



# Science & Health NEWS

UNIVERSITY OF WISCONSIN-LA CROSSE COLLEGE OF SCIENCE AND HEALTH NEWSLETTER VOLUME 15, NUMBER 1 WINTER 2019-20

## Unsung heroes of healthcare

*CSH partnership with School of Anesthesia prepares nurses for critical healthcare teams*

STORY ON PAGE 4 >>

*in this issue*



## 7. New major approved

UWL will soon turn out majors in computer engineering — a growing, high-demand technology program.



## 12. Collaborative national research

Trio conducts assessment of the psychosocial occupational health status of archaeologists.



## 14. A benthic bonanza

Riverway invertebrates are providing a unique insight.



## 28. Microplastics in the Mississippi

Grad student, DNR take a close look at what's in the waters.



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UNIVERSITY OF WISCONSIN-LA CROSSE  
COLLEGE OF SCIENCE AND HEALTH  
NEWSLETTER

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### CLASS NOTES POLICY

Update your address and provide a class note for the Lantern at [www.uwlalumni.org](http://www.uwlalumni.org).

**ON THE COVER:** Jessica Peterson, CRNA and program director, Franciscan Healthcare School of Anesthesia, left, working with Amy Tevis, a 2017 alumna of the school, while she was a student. *Photography by Teresa Hase, Mayo Clinic Health System.*

[www.uwlax.edu/csh](http://www.uwlax.edu/csh)

# MEDICAL MATES

## UWL, Mayo enter research partnership

**A**n agreement between UWL and Mayo Clinic Health System will give students projects to research and Mayo professionals more experiments. Plus, the new research collaboration will benefit the Seven Rivers Region with better health and wellness.

The agreement, signed Nov. 21 on campus, aims to enable researchers at the two institutions to work together, helping prepare the next generation of scientists, innovators and health care providers.

“This is a wonderful opportunity for the best and brightest people in two outstanding organizations to come together to conduct essential research aimed at discovering invaluable new health benefits,” says UWL Chancellor Joe Gow.

Mayo Clinic Health System Regional Vice President Paul S. Mueller, M.D., expects the agreement to bolster and continue the collaborative spirit. “It will enable our physicians and UWL’s faculty, staff and students to further collaborate and will provide a catalyst for developments in research and health care education,” says Mueller. “Ultimately, today’s research will transform into tomorrow’s cutting-edge care and cure for patients.”

UWL CSH Dean Mark Sandheinrich says the partnership complements the university’s strong alliance with several local healthcare providers through the Health Science Consortium, along with numerous collaborative efforts in educating health professions students.

“Our students will especially benefit from the increased opportunities for undergraduate experiences that this agreement presents,” explains Sandheinrich. “More than 2,000 students at UWL are interested in careers in the health professions and these academic programs are one of numerous strengths of the college and the university.”



*UWL Chancellor Joe Gow, left, and Mayo Clinic Health System Regional Vice President Paul S. Mueller, M.D., sign an agreement in the Prairie Springs Science Center Nov. 21. The agreement aims to enable researchers from both institutions to work together to help prepare the next generation of scientists, innovators and health care providers.*



*Three CSH alumni were among the Mayo Clinic Health System professionals at the new partnership signing. They included, from left, Paul Molling, D.O.; Andrew Jagim, Ph.D.; Jacob Erickson, D.O.*



# Unsung heroes of healthcare

*CSH partnership with School of Anesthesia prepares nurses for critical healthcare teams*

Heidi Inabnit, CRNA. Photography by Teresa Hase, Mayo Clinic Health System.

A gallbladder removal.  
 An epidural insertion.  
 A heart valve replacement.

**A** day in the life of a nurse anesthetist is diverse and busy as they meet the needs of many patients undergoing surgery and other medical procedures. But these healthcare professionals have one constant goal as they approach every bedside — helping the patient feel relaxed and comfortable.

La Crosse area hospitals saw a need for trained anesthetists back in 1942 and a local nurse and sister with the Franciscan Sisters of Perpetual Adoration stepped up to run a certificate program. Sister Yvonne Jenn started what eventually became the first anesthesia school in Wisconsin.

Today that school has blossomed into a successful local partnership between Mayo Clinic Health System La Crosse - Franciscan Healthcare School of Anesthesia, UW-La Crosse College of Science and Health, and Viterbo University School of Nursing.

### UNIQUE PARTNERSHIP MEETS DEMAND FOR ANESTHETISTS

The program admits a maximum of 12 students a year — all registered nurses looking to advance in their careers. They are prepared through academic and clinical training to become Certified Registered Nurse Anesthetists (CRNA). The highly-trained nurses fill an in-demand need on healthcare teams — 100% of the school's graduates in the last five years were employed within six months of graduation.

The school allows each partner — Mayo, UWL and Viterbo — to excel in its strength,

explains Jessica Peterson, the school's program director and an alum.

UWL's graduate program in biology provides students a strong educational foundation in how the human body functions at the cellular level through core courses in areas such as anatomy, physiology, chemistry, electrocardiography and endocrinology.

“Our school would not be the same caliber without UWL — we wouldn't be able to fill that void of the curriculum,” explains Peterson.

UWL became a partner of the school under Barb Jochman, who directed the school from 1985-2016. Jochman, who was also a 1980 alumna of the school, recalls working with wonderful UWL faculty and university leadership to make the partnership a reality, which allowed the school to meet its accreditation standard of students being prepared with a master's degree.

“After that affiliation, the program obviously became stronger,” recalls Jochman. “We became a very solid program.”

### REAL-WORLD SETTING OF SCHOOL IS KEY

But the UWL coursework is only part of the picture. Students can continually see what they are learning in classes in the real-world setting as the school is based at the Advanced Medicine and Surgery Center at Mayo Clinic Health System La Crosse. UWL's program stands out from others because the school is so intimately tied to the hospital, says Peterson.

“Our students are part of our department,” explains Peterson. “They work with us in the care of our patients every day.”

For instance, in their academic coursework, students learn about how neurons in the brain connect with certain muscle groups. Then, in the clinical setting, trained CRNAs and healthcare providers can guide students in a discussion of the techniques and medications used to block those nerves as they help meet a real patient's specific needs.

CRNA Heidi Inabnit is continually working with students as they move through the

*Continued on next page.*

### PROGRAM STATISTICS ARE IMPRESSIVE

Matriculation rates, success rates for first-time takers on the Certification Exam and employment rates for the Mayo Clinic Health System La Crosse - Franciscan Healthcare School of Anesthesia.

	2014	2015	2016	2017	2018	2019
Number of Graduates	10	10	10	9	10	10
Matriculation Rate (%)	100	100	100	100	100	100
Certification Pass Rate (%) - first time takers	90	100	80	89	90	100
Employment Rate (%) within six months of graduation	100	100	100	100	100	100

*Continued from previous page.*

program to foster their independence and learning. All the CRNAs and Anesthesiologists at Mayo Clinic Health System La Crosse are instructors to the students in the clinical setting. They also contribute to their education by lecturing about monitoring devices, preoperative assessment, pediatric patients, anesthesia during labor and delivery of obstetrical patients, cardiac anesthesia, and ethics.

A 2016 graduate of the school, Inabnit says the program prepared her well by providing a good combination of the academic coursework and clinical experience.

### **PROGRAM'S REPUTATION IS STRONG**

Inabnit says pursuing this path was appealing because of the autonomy, work-life balance and overall job satisfaction she heard about from others.

Inabnit is glad she chose to become a nurse anesthetist and is happy to be part of a great team of CRNAs at the Mayo Clinic Health System La Crosse — many who are also graduates of the school.

“Every patient is unique. Cases are variable. What remains the same is the diligent care we provide regardless of a 15-minute or five-hour case,” says Inabnit. “We are the patient’s advocate for safety and comfort, constantly micro adjusting our anesthetic.”

Peterson, who is also an alum of the school, moved to La Crosse for the program. She graduated in 2009 and went on to become a local CRNA, until eventually transitioning into the position of assistant director of the program and then director. She enjoys the student interactions and says the student involvement makes the team stronger.

Students learn from and work with experienced staff to ensure that the equipment and medication meet the needs of every patient. The Anesthesiologist, CRNA, and student discuss the procedure and the patient’s conditions early in the day, so the team can be better prepared, explains Peterson.

“It is incredibly rewarding not only to see student success, but the impact it has on our department and patients,” says Peterson.



