

Vandals in FOCUS



CONTENTS

GABE CONLEY.....	1
biological engineering and computer engineering	
ANDREA PIKES AND NICOLE WALDORF	2
sociology/criminology	
BRET KINDALL.....	3
agricultural education and horticulture	
ALYSSA HUDSON	4
accounting and management/ human resources	
CODY MUIR.....	5
graphic design	
SAVHANNA KORVER	6
elementary education	
JAKOB MAGOLAN.....	7
assistant professor of chemistry	
MEGAN WHETZEL.....	8
wildlife resources	
ABIGAIL RAVELING	9
biological engineering	
ERICA ALBERTSON.....	10
interior design	
MICAH JOHNSON	11
marketing and modern language business	
BROOKE LUZZI.....	12
food science	
PRANAV RANA.....	13
microbiology	
RYAN DUNBECK	14
ecology and conservation biology	
SARAH HORVATH	15
physics	
KATE CONNER	16
exercise science and health	
ZACHARY LIEN	17
international studies and political science	
LEONTINA "LT" HORMEL	18
associate professor of sociology	
ABOUT VANDALS IN FOCUS	19
GET STARTED WITH RESEARCH.....	20

COVER ILLUSTRATION by Rebecca Mann, a December 2016 graduate of the UI Bachelor of Fine Arts program. Mann is from Lewiston, Idaho, and now lives and works in Moscow.

UNLEASHING INNOVATION

The University of Idaho provides an unparalleled undergraduate experience, including participation for most students in research, scholarly activity and creative work. That is one of the core strengths of our comprehensive research university: We are uniquely positioned to deliver learning opportunities of breadth and depth with mentorship from faculty experts at the leading edge of their disciplines.



Hands-on research experiences allow students to develop as scholars and innovators while gaining experience they can apply to life after college. That post-graduation success might include continued education or the start of a fulfilling career. Down whatever road it leads, a UI education offers growth through bolstered self-confidence, collaboration skills and critical thinking.

This report highlights the contributions to innovation and discovery that our students make. Students at UI don't just receive knowledge — they help unlock and unleash it. I am proud to see that Vandals tradition showcased here.

A handwritten signature in black ink that reads "Chuck Staben".

Chuck Staben
President



Watch a video about undergraduate research, read expanded stories, check out more photos and learn how to get involved in research on the Vandals in Focus website.

www.uidaho.edu/VandalsInFocus

Tapping into Neurology



Engineering student uses mapping and imaging to reveal unknown

A multicolored string of lines spreading in different directions fills a computer screen. It resembles a child's drawing. But this picture is actually a diffusion-tensor image of the brain.

Gabe Conley spent fall 2016 and spring 2017 studying these intricate images of the brain as part of a research project in the University of Idaho's new Integrated Research and Innovation Center. Conley, a 19-year-old freshman from Moscow, is double majoring in biological engineering and computer engineering in the UI College of Engineering.

His work was a small piece of a larger project involving the cerebrospinal fluid system, led by assistant professor Bryn Martin. Conley worked alongside Lucas Sass, a first-year doctoral student in biological engineering.

"I have always been interested in the central nervous system, specifically the brain," Conley said. "So the opportunity to research with the Neuropysiological Imaging and Modeling Laboratory where I am literally looking at the brain and learning about its different functions was very fortunate."

Cerebrospinal fluid is liquid that circulates between the spine and the ventricles, which act as communicating nooks within the brain. The researchers hope to better understand the system, and how cerebrospinal fluid dynamics could be used to diagnose and treat neurological disorders.

To do this, Sass designed the original idea for a pump that is used to simulate cerebrospinal fluid. The pump connects to a 3-D printed spine and brain.

Conley's part of the research focused on the cerebrospinal fluid inside the brain. He used MRI images that are stored in Digital Imaging and Communications in Medicine files. These files have hundreds of images of different slices of an object – in this case, the cerebrospinal fluid in the brain. From these images, Conley created a virtual model. The final step was bringing it to life by 3-D printing the image.

The combination of studying the body and working with computer images is a perk to Conley's research because it pertains to both of his majors, which he says go hand in hand. As he becomes more proficient with technology he can improve his research, he said.

Another perk to working as part of a larger team, and within the interdisciplinary IRIC building, is learning about others' ideas.

"My favorite part is actually the meetings, because there's also Ph.D. students working in similar subjects that we are," Conley said. "It's interesting to talk to them and try to think the same way that they do or just see the way they think."

To further his research experience, Conley received a grant from the Idaho IDeA Network of Biomedical Research Excellence for summer 2017. Conley said he hopes to study arachnoid trabeculae, which resemble spider webs and are located in the same space cerebrospinal fluid is and may have a role in the fluid's pulsation.

Conley also plans to present his research in Tucson, Arizona, in June 2017 at the Summer Biomechanics, Bioengineering and Biotransport Conference.

WRITER: Emily Lowe, a senior from Kuna, Idaho, is majoring in journalism.

PHOTOGRAPHER: Carly Scott, a sophomore from Buhl, Idaho, is majoring in mathematics and biology.



Finding a Life Mission

OUR Travel Grant recipients

WRITER: Mary Caraway is a senior from Idaho Falls, Idaho, studying English with a creative writing emphasis.

PHOTOGRAPHER: Kara Billington, a junior from Moscow, Idaho, is majoring in broadcast and digital media.

Sociology students say studying police oversight agencies has given them purpose

A research project examining ways to improve police oversight agencies made University of Idaho senior **Andrea Pikes** realize she wanted to dedicate her life to studying relationships between law enforcement agencies and the people they serve.

"This project makes you realize what could be done for this outcry that's going on with the community and the police," said Pikes, 22, of Boise, a double major in sociology/criminology and psychology in the College of Letters, Arts and Social Sciences.

Police oversight agencies process complaints from civilians against the police. Pikes said such agencies are particularly important in the current climate, when some people feel unrest and distrust after officer-involved shootings and other conflicts. She worked with fellow sociology/criminology senior **Nicole Waldorf** on the project, under the guidance of assistant professor Joseph De Angelis.

Waldorf, 22, who transferred to UI from a community college near her hometown in the Seattle area in pursuit of finding her true purpose in life, jumped at the chance to work with Pikes and De Angelis and be part of something bigger than herself.

