



You are *what* you eat

Athletes,
others turning
to nutritionists
for more
energy, ability

Michelle Meinking, '16

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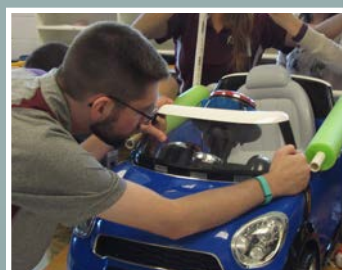
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CLASS NOTES POLICY

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COVER IMAGE:

May 2016 graduate Michelle Meinking spent part of her summer working with the Green Bay Packers' director of performance nutrition. Meinking, a graduate in the exercise and sport science pre-professional major with a minor in nutrition, worked with a variety of sports teams during her undergraduate work. She is currently working toward a master's in nutrition and dietetics at the University of Utah.



You are *what* you eat

Michelle Meinking, '16

Athletes, others turning to nutritionists for more energy, ability

Michelle Meinking jokingly told her parents that after having exercise and sport science internships at the University of Notre Dame and in nutrition with a popular Chicago dietitian who works with the Cubs, the only team left was the Green Bay Packers. So, after not finding an email address for Adam Korzun, the Packers' director of performance nutrition, she sent him an old-fashioned letter.

A few days later while walking across campus, Meinking was excited to see an email from Korzun. She was even more excited to discover he had offered her a paid work study with the team during training camp beginning in May 2016. She gladly accepted.

THE ROAD TO A NUTRITION MINOR

Michelle Meinking, a May 2016 graduate in exercise and sport science pre-professional major with a minor in nutrition, didn't expect to go down the path of nutrition. During her junior year, she had an internship at the University of Notre Dame to help do research with GPS on athletes. It's a monitoring device that tracks players, indicating when they are getting close to overloading and increasing their risk for injury.

But Meinking also took note of Notre Dame's nutrition program for its athletes. It caught her attention, and she began working with that aspect of the sports program in her free time.

The nutrition work sparked another internship — one with Dawn Jackson Blatner, a nutrition expert, blogger and consultant who also worked with the Chicago Cubs.

Continued on next page.

You are *what* you eat

Continued from previous page.

Meinking worked with Blatner for four weeks, making educational materials to encourage proper nutrition among Cub players and helping Blatner prepare for on-camera interviews and more.

“After my internship with her, I realized nutrition was for me,” Meinking recalls.

When she returned to campus, she added the nutrition minor, along with a working opportunity at the campus food service. She continued research on body composition and worked with the campus dietitian to make promotional materials encouraging students to make good nutritional choices.

FOOD BEING ADDED TO THE GAME PLAN

Nutrition is becoming a key to the game plan for more and more athletes. The practice of providing athletes food to help them excel in their sport is quickly spreading from professional teams down through colleges, and even high schools.

“Sport teams are starting to understand that what you put in your body can provide optimal performance,” says Lisa Kobs, program coordinator of UWL’s Nutrition Program.

Kobs says opportunities for students interested in nutrition continue to grow. “We have a lot of opportunity for students to use what they’ve learned in the classroom in real settings,” she says. Many settings are conveniently located in La Crosse in a variety of organizations.

Pro teams and even some Division I colleges hire nutritionists, dietitians and chefs to select food for athletes according to their role on the team, or their sport.

“Nutrition is becoming a lot more important among athletes,” notes



Michelle Meinking, '16, added the Green Bay Packers to her list of providing nutritional advice to athletes. Along with UWL teams, others she assisted include the Chicago Cubs and University of Notre Dame.

Meinking. “It’s really athletes learning what they need and then eating what they like and want to help them succeed.”

Meinking enjoys working with athletes because they are driven to do better. And those who work with athletes must be driven too.

Training camp days are just as long — if not longer — for those serving up the food for the team as those trying out for the team. Meinking is up early each day on the floor with the coaches and athletes making sure the correct foods are available and restocking the player lounges. She’s also assisting with kitchen food preparation, working alongside the chefs.

“I really enjoy working with the Packers,” she says. “There’s a really good culture there.”

MORE SCHOOL, THEN WORK

Meinking returned to class this fall, working on a master’s degree in nutrition and dietetics at the University of Utah

in Salt Lake City. The two-year program will include classwork, along with 1,200 hours of supervised practice. She hopes to work with both collegiate athletes, along with U.S. Olympic athletes in nearby facilities for the winter games.

Meinking knows working with professional and collegiate athletes can be very time consuming, with long days and long weeks. Right now, she’s planning to stick with a busy schedule like that, but figures eventually she might look for a slower pace.

She sees fitness centers emphasizing nutrition more in their training plans. And overall, expects interest in nutrition to continue to grow.

“People are becoming more aware of what they’re eating,” says Meinking.