Heidi Inabnit, CRNA



Jessica Peterson, CRNA and program director, Franciscan Healthcare School of Anesthesia

**100% of the 2019 graduates of the Mayo Clinic Health System La Crosse  
- Franciscan Healthcare School of Anesthesia passed the National Board  
Certification of Nurse Anesthetists on the first try.**

## **About the Mayo Clinic Health System La Crosse - Franciscan Healthcare School of Anesthesia**



Students are taught in a didactic and clinical setting during the course, which requires 36 months of consecutive study. After successful completion of the program, students earn:

- A Master’s of Science in biology from UWL (33 credits)
- Certificate of Completion from the School of Anesthesia (26 credits)
- A Doctor of Nursing Practice from Viterbo University (22 credits)

Applications for the program are accepted from July 1-Sept. 1.

Learn more at:

<https://mayoclinichealthsystem.org/locations/la-crosse/education/school-of-anesthesia>

# New major APPROVED

## Computer Engineering will address technology demand

UWL will soon turn out majors in a growing, high-demand technology program.

The UW Board of Regents approved the Bachelor of Science in Computer Engineering Oct. 11. Once approved by the Higher Learning Commission, it will become UWL's first undergraduate engineering degree. The new major starts enrolling students in fall 2020.

Computer engineers develop new computer systems, and focus particularly on the boundary between computer hardware and software. Many computing tasks could equally be done in software or hardware. Computer engineers study trade-offs involved and design the interaction between hardware and software.

"This new degree is an outgrowth of the college's excellent computer science program and provides additional opportunities for students in an exciting and dynamic professional field," says CSH Dean Mark Sandheinrich.

The new major is in demand. The U.S. Bureau of Labor Statistics projects the job outlook for computer engineers will grow by 5% from 2016-26 and 10% in Wisconsin during that decade.

Along with market demand, computer engineers have a high earning potential — the second highest among engineering occupations with a mean annual wage of \$114,600.

Technological advancement is not only increasing demand for computer engineers, but is also expanding types of systems being created, says Assistant Professor of Computer Science Elliott Forbes.

"The ability to embed computational power, sensors and wireless connectivity in small devices has created a whole new range of devices that connect our world," Forbes explains. "This has significantly changed the range and scale of devices that computer engineers design. Increasingly, companies are forming interdisciplinary teams that blur the boundaries between hardware and software engineers and require new skills from each."



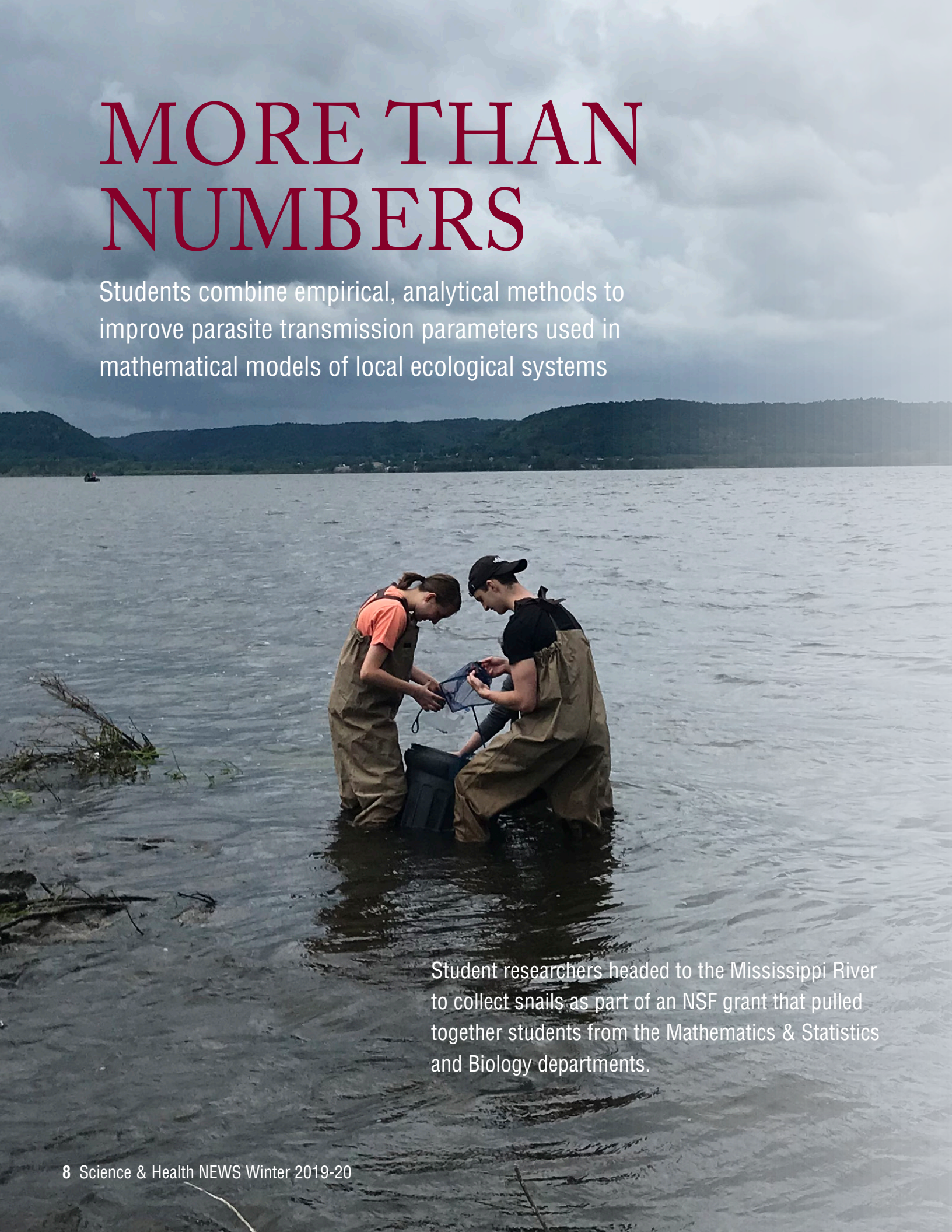
Assistant Professors Elliott Forbes, left, and Lei Wang, Computer Science, are heading up efforts for the department's new Bachelor of Science in Computer Engineering.

The Computer Science Department has an over 50-year history of delivering innovative curriculum. The new program will have a course sequence culminating in one on virtual machines, which use one computer to pose as another. They are the backbone of the cloud, helping make secure systems and newer computers compatible with legacy systems and software.

For efficient virtual machines, hardware and software need to be finely-tuned — a very appropriate topic for computer engineers. While other universities have virtual machines as an elective, UWL will be unique in requiring topics in virtual machines, making graduates highly desirable to employers.

# MORE THAN NUMBERS

Students combine empirical, analytical methods to improve parasite transmission parameters used in mathematical models of local ecological systems

A photograph showing two student researchers wading in the Mississippi River. They are wearing brown waders and are focused on examining a sample in a blue mesh net. The background features a wide river under a cloudy sky, with a forested shoreline in the distance.

Student researchers headed to the Mississippi River to collect snails as part of an NSF grant that pulled together students from the Mathematics & Statistics and Biology departments.



**M**embers of the Mathematics & Statistics and Biology departments recently received a National Science Foundation grant (REU 2019-2022) to support summer research programs in ecological modeling.

Faculty members Robert Allen, Anita Davelos, James Peirce, and Greg Sandland mentored eight students, primarily math majors from across the U.S., in projects aimed at improving dynamical models of disease in the Upper Midwest. Through the course of their interdisciplinary experience, students gained the empirical and theoretical knowledge necessary to successfully conduct cutting-edge, mathematical-ecology research. Not only did they become well-versed in many of the analytical tools used by population biologists, they also spent time in the field studying their organisms of interest.