Pikes and Waldorf sent surveys to oversight agencies all over the country to gather information on their practices for handling complaints.

Over the course of the project, they "read much of the existing literature on police oversight and looked at what those authors have found on what makes these agencies accessible to the public," Pikes said.

They learned that having multiple language options on complaint forms, attempts at public outreach, and independent, unbiased locations away from the local police departments for civilians to file complaints are most effective.

Throughout the course of their project, they were most surprised to discover how little standardization there is for police oversight agencies, Pikes and Waldorf said, and how even the communities they grew up in are lacking in this resource.

Waldorf, who grew up surrounded by family members who were police officers, said she hadn't been aware of how much police oversight was in need of reform. This need is what helped both women see how this project allows them to make a difference.

"In today's atmosphere, relations between communities and the police are really strained, and so to be able to work on a project that has real-life implications outside of the classroom is really important," Waldorf said.

Both women are grateful this project has provided them with the opportunities to learn about their passions and make a difference. They've gotten to learn how sociology can help change the world, they traveled to New Orleans to present the findings of their project and they have even had opportunities for graduate school open up for them.

"When I first started here, I wasn't really considering grad school, and now I want to continue my studies," Pikes said. "I know I want to do this work for the rest of my life."



A Career 10 Years in the Making



Agricultural Education

WRITER: Laurien Mavey is a senior from Homedale, Idaho, majoring in advertising.

PHOTOGRAPHER: Madelen Johansson is an international student from Tibro, Sweden, and is majoring in interior design.

1210 W. 6th Street

Agricultural education student is inspired by, studies FFA

Bret Kindall's passion for agriculture started when he was 10 years old. Ten years later, he is a sophomore at the University of Idaho, double majoring in agricultural education and horticulture in the College of Agricultural and Life Sciences. He plans a career as an ag teacher for high schoolers and a FFA advisor who focuses on plant sciences.

"4-H and FFA were what sparked my interest," said Kindall, 20.

Growing up in Cambridge, Idaho, Kindall showed market lambs in 4-H, which made for an easy transition to bigger and better things like FFA.

While in FFA, he competed on many different teams and went to nationals for two different competitions; he won first and third — winning cash and an engraved plaque and getting to walk across the stage at the National FFA convention. This year he received his American Degree, the highest level of degree possible in FFA.

After years of competing in different FFA events hosted at UI, Kindall got used to the campus and really liked it.

"I decided that since I already knew the campus and they have such a great ag program, UI was the best fit for me," Kindall said.

Jeremy Falk, an assistant professor of agricultural education, approached Kindall about studying different teaching styles of FFA advisors. Kindall had previously expressed interest to Falk and other faculty members about wanting to conduct undergrad research. Since Kindall had competed at the national level and likes competition, he was interested in better understanding the different styles.

Falk and Kindall teamed up, along with another student, to develop a plan to conduct their research and analyze the results.

They collected information about six different types of teaching styles. They picked a series of questions to put into survey that they handed out at nine different contests at FFA nationals.

"For an entire day we raged on advisors and students to do our surveys by just handing them out to everyone and giving them a sticker with the FFA crest on it," Kindall said.

There were two different types of surveys: One examined how the students felt their advisors praised them, and the other assessed how the advisors behaved in response to their students' performance. Based on the answers, Kindall and his fellow researchers can analyze the style of teaching for each advisor or coach.

From that information, they are trying to determine if one teaching style has a winning or losing rate or if there seems to be any correlation. They also are interested to see if there's any correlation between the teaching styles of coaching students for contests versus coaching for team events.

So far, the researchers have 3,000 surveys and are putting in the work to analyze them. Each survey takes about three minutes to review.

"I hope that from analyzing the results I can learn, and one day use, the best teaching styles to have successful teams," Kindall said.

Career Center Intern Prepares for Bright Future

WRITER: Emily Lowe
is a senior from Kuna,
Idaho, majoring in
journalism.

PHOTOGRAPHER: Irish
Joy Martos is a senior
international student
from the Philippines
studying psychology.



Business student studies career development theories

Alyssa Hudson's first visit to the University of Idaho Career Services Center was the day she started working there.
"I hadn't really visited here or come here at all before this internship," Hudson said. "I really wish I would've started my freshman year."

Hudson, 20, a junior studying accounting and management/human resources in the College of Business and Economics, is conducting research for Career Services during a year-long internship.

Hudson, who is from Wenatchee, Washington, is one of four interns at the center. In fall 2016, the interns helped set up the fall career fair, helped fellow students write resumes and cover letters, and observed drop-in appointments with the Career Center's professional staff.

"When I submitted my resume for the internship, I had it designed one way and then after being in the internship I completely changed the whole thing just based off of what I learned," Hudson said.

In addition, the interns study different career development theories. Hudson chose to study Sunny Hansen's Integrative Life Planning. This theory discusses all areas of life, not just careers.

What tends to happen today is people separate what they want in their work life and their home life, Hudson said. But Hansen tries to tie them together into what is called a holistic approach.

The interns presented what they'd learned about their theories to the Career Service Office, and they may study more areas as their internships continue.

Hudson thinks the research the interns are doing will benefit students in the long-term.

"Essentially, a student can come in and have access to an abundant amount of resources and will be able to tailor different aspects of career development to their situation and get a result that is different from every other student," she said.

This internship is also preparing Hudson for her own future. At the career fair, Hudson learned about potential careers in purchasing departments. She is interested in the idea of buying items for a company she thinks could sell well.

"I like working with people, and so that will give me the opportunity to work more with people and less with numbers," Hudson said.

But keeping the accounting degree allows her to be able to understand how the numbers work, she said.

Having the internship has given Hudson good background knowledge, she said. Not only can she write a good resume and cover letter now, but she also has learned how the career-search process works.

"All the students on campus have the same resources I do," she said. "It's just a really great place to come learn about anything job related."

OUR Undergraduate Research Grant recipient

WRITER: Justin Robson of Grangeville, Idaho, was an English major with an emphasis in creative writing in 2016.

PHOTOGRAPHER: Carly Scott, a sophomore from Buhl, Idaho, is majoring in mathematics and biology.



Re-Imagining the World



Graphic design student finds career in illustration

University of Idaho graphic design graduate **Cody Muir** strives to find the spark in even the most mundane aspects of life.

