Outstanding Creative Endeavor
Outstanding Researcher of the Year
Welcome!

Going strong into our second year as a single, cohesive, unit, Sponsored Project Administration (SPA) is pleased to share with the University Community its accomplishments as an office – and especially of the faculty and staff it serves. SPA has been fully staffed since February 2016, and continues to move forward on refining procedures and policies in its mission to provide the highest level of service possible throughout the sponsored projects lifecycle.

To that end, this magazine includes the Fiscal Year 2015-16 records pertaining to SPA. Figures include grant awards, contracts awarded to University Centers and Institutes, and funding to the Ball State University Foundation that resulted in sponsored programs.

As an executive summary of sorts: FY 15-16 brought more than $25.7M in external dollars to Ball State University. Six-hundred-79 proposals were submitted during the fiscal year and 333 funded awards were recorded.

We extend our appreciation to all who carried out the challenging work of preparing and administering sponsored projects, both internal and external, - awarded or not - and recognize the productivity and commitment represented by all who are actively engaged in the pursuit of extramural funding: faculty, professionals, staff, and administrators alike.

On behalf of the first-rate and hard-working SPA staff, we offer our warm regards and best wishes for continued success.

Carolyn Kapinus
Acting Associate Vice President for Research and Dean of the Graduate School

Justin Miller, EdD
Director
Sponsored Projects Administration

Ball State University
Interim President
Terry S. King, PhD

Acting Provost and Executive VP for Academic Affairs
Robert J. Morris, PhD

Acting Associate Vice President for Research and Dean of the Graduate School
Carolyn Kapinus

Sponsored Projects Administration
Justin Miller | Brenda Ayers | Maria Bumbalough | Keith Chandler | Carol Clendening | Mark Combs | Todd Davidson | Jacqueline Davis | Stanley Geidel | Jay Javed | Ted Kolodka | Sarah Lee | Briana Lomax | Matthew Moore | Chad Paskewicz | Jessie Roark | Stephanie Roof | Sheila Shafer | Lee Anne Shore | Eric Strauch | Linda Swartz | Araminta Tuttle | Rebecca Tyler | Augusta Wray | Gandzhina Dustova | Emily Hayes | Rosie Hua | Alicia Kelly | Briana Lomax | Linda White

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Cover Photo: Mark Pyron

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FY 2016 Annual Report
Grant tests literacy tools for at-risk youth

by Holly Ford & Linda White

Secured for their own safety, three grade levels behind in reading, facing emotional and behavioral issues, some residents at one Youth Opportunity Center (YOC) could face the poorest outcomes in society. “They are at high risk of ending up in prison later. They are at high risk for school dropout before they finish high school,” said Janay Sander, associate professor of educational psychology.

Sander believes providing the right intervention to the right teenager is one way to change their bleak outcomes. “By intervention, I mean educational interventions that are more than just the standard curriculum, plus mental health interventions that are designed to target a specific set of emotional and behavioral symptoms.”

Those interventions are part of a reading program study Sander and Ruth Jefferson designed. Jefferson is an assistant professor of special education and co-principal investigator with Sander on this project, backed with nearly $400,000 from the National Institute of Justice. They are testing their work at Muncie’s YOC, a residential treatment facility for juveniles placed there by the court system. The pilot group started in summer 2016.

Improving reading levels is goal

“The first goal is to find out if it is possible to improve reading skills by providing interesting and effective reading interventions in a safe and stimulating environment,” said Sander.

She said other goals include preventing repeat offenders and increasing confidence in YOC residents, who are 12 to 17 years old. Sander supports positive, holistic approaches to support student success and well-being. YOC houses 400 youth a year.

“At that facility, there are 100+ kids on an average day. That’s a big enough sample to do meaningful research,” said Sander.

YOC’s education coordinator Lindsay Price has seen positive changes in students.

“In the past, students have used reading material as a way to pass time, and now they are utilizing their comprehension of the material as a bid for conversation among each other and with staff. This is an incredible accomplishment that could only have begun with the implementation of the Ball State reading study,” said Jefferson.

Sander and Jefferson aren’t doing this work alone. Ball State students work with YOC residents. The undergrads are part of an immersive learning course and must pass several levels of training plus a background check.

“My experience was far more eye-opening than I could have ever imagined,” said Kierra Bronson, a senior psychology student who plans to earn a master’s degree in counseling psychology. “I’ve been working with students at YOC for two weeks. It seemed that as much as we were helping them, they were helping us, too. I left feeling hopeful and positive because I knew the reading strategies were benefiting the students in so many ways. I knew that everyone involved was there for the right reasons.”

Searching for a solution

Research goals include discovering effective reading tools by testing existing ones in hopes of recommending better methods for working with at-risk youth.

To evaluate options, Sander and Jefferson randomly assign the participants who have volunteered for the program, to a control group or an intervention group. The control group receives instruction as usual, while the intervention group receives a research-based reading program for 210 minutes each week.

For Bronson, this research project helped her realize her path in education. “Through this experience, I can confidently say that I know working with at-risk children is something I have a passion for and want to continue pursuing.”

Researchers believe this project has the potential for long-lasting societal effects beyond YOC. “Anytime that at-risk youth acquire skills appropriate for success in school or in adult life in general, the general public should benefit,” said Jefferson. “As these individuals make meaningful connections with college students and develop lifelong skills in literacy, we hope their chances increase for being productive citizens, and their options expand into appropriate areas, leading to lives as contributing adults.”

Finishing up the research by the end of 2018, Sander believes it has the potential to change the way schools and juvenile justice facilities handle the educational needs of some of their more challenging students.
Rivers of Research: How We Affect Watery Ecosystems

By Briana Lomax

With a third of Americans getting their drinking water from rivers, according to americanswtr.org, the health of those bodies of water is vital for people, animals and the environment. But what influence do humans have on those waterways?

Ball State biology professor Mark Pyron is investigating this question by comparing North American river ecosystems that have been modified over time to more pristine Mongolian rivers. He’ll do this with an award of more than $190,000 that’s part of a $4 million-plus National Science Foundation grant.

