



Science & Health NEWS

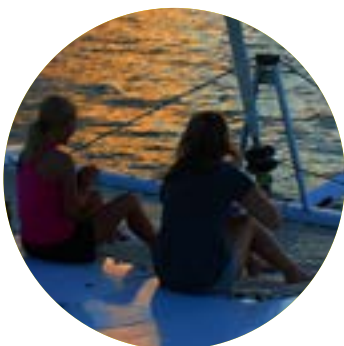
VOLUME 15, NUMBER 2 SUMMER 2020

A person wearing a green cap, sunglasses, a grey hoodie, and brown waders is standing in a grassy field. They are adjusting a camera mounted on a silver tripod. In the background, there is a stream and a line of trees. The scene is brightly lit, suggesting a sunny day.

TEACHING IN THE AGE OF COVID 19

FACULTY SEE ONLINE COURSES AS
CHANCE TO GROW, EXPERIMENT

in this issue



12 Sailing studies

Students who returned from the Virgin Islands in January ended up using their newly learned DNA sequencing skills in a modified online class to see how COVID-19 spread rapidly across the world.



18 Snow Bike Girl

Snow biking is so new that what you ride is built from a kit, rather than sold as a unit. Alumna Jackie Riess, '19, is one of the sport's pioneers — particularly among women.



28 Biochemistry beach

Imagine heading to a warm, tropical island to escape Wisconsin's winter. In January 2020 nine students did just that when they traveled to a remote marine research station on Little Cayman Island to apply chemical principles and analyses to marine organisms and ecosystems.

uwlax.edu/csh

Science & Health NEWS

UNIVERSITY OF WISCONSIN-LA CROSSE
COLLEGE OF SCIENCE AND HEALTH
NEWSLETTER
SUMMER 2020 VOL. 15, NO. 2

The UWL College of Science and Health News is published in January and July for alumni and friends. Copy deadlines are May 1 and Nov. 1. Submit news to: Brad Quarberg, Editor, bquarberg@uwlax.edu

Editor

Brad Quarberg, '85
Distinguished University Relations
Specialist, UWL News & Marketing

Editorial Assistance

Gubbi Sudhakaran
Associate Dean, CSH

Art Director

David Piro
Director, UWL Creative Services

Writers

Kyle Farris
Kjerstin Lang
Brad Quarberg, '85
Nick Ragner, '14

Photography

Michael Lieurance, '02

View past issues here

uwlax.edu/ucomm/our-services/alumni-publications

Think B4U print! This online newsletter has many handy, direct links to videos and websites. Printed copies don't contain hyperlink information. You may download and print this publication through ISSUU.



Follow UWL on Facebook
www.facebook.com/UWLaCrosse

Follow UWL on Twitter
twitter.com/uwlacrossenews

CLASS NOTES POLICY

Update your address and provide a class note for the Lantern at uwlalumni.org.

ON THE COVER: Colin Belby, professor of geography and earth science, headed to rural Coon Valley to record for his online classes during COVID-19 Safer-at-Home orders.



FRESHWATER FACTOIDS

UWL recognizes the importance of Wisconsin's freshwater resources to our economy ...
Water is a strong curricular theme in several of our science majors.

25

YEAR PROGRAM

**Aquatic Science Concentration
in the Biology Major**

Limnology - the science of freshwater ecosystems, serves as the core course accompanied by 11 other electives in aquatic science.

4 UNDERGRADUATE MAJORS

WITH ENVIRONMENTAL SCIENCE CONCENTRATIONS

BIOLOGY | CHEMISTRY | GEOGRAPHY | MICROBIOLOGY

60 STUDENTS LISTED

as co-authors of peer-reviewed articles
in aquatic science since 2010

92

UNDERGRADUATE DEGREES
AWARDED IN AQUATIC
OR ENVIRONMENTAL
SCIENCE SINCE 2015

16

PH.D. FACULTY
with expertise in water
science & related fields

50

**Years of continuous research on
our nation's great rivers and lakes**

The River Studies Center is a multidisciplinary unit focusing on research and scholarly programs pertinent to the Upper Mississippi River and related freshwater resources.

\$14.5

MILLION

in extramural funding
since 2000

25 YEAR

COOPERATIVE EDUCATIONAL AGREEMENT

between UWL and the Upper Midwest
Environmental Sciences Center (USGS)

**24 FACULTY MEMBERS PROVIDING MULTIDISCIPLINARY
EXPERTISE FOR THE STUDY OF LARGE RIVERS**

BIOLOGY | CHEMISTRY | ENGLISH | GEOGRAPHY | MICROBIOLOGY
MATHEMATICS & STATISTICS | SOCIOLOGY | RECREATION MANAGEMENT

**UNDERGRADUATE RESEARCH
PROJECTS SUPPORTED**

300

The La Crosse area, adjacent to the Mississippi River and located in the beautiful Coulee Region of southwestern Wisconsin, offers students excellent surroundings to pursue their interests in aquatic and environmental science.

Colin Belby



Teaching in the age of COVID-19

Faculty see online courses
as chance to grow, experiment

Eddie Kim had never taught online.

So when UWL moved all courses online for the remainder of the spring semester due to COVID-19, Kim, an associate professor of mathematics, knew he had his work cut out for him.

“I had heard some of my students in mid-March talk about their anxieties about learning in an online format,” Kim says. “So I wanted to recreate as much of the classroom experience as I could.”

The fast-moving nature of COVID-19 forced faculty to act quickly.



Eddie Kim, associate professor of mathematics

On March 16, three days after students departed for spring break, UWL announced that the rest of the semester would happen virtually. The week of classes immediately after spring break was cancelled to give faculty more transitional time.

Still, professors had only two weeks to restructure their courses for an online audience — a process that usually takes months, according to Kristin Koepke, director of UWL’s Center for Advancing Teaching and Learning (CATL).

“This was an emergency situation where we had to do things out of the ordinary,”

Continued on next page



Kristin Koepke, director of UWL's Center for Advancing Teaching and Learning (CATL).

explains Koepke, whose office helped guide professors, especially newcomers to online instruction like Kim, through the process.

"It was a pretty large undertaking, but faculty have been very receptive," she says. "They're embracing the opportunity to help our students as best we can."

That's meant different approaches for different courses and disciplines.

Eugenia Turov, a lecturer in the Chemistry and Biochemistry Department, is accustomed to leading students through experiments that require a range of ingredients and specialized equipment.

But in this new reality, the best Turov can do is send her students step-by-step

videos of her conducting the experiments they would have conducted in class. After watching the videos, students are tasked with gathering data, performing calculations and graphing the results.

"It was a huge adjustment moving labs online, because they're completely hands-on," Turov explains. "Luckily, my colleague and I had a couple days to record ourselves talking about all the experiments we had planned, so students would have something to watch."

Faculty in the Geography and Earth Science Department found a creative way for students to conduct their lab work. With the help of Information Technology Services, the department developed a system for students to remotely log in to university computers, allowing them to access professional-quality GIS software from home.

Students use the software for all kinds of projects, such as tracking changes to urban areas and the natural environment over time, or creating maps to display data, such as election results.

"There are a lot of free GIS programs online, but we wanted our students to use the higher quality software," says John Kelly, an assistant professor. "Those free programs wouldn't have given them the full benefit or the same hands-on experience they'd have at school, or in the workplace."

"One problem," adds Colin Belby, a professor, "is we're not there in person if they stumble. It's harder to grab a hold of the computer and help them with whatever problem they're running into, but we're doing our best."



Eugenia Turov, lecturer in the Chemistry and Biochemistry Department.

