into a performance career have not been taught. Three years ago, the School of Music launched a music entrepreneurship certificate consisting of 12 credit hours, two of which are earned by completing a 100-hour internship. The certificate is available to undergraduates and graduate students—in fact, the University of Missouri was the first school to offer a certificate for both.

Julia Gaines, director of the School of Music, holds three music performance degrees and says that nowhere along the way did she learn how to market herself as a musician. “I grew up in an age where I was going to be a college professor, and there was a job for me,” she says. “We’ve got to stop thinking that we’re preparing our students only for music education, the orchestra, and academia.”

Many music graduates have been successful in the St. Louis freelance market, but Gaines says that a lot of them struggle for a year or so while they’re trying to figure out how to market themselves.

The Obvious Answer

Innovation and entrepreneurship have been buzz words for a few years now, and there has been recognition throughout the arts that teaching students the additional skills to be successful at the business of music or art or theater could only be a good thing. There are six one-credit modules, each of which lasts for five weeks. Students can take them one after another, with three in a semester, or they may pick and choose if they decide not to complete the entire certificate. Principles of entrepreneurship, arts marketing, grant writing, music industry, non-profit management, and community engagement are topics covered.

In addition to the modules, there are semester-long classes in career development and one in entrepreneurship, leadership, and advocacy. Past students have done internships with the St. Louis and Kansas City symphonies; one student even interned with the Seattle Symphony.

Practical Results

The certificate has an obvious musical focus, but students from all over the university have taken the classes, with most taking two to three semesters to complete the certificate. “I think the program is necessary for all students starting a career in the arts,” says Korin Wahl, MM ’15. To this day, she still uses the résumé and artist biographies she created as a base for all of her current projects.

Daniel Edwards, MM ’15, realized possibilities he might not have imagined otherwise. “Immediately after taking the introductory course, I organized a solo recital in my hometown, where I booked the venue, created a program, gave a class to high school students, submitted a press release, and distributed marketing materials,” he says. “The event was a tremendous success.”

Even if students don’t have room in their schedules to take the entire certificate, Edwards recommends taking at least a few of the classes. “Programs like the one at Mizzou are not common, so take advantage of the tremendous opportunity at your fingertips.”
The World Awaits

BY JORDAN YOUNT

They come from rural hamlets and huge metropolises, from the East Coast, the West Coast, and all points in between. They travel to the Midwest from many nations to study at one of the premier institutions of higher education in the country—the University of Missouri. For many of these students, Columbia, Missouri, is the destination—and will be their home for four years or more. But for more than 1,000 students each year, MU serves as a launching pad to the wider world through the study-abroad program.

A Second Chance

Conor Fagan, a senior majoring in history, had hoped to spend time studying in Amman, Jordan, when he was an Air Force Reserve Officer Training Corps cadet. He had received a scholarship to study Arabic but then was honorably discharged from the corps due to medical reasons. A few years later, as an MU student, Fagan got another chance to go to Jordan to study Roman history.

“There is a lot one can learn about a site from rigorous book study,” Fagan says. “Without ever physically approaching a Roman ruin, one can amass an astonishing amount of information. But there is something phenomenal about setting foot on the sand, putting a shovel into the ground, and uncovering that information yourself. Despite 4:30 a.m. wake-up calls and temperatures swelling past 100 degrees, there is something fundamentally rewarding about archaeological field work.”

Fagan credits the College of Arts and Science Study-Abroad Scholarship program for making his trip to Jordan financially feasible and says he is indebted to his professors who supported his efforts to study abroad, especially Linda Reeder, an associate professor of history at MU.

In Touch with the Real World

Fagan says while he could have studied Roman history from the comfort of his living room couch, he would have missed the opportunity to have tea with a Jordanian shop owner, or to learn that donkeys in the wild are very sneaky beasts, or to experience the smells of Cairo at lunchtime.

“Beyond those anecdotes, I learned so much academically,” he says. “Techniques for use in the field, how to conduct certain aspects of a dig, and learning about our host country and the Roman ruins within it. I built contacts with people who likely will be the future in the field, and my knowledge about the subject now is so much greater than when I applied for this scholarship.”