Four students added biological relevance to a new model for American Chestnut blight by incorporating several important disease classes and interactions not previously captured. These additions provided a more complete and accurate description of the demography of chestnut stands across the U.S. Their model also predicted the replacement of full-sized chestnut trees by smaller individuals (sprouts) — a pattern currently observed in Appalachian forests. The remaining students developed and analyzed a disease model for swimmer's itch, a human inflammatory condition caused by aquatic flatworm parasites that use snails and migrating waterfowl to complete their life cycles. Through a combination of empirical and theoretical approaches, students showed that key infection parameters and model outputs varied substantially among sites within a

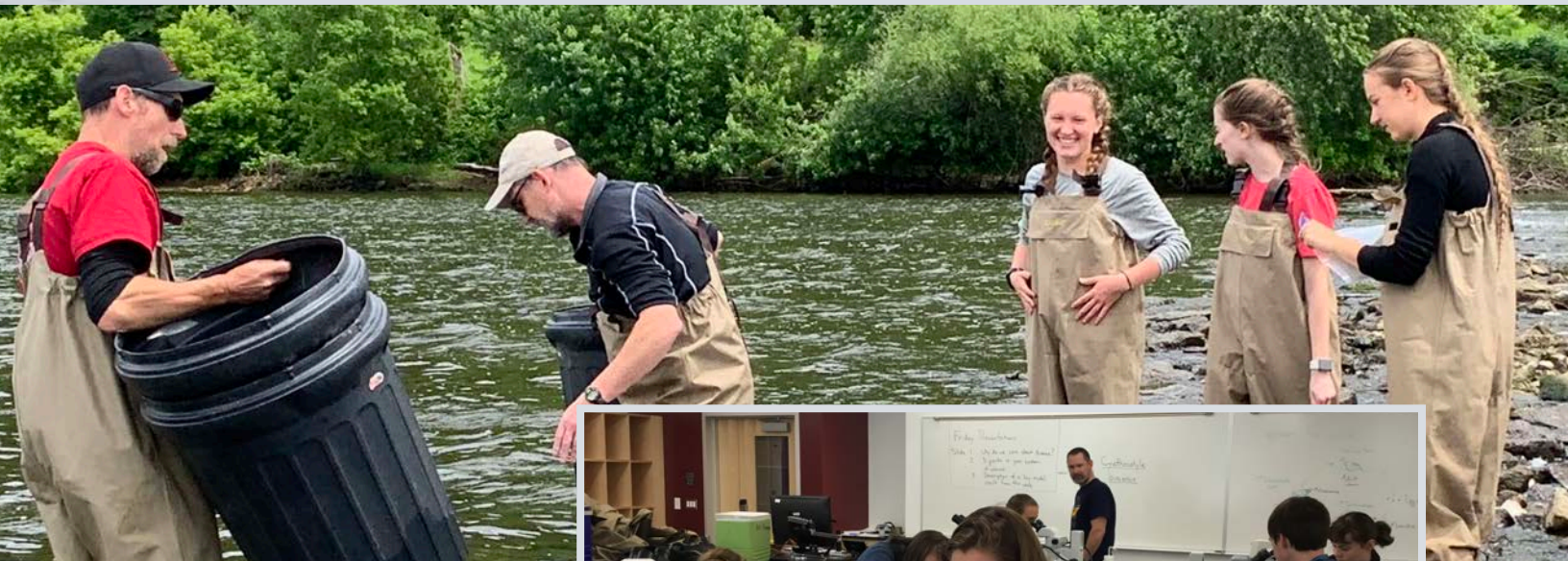
lake and whether the lake was a resident or transient location for migratory hosts.

Overall, research from both projects has the potential to substantially contribute to strategies aimed at controlling the diseases in the future.

Moreover, this interdisciplinary experience has provided the students with the background to successfully contribute to a workforce that is continuing to tackle scientific problems of increasing complexity.



James Peirce, professor of mathematics and statistics



Faculty and student researchers headed to an area waterway to gather snails for swimmers itch, part of an NSF grant.



Student researchers from the Mathematics & Statistics and Biology departments analyze snails gathered as part of a National Science Foundation grant.

# CSH faculty developing, teaching new first-year seminar courses

Five faculty from CSH are helping to revamp UWL's general education program. With UWL's Strategic Plan calling for general education revisions, Anne Galbraith, Faculty Senate chair at the time in summer 2017, led nine faculty in developing a new general education model.

Among the working group were five CSH faculty: Working Group Chair Galbraith, Biology; Colin Belby, Geography & Earth Sciences; Taviare Hawkins, Physics; and Heather Hulett, Mathematics & Statistics. Nadia Carmosini, Chemistry & Biochemistry, also participated in spring 2018.

One change approved by the senate is adding a First Year Seminar (FYS) as part of a 42-credit general education program. Seminar courses are included among teaching and learning practices called High Impact Practices (HIPS). According to the AAC&U, HIPS are highly beneficial for all college students.

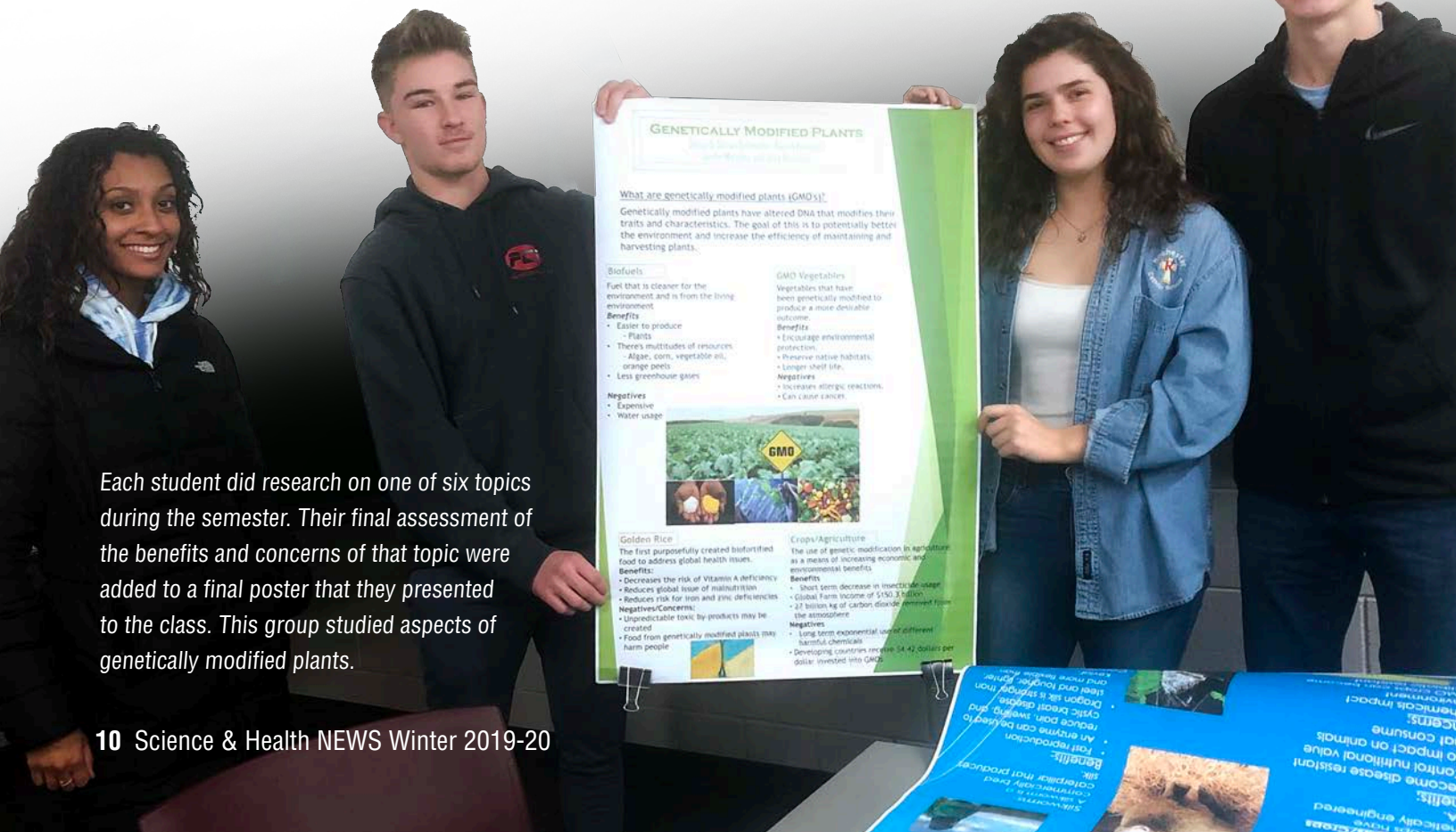
Beginning in fall 2020, all new students and transfer students with less than 30 credits will be required to take FYS100, marking the first substantive change to UWL's general education program since 1995. Over 100 faculty across campus will become certified as FYS instructors. Among these are about 30 from CSH.

In fall 2019, 24 sections of FYS100 were taught in a pilot, enrolling about 30% of the first-year students. Three CSH faculty participated: Scott Cooper, Biology, with "Living on the Edge: Organisms in Extreme Environments"; Galbraith with "Taking the Mystery Out of Biotech"; and Laurie Harmon, Recreation Management & Therapeutic Recreation, with "Time Wasted or Well Spent?"