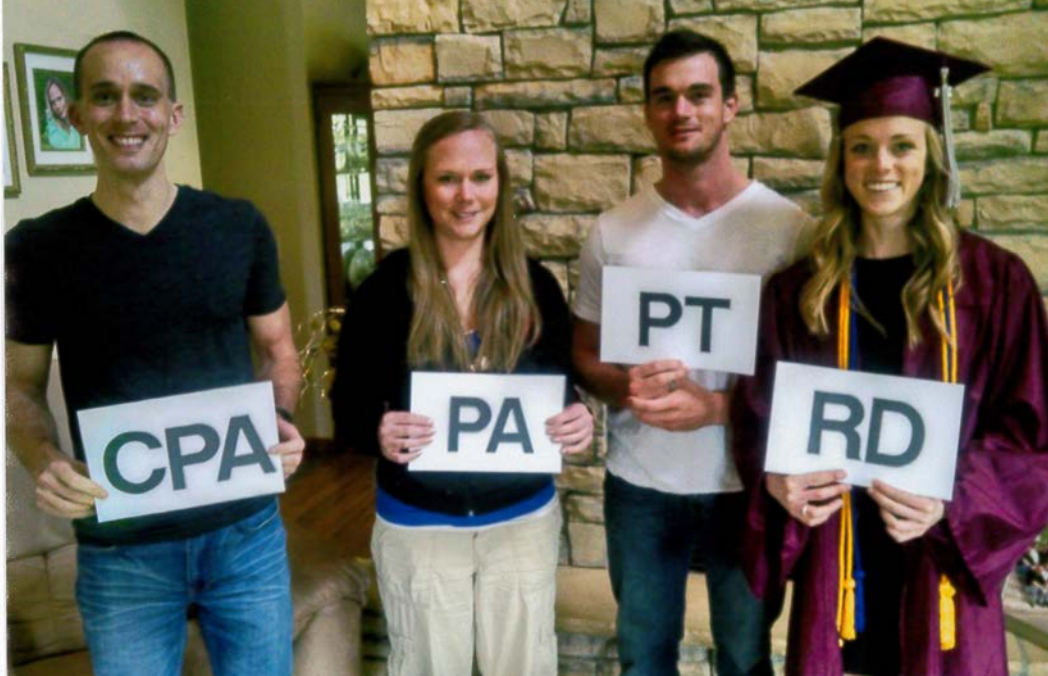
THE NUTRITION MINOR AT UWL

Students from pre-allied health, pre-medicine, exercise and sport science, and health education in the College of Science and Health look to the nutrition minor to help them reach career goals. Across campus, students majoring in psychology, sociology and business may also gravitate toward the minor.

The minor includes 18 credits of nutrition-related coursework for students planning to enter professions where an understanding of food and nutrition will be helpful and make them more competitive in work or grad school.

Nutrition faculty work from the basement of the Health Science Center.

Find out more at: <http://catalog.uwlax.edu/undergraduate/nutrition/>



ALL IN THE FAMILY

Michelle Meinking not only works with sports teams, she's part of a UWL family team. The May 2016 graduate, right, teamed up with her siblings for a family photo displaying the alums and their disciplines. They include, from left, Brian Losching, '03; Melissa Meinking, '14; and Ben Meinking, '12. "UWL gave them a strong, solid foundation to further pursue their future aspirations," says mom Linda Meinking. "Each of them are leading successful lives and have a bright future."

NUTRITION MINOR SERVES UP PROFESSIONALLY, PERSONALLY

UWL nutrition minors learn about food and nutrition to complement their major fields of study — along with applying healthy and socially responsible eating to their personal and professional lives.

All minors complete core courses, which cover human nutrition across the lifecycle and basics of food composition, production and safety. Students choose electives that align with their interests and are offered by a variety of departments across campus.

"Philosophy of Food," "Anthropology of Food," "Nutrition and Sport" and "Advanced Nutrition for Health Professions" are courses that demonstrate the diversity of electives this interdisciplinary program offers. Some courses are conducted in conjunction with community programs, where students can put food and nutrition knowledge into beneficial action.

Nutrition minors also have the opportunity to participate in nutrition-related research with faculty and classmates. Some students complete a field experience course, which allows them to earn credits while applying their nutrition knowledge. Some have even been offered a job by their host sites upon completing their field experiences.

Nutrition minors include majors in exercise and sport science, community health education, biology, psychology, microbiology, chemistry and biochemistry, history, business disciplines, therapeutic recreation, recreation management, and sociology. Some will go on to graduate programs and careers in healthcare, while others will work to promote overall healthy behaviors — in community health, the fitness industry or corporate wellness programs. A solid understanding of food and nutrition complements all of these occupations. Other students extend their pursuit of food and nutrition knowledge with graduate work and careers in public health nutrition, food science and dietetics.

Dedicated UWL faculty will always strive to provide nutrition minors with a sound base in the science of food and nutrition, along with an exciting array of interdisciplinary elective opportunities to help them explore and achieve their personal and professional goals.



by Lisa Kobs,
lecturer in
the Biology
Department

Science Labs Building underway



Scientists on campus will soon have a new place to call home. Construction on the new \$82 million Science Labs Building got underway this past summer.

The building will address a lack of space and severely deteriorating infrastructure in Cowley Hall, the existing physical and life sciences facility. When Cowley was built in 1965 and added on to in 1969 and 1970, fewer science programs were offered and fewer students were attending.

The new building will include 35 instructional and research labs for biology, chemistry, geography and earth science, physics, microbiology, river studies and the radiation center, along with shared administrative and building support spaces.

“This building will be a place where scientists and their student apprentices can play, learn, discover and invent new ideas and technologies,” predicted Chemistry and Biochemistry Professor Aaron Monte during a ceremonial groundbreaking in November. “It will be a beacon to all of the great work that our older faculty have done in growing a culture of excellence in the sciences over the past several decades, and one that will inspire the current and future generations of students and faculty to continue in that vein.”

The building is scheduled to be completed in fall 2018.

SCIENCE LABS BUILDING FAST FACTS

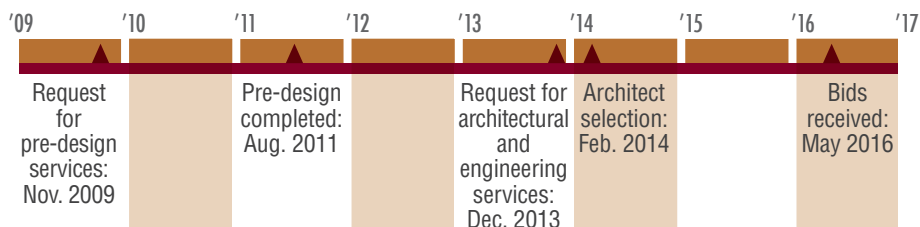
- Total Square Footage: 187,600
- 822 tons of rebar
- Four-story structure with basement
- 268 tons of structural steel
- 11,750 cubic yards of structural concrete
- 190,000 bricks



Special scoops

Taking part in the ceremonial groundbreaking of the Science Labs Building Nov. 16 were, from left, Al Nelson, Professor Emeritus, Biology; Eric Lehmann, Vice President, Fowler & Hammer; Val Schute, Founder/Principal, River Architects; Jacob Schimmel, UWL Student Association president; State Sen. Jennifer Shilling; Chancellor Joe Gow; David Miller, vice president for Administration and Fiscal Affairs, UW System; and Aaron Monte, professor and department chair, Chemistry & Biochemistry.

SCIENCE LABS BUILDING TIMELINE



The importance of PAs

UWL PHYSICIAN ASSISTANT PROGRAM CONTINUES TO FILL HEALTH CARE SHORTAGE

When UWL graduate Jessica DeBruyne decided to continue her education to become a physician assistant, she looked no further than her alma mater.