The International Center at MU encourages students to consider enrolling in a study-abroad program for a summer, a semester, or a full year to explore foreign lands, meet new people, and immerse themselves in a different culture. Financial aid and scholarships are available to students interested in a study-abroad program, and students can receive academic credit for courses completed successfully. Many students do not have to delay graduation, even while studying abroad for a full year. MU offers more than 250 study-abroad programs covering every major, in nearly 60 countries.

Fagan says he hopes A&S will expand the program so even more students will have the opportunity to explore the world while getting an education.
Olympic bronze medalist J’Den Cox is thinking about the future. Not necessarily the immediate future, though the MU senior is focused on helping the Tiger wrestling team win a national title this season, and his personal goal is to win the Hodge Trophy, wrestling’s version of football’s Heisman Trophy. He also has set his sights on winning a gold medal at the 2020 Olympic Games in Japan. But Cox is thinking farther afield, to when he has children. “I’m going to have kids one day, and that’s what I’m thinking of nowadays,” Cox says. “You know, I’ve lived out my dream—I’ve gone to the Olympics, I’ve conquered, and I’ve failed, and I’ve risen up, so I’m thinking of the future. What am I supposed to leave behind? When I think about that, I think what’s going to be left behind are my children, so what can I leave behind for them? Hopefully I can leave behind a world that’s better than the one I was living in.”

A Mature Perspective
Pretty heady stuff, but Cox has had opportunities to travel the world as an MU wrestler. He enjoys meeting new people and immersing himself in different cultures, from Germany to Mongolia to his recent foray to Brazil, where he won the bronze medal in the 86-kilogram freestyle wrestling competition at the Olympic Games in Rio de Janeiro. Cox became the first Columbia native to win an Olympic medal and just the seventh Tiger to medal at the Olympics, and he did so while injured.

“I got the final takedown with a torn meniscus, and I tore it up even more trying to get that takedown, but it was totally worth it,” Cox said at his homecoming news conference at the Columns Club at Memorial Stadium.

Winning Is Not Everything
Cox says he accepts the fact he can lose, so when he does, as in the heartbreaking Olympic semifinal round loss to Turkey’s Selim Yasar, he was able to shake it off and prepare for the bronze medal round instead of the gold. “I’ll be honest, after that semifinal loss I was disappointed,” says Cody Shoemaker, director of operations for MU Wrestling. “I think I took it harder than he did, but then I realized it’s his match. Winning the gold would have been awesome, but his character showed itself in the way he dealt with a very unusual loss. You could tell for him it was fun, he was enjoying it.”

Cox says part of the reason he enjoyed his time in Rio so much was because 11 members of his family made the trip to Brazil to cheer him on. “It’s great to share an experience you’ve been dreaming about with the people who have helped you throughout your life get to where you are,” Cox says.

The Family Guy
Cox’s grandmother, Jennifer Arnold, who recently retired as an administrative associate in the Department of German and Russian Studies, says family is everything to her grandson. She says he often attends church with his parents in Fayette, sometimes singing one of his original songs. In addition to writing lyrics and singing, Cox plays several instruments—the violin, viola, bass, piano, and guitar. He used to be able to read music but says he has forgotten, although he can figure out how to play a composi-
Olympic Medalist Looks to the Future

From top: A victorious J’Den Cox at the NCAA championship in March; Elizabeth Puricelli, MA ’10 HES, (holding Annalise) tries on Cox’s bronze medal at a semester kickoff event; the multi-talented Cox sings the national anthem at the MU–Georgia football game, Sept. 17.
Notable Achievements on Campus and Beyond

**Anthropology**

Mark V. Flinn and his team believe that the quality and size of the social relationships nurtured in childhood may have important physiological consequences for physical and mental health for youth. As part of a 28-year study in Dominica, the team determined that children and adolescents physically react to their social networks and the stress those networks may cause.

**Biological Sciences**

Susan Nagel, an associate professor in the department of obstetrics, gynecology and women's health and an adjunct associate professor of biological sciences, reported high levels of chemical activity in the surface water near a hydraulic fracturing wastewater disposal facility in West Virginia. Scientists warn that this level of activity may be associated with negative health effects in aquatic organisms, other animals, and humans.

