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UM / News / Flathead Lake Bio Station: Swimmer's Itch is a Fluke

COLLEGE OF HUMANITIES AND SCIENCES

A photograph of a brown and white dog swimming in a lake. The dog's head is above water, looking towards the right. The background shows a forested mountain under a clear blue sky. The water is dark green and reflects the sky and mountains.

# FLATHEAD LAKE BIO STATION: SWIMMER'S ITCH IS A FLUKE

31 JULY 2023

**By Ian Withrow**

Here in Montana, itchy skin has always been an unavoidable consequence when enjoying the great outdoors. From peeling sunburns to mosquito bites, many of the inflamed epidermal threats we experience are widely known and well understood by local residents and out-of-state visitors alike.

But there's another cutaneous offender that exists more in the realm of local folklore than the

rest — one that resides in the shoreline waters of Flathead Lake and other freshwater bodies, starting to emerge when summer temperatures approach their peak. You probably know it as swimmer's itch. Prepare yourselves, readers, because this column is bound to get under your skin.

As someone who grew up in Montana, my childhood summers were peppered with mysterious swimmer's itch tales. "Did you hear about so-and-so," a fellow fifth-grader might say, in a tone reserved only for the scariest of ghost stories. "They got swimmer's itch after cannonballing off of their family cabin dock."

At the time I had no personal swimmer's itch experiences to fall back on, so these tales often left me no choice but to imagine poor so-and-so in a hospital bed, pockmarked and malformed by their terrifying encounter with the infamous itch of the swimmer.

In reality, swimmer's itch symptoms aren't quite so dramatic. They typically manifest as mosquito bite-like bumps that emerge wherever lake water has air-dried on the skin. It's an allergic reaction, in other words, not unlike the body's response to poison ivy. For the longest time that's actually what I assumed swimmer's itch was — a simple reaction to some kind of irritant like algae or an underwater plant. It wasn't until I joined the University of Montana's Flathead Lake Biological Station that I learned the horrific reality festering inside those little red bumps.

Here's the unflinching truth: swimmer's itch, officially known as *cercarial dermatitis*, is caused by an immune system response to the penetration of human skin by parasites known as blood flukes.

Still with me? Well hold on, because we haven't even scratched the surface yet.

Less than a millimeter in length, blood flukes begin their life cycle as eggs that are released with the feces of infected waterfowl or mammals, which in Flathead Lake are often merganser ducks. Once these eggs reach the water, tiny larvae called *miracidia* hatch and immediately go on the hunt for the freshwater snails of the Flathead Lake ecosystem.

When the *miracidia* find their unsuspecting snail, they invade it and begin to asexually reproduce into their next life stage called cercariae. Over the next few months, over 250,000 blood fluke cercariae can be released from a single infected snail. They have only one aim: Find a merganser, mature into adulthood within the merganser's blood and start the cycle over

again.

Meanwhile, you just happen to be perfecting your cannonball technique from your family cabin dock. Mistaking you for a giant waterfowl of some kind, the blood fluke cercariae attach themselves to your exposed skin. When you get out of the water and begin to air dry, the flukes sense this, penetrate your skin and burrow inside.

Fortunately, you're not a giant waterfowl. The human body is inhospitable to these parasites, and they die seconds after boring into your skin. For some people, upon discovering this sudden arrival of blood fluke corpses, the immune system overreacts — which, I think we can all agree, is a completely understandable response. It isn't long before red and itchy bumps start popping up on your body like tiny, irritated memorials commemorating where a tiny blood fluke has died.

It's a lot to process, I know, so let me do my best to address any additional questions you may have.

Question: If the blood flukes aren't a nuisance to humans until they've passed through a merganser and been released from a snail, can't we just get rid of the mergansers and snails?

Answer: No. Waterfowl and snail eradication has been tried in other lakes. Not only did those efforts fail at reducing swimmer's itch, but many of the lakes were polluted with toxic chemicals in the process. This is a far greater threat to Flathead Lake's ecosystem and recreational cannon-ballers than swimmer's itch could ever be.

Question: Is there an easy way to determine if blood flukes are currently in my favorite swimming area?

Answer: Not really. FLBS researchers have investigated swimmer's itch over the years and found that 60% to 80% of common mergansers on Flathead Lake suffer from blood fluke infections. According to a 1998 survey, the infection rate in Flathead Lake's snail population is around 1%. This low percentage sounds encouraging until you remember that a single infected snail can transmit hundreds of thousands of blood flukes to birds (and humans) swimming nearby. To put it simply, if there's a single snail somewhere in your favorite swimming area, you may be at risk of contracting the dreaded Itch.

Question: What can we do to safeguard ourselves from the dreaded swimmer's itch?

Answer: Again, swimmer's itch doesn't affect everyone. There are a number of you who never realized you've had dead blood flukes in your skin (until now!). For those who are susceptible to stronger immune responses, here are a couple things you can do to decrease your risk of Swimmer's Itch. First, swim offshore. Snails and parasites concentrate along the shoreline, so offshore swimming should keep you blood fluke-free. Second, after swimming be sure to use your towel. Researchers in Europe concluded that toweling off vigorously before the blood flukes have a chance to dig into your skin is the best way to avoid the Itch.

Once a person contracts swimmer's itch, there's little that can be done. Those itchy, red bumps will remain until the immune response runs its course, a process that generally takes a week or so. In the meantime, scientists recommend using hydrocortisone cream to ease the discomfort and getting back out on that dock. Those cannonballs won't perfect themselves, after all, and there's only so many days in Montana's summer season.

Swimmer's itch can be an uncomfortable experience, but it's nothing compared to the feeling of missing any opportunity to recreate and relax in our incredible Flathead watershed.

**Ian Withrow is the marketing and communications manager at UM's Flathead Lake Biological Station, a world-renowned freshwater research, monitoring, and education facility located on the shores of Yellow Bay. For more information about the Bio Station, visit [flbs.umt.edu](https://flbs.umt.edu).**

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UM / News / Microsoft Selects AccelerateMT to Grow Economic Opportunity in Montana



**MISSOULA** – Accelerate Montana announced a partnership today with Microsoft TechSpark to foster regional digital inclusion, job creation and technological innovation in the Treasure State.

Accelerate Montana, the University of Montana's economic and workforce development partner, will use a new grant with Microsoft TechSpark to bridge the digital divide and ensure that all Montanans have equal access to digital resources and opportunities.

"Since we launched TechSpark in 2017, we've helped communities secure more than \$125 million in funding and helped create thousands of jobs," said Kate Behncken, corporate vice president of Microsoft Philanthropies. "By expanding TechSpark to all 50 states, we hope to continue our hyperlocal, partner-driven work to help communities realize the potential of technology and foster greater economic opportunity."

Earlier this year, Microsoft announced the expansion of its TechSpark program to tackle digital inclusion in four focus areas: digital access, digital skills, computer science education and digital transformation with local-based organizations. Since its inception in 2017, **TechSpark** has helped its eight communities secure more than \$125 million in community funding, train 55,000 people and create 3,300 jobs.