In his digital art project "Macropolis vs Micropolis," he does that by turning familiar Northwest landscapes into explorations of danger, darkness and violence.

"I love the way illustration allows me to tell a story," said Muir, 22, of Moscow, who graduated in December 2016 from the College of Art and Architecture.

Muir's work contrasts how people approach these topics in different places. One side is represented as rural Moscow and the other side as urban Seattle, where Muir lived as a child and frequently visits.

In the first set, "The Crooked," Muir explores "the treacherous underbelly of an unassuming Northwest town." He used locations throughout the city of Moscow to create a series of digital prints that feel treacherous and uneasy. People are sensitive to crime in rural areas because there is a lack of it, Muir said. But when crime does happen it stays with people a lot longer.

Since graduation, Muir has been busy on the second set of the series, which will illustrate the hustle and bustle of the Seattle area while drawing attention to the lack of sensitivity found in the urban environment.

"The series takes this idea of a place filled with brightness and excitement and fills it with characters suffering from various effects of lethargy," Muir said.

Muir's interest in illustration work was encouraged by his professors at UI.

"Initially I kind of worked illustration into my graphic design classes, and the faculty were really supportive of that as a way to push design forward," he said. "Over time, illustration overtook the graphic design part."

Muir also works as a freelance illustrator. His work has been featured in several publications on campus and throughout the Pacific Northwest. He has worked closely with the UI Sustainability Center to promote energy efficiency and volunteer work. His illustration in the student-run Blot magazine captured how people engage socially through video games and other digital spaces. And in May 2017, his artwork will grace the cover of the space-themed issue of UI's alumni magazine, Here We Have Idaho, which also will include an illustration of Saturn research by Muir.

A few of the prints in "The Crooked" ended up gaining international press. An art blog called thisishappiness.com and Instagrammer @designarf have featured multiple prints Muir created as a UI student. As he pursues a professional career as an illustrator, Muir shares his work on his website, www.codymuir.com, and on Instagram as @magicmuir.

"My hope for the future is to get more established in the editorial field, working for magazines and companies," he said. "Art tends to be stronger when it's in response to something. The editorial field is a great way of doing that, because it's tied to stories that people care about."



Learning in Action

WRITER: Madison Billingsley, a senior from Covington, Washington, is majoring in creative writing.

PHOTOGRAPHER: Madelen Johansson is an international student from Tibro, Sweden, and is majoring in interior design.

Elementary education major's real-world experience prepares her for teaching

Savhanna Korver believes that teaching is one of the most important jobs a person can do. Teachers, good and bad, have a lasting effect on their students, and Korver wants to have a positive effect on the lives of the children she teaches in the future.

"It might not be the most monetarily rewarding, but I can't think of a career that would fill your heart more than helping a student learn how to read, or making sure that they are going home to a safe home at night," she said. "You have the ability to make your students feel that they are important, and I can't think of one thing that's more important than instilling confidence in a first-grader."

Korver, 22, from Potter Valley, California, is a senior majoring in elementary education in the University of Idaho College of Education. She loves the hands-on nature of the university's curriculum, which involves working in classrooms at local elementary schools.

"It's really exciting that, especially this year, I'm in a classroom once a week for at least three hours, if not more than that," she said. "Even when we are in class (at the university), it's a lot of peer-teaching. So I'll teach a lesson to my peers as if they were third-graders, for example."

Her experience has been shaped not just by teaching and learning in the classroom, but also by the research she conducted over the course of her junior year with Vanessa Anthony-Stevens, an assistant

professor of social and cultural studies. The focus of their research was diversity in the classroom.

Korver gained knowledge by transcribing interviews conducted by Anthony-Stevens, and by accompanying her on field trips that broadened her understanding of how a community can shape a classroom's diversity. An experience that stood out to Korver was a visit to the Nez Perce tribe's reservation in Lapwai, Idaho.

There, she spent time observing teachers in their classrooms, visited the local fish hatchery and learned how the school incorporated cultural diversity. She felt a strong sense of community in Lapwai, and saw that community is a part of implementing cultural diversity.

Working with Anthony-Stevens has been inspiring for Korver.

"It was really cool to not only experience, but also listen to Vanessa's point of view during the whole thing," she said. "She is very experienced in the area and I'm not. She did a lot of teaching abroad. She's taught in Mexico and other places, and I plan on teaching abroad when I'm done with my student teaching."

Ultimately, what will be a rewarding career for Korver and others like her will be a benefit to future generations.

"Since we live in a country that has such an emphasis on education, we should have good educators," she said.



FACULTY MENTOR IN FOCUS

WRITER: Keegan Lawler, a junior from Rathdrum, Idaho, is majoring in English with an emphasis in creative writing.

PHOTOGRAPHER: Chuan He is a sophomore from Zhuhai, China, studying secondary education with an emphasis on social studies.

Chemistry professor encourages undergrads to gain research experience

When assistant professor **Jakob Magolan** came to the University of Idaho in fall 2010, Ray von Wandruszka, chair of the College of Science's Department of Chemistry, told him the university has a very gifted undergraduate population, and he should make sure to seize that opportunity. Magolan has taken this advice by offering many undergrads the chance to earn credit for assisting in research in his lab.

After obtaining his doctorate from the University of Western Ontario and spending three years working in Australia, Magolan came to UI to study organic synthetic chemistry, which he describes as "how to build useful complex organic compounds from simple ones."

Magolan has worked hard to include undergraduates in his research at UI, having them work alongside him and his graduate students. Right now, he has six undergrads and three graduate students on his team — and the word team means a lot to Magolan.

"For me, an important part of mentorship is the fostering of a team atmosphere in which knowledge can be passed laterally between students," he said. "I meet individually with each student often, but we also meet each week as a team to talk about chemistry together."

Undergraduates not only serve as research assistants to graduate students, but they also get hands-on experience and education to supplement their classwork.

"Our weekly meetings emphasize advanced organic chemistry education and cover a range of topics that extend beyond our own research activities," he said.

Almost all of Magolan's undergrad students receive their first significant laboratory training under him. These experiences have already led seven former UI undergrads to be accepted into doctoral programs at chemistry departments around the country.

His research team has even brought in students from Lewis-Clark State College, University of Wyoming and Brigham Young University. Several of the undergrads he recruited have co-authored articles in respected scientific journals before earning their bachelor's degrees.