Research underway

Pyron is working with scientists and graduate students from nine universities including Ball State, the University of Kansas, and international universities such as the National University of Mongolia. James Thorp of Kansas leads this project.

This five-year research project began in the summer of 2015. Part of their study includes collecting samples of fish, insects and plants from rivers in California, Nevada and Utah, plus Mongolia. They are studying more than a dozen rivers until 2020, focusing on semiarid shrublands, mountain steppe shrublands, and short-to-tall grassland ecoregions.

These three ecosystems are all river basins — land that drains water and sends it to a river. Semiarid shrublands are basins where rivers either dry at a final point or enter a landlocked lake. Mountain steppe shrublands and short-to-tall grasslands are basins whose rivers eventually reach an ocean.

“Primarily, we’re going to test Jim Thorp’s idea for river ecosystem synthesis, which is a prediction that rivers function as small units that are impacted by the local hydrology and local geology,” Pyron said. According to Pyron, the group is studying how food webs, the food chain in an ecological community, change as functions of rivers, as well as how they change in response to factors such as dams and human influences.

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“When we ask human influences, what are they? We can ask, ‘Is this what a river naturally functions like?’ ”

Pyron’s main focus on the project is studying fish. He and his team will use tissue samples from fish and look at isotope levels to better assess questions related to food webs. Fish collection will be different in each country. In the U.S., they will use backpack electric fishers and nets and in Mongolia, they plan to use rod and reel. Other researchers will focus on insects.

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When asked about the expected differences between North American and Mongolian rivers, Pyron said, “One of the overlying differences is just there are fewer species there.” He also lists differences in geology, ecological conditions and evolution as contributing factors.

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“The cool thing is that rivers that have no exotic species — there’s nothing introduced there.”

Advice

Pyron said Ball State students are motivated to assist with the research. “I’ve got two graduate students who are going to be doing the field work with me. They’re both going to use a portion of this research as part of their dissertations. So they’re heavily involved in it,” he said.

Pyron has a lot of advice for students considering a career in research or biology. “It’s probably more important that you find an area that really interests you rather than something that’s going to sell. It’s more motivating to do research that you’re interested in.”

But he said that if the area doesn’t sell, you’re less likely to get funding for research. Pyron suggests being open to multiple paths of research and willing to modify things to fit funding opportunities.

Because of Ball State’s flexibility in research, Pyron has been able to follow a path that fits his interests and funding needs. He’s thankful for his research opportunities, especially traveling to Mongolia and the Western U.S. where he sees “really cool” sites and creates contacts with students and researchers at other universities.

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New research instruments used to treat incurable diseases and uncover history

Each day Ball State University researchers have a variety of technological instruments at their fingertips that make doing their jobs that much easier. That’s the case for the machines in the photos on this page. Both are known as major research instruments or MRIs.

The one above is a liquid chromatography-mass spectrometry system. Sundeep Rayat, associate professor of chemistry is putting it to good use in her department. She said it’s being used in developing quick, efficient and versatile methods to obtain new classes of compounds with significance in agriculture, material science and medicine.

The photo to the right is of a ground-penetrating radar. Archeologist Kevin Nolan has already used it in nearly a dozen projects in some cases searching for hidden treasure of our past. Both MRIs were purchased with grant dollars and are helping Ball State Researchers attract new faculty, students and increase the Cardinal name in the world of research.

Liquid chromatography -mass spectrometry system

Getting to the heart of a molecule in less time and with fewer resources is the essence of what a liquid chromatography-mass spectrometry system is doing for the research community in Ball State’s chemistry department.

Sundeep Rayat, PhD, associate professor of biology, received a $200,000 grant from the National Science Foundation to purchase the system, considered a major research instrument.

She said she was delighted to get the funding on her second attempt. “The acquisition of this instrument has provided access to an invaluable tool for the investigation (or study) of a wide range of compounds and biomolecules.”

Rayat’s laboratory is working on developing cheaper, more selective, and more potent drugs to treat diseases such as cancer and cystic fibrosis. The machine is being used to focus on analyzing compounds. The liquid chromatography will quickly separate mixtures, then the mass spectrometry will identify the substances.

The system was installed in spring 2016. According to Rayat, the instrument has far-reaching implications for research at Ball State and should help to recruit more faculty and students.

“This instrumentation is also being employed as a research training tool in undergraduate and graduate courses in chemistry to familiarize students with this modern analytical technique as a part of their curriculum, and thus provide them with skills necessary to succeed in an advanced degree or in a highly competitive global job market.”

Rayat’s research students who work with the equipment see it as an important step in their academic careers.

Jordan Deal, a senior from Collierville, Tennessee, said the system was a valuable resource in his ongoing research project this past summer. “Without it, I would not have seen any conclusive evidence that my compound of interest was actually being synthesized.” Without those findings, Deal said he would have scrapped his project.

Available to nine different research groups, the machine system isn’t just helping faculty and students. Rayat said it will also let her compete for more federal funding, increasing the visibility of multiple departments and Ball State University.
Finding hidden treasures below ground is one of the goals of Kevin Nolan. The senior archaeologist and director of the Applied Anthropology Laboratories (AAL) has a new tool to help him—a ground-penetrating radar purchased with a $40,000 grant from the National Science Foundation.

Nolan said the radar has been used in 11 different projects. He said it’s ideal for archaeology, forensics, geology, and mining.

“Projects we are doing include looking for unmarked graves in early cemeteries, creating 3-D models of the construction stages of Native American earthworks (Mounds State Park in Indiana) and searching for signs of an Indian Wars fort (Fort Recovery in Ohio), exploring the geology and archaeology of Great Salpeter Cave (in Kentucky).”

It is expected that this machine will play a valuable role in furthering interdisciplinary research as well as improving student and teacher training in the fields of geology and anthropology.

One of those students is 23-year-old Amanda Balough of Alexandria, Virginia. With a passion for archaeology, Balough appreciates the opportunity to learn and work with the equipment. “I think that having this specialization will make me more marketable, and it is wonderful that the AAL is doing so much with the GPR and granting me this opportunity. It is very beneficial for any archaeologist to have an understanding on how to operate different survey equipment,” Balough said.