The grant provided to Accelerate Montana will fund a TechSpark Community Engagement Fellow, who will spearhead local efforts by working with local partners. This fellowship represents the first time TechSpark has worked in Montana.

"I am so excited to be a part of the TechSpark Fellows Program," said Ticia Cliff, Accelerate Montana's TechSpark Fellow. "This will be a great opportunity not only to build more tech career pathways for our rural and indigenous communities, but also to share the incredible training programs already underway in Montana."

By empowering individuals, businesses and communities with the tools and knowledge they need to thrive in the digital age, Accelerate Montana and Microsoft TechSpark are shaping a brighter and more inclusive future for Montana.

"The TechSpark Fellowship will further Accelerate Montana's objective of expanding access across the state to the training and skills needed for good paying in-demand jobs," said Paul Gladen, executive director of Accelerate Montana. "We are extremely grateful to Microsoft for this opportunity."

###

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UM / News / UM Secures \$3.6M to Help Cure Montana Nursing Shortage

MISSOULA COLLEGE, UNIVERSITY OF MONTANA

# UM SECURES \$3.6M TO HELP CURE MONTANA NURSING SHORTAGE

25 JULY 2023

*A new UM program will create a pathway for licensed practical nurses in Montana to quickly upskill to become registered nurses.*

**MISSOULA** – The University of Montana recently secured \$3.6 million from the Health Resource and Service Administration to bolster the nursing workforce across Big Sky Country.

The federal grant will fund a new training program implemented by three UM organizations: the Office of Health Research & Partnership, the Missoula College Nursing Program and the

## Center for Children, Families and Workforce Development.

OHRP Director Lily Apedaile said Montana is experiencing a healthcare workforce shortage, especially in the nursing field.

“Rural Montana is particularly feeling the effects of this shortage,” Apedaile said. “This new nurse training program developed at Missoula College will create a pathway for licensed practical nurses in Montana to quickly upskill to become registered nurses.

“We see this program as a key part of addressing the nursing shortage by developing a needed step in the nursing career pathway,” she said.

The new LPN-to-RN Bridge Program will use an online, accelerated training model to upskill licensed practical nurses to become registered nurses.

She said the program will develop prior learning assessments to grant credit for experience LPNs have gained in their current role, which will allow them to bypass certain courses.

The program also will focus on public health nursing and health equity in Montana, which are emerging areas of need in the state. A key feature of this program will be allowing LPNs to do their classroom instruction through an online platform while continuing to complete clinical training in their community. The application process for the new program is expected to open in spring 2024, with the first cohort of nursing students starting in summer 2024.

“The Missoula College Nursing Program is excited to be able to offer a pathway for rural LPNs to achieve RN status in a short period of time while working in their communities,” said Linda Barnes, Missoula College Nursing Program director. “This grant will help to change the lives of many working nurses who are unable to travel long distances for continued education

A major focus of the grant is working with rural communities. The LPN-to-RN Bridge Program will partner with rural Montana healthcare facilities to support their efforts in designing career pathways for employees.

In addition to the upskilling component of the program, the funding will support RNs at partner facilities to serve as clinical instructors for LPN students. These RN preceptors will receive specialized training to strengthen the nursing education workforce.

“This program will be an important part of recruitment and retention of nurses in rural communities by allowing existing LPNs to stay and train in their hometowns while also increasing the number of nurse educators in rural Montana,” Apedaile said.

Barnes said rural facilities will benefit from the increased knowledge base of their current employees.

“One goal of the grant is to reach underserved areas in Montana with LPNs RNs,” she said. “This grant will help to facilitate the continued education of essential healthcare workers in these rural areas.”

###

**Contact:** Lily Apedaile, UM Office of Health Research and Partnership Director, 406-243-7949, [lily.apedaile@mso.umt.edu](mailto:lily.apedaile@mso.umt.edu).

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UM / News / Teachers Go Back to School for Career Advancement and Renewal at UM

COLLEGE OF THE ARTS AND MEDIA, UNIVERSITY OF MONTANA

# TEACHERS GO BACK TO SCHOOL FOR CAREER ADVANCEMENT AND RENEWAL AT UM

24 JULY 2023

*Students gather together in UM's Random Acts of Singing class, part of the University's Creative Pulse program that allows working teachers to conveniently earn a master's degree. (UM Photo by Tommy Martino)*

By Abigail Lauten-Scrivner, UM News Service

**MISSOULA** – While their students enjoy a break from the classroom during summer vacation, a group of teachers spent a month at the University of Montana going back to school.

Representing a range of grades and subjects, educators traveled to UM from throughout Montana and beyond for **Creative Pulse**. The program allows working teachers to earn a Master of Arts by taking summer classes, plus independent coursework during the school year.

From 8 a.m. to 5 p.m. five days a week for four weeks, the teachers became students again, returning to their classrooms as improved instructors in the fall.

Housed in UM's **College of the Arts and Media**, the program is unique to UM. While prioritizing convenience by working around teachers' schedules, Creative Pulse facilitates upward mobility for educators through salary increases triggered by earning a master's degree. It also reinvigorates instructors' approach to education by infusing creativity into the classroom, stimulating more positive and effective learning experiences for teachers and students alike.

"A lot of people who come into our program have been educators for a while and they're looking for inspiration," said Creative Pulse Director Faith Morrison, who also teaches dance at UM. "Many of them have felt that spark in the past but may have become disconnected from it or disillusioned by some of the hardships teachers are facing."

Rekindling that spark is why Creative Pulse was launched in 1990 by James Kriley, former Dean of the UM School of Fine Arts, and Dr. Randy Bolton, Emeritus Professor of theater.

"The two of them set out to create a program that would be enlivening to classroom teachers, because so many teachers were finding that the curriculum in K-12 was killing their love for teaching," said Karen Kaufmann, who served as interim Creative Pulse director while Morrison was on maternity leave. "The need that the Creative Pulse is filling is to bring humanity, life, creativity and joy back into classrooms."

Kaufmann, a UM Emeritus Professor, began teaching Creative Pulse classes when it first launched and served as director from 2012 until retiring in 2020. In that time, Creative Pulse became a landmark arts education program, advancing hundreds of educators.

New technology, learning standards and COVID-19 changed classrooms in the 30-plus years since Creative Pulse was founded, but the frustrations and burnout felt by educators have not, Kaufmann said. When teachers go looking for a remedy, they find Creative Pulse.

Creative Pulse has adjusted to modern day education benchmarks, but Kaufmann said its philosophy remains. The program teaches instructors to imbue classrooms with personalized, artistic approaches that help them better understand student needs.

Foundational to Creative Pulse is arts integration, meaning traditional subjects like math and science are taught in harmony with the arts, and the concept that students can display multiple forms of intelligence. Its philosophy follows that many talented students don't display their intelligence through standardized tests or homogenized learning standards.