While under his supervision, undergraduate students have also applied for and received grants to support their research. Fellowships such as the Idaho INBRE summer fellowship and the Hill Undergraduate Research Fellowship have given thousands of dollars to undergraduates studying organic synthetics at UI.

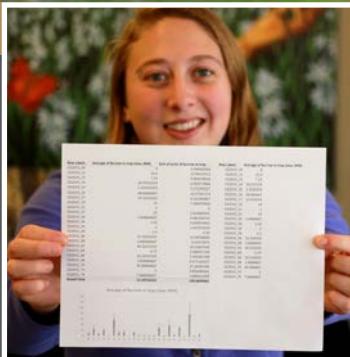
"I'm very proud of all our team has accomplished, especially in the short amount of time we've been around," Magolan said. "And a lot of that is thanks to the work of our undergraduates."

Hopping into Research

OUR Travel Grant recipient

WRITER: Lauren Orr is a sophomore from Sandpoint, Idaho, majoring in journalism with minors in psychology and English.

PHOTOGRAPHER: Yishan Chen is an international student from Kunming, China, and is majoring in physical education.



Wildlife resources student studies pygmy rabbit personalities in western Idaho

Pygmy rabbits: they're the fuzzy, hopping smallest rabbit species in North America, and they may also have distinct personality types.

Megan Whetzel, 21 a senior at the University of Idaho from Ukiah, California, majoring in wildlife resources, was given an opportunity during the summer after her sophomore year at UI to study whether or not pygmy rabbits have different personality types, on a spectrum of shy to bold. Whetzel was presented the research opportunity through her advisor, Janet Rachlow, a professor in the College of Natural Resources Department of Fish and Wildlife Sciences.

To study rabbit personality traits, Whetzel and the team went to a study site in Leadore, Idaho, in 2015. Pygmy rabbits live in sagebrush landscapes like those surrounding Leadore, in western Idaho near the Montana border.

"I was able to work in a part of Idaho I wasn't very familiar with and spend a summer in a high desert ecosystem," Whetzel said.

In Leadore, Whetzel and the research team set up live traps along the rabbits' burrowing holes. They came up with a system of three time-to-emergence trials, where they observed how quickly the rabbits emerged from their burrows into the traps, and then from the traps into handling bags. After this initial step, they released the rabbits into the middle of a circle with a one-meter radius, and timed the rabbits as they scattered. In this process, they hoped to place the rabbits on

the shy to bold personality scale, and to see if males or females were more likely to have certain personality types.

The chance to work directly with animals in their natural environment was a highlight for Whetzel.

"I was able to be around pygmy rabbits every day, either trapping them, running trials, or sampling vegetation and burrow systems," Whetzel said

The researchers compared the results of the timed trials to the handling bag trials and then compared that conclusion to a previously established docility test to determine whether or not the docility test was a good way to measure personality.

The project is still ongoing—further research has to be conducted to find a concrete conclusion determining whether the docility test is accurate and whether pygmy rabbits have personality.

Despite the inconclusiveness of her work, Whetzel still highly valued her experience.

"It was a lot of fun since I had never had much experience working in research before," she said. "It has been a big collaborative effort and I know the skills I gained are so important. I am excited for my future employment since this research opportunity gave me valuable knowledge that will be useful in the future."



Building Her Future

OUR SURF Grant recipient

WRITER: Madison Billingsley, a senior from Covington, Washington, is majoring in creative writing.

PHOTOGRAPHER: Irish Joy Martos is a senior international student from the Philippines studying psychology.

Research helps biological engineering student prepare to help children with disabilities

When **Abigail Raveling** was in high school, she volunteered at a local hospital. Working in the pediatric physical therapy department with children and their therapists, she saw firsthand how hard they worked, together, to overcome the children's physical challenges.

"I was impressed by both the therapists' desire to help the kids reach their full potential physically, as well as the determination that the kids exhibited as they strived to overcome physical obstacles," said Raveling, 20, a University of Idaho junior from Hamilton, Montana. "This experience made me want to be a physical therapist so that I could help kids with disabilities experience a life with the most independence and mobility possible."

Raveling is majoring in biological engineering in the College of Engineering. When she first heard about the major, she wanted to learn more, and discovered it would be great foundation for her future career as a pediatric physical therapist.

"I'm hoping that biological engineering will give me a background in biomedical equipment so that I can help influence how medical equipment is used," she said.

With Nathan Schiele, an assistant professor of biological engineering,

Raveling is working on a research project studying how tendon cells react to strain. To simulate the kind of strain tendon cells experience within people's bodies, Raveling uses a bioreactor she designed herself. The device simulates the biological process, with a chamber for the cell sample and a motor to move the sample.

"Tendons in your body are exposed to strain all the time," Raveling said. "And we want to see how that affects how the cells align the collagen. We get to take this complex system of the tendon and narrow it down into looking at what the cells do under tensile strain."

For Raveling, this hands-on experience has been fun and rewarding.

"It's just been fun getting to design and refine a system so that it's usable for experiments," she said.

Biological engineering will influence how physicians and therapists treat the human body in the future, including the use of advanced prosthetics. For Raveling, the technology that comes out of this field and the knowledge she gains studying it will be tools to help children with disabilities.

"I want to be a part of helping them to have a successful future," she said. "I love working with kids because of their energy and excitement for life."



The Humanity of Design

OUR Travel Grant recipient

WRITER: Mary Caraway is a senior from Idaho Falls, Idaho, studying English with a creative writing emphasis.

PHOTOGRAPHER: Madelen Johansson is an international student from Tibro, Sweden, and is majoring in interior design.

Interior design student helps redefine student space

The summer before her junior year at the University of Idaho, **Erica Albertson** worked at a small boutique in San Diego. It was there, working in such a welcoming and beautiful environment, that she realized how much the design of a space could affect the people interacting in it.

This sparked a passion in her that led her to study interior design in the College of Art and Architecture. It is the human aspect of her major that the Boise native says keeps her interested in every project she does.

The first project that gave her real-life experience interacting with clients was one she did with two others, fellow interior design major Courtney Tanner and architecture student Alyssa Anderson. The project called for designing a student space for business majors in the Albertson Building, home to the College of Business and Economics. The trio took research gathered by the business students and designed a space for them that was tailored to their needs.