Article by Anne Galbraith, Biology

Seminar Director Tim Dale, Political Science & Public Administration, expects the changes to pay off. "We often wait too long into a student's college career before introducing them to the interesting and exciting things that we research," notes Dale. "This course is designed to help develop an excitement for learning alongside important lessons on how to best transition to academic life at UWL."



Each student did research on one of six topics during the semester. Their final assessment of the benefits and concerns of that topic were added to a final poster that they presented to the class. This group studied aspects of genetically modified plants.

**GENETICALLY MODIFIED PLANTS**  
*Genetically Modified Plants*  
 What are genetically modified plants (GMOs)?  
 Genetically modified plants have altered DNA that modifies their traits and characteristics. The goal of this is to potentially better the environment and increase the efficiency of maintaining and harvesting plants.

**Biofuels**  
 Fuel that is cleaner for the environment and is from the living environment.  
**Benefits:**  
 • Easier to produce  
 • Plants  
 • There's multitudes of resources  
 • Algae, corn, vegetable oil, orange peels  
 • Less greenhouse gases  
**Negatives/Concerns:**  
 • Expensive  
 • Water usage

**GMO Vegetables**  
 Vegetables that have been genetically modified to produce a more desirable outcome.  
**Benefits:**  
 • Encourage environmental protection  
 • Preserve native habitats  
 • Longer shelf life  
**Negatives/Concerns:**  
 • Increases allergic reactions  
 • Can cause cancer

**Golden Rice**  
 The first purposefully created biofortified food to address global health issues.  
**Benefits:**  
 • Decreases the risk of Vitamin A deficiency  
 • Reduces global issue of malnutrition  
 • Reduces risk for iron and zinc deficiencies  
**Negatives/Concerns:**  
 • Unpredictable toxic by-products may be created  
 • Food from genetically modified plants may harm people

**Crops/Agriculture**  
 The use of genetic modification in agriculture as a means of increasing economic and environmental benefits.  
**Benefits:**  
 • Short term decrease in insecticide usage  
 • Global Farm Income of \$160.3 Trillion  
 • 21 billion kg of carbon dioxide removed from the atmosphere  
**Negatives/Concerns:**  
 • Long term experimental could different harmful chemicals  
 • Developing countries receive 14.42 dollars per dollar invested into GMOs



# Unique atomic bomb class taken to Yale

A UWL physics class on the atomic bomb was taught at one of the world's top universities.

**A**ssociate Professor of Physics Shelly Lesher's class about the history of the atomic bomb and its implications on society snagged the attention of a Yale University faculty member who nominated her for a Yale Presidential Fellowship. Lesher earned the fellowship — one of about 10 awarded annually — and taught last fall during her sabbatical, which runs the 2019-20 academic year.

"The physics program at UW-La Crosse has several innovations that we think are important, and, in particular, Professor Lesher's course on nuclear weapons and their impact on society is timely, and I think would be of great interest to students at Yale," says Reina Maruyama, associate professor of physics at Yale.

Yale learned of Lesher's course after she gave a public talk there last year. She developed the course, Physics 142: Navigating Global Nuclear Issues, and has offered it at UWL since 2015.

Even though an expert in nuclear physics, Lesher's course doesn't delve into the actual physics behind the bomb. Instead,

she uses her science lens to explore the atomic bomb from a variety of vantage points, including its development and the decision to drop it. Her students see how the bomb impacted society globally, including the Japanese, U.S. and Russian perspectives during the Cold War.

"I think it is the only course like it in the country," says Lesher who is making waves in the nuclear physics field beyond her Yale Fellowship. She was recently awarded a \$396,747 National Science Foundation grant to develop a detector array at the University of Notre Dame during the summer months with help from UWL students.

*Above photo: Shelly Lesher, associate professor of physics, was awarded the Yale Presidential Fellowship. She was a visiting associate professor of physics at Yale University where she taught her unique course on the atomic bomb. Lesher has taught physics at UWL since 2009.*



# COLLABORATIVE NATIONAL RESEARCH

Trio conducts assessment of  
the psychosocial occupational  
health status of archaeologists

Utilizing a unique, collaborative, cross-discipline approach, three UWL faculty conducted first-of-its-kind research to look at the health status of practicing archaeologists.

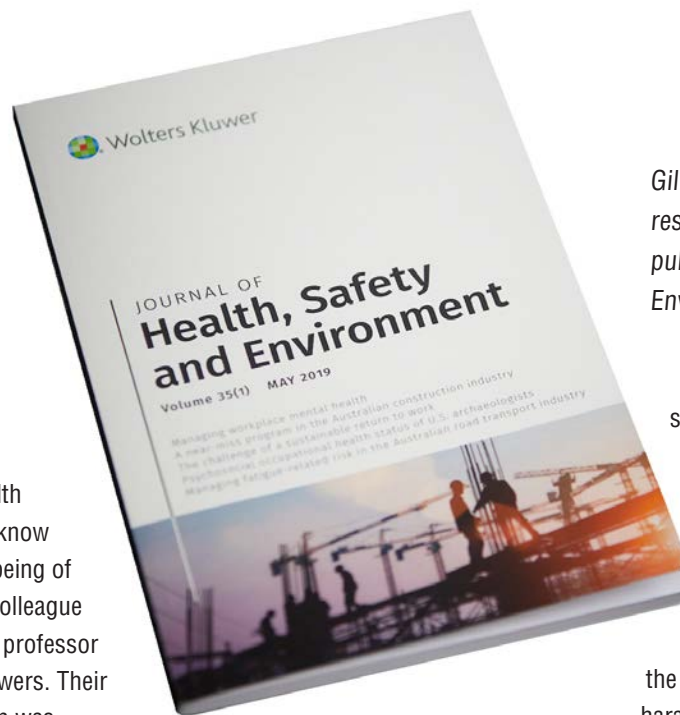
It started in 2016. Gary Gilmore, a UWL health education and health promotion professor, wanted to know more about the health and well-being of archaeologists. He approached colleague David Anderson, an archaeology professor and former professional, for answers. Their conclusion: very little information was available.

Gilmore and Anderson, having collaborated on previous projects, felt the need to investigate. Soon after, they recruited UWL Psychology Professor Ryan McKelley to offer a psychosocial perspective to the budding study that already featured angles both from the profession and occupational health.

“It was beneficial that we were from different disciplines,” explains McKelley. “When I work with other psychologists, sometimes we end up spending quite a bit of time debating from our own theoretical orientation and sometimes we get bogged down.”

The trio developed a nationally-validated survey directed at practicing archaeologists. Each investigator provided discipline-specific content for the survey to gain new perspectives and, ultimately, first-of-its-kind data on the self-reported health of archaeologists. After reviews by various national experts from each discipline,

*Opposite page photo: Gary Gilmore, left, Ryan McKelley, center, and David Anderson agree that cross-discipline research brings fresh perspectives to old topics. “Every discipline could benefit from people outside that discipline having eyes on what they do,” says McKelley.*



the survey was distributed through three major archaeology organizations, reaching an estimated 51% of practicing U.S. archaeologists.

Nearly 1,000 surveys were completed and returned. With data in-hand, Gilmore, McKelley and Anderson would schedule data analysis and report development organized, on-task and on-schedule was the team’s top priority.

“There wasn’t an 11th or 12th hour deadline for us. We didn’t have a ‘crash’ deadline on any aspect of the work,” explains Gilmore. “If you want a quality outcome from a collaborative group, the key is organization. If we were to meet for an hour, our portion of work was completed within the hour.”

Included in their findings, field archaeologists self-reported higher levels of coping behaviors and lower levels of substance abuse when compared to archaeologists working in an office

Gilmore, McKelley, and Anderson’s research was published in the international publication, “Journal of Health, Safety and Environment,” in May, 2019.

setting. High levels of loneliness were also found when comparing field archaeologists to other practicing archaeologists. Gilmore says another key finding was about one-third of the sample reported at least one instance of gender harassment in the previous five years. “We didn’t expect harassment to emerge like it did. That needs to be followed up on,” he notes.

“Archaeologists are doing well as far as managing stress and their working environments,” continues Anderson. “As someone who ran a division of 40 people for close to 10 years, archaeologists are coping pretty well. It’s better than some other professions.”

Gilmore, McKelley and Anderson’s study was recently published in the international publication: “Journal of Health, Safety and Environment.” The trio has also made their survey available for examples on collaborative research.

“Archaeologists have done similar surveys on little aspects of wellness and there’s lots of shortcomings of those studies,” says Anderson. “Without input from (Gilmore and McKelley), the research would have not been remotely successful.”