Nolan said various individual research projects for faculty and students have already been planned, providing crucial skills that will set students apart in the job market. He said he also hopes to partner with local cities and towns to help them with construction projects and planning.

“Locating utilities, buried objects or foundations is a service we hope to be able to provide to current and potential community partners.”

Nolan sees the machine as a way to continue his department’s objectives—conducting high-quality research, educating the public, helping local governments oversee cultural resources, and performing community service. §

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**GROUND-PENETRATING RADAR**

Kevin Nolan conducts a ground-penetrating radar workshop on the quad Students received one on one training on the radar at the Nottingham Cemetery near Muncie

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**ENERGY, ARCHITECTURE AND SOCIAL WORK**

**ASPIRE INTERNAL GRANT AWARD WINNERS**

By Briana Lomax

Three of Ball State University’s junior faculty are hoping to make an impact in their fields of energy, architecture and social work. Their work may have far-reaching effects, which is why they were named this year’s 2015-16 research competition award winners.

Separately, the trio, Tom Collins, Zhihai Li, and Matt Moore, is looking into effective energy conversion systems, improving the quality of Interactive Learning Space classrooms and addressing student-athletes’ mental health concerns. The primary purpose of this award competition is to give up to $15,000 for research and projects that will lead to further support from external funders. Those in their first five years of a tenure-track appointment may apply. Sponsored Projects Administration oversees the Aspire internal grant program, which hands out the awards. Read more about the award winners.

**How Well are Interactive Learning Space Classrooms Performing?**

In kindergarten, Tom Collins, PhD knew he wanted to be an architect. Growing up, he was surrounded by the art of the profession. He lived in a house built by his great-grandfather, and his father introduced him to many architects. These professionals gave Collins architecture magazines and let him spend time in their offices, further immersing him in the profession.

“I really can’t imagine another career that would suit me better.” Collins describes his main study interest as how buildings work. As Assistant Professor of Architecture, Collins studies building occupancy and how it affects occupants’ well-being. He also compares how occupants use buildings with how designers predicted buildings would be used. This knowledge can help improve building design and operation.

In his research, Collins evaluates how well buildings meet their designers’ goals and intentions. He’ll use his award to evaluate the conditions and occupant satisfaction of Ball State University’s Interactive Learning Space (ILS) classrooms. So far in his research Collins has found that buildings are rarely designed in ways that let researchers easily measure and validate the performance of these buildings, leading to a gap in research.

“In general, the goal of my research is to provide those who design and operate buildings with fine-grained feedback that can help them make better decisions,” Collins said.

**How do these spaces function for users?**

Collins’ research project, “EQuALS: Environmental Quality in Active Learning Spaces,” will address the gap in research. This will be done by examining indoor environmental quality in campus’s five Interactive Learning Space classrooms.
He and a graduate student will look at factors such as air quality, lighting, noise, and thermal comfort.

ILS classrooms are part of an initiative to support contemporary teaching methods as opposed to traditional lectures. Through this program, Ball State seeks to implement engaged learning methods, such as inquiry-based learning, problem-based learning, and team-based earning. ILS classrooms began 25 years ago in North Carolina State University’s SCALE-Up program. According to Collins, the goals of these classrooms are to improve student learning, change the way instructors engage with students, and offer increased flexibility and access to technology.

Most research primarily focuses on the virtual learning environment, so research on the physical environment is scarce. What little research there is, suggests the physical conditions of these classrooms can influence learning outcomes.

For his study, Collins said he will observe the five classrooms and their occupants, survey occupants and take spot measurements of the rooms’ environmental quality. It’s what’s called the basic-level evaluation environment. It’s what’s measured to assess the quality of the rooms’ environmental quality. It’s what’s called the basic-level evaluation environment. It’s what’s measured to assess the quality of the rooms’ environmental quality. It’s what’s called the basic-level evaluation environment. It’s what’s measured to assess the quality of the rooms’ environmental quality.

Watching and interviewing students

The spaces will also be observed when students are present, either while in the room or by using video. After completing the physical classroom research, Collins and his assistant will survey students to gauge their satisfaction with the rooms.

The surveys will be an important piece that will provide insight into what the users think of the quality of their learning environments,” Collins said.

Collins is analyzing data now and hopes to provide recommendations that may influence the use of ILS in the future. He said he plans to publish his findings addressing the need for research that “provides a better understanding of physical environmental conditions in higher education classrooms.”

"Much of my research has examined the role of buildings and building performance in campus sustainability efforts. Ball State’s robust and well-regarded sustainability efforts make the campus an ideal site for inquiry,” Collins said.

Collins says the university has been exceptionally supportive of his research. “I’ve only been on campus for a short time, but I already feel connected to resources and people that can assist me in my scholarly work.” Collins plans to wrap up this research in the spring.

Using Light Energy for Electricity

Assistant professor of chemistry Zhizhai Li, PhD is working on a system to convert energy without harming the environment. He received the maximum Aspire Junior Faculty Research award for preliminary research on environmentally benign energy conversion systems. Li focuses on solar cell systems which convert solar energy to electricity. According to Li, the cost to convert light energy into electricity on an industrial scale is high due to costly materials and fabrication processes. He hopes his research will help solve energy shortages and environmental pollution problems through nanotechnology, the science and technology of nanoscale devices and materials.

“Our ultimate goal is to develop some novel nanomaterials that are more efficient and economic than the current popular titanium dioxide (TiO2),” Li said in an email interview. Li went on to say nickel tungstate (NiWO4) is the best candidate for the application in solar cells due to its low cost.

Li’s project consists of three main priorities. The first is to synthesize functional nanomaterials that can be used in the light harvesting and then “dope” the nickel tungstate nanomaterials with different metal ions. “Doping” means impurities are introduced to the semiconductor to change its electrical properties.

So far, Li and his team have successfully synthesized three types of nickel tungstate-based nanomaterials. This process will help them better understand how well the solar cells can convert solar energy to electricity. They will assess these capabilities using photo-electrochemical techniques with and without the presence of light.