**Chemistry**

In the fight against cancer, nuclear medicine may be one of the best tools in a physician's arsenal. Professor Silvia Jurisson and her interdisciplinary team recently received a U.S. patent for a new delivery method that uses nuclear isotopes to help target, diagnose, and treat cancer. The patented method, highlighting Jurisson's more-than-30 years of research work, could prove invaluable in battling prostate, pancreatic, breast, and small-cell cancers in the body.

**Communication**

Although 98 percent of all organizations have sexual harassment policies, it remains an issue in the workplace. Professor Debbie Dougherty and postdoctoral fellow Marlow Goldstein Hode are evaluating how employees' interpretations of sexual harassment policies can invalidate the purpose of the policies. They found that employee perceptions of how exactly "sexual harassment" is defined by a company's policy can, in effect, eliminate or reshape the meaning of these policies and contradict the norms and values of the companies that try to enforce them.

**Geological Sciences**

Jim Schiffbauer and John Huntley, assistant professors in geology, collaborated to study trilobite fossils that reveal the behaviors of predators preserved as traces in ancient sediments. Fossils from southeast Missouri are helping scientists unlock clues about the behaviors of these predators and their interactions with their prey. Evidence shows that these ancient organisms were behaviorally sophisticated, tailoring their attacks for effectiveness.

**Psychological Sciences**

David Beversdorf, associate professor in the departments of radiology, neurology, and psychological sciences at MU and the MU Thompson Center for Autism and Neurodevelopmental Disorders, found that a medication commonly used to treat high blood pressure and irregular heartbeats may have the potential to improve some social functions of individuals with autism.
Student Artists Interpret Science

Art. Meet Science. Science—meet Art. Now, Science, you explain yourself to Art. And Art, you figure out how to visually represent Science. Twice a year, in Hannah Reeves’ 3-D design classes, one of her pedagogical methods was to pair up an artist and an undergraduate science researcher and see what came of the match.

The 3-D design class is the prerequisite wood-shop training class for anyone getting a bachelor of fine arts. The end goal of the class is that the students gain proficiency and can safely work in the wood shop to perform necessary tasks later in their studies—that a sculpture student will know how to build things out of wood, or that someone taking printmaking or painting will be able to build frames, for instance.

Collaborative Effort
A former assistant adjunct professor at MU, Reeves is now a gallery director in Columbia, and she came upon the idea for the collaboration in a conversation with Linda Blockus, the director of undergraduate research for the campus. “It’s been a goal of the Office of Undergraduate Research to really expand the understanding of creative and visual research,” says Reeves.

Blockus finds lab directors who are willing to send student researchers for a couple days of interviews with Reeves’ art students. “I think that the appeal to lab directors is that their undergraduate researchers are needing to learn how to articulate what they’re doing to people outside their immediate discipline,” explains Reeves.

Mutually Beneficial
It is probably as challenging for the science researcher to articulate his or her work as it is for the art student to take that information and adapt it into the visual. Reeves set up the interviews between the art and science students before the art students had gone into the wood shop so they had the freedom to design in their minds without being held back by thoughts of “can I physically do that?” Reeves reminded her students that helping them figure out how to do it was one of her jobs. Their job is to create.

She says a lot of an art student’s early work gets tossed after class or ends up in Mom’s attic. “They’re not used to making something that they want to keep,” she says. “I love doing that with them and having a lot of them make their first piece that they really value.”

It’s an added bonus for the students and the university that several pieces are purchased by professors or labs each semester. “They’re actually part of the university collection then—which is significant for a beginning art student.”

1. Shawn Carey showed the effect of a protein binding to an intracellular ion channel based on the research of Kaydee Harper.
2. Summer Richie showed a cell undergoing endocytosis based on the research of Alex Clarke.
3. Brandon Graf showed bacteria changing upon the introduction of a protein based on the research of Anita Donner.
4. Sam Coffman showed how a cell’s membrane, growth, and division are affected by DNA alteration based on the research of Caroline Dunn.
The University of Missouri and the American military have been intertwined since the Civil War, when a contingent of Missouri volunteers known as “Merrill’s Horse,” who were sympathetic to the Union, pitched their tents on campus and occupied the university for the duration of the Civil War.

Birth of a Tradition
The Morrill Act of 1862 created land-grant universities such as MU and required all male students to study the basics of military tactics. The Missouri Military Academy was established on campus, and formal military instruction began in 1870. The Reserve Officer Training Corps (ROTC) didn’t enter the picture until 1916, when the National Defense Act established the program to make military science courses on par with other academic subjects.