Meanwhile, Kim has been using a stylus and white board app to walk students through mathematics exercises in his recorded lectures. He cut other material from the curricula completely, because it wouldn't have fit the new schedule and format.



Biology prof on international COVID-19 team

Associate Professor of Biology Jennifer C. Klein is on a worldwide team working toward a COVID-19 drug. Klein is part of the COVID-19 High Performance Computing Consortium scurrying to find a COVID cure. Klein and her research assistant, chemistry and biochemistry major Danny Waigenbach, '19, are working with a Gundersen Health System team expected to begin a local drug trial yet this summer. Klein is featured in a recent IBM video about the consortium.

“Whether the simulation has been perfect or not,” he says, “I hope students know that I’m trying to provide the best educational experience possible with our physical constraints.”

In total, UWL faculty from across campus moved more than 2,500 in-person courses to online formats.

While CATL provided the necessary support, Koepke says the smoothness of the transition is a testament to the dedication of staff and faculty, and their willingness to work together and share ideas.

“I think our university did a really great job of being proactive,” she says. “We’re doing our best to be ahead of, and stay ahead of, the game.”

There has also been much to learn from the chaos caused by COVID-19 — lessons that will strengthen instruction even after students return to campus.

Koepke says she hopes faculty continue to embrace new resources and teaching methods, such as recording and posting snippets of lectures, so students can review concepts that didn’t stick the first time.

“The things we’re doing now,” she notes, “can also be useful going forward.”

Kim says the last half of the semester taught him a lot, personally and professionally. His students have been particularly supportive during an otherwise difficult time.

Continued on page 8



Colin Belby, professor of geography and earth science, headed to rural Coon Valley to record for his online classes. Belby says one of the challenges with online instruction is not being able to be there to assist when a student stumbles. “It’s harder to grab ahold of the computer and help them with whatever problem they’re running into,” he explains, “but we’re doing our best.”



“I’ve learned that students are very understanding of my own shortcomings as an online instructor,” Kim says. “They’re forgiving, accommodating and flexible, and I hope I’m reciprocating those same attitudes back as well. This all goes to show how we as humans are adaptable and that together, we will get through this.”

With large labs on campus like this one in 2017 not possible with online learning due to COVID-19, Geography and Earth Science Department faculty found a creative way for students to conduct their lab work. With the help from Information Technology Services, the department developed a system for students to remotely log in to university computers, allowing them to access professional-quality GIS software from home.



Eddie Kim



Lee Baines

Profs take their talents to the neighborhood

A Mathematics and Statistics Associate Professor didn’t let COVID-19 quiet his love for music. Eddie Kim took his keyboard out to his front yard in La Crosse to play tunes for the neighborhood in April’s spring weather during Wisconsin’s Safer-at-Home order. He even raised money for area food pantries. See more at:

wxow.com/2020/04/12/musicians-at-home-concerts-brings-community-together

A colleague in the Biology Department, Keyboardist Lee Baines, headed outside his house too. Baines also played hits like “House of the rising sun” and “Stand by me” while raising money for the UWL Food Pantry.



Peter Thielen, front, works with Tom Mehoke on immediate sequencing of the SARS-CoV-2 genome, the virus that causes COVID-19, at the Johns Hopkins Hospital molecular diagnostics laboratory. Thielen says UWL was a major component of his future success. When he finished his bachelor's and started grad school, he came to appreciate his UWL education even more.

Cracking the coronavirus

As world awaits vaccine, alum sequences virus' genome

A CSH alum is on the front lines to understand — and ultimately defeat — COVID-19.

Peter Thielen, '05, is a molecular biologist at the Johns Hopkins University Applied Physics Laboratory in Laurel, Maryland. As millions worked from home, Thielen toiled away in a lab sequencing the genome of the SARS-CoV-2 virus.

"When a sample comes through and is diagnosed for SARS-CoV-2, the virus that causes COVID-19, we take the remainder of that sample and sequence the entire genome," he explains. "We're looking at

tests from as many patients as possible, so we can observe genome mutations and track the evolutionary changes that occur when it passes through large numbers of people."

Early results show the SARS-CoV-2 genome has only a small number of mutations since first being identified in China late last year.

The version on the U.S. West Coast appears to have been imported by a traveler from China. East Coast versions likely originated in Europe. It's an important distinction, Thielen says, because it helps establish public health responses such as social distancing.

Thielen's task is to sequence as many SARS-CoV-2 genomes as possible to better understand the virus' genetic diversity and develop an effective vaccine, which is still at least a year.

But there's good news: Because SARS-CoV-2 is mutating slower than viruses like influenza, it may take only a single vaccine to

prevent it. In this way, SARS-CoV-2 would be more like chickenpox and less like the flu.

Thielen views SARS-CoV-2 as a serious problem, but not the kind of once-in-a-century virus it's made out to be.

Back in La Crosse, Anne Galbraith says the world is fortunate to have someone like Thielen working on its behalf.

The associate professor of biology worked with Thielen when he was an undergrad. A decade and a half later, she has only positive things to say about him.

"I remember Pete as just a good, smart, funny person, and he's clearly moved up the ranks to where he is now," she says. "I know a lot of people are suffering and will suffer because of the virus, but it makes me happy to know that someone like Pete is out there helping battle this."

Galbraith says there are many other UWL alums making a difference, too.

WE'RE IN THIS TOGETHER

Science faculty step up to provide supplies for COVID-19 tests



Mark Sandheinrich, dean of CSH, left; Scott Cooper, director of Undergraduate Research, center; and Michael Hoffman, professor of Microbiology, prepared supplies to deliver to Gundersen Health System at the start of the pandemic.

UWL has many faculty and students involved in molecular biology research, so it had a large number of supplies used to extract RNA from various samples. RNA also carries the genetic information of the coronavirus. Obtaining it from samples is a step in the process of determining if a person is infected with COVID-19, explained Sandheinrich.

“We know and work with the researchers at Gundersen and we had the supplies they needed,” noted Scott Cooper, director of Undergraduate Research. “We can’t do any research for the next few months and anything we can do to help get more COVID-19 tests done in the community the better.”

Eventually, UWL faculty and staff gathered other supplies across campus science labs for healthcare workers. A large number of disposable gloves and other personal protective equipment from the Health Science Center were also donated, along with additional safety materials in the Art and Theatre departments.

The Health Science Center also serves as Gundersen’s go-to laboratory for COVID-19 research.

As the COVID-19 outbreak reached La Crosse in mid-March, UWL faculty and staff moved quickly to provide the important supplies needed to run coronavirus tests locally. Initially, supplies were in short supply at Gundersen Health System and nationwide.

“Our UWL faculty and staff and their families are an integral part of our greater La Crosse community,” explained Mark Sandheinrich, dean of College of Science and Health. “In our own way we each need to do our best to support our community in times of need.”

Researchers at Gundersen reached out to Microbiology Professor Mike Hoffman asking for the supplies at 6 p.m. one evening in March. Hoffman got the word out to

colleagues in Microbiology and Biology and by 9 p.m. they had identified the location of the supplies in the Prairie Springs Science Center.

Enough supplies to run 2,900 COVID-19 tests were collected and delivered to the Gundersen testing laboratory the next morning.

“We’re incredibly grateful for this donation from UW-La Crosse,” said Stephen B. Shapiro, MD, Chief Medical Foundation Officer for the Gundersen Medical Foundation. “Community collaboration, such as with our educational partners in La Crosse, is vital to helping slow the spread of COVID-19 and keep our communities as safe as possible.”