"It's hard when you have a real client, and people to say 'Hey, I don't really like that,' because in our school projects we can pretty much just do whatever we want," said Albertson, 23. "So I think that made it hard, but that was also the beauty of it."

She also learned about collaboration.

"In the business world you think very differently than in the design world, so we almost had to play interpreter. That was really new," she said.

Another project that has given Albertson experience designing with people in mind is her senior project. The idea is to create a "maker's space" in South Chicago — an art studio for adults to use in the day and for kids to go to after school to design, paint, sculpt or even 3-D print. Albertson said the area is ranked one of the most troubled neighborhoods for youth in America.

"It's really devastating to read these stories of these kids who are literally killing each other on their way to school," Albertson said. "And I think the reason they're killing each other is that they're cooped up all day and they have no creative outlets to let their minds wander."

Albertson said this project has shown her that understanding how people interact with their surroundings can affect a community.

Albertson, who will graduate this spring after five years at UI, said she is thankful to feel so prepared to head out into the world and start her career. She already has a job offer from a firm in Boise. She is eager to include the human aspect of design in her future projects.

"It was kind of hard last year, watching a lot of my friends graduate, but now I'm really grateful to have had a fifth year," she said. "I feel like I can say that the U of I can send me into the world well, both scholastically and as a woman."



WRITER: Jordan Gonzalez is a freshman from Wenatchee, Washington, majoring in anthropology.

PHOTOGRAPHER: Madelen Johansson is an international student from Tibro, Sweden, and is majoring in interior design.

Business in the Front, Fun in the Basement

Marketing student uses research to support his college and colleagues

The Albertson Building is a familiar place for students across the University of Idaho College of Business and Economics. It houses classrooms for learning, offices for meeting and a basement. But the basement isn't much to look at: There are a couple of chairs, a couple of tables and spotty Wi-Fi, but it doesn't have the atmosphere to combine the two aspects of learning and meeting. Not yet, anyway.

Senior **Micah Johnson** and a team of other students have a plan for that space. Johnson, 21, of Portland, Oregon, is double majoring in marketing and modern language business, which combines language study and business courses, with an emphasis in Spanish.

The 2015-16 school year brought a group of nine interior design and marketing students together to reimagine the Albertson basement, with the support of faculty including Johnson's advisor, associate professor of marketing Mike McCollough.

The team spent the semester finding a design that would excite the college's students, and sought the feedback of professors as well. Interior design students studied design techniques used to bring people together. The business students put together surveys to find out what students wanted to see happen to the space.

Johnson says the primary goal of the design was to create a space that students could use when they work to do individually or in a team, especially since business students frequently have group-oriented projects. The interior design students figured out a design based on principles used in coffee shops.

"Students need a space that allows them to be as successful as possible," Johnson said. "We did a ton of research to allow students to be successful in doing homework, studying and doing group projects together."

After the students finalized their decisions, they presented their plan to the College of Business and Economics Alumni Advisory Board, and the project was approved. The nine students did the presentation together, and it was a chance for Johnson to have real-life presentation experience. Five of the six business students in the class graduated last year, making Johnson the last to see the project through. The next steps for the project is to bring in a professional architect to work out everything that needs done.

Johnson will graduate in May 2017, so his time on the project is nearly over, but it was time well spent.

"I would recommend anyone do this," Johnson said. "It was fun. It really was."

Say Blue Cheese

WRITER: Lauren Orr is a sophomore from Sandpoint, Idaho, majoring in journalism with minors in psychology and English.

PHOTOGRAPHER: Yishan Chen is an international student from Kumming, China, and is majoring in physical education.



Food science student hopes to help people with Crohn's disease

When most people think of food, they usually only wonder whether or not they would like to eat it. Others look at it and wonder why it tastes the way it tastes or looks the way it looks — and **Brooke Luzzi** is one of those people.

Luzzi, 19, of Boise, is a junior studying food science in the University of Idaho's College of Agricultural and Life Sciences. She was drawn to diving into the details of food and health after she was diagnosed with a medical condition that affects the digestive system.

"I was diagnosed with Crohn's disease four years ago and always loved science, and so now I'm here," said Luzzi, who is also working toward a minor in pre-health sciences.

Luzzi knew from the first week that she was enrolled at the university she wanted to become involved in some sort of undergraduate research in food science. Luzzi was happy to be given the opportunity to work in assistant professor Helen Joyner's lab as a research assistant, after asking several of her professors for opportunities.

In the lab, Joyner, Luzzi and several postdoctoral students partnered with an Idaho food producer to study the structural properties of blue cheese at different ages and temperatures to see whether or not the wedges would turn pink.

"Sometimes, for some reason, the wedges would turn pink, and it would freak the customers out," Luzzi explained as the reasoning behind the research.

Luzzi and her fellow researchers tried to figure out why and how the cheese wedges would turn pink, believing that it had to have had microbial origins.

The pink color that would appear on the blue cheese wedges showed evidence that it takes time to develop and occurs in cold temperatures while in storage. Though the team studied the wedges from February to April 2015, the blue cheese they studied never did turn pink.

Luzzi and the team, however, found evidence that the pinking in the cheese was caused by viscoelastic properties in the wedges, where the cheese and mold structures would stretch and reform, and that the pink was formed through microstructural changes within the mold on the blue cheese.

Though the research never yielded any pink coloring on the cheese, Luzzi had the opportunity to present the research for the Institute for Food Technologies. She said she is very grateful for the opportunity she had working in Joyner's lab and the experience it gave her to reach her goals of being able to help people with Crohn's disease in the future.

WRITER: Emily Lowe, a senior from Kuna, Idaho, is majoring in journalism.

PHOTOGRAPHER: Irish Joy Martos is a senior international student from the Philippines majoring in psychology.

Studying a Tiny World

Biology student from Nepal examines bacterial changes

Rarely do people think about the minuscule organisms covering every surface and how they impact nature or the human body. But **Pranav Rana**, 21, a junior microbiology major in the University of Idaho's College of Science, enjoys studying these microscopic organisms that most people forget even exist.

During high school science in his home country of Nepal, Rana discovered his passion for microbiology. He was working on a simple project about microbes.