The Army ROTC program was established at MU on Sept. 8, 1917, one year prior to the start of World War I. Attendance at the university and in ROTC dropped dramatically during World War I and World War II as students and cadets left campus to fight overseas. In 1946, the Air Force and the Navy established ROTC units at MU; all three programs are now housed at Crowder Hall.

Strong Citizens, Strong Communities
“You will be a better citizen, and that’s what we stress here—to make them a better person in their community by teaching them leadership and integrity,” says Master Sgt. Justin Hardy, the assistant department head for MU’s Army ROTC unit. “We instill our Army values in the first two semesters, then if you decide you want to be an Army officer, we’ll show you how to take those leadership principles and apply them to the Army,
Left: Because military science was an artillery-based program, cadets practiced placing and firing the cannons in front of Switzler Hall, ca. 1912. C:0/3/7, courtesy of University Archives.

Below: Each Wednesday, the battalion formed on the Quad to practice military drills, ca. 1908. C:0/47/3, courtesy of University Archives.

Opposite page, top: Two MU cadets firing the cannon at the MU Homecoming football game in 2007.

Opposite page: Newly commissioned Army officers, from left, Taylor Goddard; Hunter Stoll, BA ’16 history; Colin Snook, BS ’16 biochemistry; Mitch Brown, BS ’16 natural resources; James Holland, BHS ’16; Tyler Anderson-Sieg, BS ’16 psychology; Alex Gold, BA ’16 history; Jonathan Frye, BHS ’16; Robert Williams, BSME ’16; and Sarah Feuerborn, BS ’16 natural resources, May 2016.

whether it’s active duty, the National Guard, or the Reserves.”

Graduating cadets are commissioned as second lieutenants. Hardy says the Tiger Battalion works to commission 20–25 officers from the program each year from a pool of about 200 students, although the number of students who enroll in the program ebbs and flows with changes in university enrollment and current events. Last year 130 students were enrolled in Army ROTC. Students can participate in the program their freshman and sophomore years without an obligation to join the Army. The Army will pay the tuition and fees, as well as a monthly stipend, for students who decide to continue.

Hardy says one of the biggest changes in the program over the last 100 years is the type of person the Army hopes to recruit. “Now we are looking for outside-the-box thinkers to get us into those missions of 2025,” he says. “We’re not looking for robots—we want people who can do more than just drill and follow orders. We need people who are strategic thinkers.”
Some of the School of Music students who could benefit from a consolidated facility, pictured in the lot that will someday hold the new building. Seated: sophomores Noah Petti and Madison DeWeerd; standing, from left: freshman Ben Dawson, junior Laura Beth Reznicek, seniors Sam Riley and David Roth, sophomore Julie Youngers, and senior Bria Jones.

PHOTO BY ROB HILL
A consolidated facility for the School of Music has been a dream for a long time, but now, it’s become an all-encompassing need.

Why? It really comes down to three things: growth, acoustics, and collaboration.

Bursting at the Seams
The music program has experienced phenomenal growth in the last 46 years since the Fine Arts Building was built in 1961. We have more than twice the number of students and greatly expanded programs and activities, including the Mizzou New Music Initiative, a music entrepreneurship certificate (read more on page 22), two jazz bands, a jazz choir, two percussion ensembles, and myriad chamber ensembles—none of which existed when the building first opened.

No longer able to fit in the four music classrooms in the Fine Arts Building, students in the School of Music now take classes in six different buildings across campus, and many of the facilities are not large enough to accommodate our musicians. Marching Mizzou, which numbers 250–300, gathers in the Missouri Theatre for music-only practice. The drumline squeezes onto the stage with the director, while the rest sit in the audience seats. Imagine 50 saxophone players with their instruments hunkered into those plush, velvet seats.

Acoustics Matter
An equally serious problem is that many of these spaces were not designed for students studying or performing music. Some classes are in an old gymnasium; others are in areas designed for food preparation. Julia Gaines, director of the School of Music, recalls using old walk-in coolers as practice space.