Factors like a 100 percent pass rate on the Physician Assistant National Certifying Exam among graduates, small class sizes and a partnership with two leading healthcare institutions, made UWL's program particularly attractive, says DeBruyne.

"Despite looking into other PA programs across the Midwest, I knew that UWL's PA program would be the best fit for me," she says.

Today, DeBruyne is working toward her graduate degree in UWL's Physician Assistant Studies program. She doesn't regret the decision. In fact, she's eager to promote the program and the profession she's planning to pursue after graduation.

Oct. 6-12 was National PA week, a time to celebrate the profession that has helped fill primary care doctor shortages nationwide since the first graduating class of PAs from Duke University in 1967. A 2016 report from the Association of American

Medical Colleges projects a shortage of physicians ranging between 61,700 and 94,700 over the next decade.

Graduates of the program, now working in the region, explain how the program prepared them.



Click to watch

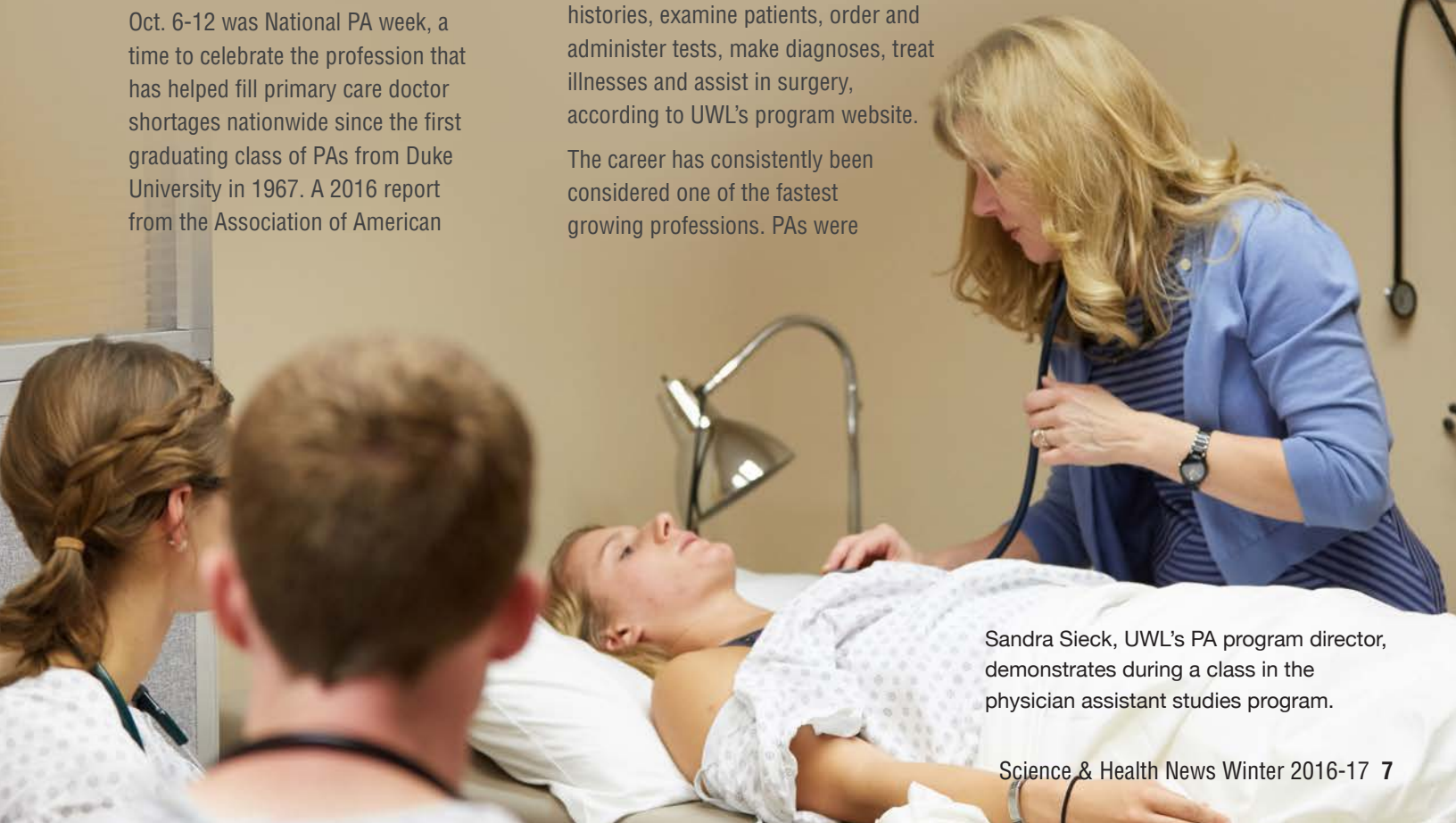
Under the supervision of physicians, PAs are able to fill many duties previously completed by doctors. They are qualified to take medical histories, examine patients, order and administer tests, make diagnoses, treat illnesses and assist in surgery, according to UWL's program website.

The career has consistently been considered one of the fastest growing professions. PAs were

ranked the most promising job of 2015 by Forbes.com. All UWL graduates who seek employment after graduation are employed as PAs, and more than 90 percent of program graduates stay within the tri-state area to practice medicine, which includes Wisconsin, Minnesota and Iowa, says Sandra Sieck, UWL's PA program director.

Sieck says UWL is extremely fortunate to have program partners — Gundersen Medical Foundation and Mayo Clinic School of Health Science of Rochester. UWL PA Program instructors include renowned clinicians and scientists.

"The program faculty have a sincere commitment to quality education and work hard to promote the PA profession in all they do," says DeBruyne. "I've never regretted choosing this program!"



Sandra Sieck, UWL's PA program director, demonstrates during a class in the physician assistant studies program.



Summer school

London: A great place to learn about science and health

During the 2015-16 academic year, UWL students were offered opportunities to learn about psychology, sociology, English, history, business and public health from La Crosse faculty in London.



During summer 2016, London South Bank University hosted UWL faculty and students in the heart of London. Bob Jecklin, a College of Science and Health faculty member in Health Education and Health Promotion, taught a psychology and sociology course titled, “Death, Grief and Bereavement.” Participating students successfully balanced both courage and caution to travel in a time of seemingly relentless warnings and to discuss death — a topic often avoided by others.