LECTURES ABOUND

Distinguished speakers bring noteworthy knowledge

Nobel laureates and noteworthy researchers bring a wealth of knowledge to campus during distinguished lecture series in numerous CSH departments. The long-running series started two decades ago in the Physics Department. The latest was added following the \$2 million endowment from the Prairie Springs: The Paul Fleckenstein Trust given in 2018. Here's a look:

Distinguished Lecture Series in Physics

The series annually brings a physicist to La Crosse whose significant accomplishments and communication skills can inspire and enrich. It's funded by private gifts to the UWL Foundation and through support from the **Department of Physics** and **CSH**. The series hopes to bring its 20th Nobel Prize winner in fall 2020, postponed from spring due to COVID-19.

The Prairie Springs Distinguished Environmental Sciences Lecture Series

The series was created as part of the \$2 million endowment from the Prairie Springs: The Paul Fleckenstein Trust given in 2018. The gift also named the **Prairie Springs Science Center**, along with establishing an endowment that supports environmental studies and education; wildlife and wildlife habitat protection; conservation; and ecological technology.

Rob Greenfield, '09, has dived into thousands of dumpsters to raise awareness about the broken food system, wore all of the trash he generated for a month to show how much garbage the average Westerner creates, and lived off the grid in a tiny house to demonstrate sustainable living systems. Greenfield brought stories of extreme adventure and activism to the 2nd annual Prairie Springs Distinguished Environmental Sciences Lecture Series speaking on "Be the Change in A Messed Up World" in September 2019.

See more about the presentation: news.uwlax.edu/be-the-change-in-a-messed-up-world

Read more about Greenfield: news.uwlax.edu/difference-dude

The Warner Memorial Seminar in Ecology

The seminar honors former Biology Professor James "Jim" Warner, who taught at UWL

from 1963 until retiring in 1996. Warner established the Terrestrial Field Ecology Course Fund in the Department of Biology to support outdoor laboratory equipment for field ecology courses. Warner died Sept. 29, 2011, of complications of a severe automobile accident. Upon his death, his name was added to the fund and it expanded to include scholarly seminars.

In spring 2017, Marlene Zuk, a professor in the Department of Ecology, Evolution and Behavior at the University of Minnesota, spoke as part of the Warner Memorial Seminar in Ecology.

Distinguished Speaker in the Life Sciences

Since 2016, CSH has held public lectures for the series. The most recent speaker, in February, was author and biologist Sean B. Carroll who shared how new discoveries about the way nature works are being used to restore it.



Rob Greenfield, '09



Marlene Zuk



Sean B. Carroll

SAILING STUDIES



The sights on the Spanish Virgin Islands trip were stunning.

Research expedition in Spanish Virgin Islands successful



Associate Professor of Biology Jennifer Klein, back, works with students to carry out whole genome sequencing of reef-building corals during a trip to the Spanish Virgin Islands.

Students who returned from the Virgin Islands in January ended up using their newly learned DNA sequencing skills in a modified online class to see how COVID-19 spread rapidly across the world.

In early January 2020, 10 UWL biology students set sail for an eight-day research expedition in the Spanish Virgin Islands led by Associate Professor of Biology Jennifer Klein in collaboration with Global Treks and Adventures from Winona, Minnesota.

Students learned the fundamentals of sailing on one of two catamarans that served as their research station and home. They departed the U.S. Virgin Islands and sailed to Culebra and Vieques off the coast of Puerto Rico.

Students carried out whole-genome sequencing of reef-building corals and documented reef health while sailing around remote and uninhabited islands in the archipelago, says Klein.

“DNA sequencing was performed using the newly released Nanopore system, which is a device that fits in the palm of your hand and can be used to sequence entire genomes or mixtures of genomes,” she explains. “Students pursued independent research projects funded by UWL Undergraduate Research and Creativity Awards. Student projects focused on characterizing stress response genes that assist some coral populations in resisting climate change.”

Many students on the trip took Bio 460 Genomics Data Science to learn how to analyze DNA sequences when they returned to campus. The COVID-19 pandemic interrupted the semester, says Klein, but the travel experienced helped them succeed.

“The students were able to apply their new understandings to SARS-CoV-2 sequence analysis, which they’ve been carrying out remotely in order to understand how SARS-CoV-2 has spread from country to country,” she explains. “Student development has come full circle, from learning via adventure science to practical application of that knowledge during a public health crisis.”

Along with learning science, students discovered life on a sailboat is both beautiful and challenging. “There are emotional, physical and social risks that come along for the ride when we engage in adventure, but when the risks are well-managed the reward is phenomenal,” notes Klein.

While some students were not swimmers, all become confident snorkelers. Simply being away from land in the open ocean or sailing through a small squall can be anxiety-provoking, says Klein, but every student chose to overcome apprehensiveness to sail as a team.

“One student told us after the trip that she finally learned that everything she’s ever wanted is on the other side of fear,” says Klein.

Evenings were spent creating dinners together, dancing off the back of the catamaran, dipping into bioluminescent bays, and watching sea turtles.

Jennifer Klein, Associate Professor, Biology

[SEE MORE ABOUT THEIR ADVENTURE](#)



During the trip, students saw many reef-building corals and documented reef health while sailing around remote and uninhabited islands.

Near the west edge of the UW-La Crosse campus is a building unlike any other in higher education.

The Health Science Center, opened in 2000, is home to the La Crosse Medical Health Science Consortium — a partnership among the city’s three colleges and two health systems.

The idea, 20 years ago, was for the five founding institutions to bring their talents and resources under one roof to help meet the growing health care needs in the region.

Since then, many of the faces have changed and the technology has evolved. But the mission has remained the same.

“I’ve looked for other partnerships like this — believe me — and I haven’t found anything quite like what we do,” says Catherine Kolkmeier, executive director of the consortium. “There are health care alliances focused on workforce development, but we do that and a lot more, plus we have a building. It’s easy to take that level of collaboration for granted, or to assume it happens elsewhere, but it doesn’t.”

The Health Science Center is part research facility, part academic building, part high school academy and part student health center.

Here, high school students aspiring to careers in health care get their first taste of the medical profession.

Patients recovering from trauma or injury reclaim their lives through physical therapy. And students, faculty and researchers study everything from viruses and bacteria to human biomechanics.

Even a global pandemic cannot stall this steady march toward discovery.

In the microbiology diagnostics lab, researchers from Gundersen Health System are processing COVID-19 tests and sequencing the virus’ genome. Gundersen was the 15th institution in the United States to share sequencing data to Nextstrain’s global database, helping experts around the world track and better understand the virus.

MORE THAN A BUILDING

Health Science Center marks 20 years of collaboration

The La Crosse Medical Health Science Consortium tailors its programs to the needs of the community. Here, UWL physical therapy students help residents regain their health and mobility through the consortium’s EXPAND program.



"It's more than a building, more than the physical space," explains Mark Sandheinrich, dean of the College of Science and Health. "What's unique is the partnerships in the community, the educational opportunities, and the research that goes on there. You have dedicated spaces for all these things, which couldn't happen in other areas of our campus."

More than anything, the center and consortium are adaptable.

When families without dental insurance needed a place to turn, a nonprofit dental office temporarily opened its doors to them.

When the community's attention turned to excessive drinking, the consortium formed a group looking to prevent alcohol abuse.

And more recently, when children's mental health became a focus, the consortium convened a youth mental health program meant to create trauma-informed communities.

Programs and people have come and gone with the times. Others, like Tom Kernozek, have been there since the beginning.

Kernozek, a UWL physical therapy professor, has worked in the Health Science Center since it opened. From his third-floor lab, he and his students have cranked out

more than 100 research studies, many aimed at understanding and preventing leg injuries.

If not for the building, and the people who made it possible, history might have been different.