"As standardized testing comes into classrooms and there's a lot of pressure on teachers to get through set curriculum, I think many of them have been discouraged by not having as much creative freedom," Morrison said. "This program is special because it gives people new ideas."

Exemplifying that uniqueness are the program's summer courses. Offerings included Creative Placemaking, Integrated Indigenous Arts in Education, Site Specific Art and Visual and Acoustic Thinking. The interdisciplinary catalog exposes Creative Pulse students to all art forms while teaching them to synthesize the lessons into their classrooms come next school year.

"They all leave with inspiration and ideas for their classroom throughout the year," Morrison said. "I've heard from a lot of parents and other teachers at schools who say, 'What that Creative Pulse teacher is doing in their class is so special. How did they get those ideas?'"

Participants also take an asynchronous writing class during the school year and complete a field project between the first and second summer. The last step is a creative project that serves as a master's thesis. Graduate students typically defend the following summer.

Having completed his second summer on campus, Creative Pulse student Rob Harcharik is about to begin his thesis research while entering his 10th year as a kindergarten teacher at Hellgate Elementary School District. He first applied to Creative Pulse on the recommendation of colleagues who graduated from the program – advice he now passes on to any teacher who's yet to pursue a master's.

"They had nothing but amazing things to say," Harcharik said. "Even after the first day, it was perfect. It's really great to collaborate with like-minded people, and everything is so applicable

to the classroom.”

Harcharik integrated mindfulness, meditation and grounding practices into his energetic kindergarten classroom. Despite their young age, Harcharik found that his students, much like himself, both loved and benefited from it.

*Creative Pulse students begin each day of classes with Morning Movement in the campus dance studio. (UM Photo by Ryan Brennecke)*

“In teaching, we always say we want to make it fun for students – that is exactly what we’re doing, we’re having fun in this program,” Harcharik said. “You really tap into the perspective of your students.”

By putting themselves in their students’ place, educators better grasp their needs and the best tools available to address them.



Harcharik hopes to better address those needs through his research, which will involve his students. The project will study the relationship between children’s books and student behavior, and tie the findings to social and emotional learning.

Creative Pulse projects vary widely depending on the field of study educators are interested in. Past research included the impact of play in early childhood education, integrating social and emotional learning into music class, transforming classrooms into unconventional spaces and the effects of student-family book clubs on literacy and reading comprehension.

Throughout all those projects, the common thread is a commitment to fostering a more fun and effective class time for students – and teachers – of all kinds.

“Discovering new possibilities for education is an essential element of our program, and students benefit from those new ways of learning,” Morrison said. “Graduates feel really

grateful to have the space to grow, try new ideas and think outside the box.”

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**MISSOULA** – From forestry and medicine to the arts and education, University of Montana grads are putting their skills to use across Big Sky Country and beyond. The **UM Alumni Association** has launched a new 25 Under 25 program to spotlight young alums who are making an impact in the early days of their careers.

“University of Montana alums are leading the way in tackling some of humanity’s most pressing challenges, leaving an indelible mark and making a significant impact on a local and global scale,” said LeAnn Layton, UM’s director of alumni relations. “Impressively, they are doing so immediately upon graduation, and we are beyond proud to recognize them in our new 25 Under 25 program.”

UM's young alumni are remaking the world with dedication and passion for their chosen careers and communities, Layton said. **Honorees are being featured on social media** and will appear UM's Montanan magazine.

The UM alumni honorees are:

Lee Adler ('21) **Missoula, Montana** – Since graduating from UM, Adler has held management roles in security at Community Medical Center and the Ranch at Rock Creek. He also served in the Army National Guard, specializing in suicide prevention, for which he received an Army Commendation Medal. Currently, he is contemplating graduate school while serving as a wildland firefighter for the DNRC. He recently returned from a DNRC assignment fighting fires in Northern Alberta.

Austin Amestoy ('22) **Laurel, Montana** – As a journalism student at UM, Amestoy created the Kaimin Cast, a weekly news podcast recognized by NPR as one of the best college podcasts in the country in 2022. After graduating, he joined Montana Public Radio as an evening newscast intern before taking on a full-time role as the station's morning news host. Amestoy also hosts MTPR's podcast "The Big Why," where he and other reporters answer listener-submitted questions about anything in Montana.

Chase Bartlett ('22) **Frisco, Texas** – Bartlett worked as an assistant tennis coach while earning his MBA at UM. Inspired by his career in tennis, he founded MatchCoach, an online coaching company to help tennis players across the world access personalized coaching. The company has won prizes in several startup pitch competitions.

Mariah Beckwith ('20) **Sammamish, Washington** – Beckwith is a first lieutenant in the Army, currently serving at Fort Bliss, Texas. After graduating from the UM ROTC program, she began her career as an intelligence officer and served for a year in Korea as part of the continued support operations near the Demilitarized Zone. She recently completed a validation exercise at the National Training Center in California, leading unmanned aerial vehicle operations as an integral part of modern military strategy.

Charlie Booher ('22) **Lolo, Montana** – Booher graduated from UM with a Master of Public Administration and studied wildlife biology and natural resource conflict resolution. At the conclusion of his time at UM, Booher was awarded the Boone and Crockett Fellow Outstanding Achievement Award in Graduate Research. He now works as a conservation lobbyist in Montana.

Alexa Coyle ('21) **Bozeman, Montana** – Coyle competed for UM women's soccer for four years, before graduating and moving to Scotland to play professionally. With her teammate, she founded The Female Edge, which aims to mentor female athletes with services such as mindset mentoring, college recruiting and more. Coyle joined the Seattle Seahawks as an intern last year and has now accepted a full-time position on their business marketing team.

Brooke DeRuwe ('23) **Spokane, Washington** – After graduating from UM with a bachelor's degree in Environmental Science & Sustainability and a minor in Climate Change Studies, Deruwe moved straight to the Florida keys to start her dream job working at a facility for sea turtles. During her time on campus, she served as a UM Advocate and a research assistant.

Sara Diggins ('21) **Salt Lake City** – While studying journalism at UM, Diggins interned for the St. Louis Post-Dispatch and the Missoulian. She now works as a photojournalist for the Austin-American Statesman. She and her team recently were nominated for a Pulitzer Prize for their coverage of the Uvalde shooting and its aftermath. Diggins also advocates for the mental health and well-being of journalists. Her work is regularly published across the USA Today network.

Noah Durnell ('22) **Great Falls, Montana** – Durnell was drawn to UM as a music student and spent four years advocating for improvements to the School of Music. He worked to secure funding at the legislative level. Durnell also served as Associated Students of UM president. He is now part of the UM Foundation team as assistant director of development for the Davidson Honors College.

Devin Fillicicchia ('22) **Marietta, Georgia** – Since graduating from UM, Fillicicchia has engaged with and advocated for Montana communities as Forward Montana's Civic Education Organizer. His programming provides opportunities for high school students across the state to learn about the democratic process and get involved.