"I was so fascinated," he said. "These organisms that you cannot even see have so much impact, and it affects you so much."

Rana is currently studying how iron and an antibiotic, myxocerescin, help the bacteria species *Mycobacterium xanthus* cope with changes in its environment, also known as phase variation.

Depending on the *M. xanthus* bacterium's environment, it will either be in one of two phases, which can be visually tracked by their color, yellow or tan. An example Rana gives is how an octopus changes color without any mutation when it is threatened in its environment. Rana is studying how the antibiotic and iron allow the bacterium to vary phases.

The role of this particular antibiotic in phase variation is not completely understood. He expects to learn more about the presence or absence of the antibiotic and later the dynamics of the antibiotic with iron, he said.

Rana works with Patricia Hartzell, a professor in the Department of Biological Sciences. During a different project, they noticed a possible

connection between the antibiotic and phase variation. This led to Rana's current focus.

"Dr. Hartzell has been studying phase variation for a long time," he said. "My work will hopefully add up to what we currently know about phase variation."

The research he is performing makes up a small part of a large web, he said. The research is in the beginning phase, and will likely last until May 2017. Rana plans to present his findings in the Undergraduate Research Symposium and the Department of Biological Sciences Research Symposium, which will take place in April and May 2017.

Partaking in research has given Rana a better understanding of occurrences in the world.

"Whatever I use to learn in my classes would still seem really abstract and then I could never imagine or picture how it was going to be," he said. "But when I was doing research, I could picture them and understand things better."

Along with his research, Rana also works as a learning assistant in an undergraduate biology lab with Hartzell and undergraduate science education designer Martina Ederer. The lab includes students from many majors. Not only does he answer questions and set up lab equipment, but he gets to share the passion he has for science with other students.

"Science is not a straight line," he said. "You have to go all over the place to reach your goal."



An Eye on Lamprey

OUR Undergraduate Research Grant recipient

WRITER: Keegan Lawler, a junior from Rathdrum, Idaho, is majoring in English with an emphasis in creative writing.

PHOTOGRAPHER: Kara Billington, a junior from Moscow, Idaho, is majoring in broadcast and digital media.

Ecology and conservation biology student studies important Yakima River fish

Ryan Dunbeck started his University of Idaho research project during spring 2016 by developing special solar-powered, underwater cameras for studying lamprey — an unusual Northwest creature.

"Lamprey have watched the landscape evolve around them; they're prehistoric," Dunbeck said of the freshwater fish with long, cylindrical bodies and several rows of sharp teeth.

Dunbeck, 37, of Olympia, Washington, enrolled at UI in fall 2015. He decided to pursue a degree in ecology and conservation biology with a minor in fisheries in the College of Natural Resources.

As part of his studies during his first year, Dunbeck attended a lecture from a graduate student on the impact of lamprey and their carcasses on the rivers of the Northwest. He was immediately intrigued by the subject and decided to make it the topic of the independent study project required for his degree.

"There's a lot of work done studying salmon; it's hard to even make your way through all the research. But there's comparatively very little on lamprey, even though they may be as vital for the ecosystem," Dunbeck said.

Dunbeck explains that because lamprey aren't considered a game fish of economic value, fewer people are inclined to study them. However, that means when a student is interested, there is no shortage of opportunities.

After the presentation, he talked with his advisor, assistant professor of fish and wildlife sciences Chris Caudill, and found himself thrown head-first into the subject. Caudill and the master's student who introduced Dunbeck to the subject, Matt Dunkle, have helped with and directed much of Dunbeck's work.

"All I had to do was ask, and all these opportunities became available," Dunbeck said.

In summer 2016, Dunbeck set up his cameras along a tributary to the Yakima River to examine the carcasses of lamprey that had died naturally after mating and study how they interact with the ecosystem. Lamprey carcasses are a food source for other fish species.

The Yakama tribe was instrumental in his research, providing the study site, travel expenses and an intern to assist him with his study. Grants from the Office of Undergraduate Research and NSF EPSCoR also funded his work.

While the lamprey is not considered a "game fish" to state governments, the Yakama have a strong tradition of harvesting the fish. Therefore, they are interested in preserving it.

"They can't be caught with bait, but the Yakama tribe actually are able to harvest them at the Willamette River Falls," Dunbeck said. "The state of Oregon sells licenses to the tribe so they can continue their tradition."

Like salmon, lamprey are deeply affected by the dams along the river. Dunbeck has learned perhaps less than 50 percent make it pass the dams, because the salmon-specific fish ladder design makes passage much more difficult.

Dunbeck is now analyzing the data he collected in summer 2016 and plans to make another trip to collect more data in 2017. He hopes to continue studying lamprey as he moves into graduate school and into the workforce.

"I'm super stoked to bring more awareness to these underrepresented fish," he said.



WRITER: Justin McCabe, a senior from Post Falls, Idaho, is majoring in English literature and minoring in history.

PHOTOGRAPHER: Irish Joy Martos is a senior international student from the Philippines majoring in psychology.



Star-struck

Physics student finds home away from home in research and activities

Sarah Horvath spent spring semester 2016 scrolling through information about thousands upon thousands of stars spotted by NASA's Kepler space observatory.

"There's the potential of multiple exoplanets around any given one," Horvath said. "Yet I heard that Kepler's field of view is comparable to the amount of night sky you can block out with your hand extended above you. It was fascinating to have a firsthand sample of the amazing size of the universe."

As a physics major in the University of Idaho's College of Science, Horvath, 20, of Missoula, Montana, was thrilled to be given the opportunity to work as a research assistant during her junior year.

Jason Barnes, an associate professor in the Department of Physics, had tasked a team of grad students and assistants such as Horvath with researching exoplanets, or planets which orbit stars other than the sun. Horvath's work was supported by a NASA Astrophysics Data Analysis grant.

The goal of the project was simply to begin forming ideas about the exoplanets' characteristics by using a specialized computer program written by Barnes. In particular, the team focused on exoplanets that demonstrate spin-orbit misalignment — a phenomenon where a planet's orbit is inclined away from the plane of its star's equator — and exoplanets that orbit gravity-darkened stars, which rotate so rapidly they take the shape of flattened spheres.

Horvath's job was to search through Kepler's database of stars in order to find the stars likely orbited by exoplanets. Horvath, an involved member of the UI's Campus Christian Fellowship, found that this scientific experience was also a deeply spiritual one.