"When I started in 1996, there was a lot of excitement about the plan for the Health Science Center, and that's part of what attracted me here in the first place," Kernozek says. "I think our facilities and what we've been able to build here is commensurate with a lot of larger campuses. Hopefully, the next chapter includes more innovation and more collaboration with our regional partners."

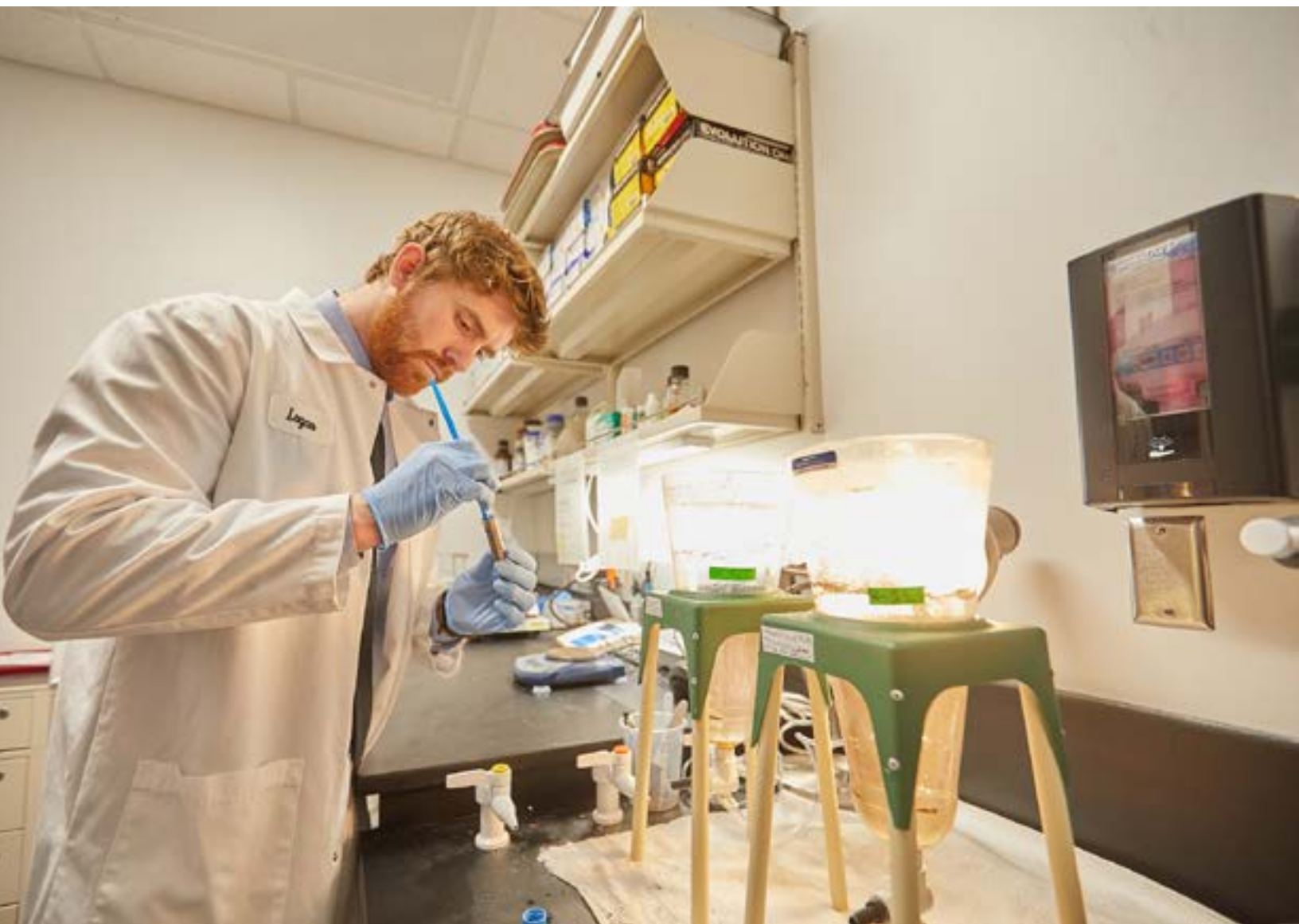
The Health Science Center, a six-story, 170,000 square-foot facility operated by the La Crosse Medical Health Science Consortium, opened its doors 20 years ago in June. The city's three colleges and two health systems were the founding members.

On a typical day, the Health Science Center is filled with researchers chasing their next discovery. Here, graduate student Allison Zank works in the center's molecular biology lab.

[Learn more about the La Crosse Medical Health Science Consortium.](#)



FRESHWATER FUTURE



UWL brings its long history of research on the Mississippi River as it joins a UW System effort to solve global water challenges

As a graduate student, Logan Keding worked on River Studies-related research with Professor of Biology Tisha King-Heiden. The research explored the effect of endocrine disruptors on the embryonic development of zebra fish.

See drone photos related to Graduate Student Alexandra Oines' Mississippi River floodplain research.

At a time when water is seen as one of the most prominent global challenges, UW-La Crosse and other UW System campuses are combining expertise to help solve these problems while preparing a water-focused workforce to meet needs across Wisconsin and beyond.

UWL is part of the Freshwater Collaborative of Wisconsin, a partnership across all 13 UW System campuses to develop the nation's most significant, integrated, multi-campus higher education program to meet the pressing needs of freshwater access and security. The collaborative will include a multidisciplinary course of study across campuses to solidify Wisconsin's leadership in freshwater science, technology, entrepreneurship and economic growth.

The Freshwater Collaborative of Wisconsin will address 10 Grand Water Challenges in Wisconsin and the world, which will be

phased in at campuses across the UW-System over the next three biennial budgets. Each challenge will be addressed by a consortium of campuses. In April, Marissa Jablonski was appointed Executive Director, Freshwater Collaborative of Wisconsin.

UWL will be most heavily involved in Phases II and III of the collaborative's plans, (2021-23 and 2023-25 budget cycles), serving as one of the lead institutions in the area of "Watershed Management and Restoration" and "Healthy Recreational and Transportation Water Use.

A HOME BASE FOR FRESHWATER WORK

UWL's River Studies Center will become the home base for the Freshwater Collaborative of Wisconsin at UWL. For nearly half a century, UWL students have been gaining research experience in water science in the Upper Mississippi River Valley and beyond through the center.

"We are here to promote an understanding of river ecosystems, but also, through collaborative research, help foster the next generation of aquatic scientists and scholars," says Roger Haro, director of UWL's River Studies Center.

Over the years the center has developed strong research partnerships with state and federal organizations, including a 25-year cooperative agreement with the USGS Upper Midwest Environmental Sciences Center on French Island. The campus has also been home to international freshwater collaborations — hosting Society for Freshwater Science international conferences in the '70s, '80s and 2001.