Students completed a heavy dose of reading and related tasks before leaving for London, including personal inventories, interviews of Americans about death-related topics, and a photo essay on their hometown cemetery.

Students arrived in London ready to learn from English experience with death and dying. After learning to navigate the town, the tube and double-decker buses, students received a warm welcome from John Troyer, a native of Wisconsin who serves as Director of the Center for Death and Society at the University of Bath. Troyer shared his



John Troyer

path to becoming an international scholar, and the many death-related topics of interest to leaders, scholars and citizens in the United Kingdom. Most students found the idea of a “good death” to be relevant for their generation.

During the second week, students shared their photo essays about their hometown cemeteries before visiting Highgate cemetery, the final resting place for many Londoners from all walks of life. Rev. Ralph Godsall, who serves as a vicar to priests in his work at Westminster Abbey, shared his experience working as a local vicar serving all people at their time of death



Ralph Godsall

— both members and non-members of the Church of England. Students noted the close relationship between the church and the government, and were impressed that priests accepted the duty to serve all citizens regardless of church membership.

Week three included Ushma Williams’ presentation on Hindu and other Indian perspectives on death and dying, a topic she regularly presented to health care and hospice workers in the United Kingdom. Williams explained that Sanskrit philosophy existed over thousands of years before being called Hindi by Europeans; she described what was important in the care of her dying father including the challenge of negotiating western medicine, caring for his body before cremation, and handling his remains after cremation.

Later in the week, Liz Crighton, senior lecturer in childhood nursing at South Bank, compared hospice care for children and adults. London was the western capital to first offer modern hospice care. Crighton emphasized her specialty in end-of-life



During summer 2016, UWL faculty and students studied in the heart of London at London South Bank University.

care for children by sharing video messages from children who described what they thought was important as they approached the end of their lives.

During the final week, students met with Canon Theologian for Westminster Abbey, Rev. Professor Vernon White, who provided a private tour of the Abbey after discussing both natural and spiritual views of death. Upon questioning, he confirmed his belief in heaven as something positive, but he could not describe heaven from this side of death. After studying death in human experience, White shared his view that dying is hard even when one believes in heaven.



Vernon White

Toby Scott, the final local leader for the course in London, spoke on behalf of the Dying Matters Coalition. The coalition includes government and private advocates who want to help English citizens learn about important decisions related death including end-of-life care, funeral plans and the handling of remains.

In addition to recognized experts on this challenging topic, students also interviewed three London residents and compared those responses to what each student heard during American interviews.

Students intended to apply their learning in personal and professional settings, and were very grateful to receptiveness they experienced in London — a great place for learning.



by Bob Jecklin,
Professor of Health
Education and Health
Promotion





DIGGIN' DINOSAURS

Students in rex lab reveal biology of Tyrannosaurus

Tyrannosaurus rex hunted across North America 66 million years ago, and still ranks as the most powerful and massive land predator in earth's history. Despite its huge adult size, *T. rex* started out as a small juvenile like all vertebrates.

UWL student researchers in the College of Science and Health are revealing more about how *Tyrannosaurus rex* survived and grew from small scampering youngsters into vast nine-tonne adults. Their research highlights the interplay of science and learning, and involvement of faculty mentors and programs in guiding future scientists and professionals. The students make new discoveries with methods and inquiry at the absolute cutting edge (in this case literally) within a dinosaur's cataclysmic jaws.

My primary research involves how adult Tyrannosaurus rex and other carnivorous dinosaurs caught, dispatched and consumed their prey.

Our anatomy and physics based inferences of behavior are dramatic for *T. rex* at adult body size, but almost nothing has been known about this dinosaur very early in its life.

In 2015 I successfully proposed placing very small dinosaur fossils in the Canadian Light Source synchrotron (Saskatoon, Saskatchewan), using pure X-rays to peer inside the bone. Along with colleagues Tim Tokaryk, (Royal Saskatchewan Museum) and Nicholas Longrich (University of Bath), I suspected that some of these fossils were from juveniles of *Tyrannosaurus rex*. Thanks to UWL students, we confirmed our suspicion that the fossils were from young dinosaurs, so young we have yet to reveal their exact ages.

Kayla Litwin and Teagan Ziegler examined X-ray slices of bone, similar to imagery from a hospital CT scanner. They are two of our elite students recruited into UWL's Eagle Apprentice program, in which freshmen receive a

stipend to assist sponsoring professors with their research.

They imaged virtual slices through the bone in three planes, enabling us to see how blood vessels fed the bone in three dimensions. Until the students found the right color combinations for visualizing the bone's histology (tissue structure), we had no idea how informative the data was.

Ziegler and Litwin showed how the bone resembles that of a growing bird, perhaps expected because of the close relationships between birds and other dinosaurs. *T. rex* is more closely related to a hummingbird than it is to other famous carnivorous dinosaurs like *Allosaurus*. Although we are still writing up this research, UWL students dramatically expanded our picture of rapid growth rates and activity levels in young dinosaurs.

"It was very interesting to see how many things could be learned about

the whole animal from one small piece of its foot,” says Ziegler. “It was also very interesting working with the many different computer imaging programs and learning how many different ways a single specimen could be analyzed.”

Litwin concurs. “I thought it was really interesting that we were able to get such detailed imaging from such a small bone,” she says. “Also, comparing the histology of the baby *T. rex* to birds currently alive helped in getting a more tangible understating of the animal.”

We are still at the beginning of understanding the lives of small tyrannosaurs. Litwin and Ziegler’s next steps are to construct 3-D computer models of these animals, with assistance from David Anderson of the Department of Archaeology. My former Eagle Apprentices, Erin Wick and Ryan Sokup, proved some of these methods in an earlier project. Students Peter Roth, Juliana Cruz and Emily Schneider have expanded and refined ways of reconstructing the bodies of extinct animals.

In addition, from the small to the giant, research student Kaitlyn Nichols reconstructed form and behavior of adult *Tyrannosaurus*. We do not know the exact layout of some jaw muscles in *T. rex*, and Nichols is testing the effects of alternative muscle attachments on bite



Students worked with Assistant Professor Eric Snively to study how carnivorous dinosaurs caught, dispatched and consumed their prey.

force. She has ingeniously reconstructed the muscles using red yarn on a rapid-prototyped 3-D print of a *T. rex* skull, and confirmed enormous bite forces in one configuration.