"Kepler gathered the data from over 100,000 stars," Horvath said. "But the information it contains barely scratches the surface."

Horvath's deep appreciation for the magnitude and complexity of the universe has instilled her with a healthy sense of adventure. In fact, it was largely her desire to explore new places that led Horvath to leave her hometown and study at UI in the first place.

And although she finds the UI to be a beautiful, friendly and practical school, what Horvath truly loves the most about Moscow are the friendships she has made during her studies and extracurricular activities.

Horvath is also passionate about music. She began her time at UI as a flute performance major, but a physics class her freshman year inspired her to study space and astronomy. Now, it is planetary science's ability to continually captivate her that keeps Horvath pursuing the field.

"Right now the thought that intrigues me most is teaching at the community college level," she said. "My favorite part of physics is being fascinated by all there is to learn, and by teaching I would get to share that with other people."

Taking Research to Heart



WRITER: Emily Good is a freshman from Meridian, Idaho, double majoring in natural resource conservation planning and management and international studies.

PHOTOGRAPHER: Yishan Chen is an international student from Kunming, China, majoring in physical education.

Exercise science student finds her place studying cardiovascular health

Many college students can be found huddled around a bowl of ramen and Netflix between classes. One University of Idaho student is studying how such sedentary habits could affect young people's heart health.

Kathleen "Kate" Connor, 22, is a bachelor's student studying exercise science and health in the College of Education. Her father earned a doctorate from the UI, and her mother earned a master's. Originally from Orofino, Idaho, Connor came to the UI expecting to study pre-law. Entering into her second semester, Connor decided to switch tracks when two of her close friends encouraged her to enter into the exercise science and health program.

"We were really competitive," she said. "We pushed each other to do better."

Connor dedicated herself to studying the cardiovascular risk factors associated with sedentary behavior in young adults. Working under the guidance of assistant professor Chantal Vella, as well as graduate students, Connor is working toward finding answers about how young adults who spend most of their time sitting or inactive may face risks of heart disease, high blood pressure and other cardiovascular problems.

After her time spent working with her peers and mentors in this field, Connor feels she has found her calling.

"These are my people," she said.

The study of cardiovascular health and sedentary behavior is relatively simple and easily understood by its participants. The researchers recruit freshman and sophomore students, along with others between ages 18 and 25, then they ask them a series of questions in regards to their health and diet. The researchers take the subjects' blood pressure, and ask them to spend a few minutes on a treadmill. For the next seven days, the subjects wear a small activity monitor on their hips. The final visit consists of a blood sample, and time in the Bod Pod, which determines body composition. At this point, Connor and the research team have collected all the data they need to continue with analysis.

The project has given Connor skills beyond her field. Working together and communication are two critical aspects during the study, between both the team and the subjects.

"Life is one huge group project," Connor said.

The most important factor in conducting research, Connor said, is the ability to communicate the findings to the public in an effective manner.

Connor highly values education, and wants to continue working in the field of exercise science and health, perhaps becoming a professor someday. For now, she plans to get her master's in exercise science and health, and is strongly considering a doctorate.



WRITER: Justin McCabe, a senior from Post Falls, Idaho, is majoring in English literature and minoring in history.

PHOTOGRAPHER: Carly Scott, a sophomore from Buhl, Idaho, is majoring in mathematics and biology.

Defending Difference

International studies student takes on the issue of apostasy

For some, the idea of being persecuted over religious beliefs may be unthinkable. For others, it's a harsh reality — and sometimes a death sentence.

This persecution is exactly the type that 20-year-old **Zachary Lien** of Boise is trying to eradicate. As a student in the University of Idaho's College of Letters, Arts and Social Sciences double majoring in international studies and political science, Lien spends his time studying the human rights violations faced by apostates, or people who renounce their religion, in Islamic countries. Apostasy is treated as a serious crime with incredibly severe punishments.

"Apostates are possibly the most hated group in possibly the most volatile region of the world," Lien says. "When you charge someone for being an apostate, you are effectively charging them for choosing something different. And there's a deep-rooted sentiment of hating difference."

Lien's project focuses not only on the number of people convicted of apostasy or murdered by neighbors and family members in extrajudicial, or unauthorized, killings, but also on the governmental and societal repercussions of apostasy. Most importantly, however, Lien is dedicated to proposing policy solutions to the problems of violence, imprisonment and death that many apostates face.

"I want the average person to understand what apostasy is," Lien says. "And the idealist in me thinks that solving the issue of apostasy would actually have the largest ripple effect when it comes to solving other human rights issues. What we could see is a shift in perspective, not only in allowing difference to exist but also in allowing difference to speak."

Some of Lien's proposed solutions include having Western countries deny foreign aid to certain problematic countries in order to instigate change, or even creating a protective coalition between secular organizations. Lien does most of his research through UI's Martin Institute, a program which allows selected students to conduct directed undergraduate research on a personal topic. Additionally, Lien spent six weeks at the Library of Congress working with a mentor in the Mount Vernon Leadership Fellows program, and he even presented a speech, "Religion and Curiosity," at TEDxUIIdaho 2016. In February of that same year, he represented UI at the Wheatley International Affairs Conference discussing religion and international affairs.

Though Lien's research spans the globe, his inspiration to study apostasy grew out of personal experience.

"I'm actually an apostate myself," says Lien. "I used to be a member of the Mormon Church but left. I began connecting with apostates all over the world, and my experience led me to research how other people are suffering."

Lien intends to become a professor to teach how international studies and religion intersect, and he's immensely grateful for the support he's received at UI.

"The international studies professors at the Martin Institute are insanely passionate and really care about their studies," Lien says. "Overall, what international studies has taught me is that making a difference is completely possible."



Helping at Home

FACULTY MENTOR IN FOCUS

WRITER: Jordan Gonzalez, a freshman from Wenatchee, Washington, is majoring in anthropology.

PHOTOGRAPHER: Chuan He is a sophomore from Zhuhai, China, studying secondary education with an emphasis on social studies.

UI sociology professor and students take on research at local mobile home park

Cynthia "LT" Hormel first learned about Syringa Mobile Home Park in 2009, when two students in her "Introduction to Sociology" class were residents of the park.