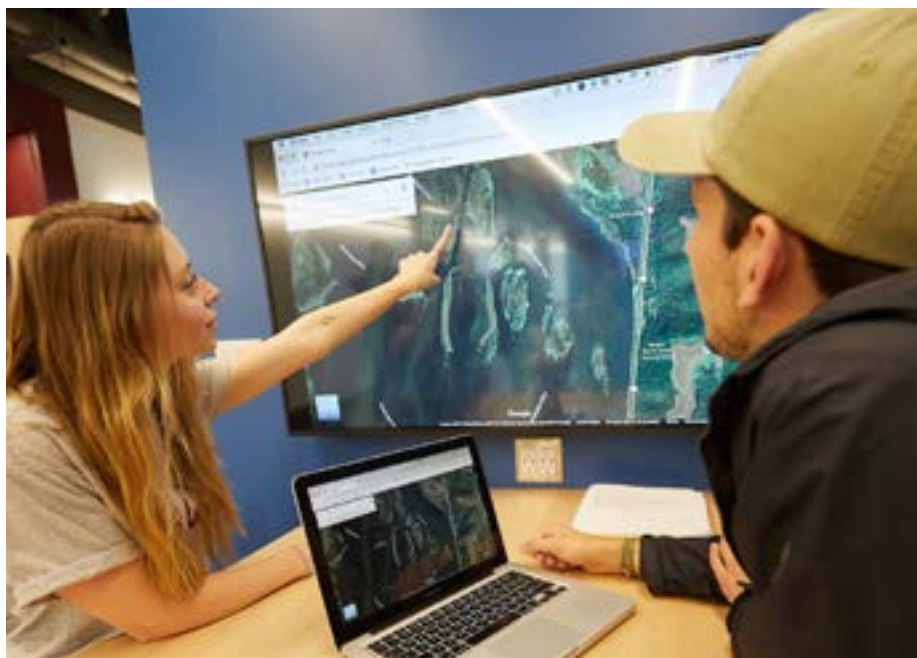
The Freshwater Collaborative of Wisconsin will allow UWL to further develop its areas of expertise in water, says Haro. It will also allow UWL to collaborate closely with institutions across the UW System to provide additional water-related experiences and training.

WHY WISCONSIN?

Wisconsin borders the greatest river system in North America — the Mississippi — and the greatest freshwater system on the planet — the Great Lakes. From agriculture to energy production to manufacturing to tourism to transportation, Wisconsin's economy relies on access to water.

Yet, Wisconsin's competitive advantage in water science is at risk. Meeting the challenges of water access and security is predicted to be a \$23-trillion endeavor over the next 20 years, according to a report from [The Artemis Project](#).

The Collaborative is designed to unleash the collective assets of the UW System and place them into an elite, one-of-a-kind program of training and research.



Last summer, UWL graduate student Alexandra Oines surveyed locations in the Mississippi River floodplain where large canopy trees have fallen down, creating a gap in the forest canopy. She is comparing how length of flooding, the size of the gap, and other factors impact what type of plants are growing in the gap — young trees vs. invasive species. Oines is working with Biology Professor Meredith Thomsen in conjunction with the River Studies Center. Her research is supported, in part, through our Cooperative Education Agreement with the USGS Upper Midwest Environmental Sciences Center (UMESC).

Snow Bike Girl

Alum a pioneer for women in new winter sport

It's a sport in its infancy. Snow biking is so new that what you ride is built from a kit, rather than sold as a unit. A snow bike is a wheel-free dirt bike with a ski attached to the front and a track on the back.

Alumna Jackie Riess, '19, is one of the sport's pioneers — particularly among women.

At a national championship snow bike race last winter, Riess looked around to find she was the only female competing. It gave her an idea. Riess knew women were interested, they just needed to come out from the back-country trails and into the racing scene.

So, Riess launched a new Facebook group, "Snow Bike Girls." Over the last year, her page has attracted more than 1,000 followers and brought together hundreds of women snow bike enthusiasts worldwide. The online friendships have led to in-person meet-ups for rides and races. During a "ride day" Riess helped organize last winter in Elk River, Minnesota, 30 women tried out a snow bike for the first time. After several followers of the page met up at a Snow Bike Cross race in Colorado last winter, two women raced for the first time.

"It is important to me to create a space where women feel invited to ride too," explains Riess. "I feel responsible to set this up for the future of the sport."

Riess has demonstrated that women should not be overlooked. In the aforementioned national championship race series — the Amsoil Championship Snocross series — she earned the No. 10 spot overall nationally against a men's pro group. She earned the No. 2 spot in pro women's class at the AMA National Championship Snow Bike Series 2018 and fifth overall in the women's AMA Championship Snow Bike Series 2017.

In motocross, she has a long history of racing titles, including being named the Minnesota State Champion three times and the Spring Creek Super Series champion five times.

A young start in the sport

Riess got her start taking laps with a mini motorcycle around her family's Eden Prairie, Minnesota, home at age 4. When that path became well worn, her family took her to the local motocross track. The rest is history. "I've been riding motorcycles longer than I've been in school," she quips.

Her experience in motocross was a natural precursor to snow biking, which she started in 2017. That was just as the sport was gaining traction — transitioning from back-country riding into national racing.

Riess competes in two series: The Snocross Series and the Snow Bike Series. The Snocross series added the snow bike class during the 2016-17 season.

"In four years, it is amazing how far racing has come — the skill level of the riders and the skill of the machines," says Riess. "It is pretty exciting to be at the beginning of it."

Although in movies and media, motorcyclists tend to get a bad rap, Riess says the truth is the community is close knit and helps one another. "If I get hurt, I have six people helping me pack up my motorcycle trailer," she notes.

While simply being part of a community of snow bike riders is fun, many are drawn to compete in the sport and particularly for the chance to compete in the X Games, the premiere national race. Riess would like to see a woman's class added. To make that more feasible, women need more opportunities to practice and gain experience racing, she says. That's where her group, Snow Bike Girls, comes in.

She credits her UWL experience for skills that have helped her have a public voice for women as the sport gains traction.

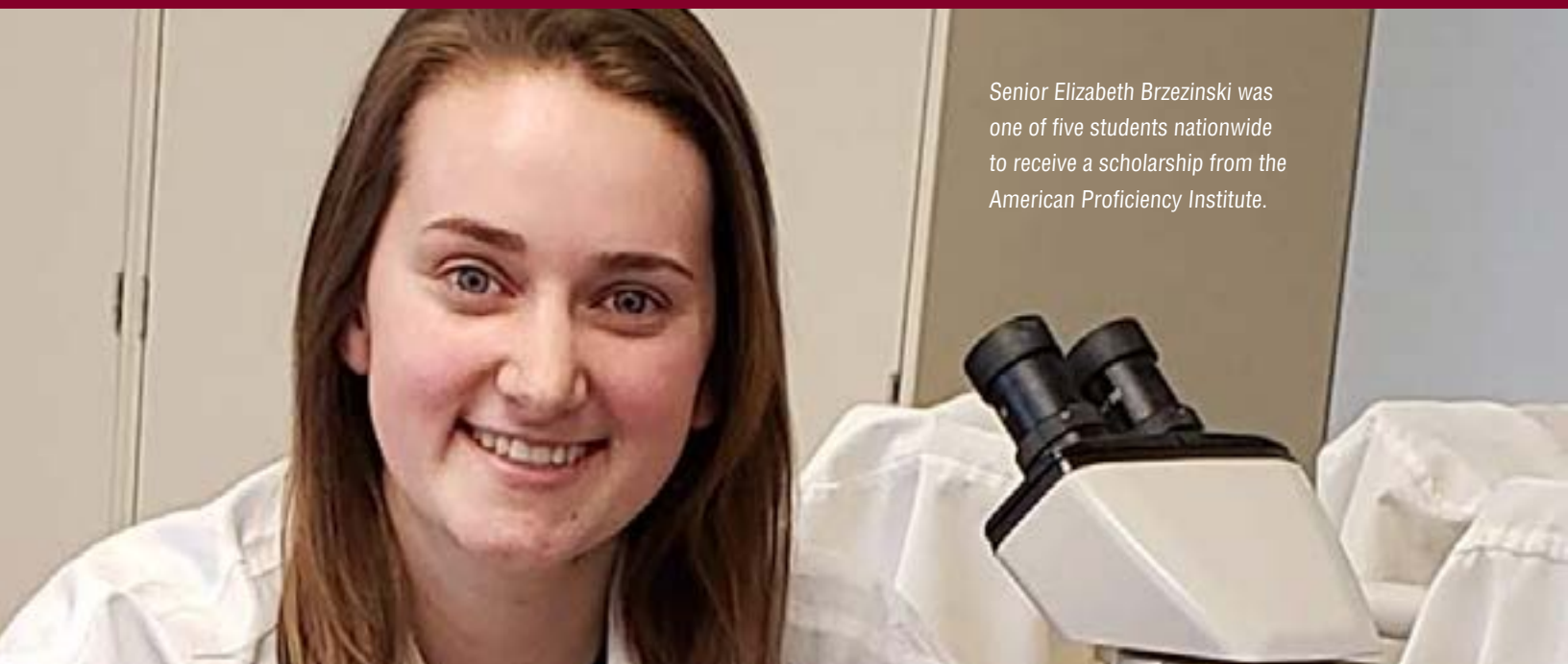
"Communication class and all the science classes where we presented research — because of that I find it easier to talk about things I'm passionate about now," she says. "I don't get nervous. It feels natural for me."