Nature of the Beast
Music is a group discipline by nature, and the spread of the School of Music across our MU campus has seriously hampered the ability to collaborate. “I realize communication in 2016 can happen anywhere, but the value of face-to-face interaction remains unbeatable,” explains Gaines. “When this happens for our students and faculty on a regular basis, I truly believe the sky is the limit!”

Preparing Musicians for the 21st Century
The School of Music’s mission is to prepare students for life in 2016 and beyond, something that’s difficult to do with facilities from the 1960s. Thanks to a generous lead gift of $10 million, additional funding from other donors, and a significant commitment from the campus administration, it’s time to make this dream a reality.

From left: Julia Gaines, Jeanne Sinquefield, and Patricia Okker are all part of the push to bring the dream of a new music building to reality. Gaines is the director of the School of Music, Sinquefield is the head of the Sinquefield Charitable Foundation, and Okker is the interim dean of the College of Arts and Science.

The Fine Arts Annex and the parking lot behind it will make way for the new School of Music building.
Why I Give

Marlin Fiola, BA ’76 economics, and Margaret Fiola

Quite candidly, it’s an opportunity for us to share some of our good fortune and 'pay it forward.' Having come from a family of modest means and being the first to be graduated from college, it’s not difficult to figure out what made the difference in my life. Giving to the school in a manner that may allow the same good fortune to benefit others is money well-spent.

Dawn Smith-Popielski, BA ’96 art history and archaeology and classical studies

I give to the departments of Art History and Archaeology and Classical Studies because of the exceptional education I received as an undergraduate student, and I want others to have access to such wonderful experiences and opportunities.

Susan Kircher, BA ’61 English, and Bill Kircher, BS EE ’60

As a member of the English Leaders Board, I was amazed at the expanded opportunities today’s English students enjoy. They are being well-prepared for careers in our contemporary job market. Deciding to give back to Mizzou so other young people can benefit from this university is an easy decision for us. We have recently made Mizzou part of our estate plan. Why wouldn’t we? What we are and have today is a direct result of our years as students at Missouri’s flagship university. GO MIZZOU!
Did you know?
When you join the Mizzou Alumni Association, you automatically become a member of the Arts and Science Alumni Organization.

Visit Mizzou.com and select the College of Arts and Science as your preferred school/college. Thank you for supporting the College of Arts and Science.

Col. David Smith, BA ’69 political science, MA ’75 business

My giving started shortly after the 9/11 death at the Pentagon of my best Army friend, Karl Teepe, MBA ’74, who I met and served with in the Army ROTC detachment in the 1970s. I thought a good way to honor his memory and our friendship would be a memorial scholarship in his name at Mizzou. I began to realize that nearly everything good in my life could also, in one way or another, be traced back to Mizzou. I therefore decided to establish other scholarships and awards to honor the mentors from my MU past who had given so much to me in ways they never realized at the time.”

Major Garrett, BA ’84 political science, BJ ’84 journalism

I’ve sort of reached the station in life where I have the means, and I want the faculty to know that their involvement and their excellence matters, and that some kid who sat in the chairs of their predecessor has reached a stage in life where he values their contribution now. That’s a message that I want to make sure they understand, and to the degree that students learn about it or hear about it now, I hope they think to themselves, ‘Hey, maybe someday I can do that.’”

Ted Murray, BA ’71 economics

My wife, Peggy, and I met on a blind date at Mizzou. She was attending Stephens and I was a DU at Mizzou. Forty-four years later, we are still married, and the memories we share from our college days are priceless. My degree has served me well. Looking around, it seemed like there was a real need, so I joined the Department of Economics Leadership Board and also agreed to donate.”
If you ask Greg and Tara Boehne, they will tell you they are Tigers forever. Now, through a gift of life insurance, they will create scholarships for future Tigers forever.

When asked about how they settled on doing a gift for MU, Tara said that it is something they’ve thought about for a long time. “We started having kids of our own and realized it is important that they understand what we had done. And it was neat to bring them back here and kind of show them where we had gone to school and where we had met.”

Greg and Tara both said they got the idea to make a gift of life insurance after reading an advertisement in Mizzou magazine. Greg added, “If we can help someone after we are gone and leave a legacy, that’s a good thing.”

For information about how to establish your own insurance or other planned gift in support of A&S, contact the College of Arts and Science development office at 573-882-4421 or at UMCASAdvancementGroup@missouri.edu.