Jade Gordon ('23) **Hyrum, Utah** – Gordon graduated from UM this year with a master's degree in speech-language pathology and is already putting her education to use helping others. She works as a speech pathologist in Missoula, serving K-12 students and adults with disabilities.

Maddie Hagan ('22) **Portland, Oregon** – Hagan studied history and philosophy at UM and participated in the Missoula County COVID-19 Documentation Project, for which her team won an Achievement Award from the National Association of Counties. Hagan now is earning her

graduate degree at Columbia University in New York City, where she also works as a preservation intern for Woodlawn Cemetery in the Bronx.

Brittany Hellman ('22) **Missoula, Montana** – After graduating early from UM with honors, Helman is working to take over her family's large health insurance business, while also managing Cambie Taphouse in Missoula. Hellman recently earned her Health Insurance agent license. She also spends time volunteering and coaching sports in the community.

Devin Hunt ('21) **Colville, Washington** – Hunt studied biology and microbiology at UM while working as an undergraduate research assistant. He is currently earning his MD-Ph.D. at Johns Hopkins University School of Medicine in Baltimore. A recipient of the Intramural Research Training Award from the National Institutes of Health, he spent a year as part of a clinical research team at the National Institute of Allergy and Infectious Diseases. He also recently received the 2023 CAP Distinguished Medical Student Award.

Alex Hurlburt ('23) **Salem, Oregon** – Hurlburt played football at UM with a limb disability while earning two degrees. He recently accepted a position as an audit associate with KPMG, U.S. in Oregon. He also competes in powerlifting and aspires to encourage and mentor other athletes with physical differences.

Oscar Kronenberger ('21) **Butte, Montana** – Kronenberger studied psychology at UM and earned the President's Outstanding Senior Recognition Award. He now works as a post-baccalaureate research assistant at UM and focuses on eating disorder care in Montana. He will start the Clinical Psychology Ph.D. Program at the University of Texas Southwestern Medical Center in Houston this fall.

Marcus Lynch ('21) **Butte, Montana** – Lynch graduated from UM summa cum laude with a degree in wildlife biology. He is now applying his scientific education and commitment to conservation in his role with the U.S. Forest Service. Lynch hopes to continue his career by pursuing a Ph.D. in wildlife biology.

Justina McDirmid ('22) **Spokane, Washington** – With a bachelor's degree in environmental science and Sustainability, McDirmid recently completed an AmeriCorps position with Montana Fish, Wildlife and Parks as an aquatic invasive species coordinator. In this role, she assisted public education on invasive species and helped build partnerships between the state and local communities and businesses. This year, she accepted a position as a water rights technician with the WGM Group in Missoula. She also sits on the Missoula County Aquatic Invasive

## Species Board.

Taylor Miranda ('22) **Spokane, Washington** – Miranda earned her bachelor's degree in geosciences from UM while completing several impressive internships, including with the U.S. Geological Survey and NASA. She is passionate about environmental sustainability and is currently planning to pursue a master's degree in geospatial informational sciences.

Kaila Parkin ('20) **Missoula, Montana** – Parkin is a teacher in a combined classroom of first and second graders in Superior. She also coaches junior high basketball and is a wife and mom to two young boys. She plans to pursue her master's degree to further serve her students.

Olivia Quintero ('21) **Missoula, Montana** – After graduating from UM, Quintero joined the Peace Corps and is serving in the health sector in Senegal. She works on projects in maternal, newborn and child health in a small town in the Tambacounda region. Over the next two years, she plans to focus on youth health clubs, water and sanitation, malaria prevention and nutrition.

Anthony Quiroz ('23) **Cheney, Washington** – As a student at UM, Quiroz worked part-time in Intercollegiate Athletics in the equipment room and was a sous chef at the Poverello Center. After completing internships with both the New York Jets and Kansas City Chiefs in equipment management and graduating from UM, he is now completing a post-graduate internship with the US Track & Field Team. He is focused on his dream of working in NFL equipment management.

Augusta Reinhart ('22, '23) **Bozeman, Montana** – With both an undergraduate degree and a master's degree in political science, Reinhart is building her career in the field of international relations with a focus on service. She recently worked with the City of Missoula, Soft Landing and the International Rescue Community to facilitate refugee employment. She currently works as an international program manager at UM's Mansfield Center.

Caroline Thornberry ('21) **Mountain View, California** – Passionate about animal welfare, Thornberry volunteered with several animal organizations and worked full time as a vet tech while studying organismal biology at UM. She is now earning a doctorate in veterinary medicine at Washington State University. Her contributions to their intensive care unit and blood bank have helped save the lives of countless cats and dogs.

**Marcus Welnel ('23) Helena, Montana** – While donning the No. 37 jersey for the Griz on the

football field, Welnel was also busy earning a bachelor’s degree in finance with minors in mathematics and economics, a master’s in business administration, and a master’s in business analytics. He now works as a financial representative for WestPac Wealth Partners, where he specializes in helping business owners and professionals achieve their financial goals.

###

**Contact:** LeAnn Layton, UM director of alumni relations, 406-243-5258, [leann.meyer@uMontana.edu](mailto:leann.meyer@uMontana.edu).

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UM / News / UM Alumna's Love of History Leads to Leadership Role at National Archives

ALUMNI, COLLEGE OF HUMANITIES AND SCIENCES

# UM ALUMNA'S LOVE OF HISTORY LEADS TO LEADERSHIP ROLE AT NATIONAL ARCHIVES

20 JULY 2023

*Throughout the unexpected journey of her career, National Archive's Chief Innovation Officer Pamela Wright said it's the lessons she learned at UM that guided her along the way.*

**MISSOULA** – The number of documents and artifacts in the care of the National Archives and Records Administration is staggering – think billions, not millions. The agency is home to invaluable pieces of history like the Constitution and the Declaration of Independence, but also to smaller remnants of the past from throughout the United States.

University of Montana alumna and NARA's Chief Innovation Officer Pamela Wright believes the archive's purpose and accessibility are of the utmost importance.

"It's to hold the government accountable and to see the history of your country," said Wright, who lives in Washington, D.C.

*Pamela Wright*

A native of **Conrad**, Montana, Wright was recognized for her successes at NARA with a Distinguished Executive Presidential Rank Award, which highlights extraordinary accomplishments among federal employees.

"I was really proud to get that award and to have the recognition that it is important for the federal government to stay on top of technology and move ahead into the digital era," she said.

Wright was inspired to attend UM by one of her older sisters. She knew she wanted to go to college, but what she wanted to study was more of a mystery.

"I was a lost soul," Wright joked.



She took a gap year to study religion – which sparked an interest in history. She also had a passion for reading and decided to pursue a double major in English and history.

Wright's time at UM proved to be exactly the inspiration she needed to find a career path.