Jackie Riess, '19, earned a degree in biology with a biomedical science concentration. She raced as a UWL student and now competes at the national level. Photo by Angela John

A leader in the lab

Clinical laboratory science major awarded national scholarship



Senior Elizabeth Brzezinski was one of five students nationwide to receive a scholarship from the American Proficiency Institute.

UWL senior Elizabeth Brzezinski is one of five students nationwide to receive a \$2,000 scholarship from the American Proficiency Institute (API).

A Clinical Laboratory Science major, Brzezinski was drawn to the field of study where she can provide physicians information to diagnose, treat disease and more. She recently was completing a nine-month internship as a medical lab student at Marshfield Labs in Marshfield, Wisconsin.

“I think it’s fascinating how much you can determine in a patient’s diagnosis just from a small sample,” she says. “This is a great career for anyone who enjoys hands-on science and wants to have a role in providing timely and accurate results to patients.”

After graduation Brzezinski aims to find a career working at a clinical lab in a rural hospital. “I think it is important to have well-trained and knowledgeable lab scientists in rural areas,” says Brzezinski, who anticipates graduating

in spring 2020. “A key aspect of health care is being available to all those in need.”

Julie J. Seehafer, director of Laboratory Education at Marshfield Clinic Health System, notes that a rural facility would benefit from having Brzezinski on staff. She is “the type of young professional that is needed in the lab, today as a technologist, and in the future as a leader.”

Brzezinski was grateful to receive the award. “I think that it is awesome to recognize students for their hard work, and I was very honored to be one of the applicants selected for the award.”

The American Proficiency Institute is one of the largest proficiency testing providers in the world, serving over 20,000 laboratories. API offers innovative solutions and technical excellence for the proficiency testing needs of hospital and reference laboratories, physician offices, clinics, and point-of-care testing sites.

The 2020 Eagle Teaching Excellence Awards

Two from CSH honored

The best educators have a profound impact on students, in and out of the classroom. A university committee selected six educators from more than 500 nominations to receive 2020 Eagle Teaching Excellence Awards. Along with CSH faculty Barrett Klein, Biology, and Tushar Das, Mathematics & Statistics, others selected were: Lisa Kruse, Sociology & Criminal Justice; Christa Kiersch, Management; Greg Ormes, Communication Studies; and Megan Strom, Global Cultures & Languages.



Tushar Das

Associate Professor of Mathematics & Statistics
Started at UWL Fall 2013

What courses do you usually teach?

I take great pleasure in teaching a wide variety of **mathematics** courses, from College Algebra, Calculus I-III and Linear Algebra, on to Real Analysis, Abstract Algebra, and Topology.

What is your favorite part of teaching?

I was always apathetic to schoolwork until I met the right teachers (both inside and outside of schools). They lit a fire in me, gave me a glimpse into the magic gardens of their subjects, and then disappeared leaving me propelled to explore on my own!

Subjects aren't inspiring per se, it's us teachers who have that crucial potential to ignite the fire of curiosity in our students. A great teacher or researcher inspires others to reach farther than what they had dreamed, and this inspiration may be most significant if transmitted through their actions and example, their philosophy or worldview.

To riff on Descartes, I learn thus I am. Learning is equivalent to existing. That's what I'd like my students to leave/live with — the fire to remain curious and to keep learning until our last breath. Not just with a handful of beautiful seashells that we discovered together on the infinite shores of mathematics.



Barrett Klein

Associate Professor of Biology
Started at UWL Fall 2012

What courses do you usually teach?

I created a few courses for UWL students: Animal Behavior, Entomology (insects, glorious insects!), and Scientific Visualization (how to critically assess and produce visuals for science). I also teach core courses in biology: General Biology, Organismal Biology, and our Capstone course.

What is your favorite part of teaching?

I am most elated as a teacher when one of the following happens:

1. A student pushes me and the rest of a class to consider something deeper, something beyond the conventional scope of the course.
2. I am able to uncover hidden talents, and encourage students to harness their superpowers.
3. Colleagues challenge me to reconsider concepts in science and education.
4. I am able to share my love of insects and what they are capable of with anyone willing to watch a honey bee dance, a cockroach hiss, a wasp sleep, or a mantis learn.

Asleep in the garden

UWL lab home to an international collaboration to understand sleep in aphids

*Aphids covering the stems of a fava bean plant in UWL's Pupating Lab.
Photo by Victoria Salerno.*



Top: Scientists in a UWL lab are studying the sleep habits of aphids, an agriculturally and economically significant inhabitant of gardens and farms the world over. Photo by Victoria Salerno.

Bottom: Barrett Klein and Victoria Salerno.

Above: An infrared-sensitive macro camera, and infrared spotlight, center, are used to film individual aphids on a potted plant. Photo by Victoria Salerno.

Sleep is an essential and basic behavior, but little is known about its mechanisms or functions in insects, the most species-rich group of organisms known to science.

Absolutely nothing is known about sleep in aphids, an agriculturally and economically significant inhabitant of gardens and farms the world over. That is changing, thanks to work in a UWL lab.

In fall 2018, UWL's Pupating Lab was graced by the presence of visiting scientist, Kevin Tougeron, who introduced the lab to aphids and their natural parasite, a minuscule wasp — both collected from a nearby farm. Tougeron came from France to UWL because of a shared interest in

sleep ecology — the desire to learn about sleep “in the wild.” He’s now a post-doctoral scientist at the Earth and Life Institute at the Université Catholique de Louvain in Belgium.

By introducing a new study system to UWL's lab, Tougeron presented the challenge of identifying sleep behavior in two tiny species of insects that would lay the foundation for understanding their ecological roles in the context of sleep and sleep loss.

Will aphids experiencing sleep loss become less effective herbivores? Will natural enemies of aphids experiencing sleep disruption become less effective means of herbivore control?

The lab scientists have begun to look at whether or not aphids experience true

sleep and what sleep would look like in a sessile, tiny insect. Using infrared-sensitive, high-magnification cameras, scientists can observe a range of behaviors that may help to identify sleep, including movement of antennae, insertion of mouthparts in plants, production of honey dew (waste), and parthenogenesis, the live birth of genetically identical offspring.

A post-pandemic analysis of the frequency of these behaviors may hold the key to identifying sleep in these organisms.

Victoria Salerno, undergraduate student who graduated in May 2020 and Barrett Klein, associate professor of Biology

So much research, so little time

Lauren Harding wins annual 3 Minute Grad Project event

Preparing for one of the biggest presentations of her life, Lauren Harding found help in an unexpected place.