Nichols will examine bite force and skull stresses in an engineering model of *T. rex*’s skull, using finite element analysis, including a model from a hospital CT scan of an entire lower jaw. Also, student Cari Jensen will use similar methods to reconstruct bite force in another huge carnivorous dinosaur, *Giganotosaurus* from Argentina.

Nichols sums up her research experience as unexpected. “It’s definitely

not something I thought I would be doing over a year ago, but now that UWL has implemented their amazing undergraduate research program, I don’t know what my week would look like without it,” she says. “I look forward to doing research on our dinosaur and it’s definitely the highlight of my week.”



by Eric Snively,
Assistant
Professor of
Biology

DAY ON THE PRAIRIE

Students in a recreation management class get hands-on with the Mississippi Valley Conservancy.



[Click to watch](#)



Science with experience

Undergraduate research experience as a clinical laboratory science major

New clinical laboratory instrumentation or procedures for diagnostic purposes are developed through research, often with the aid of undergraduate researchers. Students performing clinical research at UWL are not only crafting their laboratory techniques, they are gaining knowledge in the field of study. The research they are conducting can one day play a role in a new procedure or help identify a disorder with greater accuracy.



UWL Clinical Laboratory Science (CLS) students who are seeking undergraduate research positions often find positions in the UWL Microbiology, Biology, or Chemistry departments. Together with the talented faculty in these disciplines, students are exposed to new laboratory techniques, and develop critical thinking and problem solving skills.

In Microbiology, Peter Wilker is currently working with undergraduate CLS students on projects related to the biology of influenza viruses. In one project, students are working to define the features of influenza virus that promote viral change and adaptation to new environments. This avenue of research is important because it will help the understanding of how new influenza viruses emerge in nature and cause human disease.

In collaboration with Michael Hoffman, UWL Microbiology, and investigators at UW-Superior, students have worked on assessing the antiviral activity of an extract created from Highbush cranberries grown in Wisconsin and Minnesota.

CLS students assisting are responsible for almost all aspects of research. They design and conduct experiments, prepare reagents, assess and interpret

results, and troubleshoot technical problems. Since the students work with influenza viruses, they learn how to safely grow influenza viruses in tissue culture and characterize viruses using a number of widely used virological techniques.

Wilker has seen a great benefit not only in the production in his research laboratory, but also the skills undergraduate CLS students build.

“Over the past few years, I’ve had a number of CLS undergraduate students contribute to ongoing projects in the laboratory setting,” says Wilker. “CLS students, as well as undergraduates completing other majors, contribute to progress made in the lab. While we work together to develop experimental plans and review results, I depend on them to carry out the experiments.”

Wilker enjoys undergraduate CLS students in his research laboratory because they typically come into research labs with a very solid background in microbiology, biology and chemistry through their required coursework.

“As a result, they can get up-to-speed on research projects quickly and can start to really appreciate all the little experimental details that ultimately dictate whether the project moves forward smoothly,” he explains.

Ultimately, many faculty members within the Microbiology Department have seen the added benefit of having a CLS undergraduate student working in their research laboratory. The direct and indirect benefits of undergraduate research to CLS students are almost too long to list.

Students master laboratory techniques that they may only have had brief exposure to in laboratory classes and acquire a meaningful appreciation for the research process. Performing experiments also requires students to integrate and apply core concepts

learned through coursework, critically analyze the data they generate, and communicate those results to other individuals in the lab.

CLS students can also pursue opportunities to develop scientific communication skills through the preparation of undergraduate grant applications and poster presentations. The development of strong time management skills is also an ancillary benefit of undergraduate research.

Students are busy and have to learn to balance coursework, studying, extracurricular activities, jobs, and undergraduate research. Learning to make efficient use of time and planning ahead ends up being a critical skill that students develop while conducting undergraduate research.

THE UWL CLS PROGRAM

The CLS program at UWL is designed in a “3+1” format. The student takes three years of coursework at UWL with the fourth year at one of UWL’s affiliated internship programs. Following the internship component, students are awarded a Bachelor of Science in Clinical Laboratory Science, and are eligible to sit for the American Society of Clinical Pathology (ASCP) certification exam. Once certified, students have the flexibility to work in almost any state or hospital.

UWL CLS students undergo a challenging curriculum that prepares them well for their clinical internship and ASCP certification exam. Students in the past have commented on the coursework at UWL being “tough,” but they are tough for a reason.

This level of UWL preparedness comes with an excellent reputation that future employers recognize in a UWL student. Because of limited clinical sites where students spend their final internship year, program size is limited making the program very competitive.

UWL’s program, completed in partnership with hospitals in Wisconsin and Minnesota as well as through the University of North Dakota, is helping meet a high demand for lab professionals nationwide. The UWL CLS program was recently recognized statewide in the UW System initiative “Knowledge Powers Wisconsin,” which addresses the economic difficulties regional businesses face to create growth and jobs.

THE CLS PROFESSION

Clinical Laboratory Scientists (Medical Laboratory Scientists or Medical Technologists), are vital health-care professionals. Clinical Laboratory Scientists are extensively educated in all aspects of laboratory medicine, which include microbiology, hematology, immunology and clinical chemistry to name a few. They are responsible for providing accurate laboratory results to clinicians so they may diagnose, monitor and treat disease, monitor patient health, and aid in preventative medicine.

There is currently a critical need for clinical laboratory scientists nationwide. The average starting salary in the Midwest is \$50,000, which is significantly higher than starting salaries for jobs in the basic sciences of biology, microbiology and chemistry.

In addition, many employers currently provide sign-on bonuses due to the critical demand. Shortages for clinical laboratory scientists are expected to increase even more in the future, making this discipline one of the most marketable areas in medicine.



*by Michael Lazzari,
Director, Clinical
Laboratory Science
in the Microbiology
Department*

RESEARCH IS ADDING UP

Mathematics students spend summer studying mathematical ecology



As part of a National Science Foundation summer research project, students participated in sampling trips to the Upper Mississippi River and Devil's Lake to collect data.

As ecological questions become more quantitative in nature, it is imperative that educators foster student development at the interface between math and the life sciences.

This past spring the Department of Mathematics and Statistics received a grant from the National Science Foundation to establish a three-year research experience for undergraduates (REU) in mathematical ecology. During the summer two groups of four students spent 10 weeks on campus studying the effects of wind energy development on bird and bat populations and the outbreaks of waterfowl disease in the Midwest. The students came to UWL from various institutions, including California State, George Washington University, St. Olaf College and Sewanee University.