"The classes I took at UM gave meaning to my life," she said. "At that age, I think you're really looking 'what's the answer, what does life mean?'"

As a student, she interned at the Mansfield Library archives and found a niche that would serve as the launching pad for her career.

"I tried looking for a job that would apply to what I loved to do," she said.

Contacts in **UM's Department of History** referred her to Historical Research Associates in Missoula, and she accepted a position that involved traveling around the country to do archival research.

"I was thrilled that you could go research history and get paid to do it," Wright said. "I absolutely loved it, and I learned so much about public history and how to do effective research."

After a decade in that role, Wright felt it was time to look for a job with less travel so she could spend more time with her daughter. That led her to the National Archives, where she started out as an archivist working in initial processing and declassification.

"You open up those boxes that nobody has looked at in forever, and you document what is in there," she explained. "Which is a joy for someone who loves history."

Wright eventually became involved in the digitization of the archives vast store of documents, photographs and artifacts. She has helped make millions of records accessible and facilitated creative projects like History Hub, an online historical research community.

"From 2012 to now, we've done some really exciting projects," she said.

Her enthusiastic approach and dedication to expanding access propelled Wright to become NARA's first chief innovation officer. The position has proved to be a perfect fit.

"I love the job that I have, and I feel very fortunate that my career turned out this way," Wright said. "There was no planning it; I would have never guessed it. I just ended up in a great place."

With all the work Wright and NARA have done to digitize their archives, they still have more than 12 billion records to go. They prioritize the most sought-after records. Their digital catalog now boasts more than 220 million items.

Throughout the unexpected journey of her career, Wright said it's the lessons she learned at UM that guided her along the way.

"I came out of UM with a work ethic and an understanding of quality," she said. "UM really made me who I am."

###

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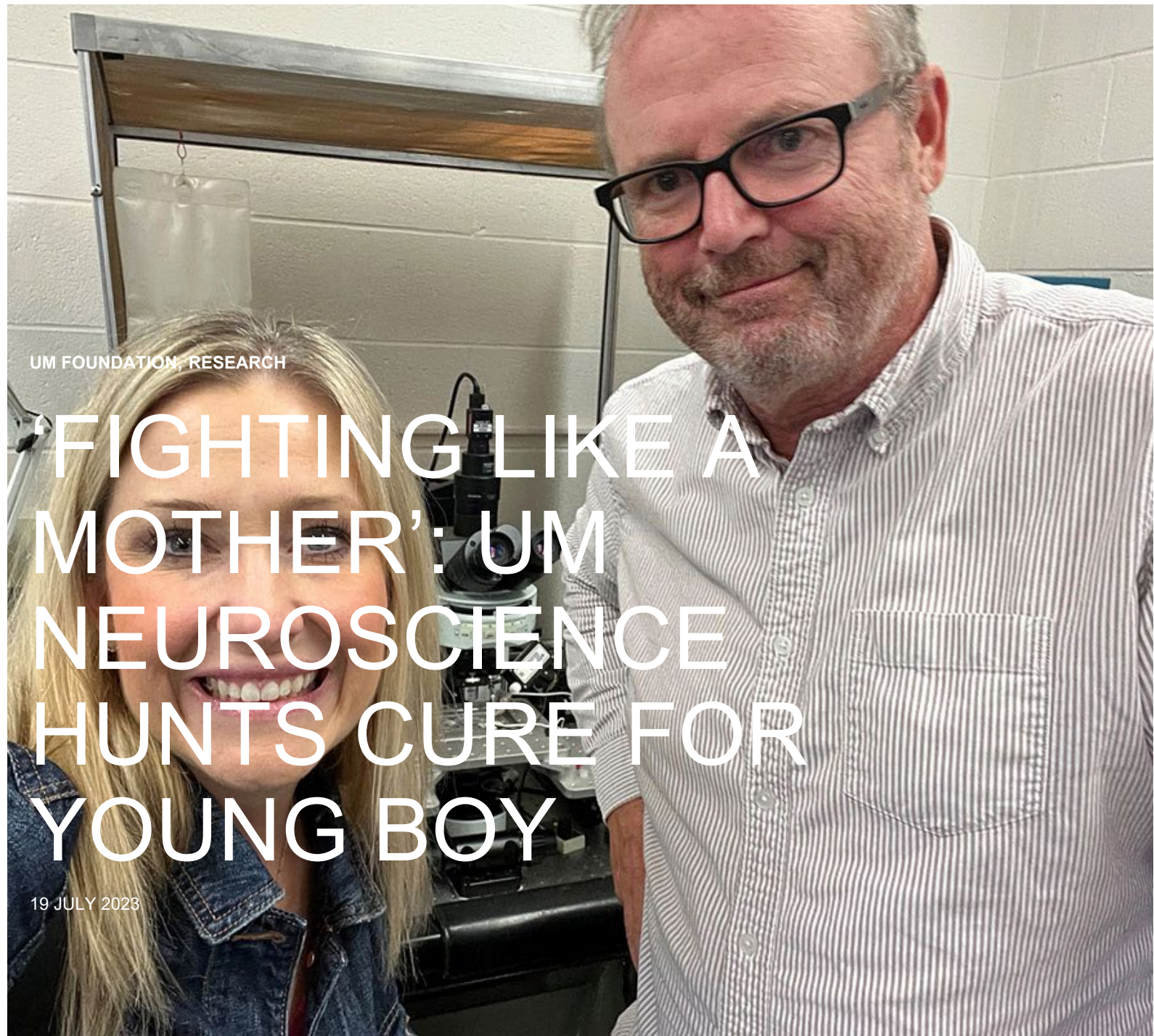
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UM / News / 'Fighting Like a Mother': UM Neuroscience Hunts Cure for Young Boy



UM FOUNDATION, RESEARCH

‘FIGHTING LIKE A  
MOTHER’: UM  
NEUROSCIENCE  
HUNTS CURE FOR  
YOUNG BOY

19 JULY 2023

*Amber Freed and her  
son, Maxwell. (Courtesy  
of Amber Freed)*

By Erika  
Fredrickson, UM  
News Service

**MISSOULA –**

Amber Freed was like any mother looking for answers. Her twins – born in 2017 – were still babies when she and her husband noticed Maxwell wasn't advancing at the same pace as his sister, Riley. The doctors tried to reassure the family, but Freed knew there was something wrong. Soon the doctors did, too.

"I noticed the doctor's tone change from, 'You're just a crazy new mom,' to one of panic," Freed said.



After some medical tests, the Freeds learned Maxwell has a genetic mutation that causes a spectrum of neurodevelopment disorders that can include epilepsy, developmental delays, movement disorders and features of autism. This genetic mutation was so rare it is only known as SLC6A1, named after the affected gene location.

While SLC6A1 is now listed among the top-10 gene variants associated with autism or

epilepsy, at the time there were only 30 kids in the world with the SLC6A1 diagnosis. The doctors told the Freeds to watch and wait. Social services told them, "Go home and give him the best life you can."