In 2013, Hormel, an associate professor of sociology at the University of Idaho, read newspaper reports discussing a water crisis at Syringa, which is just outside Moscow. The residents discovered that the water they had been drinking was contaminated with coliform bacteria, E. coli, lead and chlorine. After the discovery, running water was shut off for 90 days.

Having the connection to the two students who lived in Syringa gave Hormel an interest in the situation.

She began conducting sociological research on the park and its residents after Magar E. Magar, the man who owns the park, and the residents reached a partial settlement. Hormel knew she wanted to act and help the residents in some way, she just needed a place to start. After discussing the matter with her former students, Hormel began her research in March 2015.

"When you are working directly with residents, it's the kind of situation where you can't just say things to make things better," Hormel said. "There are people's lives at stake."

For the 2016 fall semester, Hormel incorporated the research project into one of her classes, "Sociology of Prosperity: Social Class and Economics in the 21st Century."

The research team consisted of Cynthia Ballesteros, Haylee Brister, Angelica Lopez, Kenneth Marcy and Lincoln Smith, all undergraduates

who studied different aspects of the Syringa situation. Maureen Laflin, a law professor and the director of clinical programs in the College of Law, also collaborated with the team.

The class began with a book that discussed a similar topic as the Syringa Mobile Home Park: "Evicted: Poverty and Profit in the American City" by Matthew Desmond. The book follows the stories of tenants and landlords in two neighborhoods in Milwaukee, one traditionally black neighborhood and the other low-income.

The students then conducted archival research, focusing on topics related to their majors. For example, Smith, an economics major, used his skills in business economics and business statistics to contribute to the team by entering data they collected into spreadsheets.

The main goal of the project was to continually give things back to the residents. Hormel wanted to make sure that the residents were being represented well, and also wanted the people of Moscow to think about the city's approach to affordable housing.

"A lot of things you talk about in international development are happening right here," Hormel said. "What we often think about happening somewhere far away in another country is happening right here."

The class gave the students experiences they would not normally get solely in the classroom, said Ballesteros, a senior from Nampa, Idaho, majoring in sociology.

"It's the classroom in real life," Ballesteros said. "That was one of the best things about this class. And it's affecting real lives."



About Vandals in Focus

Student writers, photographers, videographer and artist bring student stories to life

WRITER: Morgan Ward is a junior from Fruitland, Idaho, majoring in history and minoring in creative writing.

Vandals in Focus is about showing future and current University of Idaho students that opportunities for research and scholarship can be found in any major UI has to offer. Dave Pfeiffer, director of the UI Office of Undergraduate Research, is dedicated to sharing this message.

"Ultimately, I would like to see Vandals in Focus function to increase student interest in getting involved in research and scholarly activities while at UI," Pfeiffer said. "I would also like to see it used to increase interest among prospective students in coming to UI."

Vandals in Focus is now in its second year, and its staff, as well as the number of students it features, is growing.

The footwork is done by a team of 18 undergraduate writers and photographers from multiple disciplines, as well as a videographer who produced short videos about undergraduate research, and a graphic artist who designed the cover.

Working on Vandals in Focus gives the students a variety of learning experiences in different aspects of journalism and communications.

Keegan Lawler, 20, is an English major and a writer for Vandals in Focus. He was first introduced to this project by a friend who forwarded him the application information.

"I really hope that my stories will help students find interests in research they might not have had before," Lawler said. "I've had some very important people who've helped introduce me to what I am passionate about, and if I can help do that with other people, that'd be really great. I also think not many students know the amount of funding available to undergrads, so I hope it helps open up doors to current students as well."

Vandals in Focus photographer Irish Martos, a 24-year-old senior studying psychology, is in her second year working on the project. She loves her Vandals in Focus experience for more than just the fact it looks nice on a resume.

Learning about all the research and involvement opportunities UI undergraduates have is the best part, Martos said. "I usually go to their labs to look at what their projects are. Sometimes I get to test it too, which I think is really cool. It's exciting seeing the feature stories in print. I feel so proud being a part of Vandals in Focus."

Explore. Create. Discover.

Undergraduate Research at UI

Getting Started With Research

Want to get involved in research? The Office of Undergraduate research can help. Please take advantage of our resources and come visit us. The following suggestions may also help you find the right research opportunity for you.

- Review the OUR listings of on-campus and off-campus research opportunities.
- Make an appointment to talk with OUR staff about your areas of interest.
- Attend an OUR information session.
- Talk with current undergraduate researchers about your interests and learn from their tips.
- Talk with your faculty instructors about their research and other research on campus.
- Review faculty profiles on departmental websites and make appointments to talk with those whose research interests you.
- Attend the annual UI Undergraduate Research Symposium in April to find out what other students are doing.



From the OUR Director



The University of Idaho truly stands out from other land-grant, research-driven universities for its focus on engaging *undergraduates* in research. Each semester, scores of UI undergraduates representing all disciplines directly engage in hands-on research, scholarly work and creative activities. Faculty mentors go the extra mile to make these opportunities available to our students.

Vandals in Focus is a unique, student-driven publication produced by the Office of Undergraduate Research. It is designed to showcase a sampling of student projects selected from each college at UI. Our team of undergraduate writers and photographers focus not only on the innovative projects, but also on the talented undergraduates behind them. In doing so, Vandals in Focus provides readers a glimpse of the wide spectrum of projects available to undergraduates at UI while at the same time showing off some of our amazing students.

I encourage current and future UI undergraduates to visit the Office of Undergraduate Research to learn more about how to get involved in faculty-mentored projects. Participating in undergraduate research will enrich your academic experience, expand your horizons, and better prepare you for the future. Get involved!

David Pfeiffer
Director, Office of Undergraduate Research

ABOUT the Office of Undergraduate Research

The Office of Undergraduate Research (OUR) supports student engagement in out-of-class research and scholarly activities in all fields of study at the University of Idaho. OUR raises the visibility of undergraduate research, facilitates opportunities and helps students showcase their work.

OUR offers grants, information sessions and guidance for undergraduates, hosts the UI Undergraduate Research Symposium and works with faculty interested in mentoring undergraduate researchers.

Contact OUR at our@uidaho.edu or
208-885-4109.
Stop by at Morrill Hall Room 216
Learn more at
uidaho.edu/undergradresearch



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