“Our experiments and discoveries will advance the current understanding of doping other metals on photon to electron efficiency, especially on solar cells—a clean energy system—thereby having a long lasting impact on the energy industry, fundamental science, and environmental protection,” Li explains.

The second priority is to characterize these nanomaterials using various microscopy techniques such as transmission electron, atomic force, and scanning tunneling.

Lastly, they will use prepared nanomaterials to evaluate how well the solar cells they can make convert light energy to electricity. To do this, they plan to “develop low cost and high efficiency materials and optimize the fabrication process,” Li said. These new materials will help improve solar-to-electric conversion efficiency and reduce the cost of materials and fabrication processes.

Grad student excited about helping with research

“In short, we are trying to develop solar cells using novel nanomaterials and dyes to explore properties and functionalities of these materials in terms of solar cells’ performance, for example, photo-electron conversion efficiency,” Li said. He and his team have already developed a procedure to make solar cells’ properties measurable.

Currently, these materials are being tested and prepared for closer study. Li works with about a half dozen students on this project including Amirhossein Hosseini, a graduate student.

“I’m so excited to be in this lab and to participate in all ongoing research,” Hosseini said. He assists mainly with preparing nanomaterials and creating protocols for solar cell fabrication.

“Specifically, working under the supervision of Dr. Li is so interesting since he has great vision toward the future of research, and he is constantly trying to enable students to think independently, meantime providing for them an amicable atmosphere in which researchers can cherish and enjoy their time in the lab,” Hosseini said.

Hosseini lists many opportunities he has had while working under Li, such as traveling to national conferences, meeting colleagues, and set-
earlier this year in March, to promote mental health issues for student athletes. These recommendations include referring college athletes to psychological care, addressing risks during pre-season physical exams establishing standards for approaching athletes with psychological risks, and routine evaluations.

Research by the NCAA suggests that sports-related injuries often trigger or exacerbate mental health issues. However, many people think about high school and college sports when they think about high school and college culture. When many people think about high school and college culture, they think about high school and college athletics not often spoken about. Many of us thrive on sports—so much so that sports are integrated into our education, starting in elementary school. When many people think about high school and college culture and identity, time constraints and professional won’t understand athletic values and ethical principles of the social work model will break down, so that faculty can be devoted to science and inspired from each other. We faculty strongly support each other, Li said. Richard Fluegeman, Klaus Neumann, Kirsten Nicholson, and Tykhon Zubkov all have a hand in this project. Without them, Li said, “It is hard to imagine how our project could have proceeded.”

De-stigmatizing Mental Health Issues for Student Athletes

Whether it’s a home run at Wrigley Field or the winning shot at Madison Square Garden, sports are an integral aspect of American culture. Many of us thrive on sports—so much so that sports are integrated into our education, starting in elementary school. When many people think about high school and college sporting events, it brings back festive images of homecoming and singing images of homecoming and singing the school fight song. However, there is a more alarming side of school athletics not often spoken about. Research by the NCAA suggests that sports-related injuries often trigger or uncover serious mental health issues, such as anxiety, depression, eating disorders, substance abuse, or use, and other psychological disorders.

In response to this issue, the NCAA released recommendations earlier this year in March, to promote mental health of college athletes. These recommendations include referring college athletes to psychological care, addressing risks during pre-season physical exams establishing standards for approaching athletes with psychological risks, and routine evaluations.

Junior Faculty award winner Assistant Professor Matt Moore, PhD hopes to de-stigmatize mental health help among student athletes. He will use his award to support research in this area.

Moore believes various factors influence whether a college athlete seeks mental health services. Those include societal stigmas about mental health, concerns that a helping professional won’t understand athletic culture and identity, time constraints of being a student and athlete and even not knowing about available services.

“My current research is exploring how social workers can play a larger role in ensuring the health and well-being of student-athletes, especially as it relates to their mental health,” Moore said.

Interprofessional approach

In the social work field, there is very little crossover with the world of sports. Moore said there are only a handful of researchers who study the integration of social work and sports. Through his work, Moore hopes to explore an interprofessional approach to promote the mental health of college athletes. He calls it the sport social work model.

Through this model, he writes that he hopes to show “how the core values and ethical principles of the social work profession, paired with a strong understanding of sport culture and athlete identity, can promote discussions of psychosocial challenges.”

For those who work closely with athletes, education and training will be developed about how to intervene in athletes’ lives. Moore’s research will also include training about how to engage with those athletes affected by psychosocial risks.

“The exploration of such a model, along with the efforts of current professionals involved in athletics, could impact thousands of college athletes in need of psychosocial help, Moore writes. In addition to training, he also wants more education and preventive work to identify athletes with greater risks of mental health issues.

Moore describes his research as client-centered and hopes to provide all athletes with the highest level of mental health care.

By the time the research ends, Moore hopes that athletes will feel more comfortable about seeking mental health services and that the social service model will break down any barriers. Glenn Stone, chairperson of the social work department, said, “Dr. Moore’s research would put forth a model of service delivery for this population that would have social work as an integral partner in assisting student-athletes.”

Moore plans to finish his project Fall 2016 then prepare his materials for publication and presentation.
By Linda White

This year’s Outstanding Creative Endeavor Award winner has been called supportive, kind, a tough cookie, and a missile of theater goodness.

Karen Kessler, professor of theater, was invited to Ball State University as a guest artist in 2001 and 2003. By her second stint as a guest artist, she had found her new home and never left. Her body of work, from campus to off-Broadway, led her peers to recommend her for this prestigious award.

If you ask Kessler what she does for a living, she’ll tell you she’s a director who happens to teach. “I’m a lucky, lucky person. I’m living a life where I get to work with an awful lot of people whom I respect, and I’m getting to work with kids I just love. So, it’s a great thing. I’m a lucky person in a lucky place,” said Kessler.