“I got feedback from a lot of people in my major, but my sister gave me the best advice,” says Harding, a physical therapy student. “She’s a freshman and doesn’t really know much about it, so she was able to tell me if there was a certain word or a certain part that was confusing to her. It was definitely helpful getting an opinion from outside my major.”

Harding was the winner of UWL’s fourth annual 3 Minute Grad Project event in March before COVID-19 hit, when about a dozen grad students attempted to cram many weeks of research into 180 tension-filled seconds.

The idea, according to Meredith Thomsen, director of UWL graduate studies, is to push students to look past the fine



Meredith Thomsen, professor of biology and director of UWL Graduate Studies.

details of their project and see the bigger picture. That’s easier said than done, of course, for students who have spent three or four months obsessing over the minutiae.

Harding’s project revolved around UWL’s ROTC cadets, who often go on long runs with 50-pound rucksacks weighing on their shoulders. She wanted to see if lessening the load — by as little as 10 pounds — would allow the cadets to improve their form, thus preventing injury.

After extensive tests, in which Harding watched computer models of the real-life cadets running with various weights on their backs, she found that even a 10-pound reduction makes a noticeable difference.

Then came the hard part: distilling the research for a general audience.

“That was really tough, because biomechanics can be hard for people to understand if you only have a few minutes,” Harding explains. “There are terms in physical therapy that we use a lot, but the average person isn’t going to know them.



Lauren Harding, a doctoral student studying physical therapy, was the winner of UWL's fourth annual 3 Minute Grad Project event in early March. Harding's research examined how reducing the load carried by ROTC cadets can help prevent injuries.

So how do you convey the importance of that without losing the meaning?"

The feedback from her sister helped. An inherited passion for teaching — Harding's mom teaches kindergarten — probably didn't hurt, either.

But she was still nervous.

"I was practicing over and over, butterflies in my stomach and everything," she says. "But I had it all memorized, and I think I did pretty well. I was definitely grateful to win, especially because there were so many great presenters."

Though she has a knack for research, Harding plans to work as a clinician after finishing grad school. To her, the chance to meet one on one with patients, to help them regain their health and better understand their bodies, is too valuable to pass up.

"I really think the human body is amazing, and it's cool that we get to play a part in helping people heal," Harding says. "We get to help people be a part of their own healing process, too, which helps them get to the root of their pain and live healthier lives."

It's that same altruistic mindset that compelled Harding to research the ROTC cadets, a group she'd previously had little contact with. After years of studying traditional runners, she wanted to branch out and serve a different population — one known for soldiering through pain rather than trying to prevent it in the first place.

"We're not going to change the military in one day," she says. "But maybe we can make some small differences, like convincing them to make lighter equipment or carry smaller loads. And maybe that will prevent injuries."



The La Crosse Community Theater production of “Proof” had help from Mathematics & Statistics faculty members and students who served as a resource in the production. Photo by Theresa Smerud.

Math + theater = play

Faculty, students engage with cast, crew at La Crosse Community Theatre

What happens when you add UWL mathematicians to a community theatre production? Those attending the La Crosse Community Theatre production of “Proof” in March found out.

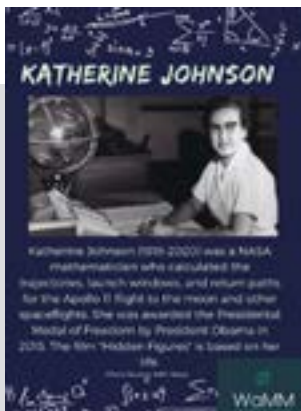
Mathematics & Statistics Department faculty and students served as a resource for the play, a story of love, struggle and a paradigm-shifting proof related to prime numbers.

Members of a newly-formed UWL student organization, Womxn & Minorities in Math (WaMM), met with the cast and crew to discuss the nature and sociology of mathematics, including showing the group an actual proof.

Three Mathematics & Statistics faculty members — Rebecca Ledocq, Karl Kattchee and Tushar Das — participated in post-production talk backs during two Sunday matinees. The talk backs revolved around questions and discussions surrounding the many themes involving mathematics and mathematicians integral to the play.

Associate Lecturer of English William Garcia, director of the production, originally reached out to the Mathematics & Statistics Department looking for math faculty to discuss the play and potential collaborations.

WaMM also produced a series of posters displayed during the production. WaMM is led by students Alyssa Oswald, Avery McLain, Deanna Bayerl and Evelyn Yuengst. Faculty members Das and Whitney George are co-faculty-advisors for the organization.



Members of a newly-formed UWL student organization, Womxn & Minorities in Math, were a resource for a spring La Crosse Community Theatre production. In addition to other support, they produced a series of posters displayed during the production.

Three CSH students earn graduate honors



The Murphy Awards for Academic Excellence: Taylor Hackel

The award, for outstanding and exceptional scholastic ability, recognizes the university's top two graduating scholars chosen by committee. As the top recipient, Hackel received \$1,500.

Hackel graduated with a Bachelor of Science in chemistry. She came to campus with an Eagle Apprentice Research Award and continued doing research. She was a Dean's Distinguished Fellow and received a Research and Creative Grant.

Hackel was a cadaver head teaching assistant and mentored children with special needs. She was co-president of the UWL Food Recovery Network, served meals at Salvation Army, was an intake and kitchen volunteer for Catholic Charities Warming Center, as well as a pen pal with prisoners.

Hackel received a Post Baccalaureate Intramural Research Training Award with the National Institutes of Health in Bethesda, Maryland. She hopes to earn a joint medical doctor/master of public health degree to address health disparities and improve social justice in health care.



The Strzelczyk Award in Science and Health: Mitch Bunting

The \$1,000 award recognizes an outstanding senior in CSH for academic achievement, along with campus and community service.

Bunting earned a Bachelor of Science in biology and chemistry, with a pre-dental track. He received numerous undergraduate research grants, studying breast cancer treatment and climate change effects on coral. He also earned fellowships and scholarships.

Bunting was president of the Pre-Dental Club, chair of the Campus Organization Council, and served on other campus committees. He was a mentor for students with disabilities, a volunteer for a pediatric clinic and a volunteer at a nursing home.

Bunting will conduct a summer research fellowship through the University of Minnesota School of Dentistry, where he will begin studying for his four-year dental degree.



The Rosandich Graduate Thesis Award: Allison Zank

The \$1,000 award recognizes the best graduate thesis, based on originality, impact and writing quality.

Zank earned a Master of Science in clinical microbiology. Zank is one of only two UWL graduate students ever to be awarded a National Science Foundation Graduate Research Fellowship, which supported her work on campus. These fellowships more commonly go to students at large research-focused universities.

Zank was selected for her research on a chemical compound that could become a new antibiotic to treat infections. She made several important discoveries that add to knowledge of how the drug works and makes it more effective. Her work directly applies to drug development, as well as providing scientists a greater understanding of the basic biology of the infectious bacteria she studies.



Trash is abundant in the oceans and though Little Cayman Island is remote, large amounts of it wash up ashore. The UWL researchers collected more than 220 pounds of garbage during 40 minutes of cleanup on an undeveloped beach. Students analyzed the composition of the trash and found the majority of the garbage was plastic bottles. The community service activity was part of a larger CCMI research project on ocean pollution and waste management.

BIOCHEMISTRY BEACH

Students learn chemistry on a remote tropical island

Imagine heading to a warm, tropical island to escape Wisconsin's winter.

In January 2020 nine students did just that when they traveled to a remote marine research station on Little Cayman Island to apply chemical principles and analyses to marine organisms and ecosystems. The new study abroad course was led by Kelly Gorres, an assistant professor of Chemistry & Biochemistry.