But Amber Freed was fiercely determined to find a cure. The day Maxwell was diagnosed, she left her career in equity analysis and bought books on molecular biology, genetics and neuroscience. She reached out to scientists working on similar genetic mutations. She tracked down other families impacted by the SLC6A1 diagnosis. She contacted politicians. She understood that as a mother with a business degree and the ability to quit her job, she was in the unique position to advocate – not just for Maxwell, but for other kids, too.

"I was going to fight like a mother for my son," she said. "I was going to do everything in my power to give him a shot at the life he was meant for and not let this disease affect him. So I dedicated my life to forming a treatment for him and every other child with it."

Freed, originally from **Billings**, soon learned that research funding for Maxwell's disease is extremely limited. In 2018 she founded SLC6A1 Connect, a patient-led organization making major strides in research about the disorder. The organization advocates for families, provides education and resources, hosts conferences and serves as a community hub. Freed and her team have raised millions of dollars to support research across the country, turning curious doctors into SLC6A1 specialists along the way.

*Amber  
Freed  
visits*



*neuroscience Professor Mike Kavanaugh at the University of Montana. (Courtesy of Amber Freed)*

Freed's tenacity also led her to seek out Dr. Mike Kavanaugh, a professor of neuroscience in the Division of Biological Sciences at the University of Montana. Kavanaugh has studied the functions of the SLC6 gene family in the brain for more than two decades. He has worked with drug companies and organizations, including the n-Lox Foundation, a nonprofit dedicated to treating patients like Maxwell by developing new RNA-targeting therapies for genetic diseases.

Kavanaugh and his students at UM conducted experiments that defined the effect of Maxwell's mutation and established that he was a good candidate for a type of gene therapy known as antisense oligonucleotide (ASO) therapy. Their work led to the development of promising new ASO therapies for Maxwell that are now undergoing further testing.

Meanwhile, ongoing research continues with the UM group's discovery of an alternative class of drugs they hope will lead to more widely available treatment for the expanding group of children diagnosed with SLC6A1 mutations.

Private support for UM's neuroscience program is essential to advancing Kavanaugh's cutting-edge research. Gene therapy and drug development research costs millions of dollars for basic development and clinical trials, all of which takes years. The cost also is high for patients and is

usually not covered by insurance. Overall costs are expected to decrease as scientific discoveries progress.

SLC6A1 Connect has become a key philanthropic partner for UM's neuroscience program through significant financial and research contributions. Continued support from the organization will scale up Kavanaugh's critical efforts, attract talent to discover innovative solutions and provide exciting opportunities for students in a variety of majors across the biological sciences, while positioning UM as a leading institution in genetic therapy.

"Amber Freed is a force of nature," Kavanaugh said. "Her contributions to finding a cure for her son and other families affected by SLC6A1 are inspiring."

Philanthropy ensures Kavanaugh and other neuroscience researchers at UM can continue to contribute to the development of groundbreaking treatments for a wide range of genetic illnesses associated with neurological conditions. With ongoing private support, this work will benefit more people around the world who are impacted by many genetic diseases similar to SLC6A1, including epilepsy, autism, Parkinson's disease, Alzheimer's disease and more.

Last year, SLC6A1 Connect recognized Kavanaugh's efforts with the Scientific Hero of the Year Award.

"All SLC families worship the ground Dr. Kavanaugh walks on for his commitment to helping our kids," Freed said. "In our darkest moment, we took refuge in knowing how much he personally cares and how much that equates to professional enthusiasm. And now he's putting Montana on the map as a hub in precision medicine for neurology."

To support the Kavanaugh lab and the neuroscience program, email Dan Minor, senior director of development at UM College of Humanities and Sciences, at [dan.minor@supportum.org](mailto:dan.minor@supportum.org) or call 406-243-2646.

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UM / News / UM Studies Prepping Soldiers for Extremes of Altitude, Heat, Cold

COLLEGE OF HEALTH, RESEARCH

# UM STUDIES PREPPING SOLDIERS FOR EXTREMES OF ALTITUDE, HEAT, COLD

17 JULY 2023

*Peak performance: UM's Walter Hailes, who studies the effects of extreme altitude on human performance, stands atop Mount Everest in spring 2022. (Courtesy of Walter Hailes)*



*Researchers at UM's Montana Center for Work Physiology and Exercise Metabolism study the outer limits of human fitness and endurance. Pictured outside the center's environmental chamber are (left to right) Robert "Trey" Coker, Brent Ruby, Dustin Slivka and Walter Hailes. (UM photo by Ryan Brennecke)*

By Cary Shimek, UM News Service

**MISSOULA** – Last year University of Montana scientist Walter Hailes was on top of the world – literally. An experienced climbing guide, he summited Mount Everest, enjoying spectacular 360-views of the highest mountains on Earth.

Hailes said the memory is hazy. Even with sufficient oxygen, the mind plays tricks at that ultimate altitude. He can't precisely remember how long they lingered on top. Maybe a half hour? But it was wonderful up there: sunny, little wind and a balmy (for Everest) -25 F.

"It was perfect," Hailes said. "I even took my gloves off to take pictures."

Hailes often works with high altitudes at UM. He is part of the Montana Center for Work Physiology and Exercise Metabolism (WPEM), which recently earned \$9 million in grants from

the U.S. Air Force and Army to investigate ways to improve the performance of service personnel working in extremes of altitude, heat and cold. A big part of the work is to understand any differences in how male and female bodies deal with such challenges.

The center is directed by Brent Ruby, a former Ironman triathlete who has long studied the limits of human endurance among wildland firefighters, soldiers and athletes. The center's modern WPEM exercise lab was tacked onto McGill Hall in 2007 and includes a 10-by-10 climate-controlled environmental chamber. WPEM also employs a series of solar-powered Airstream trailers as mobile labs for fieldwork.

"We've been doing lab and field-based research funded in part from the U.S. military since 1996," Ruby said. "We've shown we can work faster and much cheaper, and we are a lot more flexible in how we can get these big projects done. It's also challenging to do these projects with service personnel, so we find surrogate populations."

The scientific stand-ins for America's elite military personnel usually are super-fit male and female athletes. Ruby said they are working on a heat adaptation study that will be done in their campus lab. An altitude-adaption study already launched last summer at Hawaii's Mauna Kea volcano. Another cold and physical stress study will happen in Alaska.

Getting more data on females during these projects will be groundbreaking.

"I would say 90% of the data out there is with 18- to 24-year-old men," said Robert "Trey" Coker, another WPEM researcher. "There is a huge gap in knowledge when it comes to energy expenditure, how muscles maintain their resiliency in these environments and what happens when you add ridiculous amounts of physical activity."

## Heat

The WPEM environmental chamber can crank to 120 F. Researcher Dustin Slivka said the military wants strategies to help personnel of both sexes adapt quickly to extreme heat. During a seven-day study, research subjects will go into the heat chamber. One group will come in once a day for an hour and a half. Another group will come in three times a day for shorter sessions.