A passion for directing

Kessler began her journey to this lucky place as a criminology/psychology double major at Southern Illinois University at Carbondale. Kessler said a resident assistant, knowing her high school theater background, suggested she try out for a play. She was cast in a role. By her second year she had changed her major to theater. Kessler went on to get a master’s because she said she discovered her passion for directing.

“It’s a combination of personality traits to be a director. You have to like puzzles. You have to be bossy. You have to be dogmatic. You have to be willing to articulate your vision. You have to be all of those things.”

Kessler continues to articulate that vision at Ball State and in freelance directing, which she’s been doing for nearly 30 years. Early in her career, she was based in her hometown of Chicago. She’s taken her directing skills to England, Russia and around the U.S. That includes a celebrat

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there. She is a wonderful role model for any woman pursuing a career in the arts,” said Morgan.

Teaching her students is one place where Kessler finds joy. “It’s fun working with the kids cause everything’s a new adventure with them. Sometimes when you’re working with professionals, they’re like, ‘Done that.’ And the kids, it’s always the excitement of the new.”

**Pearls of wisdom**
Part of teaching is passing on words of wisdom.

This is her professional advice.

“Prompt, pleasant and prepared will get you your next job. You’ll get your first job on your talent or whom you know. They’ll rehire you, and you’re always working on the rehire, and prompt, pleasant and prepared will get you the rehire.”

This is her life advice.

“Relax. Don’t be so hard on yourself. This is a journey, not a destination. You walk the road. And just walk your road, and you do that, the best you can and try not to beat yourself up too bad.”

For Kessler, being in the classroom is about teaching students their art form, their work, their business and about being good human beings. “It’s not our job to turn out a brilliant actor. It’s our job to turn out a brilliant person who’s also a good actor.”

And as for that award Kessler’s won, Neveu and Morgan know first-hand, she’s earned it. “Karen is always looking for the spark in projects, something she can fan and set afire. I’m not surprised she won,” said Neveu.

“Her commitment to the students is unparalleled, and the real world experience you get from working with Karen is invaluable. She deserves this award and more!” said Morgan.

Kessler’s answer, well, it’s a bit different. “My answer to getting an award is but my colleagues are so cool, too.”

When reminded, her colleagues were the ones who recommended her for the award she said this. “At the end of the day, it’s nice. It’s humbling, and it’s a little bit embarrassing because compliments are hard for me. But it’s also lovely, and I love my work and I’m good at it. I know that’s true and my work, my work is important to me, and it’s nice to have that recognized.”
How Data Breaches Affect Our Actions or Inactions
Privacy and security issues remain front and center in this digital age. In the past year, Yahoo, Eddie Bauer, the Democratic National Committee, and even Fort Wayne, Indiana-based Vera Bradley have reported hacking of company information involving customers, clients, and in some cases emails, according to the Privacy Rights Clearinghouse.

This year’s Outstanding Researcher of the Year Award winner, Rui Chen, PhD, is currently focused on such breaches online and in social media. “More computers pretty much are connected to the internet in some way. So it allows hackers the opportunity to steal information,” says Chen, associate professor of information systems and operations management. Chen's most recent research looks at how to fight cyberattacks in the behavioral sense. One way to do that, he explains, is to understand how and why some people are susceptible to phishing emails.

“We are looking at individual consumers, company employees. We try to understand what goes through their minds, how they process information when dealing with security related issues.” That interest led to a $100,000 award from the National Science Foundation (NSF) to study what Chen called this interesting emerging topic.

Data Breach Fatigue

Part of Chen's research also includes data breach fatigue—that consumers become resigned as they repeatedly hear about security incidents and are therefore less likely to protect themselves. “We figure it's important for us to understand: to what degree does this data breach fatigue exist? How badly does that affect consumers in terms of discouraging them from taking actions, and most importantly, what we can do to mitigate the negative effect of privacy breach fatigue?”

Following a data breach, many of those companies now offer a standard security monitoring package at no charge to the consumer. Chen has discovered not everyone takes advantage of the coverage. “Indeed, many people don’t respond. We have industry reports to show that. A huge percentage of people, 40 percent, don’t do anything. If they don’t do anything, then it’s not much of an obstacle for the hacker to start capitalizing on those stolen identities.”

According to Chen, a consumer typically has zero liability in a data breach, so they’re not pushed to act or do more to protect their identity after a security breach. But Chen said identity protection services do fall short.

“For instance, one year’s protection, that’s totally not enough. After a year, there's no protection, so consumers are very vulnerable. And the protection services can do only certain things. Currently the ID protection services are very limited. A lot of times, they’re reactive. They’re not really proactive, and consumers have only the illusion of control.”

Theoretical and Practical Research

Chen said research is part theoretical and part practical. The practical is the “so what” factor. He's hopeful his research will make a difference. "We can use these findings to inform the policy makers, inform the regulators, inform the managers, educate the customers, so all kinds of things can be done. We can create educational awareness campaigns. We can come up with white papers. We provide suggestions and practices to the managers."

This research is just one of a dozen other research projects through which Chen tirelessly rotates on a daily basis. "You need to keep an eye on the new papers being published, attend to the new things. That’s what makes research so difficult, because you have to find something new to report. You have to be very creative in finding things and reporting them, and that creativity is so hard.”

Pursuit of Knowledge

It’s that creativity and relentless pursuit of knowledge that led his colleagues and others to write letters of recommendation for Outstanding Researcher of the Year.

Miller College of Business Dean Jennifer Bott, PhD, says Chen has a consistent and robust research agenda that elevates the status of his department, Miller College, and Ball State University.

H. Raghav Rao, PhD, the AT&T Distinguished Chair in Infrastructure Assurance and Security at the University of Texas at San Antonio College of Business, has coauthored several scholarly articles with Chen. Rao says Chen has achieved significant research accomplishments and is a fruitful scholar who contributes to the professional community by exercising his outstanding research abilities.

Since 2009, Chen has had more than 20 articles published in his field’s top journals. He's also made a similar amount of presentations at conferences and published a half dozen book chapters.

In addition to security and privacy, Chen has also made significant and innovative contributions to emergency research. He has explored new ways to improve response management strategies with cutting-edge information systems. His findings led the U.S. Department of Homeland Security (DHS) and Federal Emergency Management Agency (FEMA) to call for new research in this area.