Students were first given an extensive introduction to mathematical modeling and analysis before performing their summer research projects. Projects were overseen by a number of faculty mentors including Eric Eager, Mathematics and Statistics; Richard Erickson; U.S. Geological Survey; James Peirce, Mathematics and Statistics; and Greg Sandland, Biology.

As part of the summer experience, students participated in sampling trips to the Upper Mississippi River and Devil's Lake to collect data. In addition, participants took part in several career-building events

aimed at promoting careers within science, technology, engineering and math (STEM) areas. Trips included the Mayo Clinic in Rochester, Minnesota, the U.S. Fish and Wildlife office in Onalaska, and the U.S. Geological Survey's Upper Midwest Environmental Sciences Center (UMESC) on French Island.

Both groups presented their results at UWL's College of Science and Health's Summer Celebration of Undergraduate Research in August. Their work is currently being refined for publication in professional journals.

This January the students will present their research at the annual joint mathematics meetings in Atlanta, which will be attended by more than 6,000 mathematicians and scientists. All of the students in this first REU cohort have expressed interest in careers in STEM fields, and most will be attending graduate school within the next two years.

Next summer the REU will focus on applying fractal geometry to study animal migrations in response to climate change, as well as using individual-based and machine-learning approaches to studying chestnut blight fungus outbreaks in American chestnut trees throughout the U.S. Faculty mentors for these projects include Kevin Aagaard, U.S. Geological Survey; Martin Allen, Computer Science; Robert F. Allen, Mathematics and Statistics; and Anita Davelos Baines, Biology. The application process will begin in February and is open to students across the country, as well as UWL.



Along with collecting sample data, participants took part in several career-building events aimed at promoting careers within science, technology, engineering and math (STEM) areas.



by Erik Eager,
Assistant
Professor of
Mathematics



Robert McGaff, professor of Chemistry and Biochemistry

EARTH-FRIENDLY CHEMIST

UWL professor earns Innovator of the Year award for green chemistry contributions

Mother Nature isn't the only one happy about UW-La Crosse Professor Robert McGaff's innovations in green chemistry.

McGaff, Chemistry and Biochemistry, received the Innovator of the Year Award from WiSys Technology Foundation for his research that is making Earth-friendly chemistry more commercially viable. The inaugural award goes to just one innovator each year from the 11 comprehensive universities and 13 two-year colleges in the UW System, as well as UW Extension.

"As a chemist, you really have the potential to do damage or to find ways to be a good steward of the Earth," says McGaff. "As an environmentalist and a chemist, it seems natural that I would want to find ways of caring for the Earth through my intellectual pursuits."

McGaff has earned three UW System Applied Research grants totaling \$130,000 to do research on "green chemistry" or chemistry that doesn't create any waste or toxic byproducts. WiSys now has one patent pending on his innovation — a suite of catalysts — that can be used to carry out oxidation reactions in a more environmentally-friendly way. Oxidation reactions are commonly used in business, primarily in the manufacturing of pharmaceuticals.

"He has a lot of innovative ideas and he is constantly looking for new things that might have some commercial potential," says Arjun Sanga, executive director of WiSys Technology Foundation.

McGaff was awarded the grants after a review process each time by a committee of scientists and people in the business community. He won the grants from a pool of applicants from the 11-comprehensive campuses and 13 two-year colleges.

"There are certainly many worthy candidates throughout the UW System. His work over the last several years has stood out among his peers," says Sanga. "Getting one of those grants is a really big honor — to do it three years in a row shows he is continually coming up with new ideas that are worthy of funding."

Three years of WiSys grant funding has allowed McGaff to hire student researchers to work in his lab full-time on product exploration in green chemistry during summer months and part-time during the school year for three years.



Robert McGaff, professor of Chemistry and Biochemistry, received the Innovator of the Year Award from WiSys Technology Foundation. Here he is pictured in the lab with Rachel Butler, one of his student research assistants.

These microbiology, chemistry and biochemistry students are gaining hands-on experience while furthering the exploration of products that could potentially have commercial viability.

His students have been great problem solvers, and they have built a culture in his lab where they work hard and train each other, says McGaff. In particular, he credits student Rachel Neve, '15, a former Wisys ambassador, who worked in his lab and far surpassed his expectations as a research assistant.

"The award is really the students' award as much as it is mine," he says.

ABOUT MCGAFF'S RESEARCH

Green chemistry avoids messy clean up often associated with chemical reactions by not using starting materials or solvents that will create a chemical mess in the first place. McGaff tests and discovers products used in chemistry that are safe for the environment, yet achieve a similar or better result than other products on the market. For instance, McGaff does not use solvents — substances that dissolve other substances — because they can be a source of ecological problems, he says. On the other hand, he does use simple hydrogen peroxide, which creates a clean byproduct: water. While testing products, he considers not only environmental sustainability, but also profitability.

"You can discover a lot of green ways to do chemistry, but, if no one adopts them, you won't be able to have an effect," he says. "You need to think about commercial concerns and making a profit."

WHY WISYS?

McGaff says partnering with WiSys Technology Foundation helped him better understand the business side of his

research. WiSys is a non-profit organization that supports the UW System by helping identify innovative technologies and bring them to the marketplace. WiSys supports 11 four-year universities, 13 freshman-sophomore UW College campuses and statewide UW-Extension.

"They are unbelievably helpful," says McGaff. "They will bend over backward to help you explore the commercial viability of the work you are doing."

McGaff has disclosed inventions to WiSys twice. Both inventions had commercial potential. One patent is currently pending. The research has also resulted in a peer-reviewed, published manuscript, with a second accepted recently.

McGaff has been a strong advocate for the WiSys Ambassador program by working with and helping to recruit UWL students to become ambassadors.

ABOUT THE AWARD

McGaff received the Carl E. Gulbrandsen Innovator of the Year award at the ninth annual Wisconsin Science & Technology Symposium in early August at UW-Oshkosh. This is the inaugural year of the award, which is named in honor of a trustee who impacted WiSys since its creation.