"We are trying to see what is the best strategy to get them to a heat-tolerant level that's the most efficient," Slivka said.

They will monitor the subjects with skin and rectal monitors. (Slivka said rectal is the gold standard for this type of work.) They also use swallowed thermostat pills that provide temperature data to a watch over a 24-hour period.

“We have found in a previous study that women do acclimate differently than men,” he said. “This has made some researchers say, ‘Hey, we have to be more careful with females in the heat.’ But some of our data suggests women may be better at acclimating to heat than men. Female body cycles already require them to deal with more temperature changes than men, and we are investigating what is different about females that may allow them to acclimate better than men.

“Anytime the data doesn’t look like men, some assume it’s worse. But we think that those with that interpretation should be cautioned. We’ll learn more.”

## **Cold**

What does extreme cold exposure do to overall energy expenditure in combination with physical activity, and is it different between the sexes? UM will investigate this during two upcoming endurance races in Alaska and the Yukon.

The Alaska Mountain Wilderness Ski Classic is an unsupported cross-country ski race lasting five to seven days that crosses an icy mountain range. The Montane Yukon Arctic Ultra is 430 miles of skiing, biking or hiking that is marginally supported over 12 to 14 days. Temperatures can plunge to -50 F and colder. Only about 20 extreme athletes do each race, and usually half of those sign up to be studied by UM’s Coker and his crew. The athletes agree to provide regular urine samples as they compete.

“It’s easy to store urine at that temperature – it freezes pretty quick,” Coker said. “We will have them drink a harmless stable isotope that is like a tracer bullet. This labels their hydrogen and oxygen. The hydrogen comes off in a predictable way, but the oxygen changes in proportion to energy expenditure. The method helps us trace metabolically what is taking place in real time.”

Ruby said they have used the isotope-tracing technique on other projects but never before in an extreme cold environment.

“It’s underrepresented in the literature,” he said.

## **Altitude**

Most U.S. military bases are located at sea level. During the War in Afghanistan, troops would fly from places like Florida to forward operating bases at 9,000 feet, where they would carry heavy loads on missions to heights at 14,000 feet with few days to acclimate.

“We don’t want them presenting with acute mountain sickness or pulmonary edema and all the other bad things that can happen to them,” Slivka said.

In summer 2022, WPEM conducted experiments in Hawaii. Research subjects from Missoula (elevation 3,200 feet) slept at 9,000 feet and then took daily hikes on the slopes of Mauna Kea, which rises to almost 14,000 feet.

Everyone slept with a tent over the bed, with half getting extra oxygen pumped into the tent and half getting normal room air. Hailes said their working hypothesis is that those with boosted oxygen will sleep and perform better atop the volcano.

“The big negative is that maybe those people won’t acclimate as well because they are not getting as much time with lower blood oxygen,” he said. “They are spending nine hours in a tent with oxygen, so maybe it hampers their long-term acclimation. Maybe we’ll find it’s better to suffer for three days, and then you perform better than those who didn’t suffer.”

As the studies progress, UM will provide strategies that should help the military achieve peak performance for its personnel – male or female – no matter the environment.

Upcoming UM research will study the implications of loads and environmental and nutrient stress on protein synthesis and muscle metabolism. The work may improve performance among military personnel, extreme athletes and others.

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This story was originally published in Vision magazine 2023.

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UM / News / UM Receives \$1 Million Mellon Foundation Grant to Expand Native American Humanities

UNIVERSITY OF MONTANA

# UM RECEIVES \$1 MILLION MELLON FOUNDATION GRANT TO EXPAND NATIVE AMERICAN HUMANITIES

13 JULY 2023

*Carol Murray is a Blackfeet Tribal elder that advises on the teachings of the Blackfeet way of life.*

**MISSOULA** -- The Mellon Foundation has awarded \$1 million to the University of Montana to support integrating Indigenous ways of knowing and Native expertise into the curriculum.

The award will support an innovative Indigenous Scholar-in-Residence Program and provide academic support for faculty members to center Indigenous research or teaching methodologies within the Native American Studies Department (NAS) and across the University widely.

“This award aims to elevate knowledge that represents more complete and accurate narratives of the human experience by incorporating perspectives of Native Elders and Knowledge Holders into higher education,” said Dr. Fernando Sanchez, director of the Elouise Cobell Land and Culture Institute. “By connecting the direct guidance of Elders and other Indigenous Knowledge Holders to Indigenous research and teaching across our Humanities and Arts curricula, the University of Montana intends to provide a national model to incorporate Indigenous ways of knowing into higher education, an effort to bring knowledge accumulated over millennia in the Indigenous World into Humanities education.”

Most importantly this funding supports UM’s vision to invest in scholarship opportunities that elevate the voices of Tribal communities in Montana. The Montana State Constitution mandates Indian Education for All (IEFA) to ensure that Montana students gain fundamental knowledge and understanding of Native peoples in this region. To help advance this mandate in higher education, this project aims to provide UM and its faculty with culturally centered guidance, based on the teachings and input shared by 12 Scholars-in-Residence, to create culturally responsive and IEFA-compatible content for UM’s Humanities curricula.

For instance, Carol Murray is considered an aawaahsskataiksi, an elder that has the rights to advise on teachings of Kipaitapiwahsinnooni (“Our Way of Life” in Blackfoot culture).

“Indigenous people survived mentally, physically, socially, but the greatest challenge was to acknowledge survival by spirituality,” said Murray. “Traditional knowledge and practices are a holistic and interrelated worldview that Indigenous people believe was given to them by Creator. Knowledge lives in people. Therefore, the existence of traditional knowledge is due because of the survival of Indigenous people.”

Murray has worked tirelessly on the repatriation of Blackfoot cultural and ceremonial items. She has been vital in cultural and ceremonial revitalization for the Niitsitapii. Among her recognition in the Blackfoot Way of Life (Siksikaitsitapiipaitapiiyssin), Murray is an owner of a Standup

Headdress (Kaamipoisaamiiksi) and has been part of the Blackfoot Women's Headdress Society since 1996, Beaver Bundle (Ksissskatay'kyo Mopistun) since 1996, Horn Society (litsskinnayiiks) since 1997, Crazy Dog Society (Kanatsomitaiksi) since 1999, and Thunder Pipe (Ninaimsskaahkoyinnimaan) since 2012. She is from the Bands of the Lone Eaters/Lone Fighters.

"This award can help to transform NAS and to create a new vision for Indigenous studies at UM. As we all seek to build a hopeful future, this project seeks to bring community partners into the center of the discussion and to build transformative equitable partnerships in scholarship," said Dr. Annie Belcourt, chair of Native American Studies.

Through this project, the Mellon Foundation will also support the hiring of a tenure-track faculty member for two years in Native American Humanities and research support for UM faculty to collaborate with international programs in Indigenous Studies. The project will also offer opportunities for undergraduates to interact with Elders and Knowledge Holders. To that end, 15 student internships will be funded over the three years of duration of the project.