Due to his prolific writing, Chen also is an associate editor of two of the top journals in his field: Information & Management and Information Systems.

Encouraging Others

While Chen never lets a moment go by without thinking about what he's working on now or that next project, he also wants to encourage students to pursue the worthwhile endeavor of research.

“So we need people to do serious research. I would encourage more students to do the research. It’s a very rewarding experience in terms of you’re always going to find challenges. And you keep challenging yourself in terms of how high you want to go, how much you want to accomplish.”

Having been given awards and honored for his work in the past, still, Chen is appreciative of this latest recognition. “Every day, we are challenged to discover something new to stay innovative, keep an eye on the new things. And try to answer a question that’s not being answered. So when we have a publication and those types of recognitions and awards, it only belongs to the history. We get it. I’m very happy. I’m very proud. I’m really humbled to receive that. I take the pride back to my office and leave it. Every time I see it, that’s a driver to promote me to do more. It’s a driver for me to do more in the future.”

And that future includes creating, finishing, and publishing more research.
Building dreams and opportunities in disadvantaged Indiana communities

A northeast Indiana program is exposing some high school students to the world of health. “Every time I just go to the doctor, I just see all those cool instruments and I think, I want to do that,” said Takera Morrow, a Blackford High School junior.

Morrow and twenty-two other Blackford students are dreaming big, learning all they can while getting a jump-start on health careers. In addition to the health science education program at their school, the Northeast Indiana Area Health Education Center (NEI-AHEC) will be enhancing their learning with a $220,000 grant from the Health Resources & Services Administration.

AHECs have been around since the 1970s, according to NEI-AHEC Director Cathy Whaley, who said they were created out of necessity, specifically for rural communities. “So people knew many years ago that we would not have health care. People were going to the big cities to practice instead of staying and being a country doc. They saw it coming. AHECs were funded, trying to encourage people to stay home, stay local. We’re just trying to continue that, and the need is there.”

There are eight AHECs in Indiana. NEI-AHEC is one of the newest offices to open, housed on Ball State’s campus in Carmichael Hall. AHEC’s mission is to enhance access to high-quality health care, particularly primary and preventive care, by improving the supply and distribution of health care professionals via strategic partnerships with academic programs, communities, and professional organizations. In the Fall 2016, NEI-AHEC began implementing health career recruitment curriculum in high schools in Blackford, Delaware, and Wabash counties. With limited funding, Whaley said they are working in places and with students who are the most in need.

Former emergency room nurse and now switched to nursing. Thompson heard Tobyas tell the classroom that, once they’re employed in a health career, their employers may pay for future education for their health professionals through the National Health Service Corps program. After getting his registered nursing degree, Thompson wants to become a nurse practitioner and then …

In NEI-AHEC, students are exposed to a variety of careers like Orthopedic Surgery and Surgical Nursing.

“I kind of want to like move up in ranking, I guess, and the last thing I want to do is go into hospital administration. Just move up.”

AHEC is also helping Thompson in another way. He’s involved in the student association known as HOSA: Future Health Professionals. AHEC funds trips to state and national HOSA conferences and workshops.

Whaley said, “AHECs are often kind of behind the scenes because we’re a resource. Students don’t always know if it wasn’t for AHEC, they wouldn’t be receiving this opportunity. Do we make a difference? Absolutely – whether people know about us or not.”

AHEC is exposing students to opportunities and helping them imagine better lives for themselves. “Students need somebody to believe in them and to pay them some attention and let them know what’s possible,” Whaley said. Morrow knows what’s possible. She’s interested in a college that specifically caters to her field of interest.

“I want to go to university and those are the two closest to home” said Morrow. Two years away from entering college, Morrow not only has narrowed down her choices of where she would like to study but what she wants to study – Pre-operative Nursing. However it may take some convincing to get her to return to her community. Morrow said, “I want to go somewhere that’s big. Because when it’s bigger, there’s a lot more risk of getting hurt and a lot more surgeries.”

Dreaming big is what AHEC is about. And perhaps there is still time to convince Morrow to stay in Indiana.

Blackford High School Club MEDIC students use external fracture fixation devices to repair bone damage to a cow tibia and rib.

NEI-AHEC graduate assistant Eriel Bass speaks to Blackford High School students about medical equipment.

Blackford High School students Takera Morrow (far left) and Scott Thompson (far right) are getting a head start on their medical careers thanks to NEI-AHEC.
External Funding Overview

Sponsored Projects Administration external funding totals include Ball State University Foundation funds that play out as externally sponsored projects, as well as funding self-administered by University Service Centers. The chart below, "External Dollars Received FY 2012 - 2015," reflects totals for all sources of external funding for Ball State projects, including Foundation support and Centers.
Initiatives & Accomplishments

Progress on the Ball State Strategic Plan (2012-17):

<table>
<thead>
<tr>
<th></th>
<th>Baseline FY12</th>
<th>FY13 Actual</th>
<th>FY14 Actual</th>
<th>FY15 Actual</th>
<th>FY16 Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase by 125% external funding for scholarly work</td>
<td>$14M</td>
<td>$20.2M</td>
<td>$18.2M</td>
<td>$11.1M</td>
<td>$25.7M</td>
</tr>
<tr>
<td>Increase by 40% the number of contract and grant proposal submissions</td>
<td>505</td>
<td>532</td>
<td>485</td>
<td>440</td>
<td>679</td>
</tr>
<tr>
<td>Increase number of contract and grant proposal submissions totaling more than $25,000 by 25%</td>
<td>183</td>
<td>205</td>
<td>210</td>
<td>180</td>
<td>301</td>
</tr>
</tbody>
</table>

Notable Funded Proposals

International Projects
- Kabul University BBA/MBA, Kenneth Holland, Center for International Development, FH360/US Dept. of State: $1,000,000
- Sindh Workforce Development, Kenneth Holland, CID, US Dept. of State: $250,000
- TiYP 2016, Larry Gerstein, Center for Peace & Conflict Studies, Meredith International Center / US Dept. of State: $157,526