Gulbrandsen was former managing director of the Wisconsin Alumni Research Foundation (WARF) who supported WiSys throughout his 16-year tenure. Since then, his leadership and support have been invaluable to the rapidly growing foundation, according to WiSys. Not only has WARF supported WiSys as an affiliate organization over its 16 years of existence, Gulbrandsen has guided the strategic direction of WiSys through his service as chair of the board of trustees for the first 14 years and treasurer for the past two years, according to WiSys.

GoBabyGo!



Program utilizes small electric cars to educate, help children

UWL Occupational Therapy and Physical Therapy programs are working collaboratively to bring inter-professional education experiences to their graduate students.

One way this goal is being met is through the facilitation of GoBabyGo car builds. The program not only provides a rich learning environment of team work and problem solving, but also offers a unique experience to the community by providing early mobility to children with cognitive or physical disabilities.

GoBabyGo! utilizes small electric cars that can be purchased at Walmart, Toys R Us, Target and other stores. The cars are adapted to meet the needs of young children with disabilities.

Modifications are made using simple everyday objects such as PVC piping, kick boards, pool noodles, Velcro, and large button activation switches. The original foot pedal is disengaged with electrical re-wiring and a 'kill switch' is added for safety that can be activated by parents or caregivers if the car needs to be stopped. The adaptations allow children with limited mobility the ability to develop a sense of control over their mobility in order to interact with their environments.

Research has shown that independent mobility is linked to social, visual-motor and perceptual benefits in young children. Additionally, introducing mobility to these children early in their development helps to prepare them for power mobility down the road.



Occupational Therapy and Physical Therapy students participated in rebuilding a small electric car to meet the needs of young children with disabilities.

The GoBabyGo program was initially launched by Cole Galloway, PT, Ph.D. at the University of Delaware in 2006, with the dedicated vision to have "all people exploring their world via independent mobility." Through Galloway's vision, the program is being offered in more than 40 communities nationwide, including UWL.

Faculty members Amy Taebel, Physical Therapy, Laura Schaffer, Occupation Therapy, and Drew Rutherford, Biomechanics Laboratory Manager and Engineer (Health Professions), are using this vision to meet educational and community service goals within their graduate programs.

With the help of eager physical therapy and occupational therapy students, UWL has now hosted two car adaptation builds, in April and October 2016. The builds have served five children, ages of

1-5, and their families to increase child mobility.

'GRINNING FROM EAR TO EAR'

Brody Bujnowski, 3, received a car from the program in April. During the build when Brody was first placed in his new car, he was not sure quite what to expect. However, after several minutes and the encouragement of students and his mother, Nicole Bujnowski, Brody figured out the cause and effect of the vehicle to be able to activate the switch to make the car go.

After several months, his mother has shared video of Brody using his new car in his neighborhood with his arm hung off the side in 'style' as he goes on family outings.

Nicole says the car has been key for her son's development. "Brody grins from ear to ear showing his big dimples whenever he is in his car," she says. "He drives around waving at all the passing cars enjoying his new found freedom. As a parent it is great to see your child move from one place to another on their own. It is pure joy watching him and how happy he is when driving his car. He doesn't want to get out of the car and keeps pressing the button to continue driving around when we are all done."

With the first goal of providing children the chance for independent mobility, the second goal is to further facilitate the implementation of interdisciplinary professional education within the physical and occupational therapy programs. As clinical practice has become more diverse and fields continually specialize care methods, appropriate evidence-based



patient treatment relies upon effective collaboration of health professionals from many fields.

For success, more opportunities for students experiencing interdisciplinary teamwork through simulation and structured learning needs to be offered, prior to professional interaction with patients. Taebel, Schaffer and Rutherford are using this opportunity to research how the project affects student perceptions of inter-professional education (IPE) and collaboration within groups of healthcare professions. They are using survey tools to gather information about student perceptions and will be collecting data for outcomes in upcoming builds on how the program meets these standards.

ALL-AROUND SUCCESS

Students have expressed the value of this program in their education.

“This experience has taught me that each team member brings their own unique perspective to the table and that teamwork is essential when problem solving the best solution to a dilemma.” Says Alyssa Brownell, a physical therapy student. “Being a part of this organization has demonstrated how powerful it is to extend a helping hand to those around you. The feeling that you experience when you see the expression on the children’s faces when they are able to be independently mobile for the very first time is indescribable.”

Physical therapy student Marrison Eirich agrees. “The build this weekend definitely revealed everyone’s creativity and ability to adapt to a child’s unique

needs,” she says. “The determination and passion we all share for the child and their family is the glue to the teamwork and inter-professional collaboration.”

Occupational therapy student Jessica Dooney especially likes the community service atmosphere of the project. “Go Baby Go is such a unique opportunity for our programs to give back to the community,” says Dooney. “It is amazing to see what happens when OT and PT students put their brains together in order to help a child explore their environment.”

Fellow occupational therapy student Kendra McCain likes the opportunity to work across disciplines. “GoBabyGo was an unforgettable experience that taught me more about working with other disciplines than I could have imagined,” she explains. “Seeing our participant get in her car and exclaim, ‘Mom, I love it!’ was an incredible and heartwarming moment.”

GoBabyGo works closely with local healthcare facilities and birth-3 programs to make the program accessible to all who may benefit. The cars are provided to the family at no cost to participants and the program is maintained strictly through donations. The only request being that the vehicles are donated back to the program once their child has outgrown the car or if it no longer fits their needs.



As part of the “GoBabyGo” program, rehabilitated cars have been given to area young children with disabilities.

Those interested in donating to the program should visit <https://foundation.uwlax.edu/giving/gift-designation.php>. Under “Gift Designation” select “Other” and type “Go Baby Go” in the “Note (Optional)” field.

The program has the potential to help many children and their families in the La Crosse area, as well as professional students. Together, one car at a time, we are working toward making a difference in others’ lives.



Laura Schaffer,
Clinical Assistant
Professor in the
Occupational
Therapy Program

Heart-felt community health

Exercise program brings community health,
trains students for careers



UWL student Sarah Smith observes an adult fitness program participant during a high-intensity interval training workout using a recumbent bicycle at the Recreational Eagle Center.

La Crosse resident John Zoerb vividly recalls when his heart attack hit 30 years ago. A heavy feeling came over him — like an elephant on his chest — as he sat alone in his business office at La Crosse Floral. Zoerb had enough strength to get up from his chair and drive himself to the hospital where his doctor informed him he was having a heart attack.