But it wasn't all life on a beach. The group spent two weeks at the Central

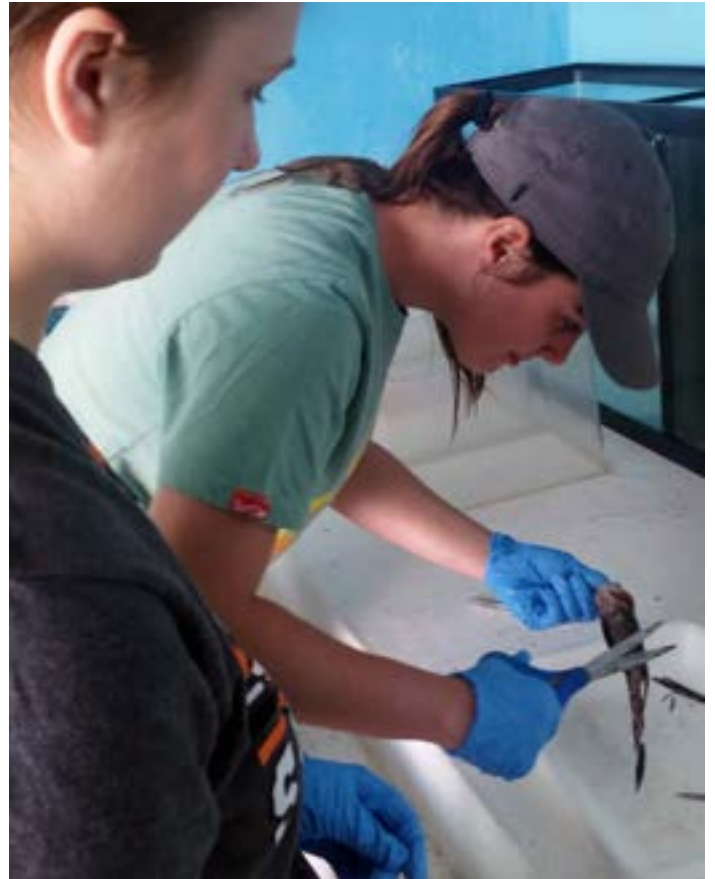


UWL Chemistry major Lindsay Heagle bundles a bag of trash she collected from an unpopulated beach where it washed in from the ocean.

Caribbean Marine Institute (CCMI), a research, education and outreach facility that hosts scientists and students from throughout the world.

"By far the most magical thing about this study abroad experience was being able to learn about a topic and then immediately being able to immerse yourself hands-on with the education in the ocean that was right outside of our classroom," says Madison Schutze, a biochemistry major.

The students studied the invasive lionfish, which have spread rapidly



Above, top: Reece Banta, left, and Lindsay Heagle analyze water samples.

August Wright and Stephanie Cole collect samples from a lionfish in the lab.

Students practice measuring coral samples on a frame used for coral restoration. From left, McKenna Theine, Reece Banta, Brad Burns, August Wright and Madison Schutze.

throughout the Caribbean and Atlantic Ocean. The venomous lionfish has no natural predators and consumes large quantities of native fish.

The UWL researchers extracted DNA and protein from the lionfish and are developing methods to molecularly monitor lionfish populations. The students also learned about the effects of ocean acidification and plastic pollution on coral reef health.

McKenna Theine, a microbiology major, learned more than she thought she would. And, the trip got her more interested in a different ecosystem, all while having fun.

“Living in Wisconsin my whole life, I was surrounded by an ecosystem that is vastly different from other parts of the world, especially that of the Cayman Islands,” notes Theine. “In fact, I live many, many miles away from the ocean. This

course allowed us to develop new skills while learning about a major environmental issue.”

The trip was a once in a lifetime opportunity that biology major Stephanie Cole never thought was possible. “Overall the course has had a huge impact on my life and was a great experience,” says Cole.

Kelly Gorres, Assistant Professor of Chemistry and Biochemistry



Field trips are key for both face-to-face, virtual classes

When face-to-face classes are in session, many faculty take their students out into the adjacent La Crosse River Marsh, or even beyond the city limits to find real-life examples of a lesson and provide an opportunity to work hands-on with field equipment.

Professor Colin Belby, chair of the Geography and Earth Science Department, last fall took one of his classes, “Geospatial Field Methods,” to see firsthand the effects of flooding of Mormon Creek, south of La Crosse.

That helped set the stage for this spring when Belby used a GoPro to take students in “Earth Surface Processes and Landforms” on a virtual field trip during the pandemic.

Left, Colin Belby, chair of the Geography and Earth Science Department, provides guidance to students from his “Geospatial Field Methods” class last fall on a trip Mormon Creek, south of La Crosse.

Middle, Students in a Geography and Earth Science class take measurements of Mormon Creek last fall.

Right, Colin Belby’s class headed to Mormon Creek southeast of La Crosse to see firsthand the effects of flooding on stream channels.



Rollo Taylor, '56 1934-2013

HE LOVED UWL

Coach Taylor remembered for impacting many

Basketball Coach Rollo Taylor, '56, loved UWL. He had a special place in his heart for former students, player and coaches. And they had a special place in their heart for the professor emeritus of physical education.

Many are helping his legacy live on by supporting the newly formed Rollo Taylor Endowment for Men's Basketball, which will provide annual funding for coaching excellence, recruiting efforts and team travel. And, The Rollo Taylor Outstanding Freshman Basketball Award has been created to recognize freshman student-athletes showing leadership, scholarship, character and basketball ability.

Tim Devine, '84, is one of the many Taylor impacted.

"While Coach T's own coaching record at UWL was impeccable (212-66), it does

not even come close to the wins he had off the court with his players, students and the greater La Crosse community," says Devine. "I am very proud to count myself as one of his many victories."

More than 150 people attended a spaghetti dinner that culminated a day of celebrating the memory of Taylor in February.

Men's basketball alums returned for alumni weekend during the UWL vs. UW-Eau Claire in Mitchell Hall Saturday, Feb. 22. Alums were honored during halftime, along with a program remembering the legacy of Taylor, who returned in 1965 to teach and coach for 27 years.

After the game, the Coach Taylor Legacy Celebration was held at the Cleary Alumni & Friends Center, reminiscent of the end-of-season dinner that Rollo and his wife, Kay

(Bertelsen) Taylor, '57 & '68, hosted in their home annually for his freshman teams.

The event included sharing memories of Taylor in person and via a video.

See the video

The campaign to raise money for the endowment kicked off Nov. 1 during the UWL men's basketball exhibition game at the Kohl Center against the Badgers. With the Taylor Family matching the first \$10,000 in donations, the fund hit more than \$33,000 by the dinner. The family hopes to grow the fund to \$100,000.

Below: Kay (Bertelsen) Taylor, '57 & '68, center, waves to the crowd during the halftime of the UWL vs. UW-Eau Claire game that featured a program honoring former basketball coach Rollo Taylor, '56. Taylor was joined by Todd Taylor, '80, right, and Tracy Johnson Taylor, '88 & '95.



TO DONATE

email foundation@uwlax.edu or visit

uwlax.edu/foundation/?fund=donation-gen-1.

Under Area of Interest, select Athletics.

Under Gift Designation – Under Endowments

– select Men's Basketball (Taylor Fund).

Closing thought...

Adapted Sport League offers fun, support for students

For years, students in the La Crosse Area Adapted Sport League have taken part in summer developmental skills at the La Crosse Wellness Center. UWL Adapted Physical Education Teacher Preparation Program students lead the program that helps students learn motor skill instruction — kicking, catching, batting, dribbling, running and throwing — along with other skills for sports and physical fitness. While this summer's sessions have been canceled due to COVID-19, UWL will resume assisting when possible.