Sciences
- Skeletal Muscle Health with Aging and Life-long Exercise, Scott Trappe, Human Performance Lab, National Institutes of Health: $424,149
- Reading Intervention, Academic and Behavioral Outcomes for Adolescents: A Community Agency and University Partnership Project, Janay Sander, National Institute of Justice: $388,478
- Software & Security Engineering Center (S2ERC), Wayne Zage, Computer Science, Multiple Sponsors: $681,370
- MRI: Acquisition of a Liquid Chromatography-Mass Spectrometry System for Research and Research Training, Sundee Rayat, Chemistry, National Science Foundation: $196,968
- MRI: Acquisition of a Ground Penetrating Radar for Interdisciplinary Studies in Anthropology and the Geosciences, Kevin Nolan, Applied Anthropology Lab, National Science Foundation: $43,415
- Collaborative Research: Hierarchical Functioning of River Macrosystems in Temperate Steep Creek Systems, Jeremy Walls (Biology)
- Dynamics and Models of the Yellow Perch in Indiana Waters of Lake Michigan, Thomas Lauer, Biology, National Science Foundation: $190,788

Public Service
- VSTOP: 2015-17, Joseph Losco, Political Science, Indiana Secretary of State: $1,190,000
- Launch Indiana, Julie Halbing, Governmental Relations, Indiana Office of Small Business and Entrepreneurship: $650,000
- Northeast Indiana Area Health Education Ceten (NEI-AHEC) Operational Support, Julie Halbing, Governmental Relations, Indiana University: $220,000
- Small Business Development Center, Julie Halbing, Governmental Relations, Indiana Office of Small Business and Entrepreneurship: $202,353
- MuncieP: Maximizing Promise and Potential in Preschool-Primary Grades through Collaboration with Community-Based Organizations, Pat Clark, Elementary Education, Indiana Department of Education: $159,897

Institutional Support
- Creation of the “John H. Schnatter Institute for Entrepreneurship and Free Enterprise”, Michael Goldsby, John H. Schnatter Family & Koch Foundations: $3,250,000
- O.W.L. Pride - Onward with Learning at Burris Laboratory School - Phase II, Dawn Miller, Burris Laboratory School, Ball Brothers Foundation: $250,000
- Center for Autism Spectrum Disorders, David McIntosh, Special Education, Ball State University Foundation: $1,382,030
- Conn-Selmer School Partnership Program for Musical Instruments, Ryan Hourigan, School of Music, Conn-Selmer, Inc.: $196,764
- Ball State University’s Residential Property Management SkillUP Indiana! Project Proposal, Sotiris Hji-Avgoquist, Family & Consumer Sciences, Indiana Dept. of Workforce Development: $158,881

In addition to the above awards, SPA was integral to assisting faculty and staff with the development and submission of proposals as part of the University’s Academic Excellence Grant competition (AEG). In all, over 100 proposals were submitted and selected to share in over $4.2M in funding via the Ball State University Foundation. Awardees and executive summaries can be viewed on the University’s Centennial Commitment website.

Research Recognition

Student Symposium: The 2016 Symposium continues to serve as an important public forum for undergraduate and graduate students to display and present their research and creative projects. This year continued a new feature with panel presentations scheduled in addition to posters. 200 individual student participants presented 149 posters and 25 papers, which drew an over 400 total attendees.

- Display Award Winner:
  - Jelena Petricvic (Biology) and Maren Orchard (History)
  - Title: Work-Family Conflict in American Women: Association with Health Risk Behaviors and Health Outcomes
  - Mentor: Jagdish Khubchandani (Physiology & Health Science)

- Content Award Winners:
  - Cody Bennett (Biology)
  - Title: Glycogen Metabolism in Mice Generated by the Cre-Lox System
  - Mentor: Bartholomew Pederson (Medical Education)

  - Josh Bock (Kinesiology)
  - Title: Establishing the Reliability of Several Consumer-Based Physical Activity Monitors
  - Mentor: Alex Montoya (Kinesiology)

  - Seth Higgins (Kinesiology)
  - Title: The Influence of Incline Walking and Stair Ascending on Lower Extremity Mechanics in Older Adults
  - Mentor: Henry Wang (Kinesiology)

  - Christopher Indovina (Biology), Sarah Engle (Biology), Ashleigh South (Biology), and Jacob Davis (Biology)
  - Title: Determining Genes Required for Degradation of Translocon-Clogging Proteins
  - Mentor: Eric Rubenstein (Biology)

  - Samuel Lawson (Psychology), Sarah Birkhead (Psychology), and Alexis Hamilton (Psychology)
  - Title: Using Twitter to Examine Male Aggression in Culture of Honor States
  - Mentor: Thomas Holtgraves (Psychology)

  - Daniel Smith (Chemistry)
  - Title: The Role of Glycogen in Hypoglycemia-induced Memory Loss
  - Mentor: Bartholomew Pederson (Medical Education)

  - Jeremy Walls (Biology)
  - Title: Exploring Environmental Controls on Toxic Algal Blooms to Promote Problem Solving and Quantitative Reasoning Skills in STEM Courses
  - Mentor: Allison Rober (Biology)
Benefacta Day
The 25th annual BeneFacta Day was celebrated November 18, 2015 in the BSU Alumni Center. This annual event for recognizing faculty and profession personnel active in submitting proposals and carrying out sponsored projects brought together over 100 attendees who enjoyed wine, cheese, and hors d’oeuvres, as well as remarks from the President, Associate Vice-President for Research, and SPA Associate Director, Pre-Award Services.

Research & Outstanding Creative Endeavor of the Year
The annual lecture and reception featuring the Outstanding Researcher of the Year and Outstanding Creative Endeavor Awardee took place on April 29, 2016 in the Student Center Forum Room. The 2015 Research recipient, as nominated by her peers and chosen by the University Research Committee, Susan McDowell, professor of biology, spoke on her research agenda and the impact of students on her research. The Outstanding Creative Endeavor award, also nominated by their peers and chosen by the Creative Arts Committee, were, Drew Vidal and Michael Elliott, both assistant professors of Theatre, shared their creative process in creating the work Frankenstein, as well as their approach to improvisation, complete with student actors.