Everything benefits from a fresh perspective, McKelley concludes. “Every discipline could benefit from people outside that discipline having eyes on what they do.”

Gilmore, McKelley and Anderson hope to revisit their research every few years to track how the responses trend over time.

# A BENTHIC BONANZA

Riverway invertebrates provide unique insights



Caleb Doebereiner, left, and Ryan MacDonald walk the bank of Coon Creek south of La Crosse searching for freshwater invertebrates.

This fall, UWL undergraduate and graduate students literally got their feet wet in search of benthic invertebrates as part of Freshwater Invertebrate Zoology course. Benthic invertebrates are small, spineless organisms that live in the bottom sediments of waterbodies, such as wetlands, lakes and rivers. Students discovered that these bottom-dwelling critters can be incredibly diverse and abundant.



Article by Ross Vander Vorste, Assistant Professor in Biology

To explore the diversity of benthic invertebrates, Assistant Professor in Biology Ross Vander Vorste first led his class of 20 students to the La Crosse River Marsh. Students used dip-nets to sweep up invertebrates from the mucky bottom and underneath root masses surrounding



the marsh. The net contents were then placed into trays that allowed students to view and collect invertebrates for their personal collections.

Benthic invertebrate samples collected from the La Crosse River Marsh were filled with crazy creatures, including dragonfly nymphs and freshwater shrimp. Both can tolerate warm water temperatures experienced in the marsh during summer.

In mid-October, Vander Vorste and his class visited Coon Creek and Bergen Coulee outside La Crosse. Students braved a particularly cold autumn day, but were awarded with a picturesque view of fall Coon Valley foliage and an impressive amount of invertebrate diversity. Here, the rocky bottom and cooler water temperatures hosted a completely different community of invertebrates, including crayfish and mayflies.



*CSH students find invertebrates from the La Crosse River Marsh for their research collections.*

Once the fieldwork was done, students returned to the laboratory in the Prairie Springs Science Center where, throughout the semester, they learned to identify the invertebrates from their collections. By the end of the semester, each student had at least 35 unique invertebrate specimens.

Beyond learning skills in invertebrate taxonomy, students in Freshwater Invertebrate Zoology develop a thorough understanding of freshwater ecology and skills in using freshwater invertebrates as indicators of water quality and ecosystem health.



*Lizzy Bejna, left, and Sabrina Brasier sample aquatic invertebrates from Coon Creek in Coon Valley, Wis.*

# Working to broaden participation

UWL's McNair Scholars Program celebrates 10 years

## STUDENT:

"I think I've finally found my true area of interest in college, but I only have one year left here. I think I want to really get into this area, maybe do research. I don't know where to start when it comes to graduate school; it's like one big mystery to me. Who do I turn to? I'm the first one in my family to graduate from college."

## PARENT:

"There's more? I thought you're finishing college. How are you going to pay for more?"







Above: In 2016, Gaokhia Yan, left, worked with Biology Professor Peg Maher as part of the McNair Scholars program.



Mark Moralez, a political science and public administration major, is currently in the McNair Scholars program studying with faculty mentor John Kovari.



Zanghia Abbey, left, and Kemmesha Thomas took part in the First Year Research Exposure program, an academic diversity initiative in the McNair Scholars program. Thomas is in her senior year and a McNair Scholar.

For students dealing with being first-generation and economically disadvantaged or those belonging to historically underrepresented groups in graduate research programs, questions like these from both the student and their family are common.

Self-doubt, misunderstanding and confusion on where to start can quickly stifle aspirations of talented students who seek to answer deeper questions and pursue graduate research.

Ten years ago, UWL received the Ronald E. McNair Post-baccalaureate Achievement award from the U.S. Department of Education. It has built a program aimed at broadening participation in graduate-level research from students like these.

“McNair” is one of eight Federal TRiO programs serving disadvantaged individuals all along the educational pathway. UWL is among 186 other American universities currently offering a McNair Scholars program.

At UWL each year McNair serves 28 undergraduates students, typically juniors and seniors from disciplines where the doctorate serves as the terminal degree.

Students receive training for the Graduate Record Exam, preparing competitive graduate school applications, financial planning and program exploration. The centerpiece experience of the program is a faculty-mentored research experience analogous to the one they will undertake in graduate school.

To date, 102 students have graduated from UWL's program, with 77% of them enrolling in graduate studies. Together, those pursuing advanced degrees have earned five doctorates and 51 master's, while 32 are still enrolled.



# A WORKFORCE FOR AN AGING WORLD

*Therapeutic Rec program gets national stamp of approval*

By the end of 2019, for the first time in human history, more people were over the age of 65 than under the age of five, according to the US Census Bureau. A growing population of older adults worldwide brings with it many questions including how to meet future healthcare needs of an aging population.

UWL is doing its part to make sure the future workforce is well prepared for a growing population of older adults. The university once again has been named a national leader in its work to meet the needs of an aging population.

The Therapeutic Recreation Program received a Program of Merit for Health Professions designation from The Academy for Gerontology in Higher Education (AGHE). UWL's program is the first ever Health Professions program to receive this stamp of excellence.

The honor builds on a previous track record on campus of work that responds to the interests, needs and opportunities for the

growing, aging population. In 2018, UWL was the first university in Wisconsin to be designated as an Age-Friendly University, an international effort led by Dublin City University to highlight the role higher education can play in responding to the challenges and opportunities associated with an aging population.

UWL's program earned the Program of Merit designation by integrating gerontology and geriatrics competencies into its Therapeutic Recreation Program curriculum, based on standards and guidelines from the Academy for Gerontology in Higher Education.

The designation came after a review and vote from the national Program of Merit for Health Professions Review Team.

"Truly, this is a testament to the student-centered, action-oriented, and professionally committed folks who deliver an amazing Therapeutic Recreation program every day," says Laurie Harmon, chair of Recreation Management & Therapeutic Recreation.

The UWL Therapeutic Recreation Program received Program of Merit for Health Professions designation from The Academy for Gerontology in Higher Education. Many programs reach out to the community.

## ABOUT THE PROGRAM OF MERIT

The Program of Merit is a voluntary program of evaluation for AGHE member and nonmember institutions that offer either gerontology programs (degree and non-degree granting) and/or health professions programs whose curricula integrates gerontology/geriatrics content. The designation gives gerontology and health professions programs an AGHE "stamp of excellence" they can use to verify program quality, lobby within their institutions for additional resources to maintain program quality, market the program, and recruit prospective students.

# Excellence in Therapeutic Rec

Program earns national recognition for contributions to the field

UWL's Therapeutic Recreation Program received the American Therapeutic Recreation Association Excellence in Education award.

The award goes to clinical agency or institution of higher education that has distinguished itself through outstanding contributions to the Recreation Therapy and Therapeutic Recreation profession. Only one program nationally earns the award each year.

UWL's program has distinguished itself in a number of ways including:

- Received the Program of Merit for Health Professions designation from the Academy for Gerontology in Higher Education.
- Established a 4 + 1 graduate program in fall 2018, which provides an alternative and faster option to earn a master's degree in Therapeutic Recreation.
- Assisted in the development of the Wisconsin Therapeutic Recreation Chapter Affiliate, a state professional organization that is associated with the American Therapeutic Recreation Association (ATRA).
- Attracted faculty into the program who are committed to scholarship and the professional development of students.



## ABOUT ATRA

The American Therapeutic Recreation Association (ATRA) is the only national membership organization representing the interests and needs of therapeutic recreation specialists, also known as recreational therapists. Recreational therapists are healthcare providers who plan, direct, deliver, and evaluate recreation-based interventions for individuals with illnesses and/or disabling conditions. They provide research-informed interventions that are based on client assessments and targeted client outcomes.



*UWL's Therapeutic Recreation program is drawing national attention for its excellence. Lisa Savarese, lecturer Recreation Management & Therapeutic Rec, center, leads a class exercise.*

# A bee-clipse

How a rare celestial event can affect behavior of a colony of bees

Does a solar eclipse affect honey bee behavior? A UWL professor and his student are looking into that.

A solar eclipse was visible across the entire U.S. on Aug. 21, 2017. The previous time this occurred on the North American continent was in 1918. The next one will be in 2024, and then in 2045.

In anticipation of the 2017 event, the Pupating Lab at UWL designed a collaborative study with the aim of better understanding whether a rare celestial phenomenon has any effect on the activities of honey bees.