Zoerb recovered and his doctor recommended he start an exercise program. At the time, private gyms in the city didn't exist, so the only options he knew of were at local hospitals.

Then he heard about UW-La Crosse's La Crosse Exercise and Health Program, a community exercise program housed in the Recreational Eagle Center on the UWL campus. Students in UWL's Clinical Exercise Physiology master's program create individualized exercise programs for participants to meet their health goals under the supervision of Program Director Kim Radtke. They get hands-on experience with skills such as taking blood pressures, reading an electrocardiogram, exercise prescription, leading group exercise classes and patient counseling.

“Sitting in class, you can learn the information, but, until you can apply it like this, it doesn't really make sense,” says graduate student Kayla Schmitt, during one of her rounds at the REC.

Participants in the LEHP program need to be at least 18 years old. Some have known cardiovascular disease or positive risk factors for heart disease while others are simply trying to improve their overall fitness level. The program celebrated 45 years in 2016. Some long-term members of the program have been part of it for nearly that long.



Program Director Kim Radtke, left, recognizes a long-term community participant Clyde Benjamin.



Long-term participants in the La Crosse Exercise and Health Program during an open house celebrating the program's 45 years at UWL. Program Executive Director Kim Radtke, far right in front row, LEHP Pioneer Phil Wilson, immediately behind Radtke; and John Porcari, director of Clinical Exercise Physiology Master's Degree Program, far right back row.

HEART ATTACK FREE

Zoerb started the program 24 years ago.

"I haven't had a heart attack since, and I don't feel like my health is deteriorating at age 89," he reports. "I can still hike and walk."

In fact, Zoerb walks a mile each day during the program. He also does chair weights, and that's just the beginning of his exercise routine. As to whether the university program has made a difference in his life, Zoerb says "I don't know how I could exist without it."

La Crosse resident Harold Flemke feels the same way. He discovered the program 15 years ago after having an aortic valve replaced. He recalls one of his caretakers said, "now don't go home and sit on a recliner." Flemke took the advice.

An unexpected perk of the program has been the socialization, he adds. In addition to meeting people while exercising, the program also has an annual picnic, golf outing and a holiday party every year.

"I'm 89, and I live by myself. It gets awful lonely at times," says Flemke. "I look forward to being here."

Moreover, he says the connection to young people keeps him younger. Students come around and check his pulse and blood pressure. They suggest exercises to adjust or change.

"Above everything else, I don't know how they pick the students for this program, but they are fantastic," says Zoerb. "They are helpful, friendly — and always smiling. They are the cream of the crop."

Likewise, Schmitt, a first-year student in the program, says what makes it fun for her is working with participants, particularly those like Zoerb and Flemke, who have had a heart event and are on the journey toward better health.

"I like helping them achieve what they thought they couldn't," she says.

PROGRAM HISTORY

The LEHP program started in 1971 as a joint effort between UWL and the La Crosse County Medical Society. Representatives from both institutions felt that with their combined expertise, a medically-oriented exercise program could be developed to benefit area cardiac patients. The first exercise session took place June 6, 1971 with six patients and three attending physicians. The program has since grown, primarily by word of mouth, to include more than 150 active participants. It has also expanded to include people with other medical issues, as well as people with no known health concerns.

PROGRAM DETAILS

Participants must be at least 18 years old to participate. People can enroll at any time. The cost is \$40 per month with discounted rates of \$210 for a six-month membership and \$350 for an annual membership. A spousal discount of 50 percent is available. Current and retired UWL employees also receive a 20 percent discount.

For more information contact the La Crosse Exercise and Health Program at 608.785.8683 or visit their website.

www.uwlax.edu/center/la-crosse-exercise-and-health



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Heather Fortune

Preparing for next-generation care

Faculty member joins Parkinson's Disease Foundation pilot program to help train future physical therapy leaders

Parkinson's Disease affects about one million people in the U.S. — a number expected to double by 2030, according to the Parkinson's Disease Foundation.

While there is no cure for Parkinson's, studies suggest that physical therapy and exercise can improve mobility and quality of life for those living with the disease. This means physical therapists play an important part in caring for people with Parkinson's.

The Parkinson's Disease Foundation launched a "train the trainer" program to help teach the next generation of physical therapists who will work with Parkinson's patients.

Heather Fortune, a UWL clinical assistant professor of physical therapy, was one of six faculty members across the U.S. selected to participate in the Physical Therapy Faculty Program at the Parkinson's Disease Foundation in Boston in August. Faculty learned about the latest evidence-

based findings in Parkinson's research and care during the four-day program.

"To keep up-to-date in my field is something I'm constantly working at," says Fortune. "It was a real gift to attend this program."

Fortune applied for the program because of the rich learning experience it would provide. She learned about current physical therapy related research and evidence-based interventions.

The program is applicable to Fortune's Adult Neuro Rehabilitation class she is teaching this fall to UWL's Doctor of Physical Therapy program students. A week-long section of the course is devoted to Parkinson's Disease. The training is also useful as she teaches a section of UWL's Exercise Program for Adults with Neurological Disorders (EXPAND). In the

program, physical therapy students work with members of the community who have neurological disorders. Supervised by a faculty member, students develop evidence-based exercise programs to improve participant's health and well being. About 75 percent of EXPAND participants have Parkinson's.

During the Physical Therapy Faculty Program, Fortune observed neurosurgeons adjusting the settings on patients who had undergone deep-brain stimulation and observed first-hand the impact surgery had on their quality of life, motor symptoms and function. She also saw several different medical interventions for people with Parkinson's Disease such as botox injections, medication options, lifestyle changes and recommendations, and how the many different members of the medical team work together to provide holistic care for people with Parkinson's Disease.



ABOUT PARKINSON'S DISEASE

Parkinson's is the second most common neurodegenerative disease after Alzheimer's and is the 14th leading cause of death in the US. It is associated with a loss of motor control (e.g., shaking or tremor at rest and lack of facial expression), as well as non-motor symptoms (e.g., depression and anxiety). Although research continues, there is currently no cure for Parkinson's disease.

— Parkinson's Disease Foundation

Tess Harvatine, UWL doctor of physical therapy program student, takes a blood pressure as part of a physical therapy evaluation of a person with Parkinson's Disease. The practice was part of an Adult Neurological Rehabilitation course at UWL. Participants were community volunteers.