Staff Updates
SPA is happy to share that it has been fully staffed since early 2016 with the addition of Mark Combs as Proposal Manager.

Program Offerings & Support Programs

Research Week, 2015
This campus-wide initiative entered its second year in FY15/16, and continued to focus on providing high quality professional development opportunities for faculty and staff all concentrated over one week. Sessions included: a panel on “Community-Engaged Research”, “What is Entrepreneurial Learning?”, a webinar from the Grants Resource Center, and "NIH Tech Tools for Grantmanship", among other presentations. An archive of presentation materials is available on the SPA website.

SPA Fellows Program
A keystone program for new faculty developed by Campus Liaison, Stan Geidel, continued during academic year 2015/16 with two cohorts of a hand-selected group of faculty members chosen by the Provost, AVPR, Colleges, and SPA staff to participate in a year-long intensive educational program. Knowledge base and grant-writing skills are developed in order to obtain external grants in support of fundable endeavors more successfully.

Focus on the Search
This 1-hour intensive session allows 6-8 participants to get hands-on, one-on-one, time with the SPO Research Information Coordinator to first sign up for COS Pivot and then how to utilize this power tool to develop a search – all with the help of a Pivot expert.

Indirect Cost Recovery Distribution
Per University policy, of the $1,311,622 in indirect costs recovered by the University, currently: 5% go to Principal Investigator(s), 10% to Departments/Units, and 3% to the College (when their four-year average is met, with 20% on amounts over that average). During the past year, the following amounts were transferred: $60,468 to PIs, $175,052 to departments/centers, and $74,119 to colleges – which makes a total distribution of $309,639.

Communication & Information
SPA continues to share information through a number of social media outlets including the SPA Research Newsletter Blog, Facebook page, and Twitter account. In addition to funding opportunities, SPA events, and news related to external funding, these mechanisms have also allowed for the ability to share funding successes quickly with the campus community.

SPA Professional Development
SPA Staff attended and/or presented at the following conferences and professional meetings:
• Indiana Forum for Research Administration (IFRA)
• Midwest Research and Graduate Administrators Forum (MRGAF)
• National Council of University Research Administrators (NCURA) Fundamentals Class
• Butler Undergraduate Research Conference
• National Council of University Research Administrators, Region IV
• Federal Demonstration Partnership

• Society of Research Administrators Annual Meeting
• National Council of University Research Administrators (NCURA) Annual Meeting
• Evisions Research Conference
• National Institutes of Health Regional Seminar
• National Science Foundation Grants Conference
• Women Working in Technology
• 2016 BSU Copyright Conference
Intellectual Property

Intellectual property development remains an integral component to the research enterprise at the University. SPA is responsible for both receiving initial disclosures of potential intellectual property and in serving as the University liaison with the Ball State Innovation Corporation (BSIC). The BSIC, under the continued leadership of President Wil Davis, directs commercialization and licensing activities related to BSU’s works of intellectual property: everything from mobile apps to curriculum to scientific patents.

Three of the performance indicators of the BSU Strategic Plan directly relate to SPA and BSIC’s IP efforts, under Goal 4, Objective 5: “Enhance commercialization with new opportunities and strategies.” Those indicators are to increase royalty by 50% (to $405,606), create a total of five start-up companies that generate significant net revenue, and increase the annual number of IP disclosures to 20.

During Fiscal Year 2016, 11 disclosures of intellectual property were made, while FY 16 royalties totaled $224,440.24. Itemized listing of those IP products are below. For additional questions on the IP process at Ball State, contact Stephanie Roof; for questions on the specific products available, contact Linda Swartz.

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Project Title</th>
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</thead>
<tbody>
<tr>
<td>Michael O’Hara, Judith Sebesia</td>
<td>Explore Theatre: A Backstage Pass - DVD</td>
<td>$12,706.77</td>
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<td>Teresa Matlock</td>
<td>Child Care Collection, LLC</td>
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<td>Hans P. Kellogg</td>
<td>Legacies of Perfection: Auburn Cord Duesenberg</td>
<td>$513.33</td>
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<td>Nancy Carlson, Ann Eldridge, Mark Warshaw</td>
<td>Gene Stratton Porter</td>
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<td>Rob Bell</td>
<td>Mental Toughness Training for Golf</td>
<td>$86.90</td>
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<tr>
<td>Ronald Morris</td>
<td>Madison, Indiana</td>
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<td>Linda Sjikberg, Ann (Burford) Blodeau</td>
<td>Safe Swallowing</td>
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Software

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<tr>
<th>Author(s)</th>
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<tr>
<td>Sherry Wooley, Donald Whitney</td>
<td>MAP: Online (Making Achievement Possible: Online)</td>
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<td>Prog Baby Apps, LLC</td>
<td>Campus Hub</td>
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<td>Matthew Stace, Mark Lora</td>
<td>iGrade</td>
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<td>Jason Bell, The muse Lauer</td>
<td>BackCalc (FishDC)</td>
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Books

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<tr>
<td>Ronald Morris</td>
<td>Crossroad Connect - Indiana 4th Grade Textbook</td>
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Miscellaneous

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<td>Dayna Thompson, Monique Gannon, Ron Kitcheluck</td>
<td>Saturn &amp; Beyond</td>
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<td>The Traveler App</td>
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<td>My Name is Jerry</td>
<td>$29.94</td>
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2015-16 Program Participation

The ASPIRE Internal Grants program processed 147 student proposals and awarded $24,745 to support 120 projects; 135 faculty proposals and awarded $269,819 to support 101 projects. Details of the 2015-16 ASPIRE Internal Grants program are summarized in the table, “ASPIRE Internal Grants Program 2015-16.” Three of the Junior Faculty awardees are featured in the 2016 issue of Ball State Research: Matt Moore from Social Work, Tom Collins of Architecture, and Zhihai Li from Chemistry.