Biology Associate Professor Barrett Klein and student Drew Lysaker coordinated efforts with bee researchers from four universities across the country. Beehives from these sites experienced a 70% eclipse in Ithaca, New York, an 85% eclipse in La Crosse, and a total eclipse in Corvallis, Oregon, and Nashville, Tennessee.

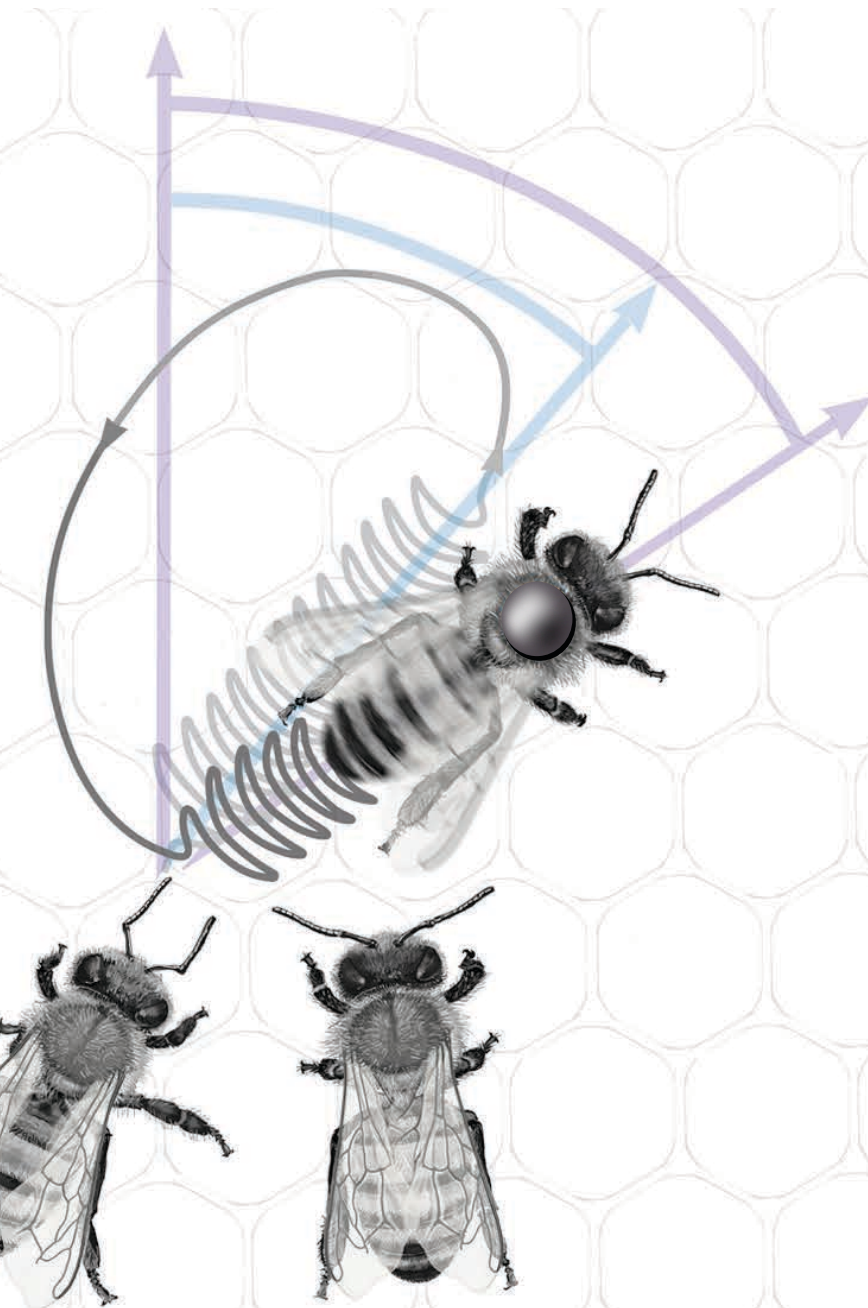
Researchers recorded activity at the entrance of each hive, along with “waggle dancing” inside several hives.

A waggle dance is often performed by a bee returning with the knowledge of a food site and encodes both the direction and distance to that site. The marvel of the dance is that inexperienced dance followers can locate the site on their own only after having followed another bee’s dance.

Researchers videotaped hive entrances and “dance floors.” Videos were selected at time intervals before, during and after the time of peak eclipse. Videos were also selected from comparable times during the day before and the day after the eclipse day for comparison.

Klein, Lysaker and the other researchers found that behaviors were affected.

So way before the next totality occurs in 2024, the researchers plan to publish their first assessment of this unusual celestial event’s potential to impact a colony of agriculturally, economically, and ecologically important insects.



*The waggle dance performed by a worker honey bee, with two followers decoding the direction and distance information for the advertised site.*

*(Illustrated by UWL alumna Danielle VanBrabant.)*

## Honorary doctorates given to Ron and Jane Rada

Ron and Jane Rada are two respected and beloved retired educators who are philanthropic in spirit. They have been pillars of stalwart support for UWL, its students, staff and faculty.

They received the honorary degrees during Winter Commencement Dec. 15. The degrees are given to highly deserving people meriting special recognition for exceptional achievement and distinction in a field or activity supporting the mission of the university.



Jane and Ron Rada.

Ron Rada had a distinguished career at UWL beginning in 1975, serving as professor, director of the River Studies Center, associate dean of CSH and interim provost twice. Officially retiring in 2006, he continued to serve as an official volunteer under three chancellors and work with the university in general and the River Studies Center.

As professor emeritus Ron helped lead efforts for two successful National Conference on Undergraduate Research events on campus, along with the 2006 International Conference on Rivers and Civilization and the 2015 International Symposium for River Science, both held in La Crosse. He served on the leadership and transition teams for the UWL Foundation and remains a special assistant to its president.

Jane Rada had a distinguished career at Western Technical College in La Crosse as an instructor in the Business Division from 1975-2002. She was program head of the Business Technology Department from 1994-2000.

Jane also served as coordinator of WTC's Academic Quality Improvement Program for the college's accreditation through the North Central Association's Higher Learning Commission and as an examiner for the Malcolm Baldrige National Quality Program. She is a long-time volunteer at Gunderson Health System, has served on numerous non-profit boards, was on the UWL Foundation Board of Directors from 1995-2004 and currently serves as an emeritus director.

In 2001, the Radas were recipients of the UWL Chancellor's Award and established the UWL Rada Distinguished Alumnus Award to honor recent to mid-career alums making exceptional contributions to their profession and communities.



The beehive, with a GoPro camera, center on the ground, capturing activity at entrance.



The beehive entrance outside UWL's Cowley Hall with two bees returning to their observation hive located inside the lab.

Article by UWL student Drew Lysaker and Barrett Klein, Biology Associate Professor

# OIL SPILL SCENARIO

*Study shows La Crosse River Marsh would have a different microbe community under oil spill stress*

Over the past year, Anna Hilger was researching an important question related to UWL's neighbor — the La Crosse River Marsh.

The microbiology graduate student wondered if a train derailed and spilled crude oil into the city's marsh, what would happen to the community of microbes living there. Although nearly invisible to the human eye, microbes are drivers of important reactions in the environment — from oxygen production to decomposition. Needless to say, their decline or demise in an ecosystem could be a huge burden on the cycle of life.

Hilger, who graduated in May and wrapped up her master's thesis work in summer, now has an answer to her question. But, as science goes, it is an answer that begs more questions.

Hilger found that makeup of the community of microbes in an oil-polluted marsh changed. She and faculty mentor, Associate Professor Bonnie Bratina, created an artificial oil spill scenario by mixing marsh water and sediment with crude oil in a container. After testing samples from the artificial marsh in her lab, she found a specific kind of microbe with the ability to chew up crude oil was thriving.

It's not news that bacteria and other microbes can

consume oil. Oil degrading microbes have long been a remedy for cleaning oil spills. But their natural rise in a contaminated marsh begs the question of what their abundance might mean for other important marsh microbes not as keen on consuming oil. Hilger's research did not delve into the question of whether this new community makeup was good or bad for the marsh ecosystem, but she is hopeful a future graduate student can tackle those questions.

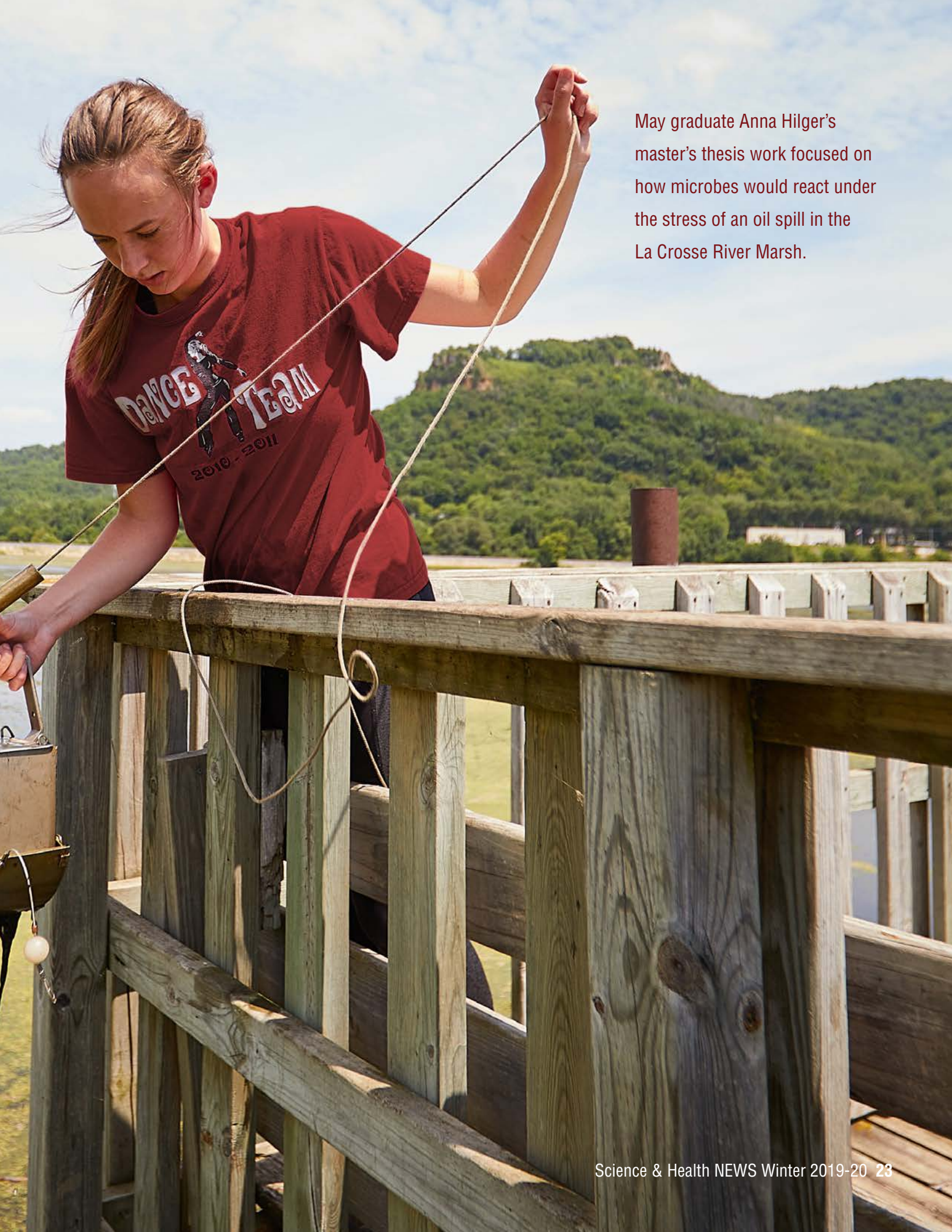
She found the impact of increasing oil degrading microbes was felt most heavily in the water and not the sediment, as the oil tended to stay at the top of the water. That may change with a heavier grade of oil, she added.

Hilger, originally from Bloomer, Wisconsin, is grateful for the opportunity to conduct research in college.

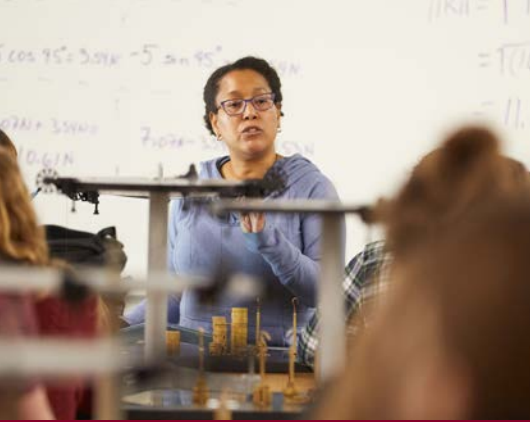
"It helped me figure out what I truly am passionate about and what I'm willing to put in the long hours to achieve," she says. "It was hard work, but I know it is worth it because it is something I really do care about."

Hilger's research was funded by a UWL Research, Service, and Educational Leadership (RSEL) grant, as well as funding from the Microbiology Department and the UWL River Studies Center.





May graduate Anna Hilger's master's thesis work focused on how microbes would react under the stress of an oil spill in the La Crosse River Marsh.



# TOP PROF

## Hawkins earns state kudos

### A physics professor has been honored for her contributions to women of color.

Taviare Hawkins received the Outstanding Women of Color in Education Award from the UW System in November. The award, created in 1994, honors women of color from around the state for their leadership in making a significant and lasting contribution to their campuses and communities. Each UW System institution is invited to select one woman to receive the recognition.

Hawkins, who was the 50th African American woman in U.S. history to earn a doctorate in physics, joined the Physics Department in fall 2012. She came to campus with an extensive background in the field of microtubule biomechanics. She was elected chair of the department in July 2019.

Hawkins is involved in activities that increase the number of women and other underrepresented groups in physics and astronomy, that promote the sciences, and increase the retention and graduation rates of science students.

Hawkins has received UW System funding, as a co-principal investigator, for her “UWL Summer Research Program for Increasing Student Retention and Graduation” and funding, as a co-principal investigator, from the Wisconsin Space Grant Consortium (WSGC) for “Promoting Women in Physics and Astronomy Through Distinguished Lecture Series at UWL.” She has coordinated and organized physics shows for students from Rufus King Middle School in Milwaukee and participates in the Physics Department’s annual “Physics and Laser Light Show Extravaganza” for approximately 700-800 local area school children.

In addition to her teaching responsibilities, Hawkins has set up a productive biophysics research laboratory at UWL where several physics students are currently working on various projects. In the last six years, 30 students have worked with her and then presented their research at local, state and national conferences. She is also in charge of the Wisconsin Economic Stimulus Program in the Biophysics area and incorporates a number of students on several undergraduate research projects there.

“The energy and determination that Dr. Hawkins brings to all her activities is phenomenal,” says UWL Provost Betsy Morgan. “She is a model citizen who has dedicated her life to the benefit of students and the community, particularly to women and other underrepresented groups.”

*Physics Professor Taviare Hawkins, center, the 50th African American woman in U.S. history to earn a doctorate in physics, received the Outstanding Women of Color in Education Award in Madison at a dinner in November.*





# Award recipient is 'heart and soul' of department

Becky Yoshizumi is caring, personable and relatable in an academic program not known for much human-to-human interaction.

"We teach students how to program so they can design and build software, how to solve computing problems, and devise new and better ways to use computers in our world," she says with a smile. "Overall – we teach them how to be problem solvers and find ways to make life better for people."

For her efforts as Academic Department Associate for the Computer Science Department, throughout campus and with students, Yoshizumi received the 2019 University Staff Excellence Award, which recognizes university staff who display outstanding service and dedication.



Yoshizumi started on campus 21 years ago and never looked back, claiming it's "the people" who kept her around. Her office, filled with gifts from grateful students over the years, is telling of her ability to connect with the young minds who walk the halls of Wing Technology Center. One student, who she recalls helping during a challenging time, left a card that said "thank you so much for listening and never giving up on me."

Associate Professor Samantha Foley nominated Yoshizumi on behalf of the department. "We could fill pages and pages with specific interactions," says Foley. "Becky cares deeply for our students and builds relationships with all of them."

On top of managing day-to-day operations of everything from helping set student schedules to pulling together employees, Yoshizumi is also credited with playing a key role in the department's 50th anniversary celebration in 2018.

"Becky's work has positively affected students and staff at UWL," notes Carla Burkhardt, Academic Services Director of the College of Science and Health. "Her work and work ethic is above and beyond any normal expectations."

See more about Yoshizumi at:

<https://news.uwlax.edu/thank-you-so-much-for-listening/>



Becky Yoshizumi, Academic Department Associate in the Computer Science Department, is the 2019 University Staff Excellence Award recipient.

# EAGLE TEACHING EXCELLENCE AWARD WINNERS



*Meredith Thomsen, biology professor, earned the Eagle Teaching Excellence Award.*

UWL faculty who make a major difference in the lives and academic experiences of students are recognized at the end of each academic year. Students nominate faculty and a committee selects six. The 2019 Eagle Teaching Excellence Award winners included two from CSH.



*Nathan Warnberg, assistant professor of Mathematics and Statistics, earned the Eagle Teaching Excellence Award.*



## **MEREDITH THOMSEN** **FINDS JOY IN COLLABORATIVE, BEHIND-THE-SCENES CLASSROOM PREP**

Biology Professor Meredith Thomsen gets excited about the work happening behind the scenes to promote student learning at UWL.

“I have always enjoyed the performance aspect of teaching — figuring out how to get and hold students’ attention, how to strike a balance between lecturing and discussion, how to present tricky concepts,” she says. “But my favorite part happens behind the scenes, in projects like the Organismal Biology redesign, or in CATL workshops. We have a lot of smart colleagues at UWL who are intellectually engaged with the question of how to best promote student learning. I love working with them to find new ways to meet that challenge.”

Thomsen completed her 13th year at UWL in May. She came to campus after completing her doctoral degree at the University of California-Berkeley. There she gained teaching experience as a graduate student in a variety of courses in a National Science Foundation outreach program working with middle school students and leading workshops for natural resources professionals.

At UWL, she frequently teaches in UWL’s Organismal Biology lecture and lab. Each fall she also teaches Quantitative Methods in Ecology. And she teaches a graduate-level course on science writing and communication.



## **NATHAN WARNBERG** **HELPS STUDENTS SEE THEIR POTENTIAL IN MATH**

Nathan Warnberg, assistant professor of mathematics and statistics, likes watching students change from a mindset of ‘I don’t understand this,’ to ‘I don’t understand this, yet.’

“Basically, I like helping students believe that there is not a math gene (or writing, chemistry, art, biology, etc. gene). Instead, there are people that do a lot of math and people that don’t do a lot of math. This, in turn, helps students realize that their potential is typically much higher than they thought it was,” he says. “Watching this realization dawn on students over the course of a semester, or year or college career is a joy. Supporting them through this process with compassion and empathy is even better.”

Warnberg has taught at UWL since fall 2014. He graduated from UW-Platteville in 2008 where he studied math and economics. He then took a year off to work before starting graduate school at Iowa State University. In college he had his first experience teaching and realized it was what he wanted to do. He graduated from Iowa State in Spring 2014.

He typically teaches some general education math courses, along with calculus courses or other upper level math courses. He has also enjoyed teaching first year seminars and a tutor training course for Murphy Learning Center tutors. “The variety of courses that I teach is one of the things I like best about our department,” he says.

# MICROPLASTICS IN T

*Grad student, DNR take a close look at what's floating in waters*

**Microplastics — plastic particles in the environment that often require a microscope to see — have emerged as a known pollutant of the world's water. But how do they impact the Upper Mississippi River?**

UWL graduate student Courtney Baker is taking a closer look. Baker began studying microplastics in summer 2018 as an undergraduate environmental biology student at UWL. She is now continuing her studies while pursuing a master's degree in aquatic biology. Microplastics, she says, can be ingested by fish and birds, and the chemicals associated with them can disrupt processes within their bodies. They can also work their way into the tissues of fish, which are then consumed by humans.

"I chose to study this because plastic pollution in the waterways is of great concern to the general public, but plastics of such a small size are a relatively new topic," she says. "I wanted to shed some light on how this size range of plastics behaves in the Mississippi River so that we could start to think of ways to combat this problem."

Her undergraduate research on microplastics, which she presented at several conferences throughout the state, showed that microplastics are present in the Upper Mississippi. However, they were not the small microbeads she expected to find.

Instead, her studies found plastic fibers such as those that come from clothing. When clothes are washed, the wastewater from the washing machine enters the wastewater treatment plant and then effluent is released into the

Mississippi River. A potential solution would be working to test different ways to remove microplastics during the wastewater treatment process. However, she adds, educating the public about a variety of pollutants in wastewater, including nitrates and phosphates, as well as microplastics, is a key starting point.

"The hardest part is getting people to care. Because microplastics cannot be seen without the aid of a microscope, it can be difficult to get the general public to be concerned," she explains. "By raising awareness of this problem, we can start the discussion about how best to remedy this."

Baker, who landed a position with the Wisconsin Department of Natural Resources as a water resources management specialist after graduating in May, says her study also draws attention



# THE MISSISSIPPI

to the idea that pollution in waterways is not reserved to bigger cities. It is found right here in the Mississippi, the home of fish and migratory birds, as well as a vital habitat for different floodplain plants and trees.

“Because of how important the river is in maintaining the balance between us and nature, I believe that it is our job to protect it and try to preserve the river in its most natural form,” she says. “By investigating different types of pollution that affect the river, we can help maintain a healthy ecosystem for generations to come.”

Baker’s work with the DNR is also related to the Mississippi. Her position is part of the Long Term Resource Monitoring Program, a joint effort among multiple government agencies across several states monitoring overall river health.



Graduate student Courtney Baker collects a Mississippi River water sample as part of her graduate research.

“I think that my coursework at UWL helped make me a strong candidate for my current job,” she says. “My main career interests lie in field-based jobs, so being able to take classes that included fieldwork and hands-on learning gave me a lot of the outdoor skills that I needed to be qualified for the jobs I’m interested in.”

## Next steps?

While her undergraduate research focused on the differences in microplastic concentrations relative to the location of the wastewater treatment plant, her graduate research will explore how concentrations differ between backwater locations and main channel locations on the Mississippi River, as well as whether microplastics are settling into the river bottom.

*Courtney Baker earned an undergraduate degree in environmental biology before pursuing a career with the Wisconsin DNR. She will continue her research on microplastics as a graduate student at UWL this fall. Her work involves collecting water samples from the Upper Mississippi River and analyzing them to determine microplastic content in the lab. She has presented findings at several state conferences including: the Mississippi River Research Consortium, the UWL Symposium, and Research in the Rotunda at the state capitol building.*

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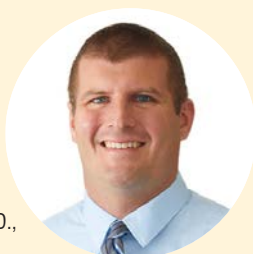


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## GILMORE RECOGNIZED FOR 50 YEARS

Professor Gary D. Gilmore, right, Health Education and Health Promotion, was recognized in November as a 50-year member of the American Public Health Association at the 147th Annual Meeting in Philadelphia in recognition of his “service over years and through decades of dedication to public health.” The award was presented by Georges C. Benjamin, MD, FACP, executive director of the organization. Over his 50 years, Gilmore has presented at several APHA Annual Meeting Scientific Sessions, particularly during his eight years as chair of the “National Health Educator Competencies Update Project Role Delineation Research.”

# GROWING HEALTHCARE LEADERS

Alum grateful for start in community health education supports those entering the field

As a UWL student, Margaret M. Van Bree took community health education classes where students put public health initiatives into action.

In Assistant Professor Robert Jecklin's class, students helped community members quit smoking through a partnership with the American Cancer Society. The experience and connection helped Van Bree land her first job after graduation as the area executive director of the American Cancer Society, Wisconsin Division.

Van Bree, now president of Rhode Island Hospital and Hasbro Children's Hospital and professor of practice at Brown University, says her background in community health education also proved valuable over the long-run of her career as she has held numerous leadership roles with complex teaching hospitals across the U.S.

Over the last decade, these hospitals have become increasingly interested in how community health affects patients as opposed to orienting themselves toward providing simply episodic, acute services. This trend has made Van Bree appreciative of the relevancy of her undergraduate program. It got her thinking early on about the health needs of a community and how that impacts the healthcare delivery system.

"That is really important. For me, having started in that realm, it is a more natural connection," she says. "I think it has made me a better healthcare system leader."

Now, Van Bree is taking steps to help future healthcare leaders emerge with a similar background in community health education. She is setting up an endowed

scholarship for female students enrolled full time in UWL's Community Health Education program. The student also must demonstrate leadership potential through campus and community activities.

In Van Bree's current position she still refers to specific community health education lectures from Jecklin. He was encouraging, provided a challenging learning environment and ultimately was "a huge influence," she says.

"I'm very appreciative of people in my life who have taken the time to mentor me," she says.

That's why she has repaid the favor many times by mentoring others. Now Van Bree's scholarship will provide another form of support to those looking toward their future.

*Margaret M. Van Bree is president of Rhode Island Hospital and Hasbro Children's Hospital. She earned a bachelor of science in community health education from UWL in 1982.*