"We are so pleased to partner with the Mellon Foundation to support Indigenous teaching and research approaches in our Humanities curricula and to facilitate the opportunity for students, faculty, staff and campus community members to learn directly from Elders-in-Residence," said UM President Seth Bodnar.

This project is led by Sanchez, director of the Cobell Institute and assistant professor in Native American Studies, Belcourt (Blackfeet, Chippewa, Mandan, Hidatsa), chair of Native American Studies and professor of community and public health sciences, and Dr. Heather Cahoon (Confederated Salish and Kootenai Tribes), associate professor of Native American Studies. They are joined by Dr. Karla Bird (Blackfeet), UM tribal relations specialist, and Amy Fowler Kinch, deputy chief of staff to the president, as senior members of the project, to make a diverse team of experts and scholars with the goal of centering and elevating Indigenous voices in academia.

As of today, the Mellon Foundation has awarded \$260 million this year to support 256 projects across the country in the arts and higher education. This is the first time the Mellon Foundation selects UM for funding to advance the Humanities.

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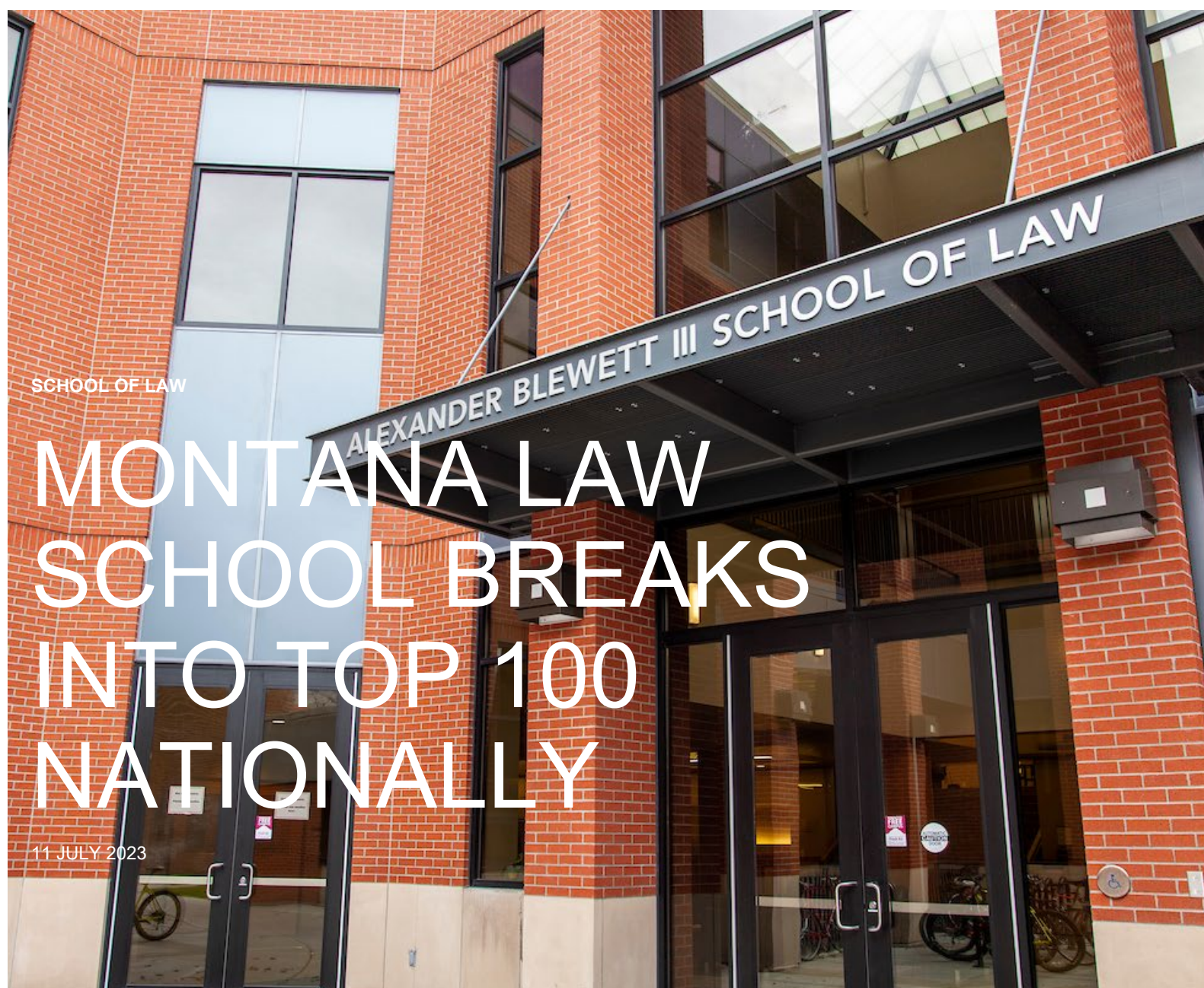
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*UM's law school has jumped 38 places the last two years in the U.S. News & World Report Best Law Schools rankings.*

**MISSOULA** – The latest U.S. News & World Report Best Law Schools rankings list the **Alexander Blewett III School of Law** at the University of Montana as a Top 100 law school and a Top 50 Environmental Law program. Montana's flagship school ties for 96, a jump of 38 places in the last two years.

“Our law school consistently achieves excellent performance outcomes, with a 94.8% placement rate for 2022 graduates seeking employment,” said law school Dean Elaine Gagliardi. “We also have a consistently strong Montana bar passage rate above the national average.”

Gagliardi, a graduate from Montana’s law school herself, credits the continued upward trajectory of the school in national rankings to the longstanding tradition of hands-on learning and practical work experience received by its students.

“Our law school trains students for the people-oriented practice of law. Its dedicated faculty bring many years of practice experience to the classroom,” said Gagliardi. “Our students learn from national experts in their respective fields, whether it be environmental law, Indian law, veteran’s law, transactional and business law, tax and estate planning, bankruptcy law, international law, or litigation.

“As the only law school in Montana, we attract exceptional students from all over the state and nationwide,” Gagliardi said. “Students come to the Blewett School of Law to gain a place-based and student-centered education, and to experience the outdoor recreational lifestyle that Montana offers.”

In addition to achieving high standing in the overall law schools ranking, the law school also placed No. 37 on the most recent U.S. News’ Best Environmental Law Programs list.

The school’s Natural Resources and Environmental Law Program is nationally recognized for its place-based learning, rich curricular offerings and environmental clinical opportunities with agencies and nonprofits that provide students with a strong foundation for entering practice.

The program’s faculty members have substantial and diverse practice experience in natural resources, environmental and Indian law, coming from careers in the public, private, nonprofit and tribal sectors. Drawing from that experience, faculty help students apply legal principles and examine issues from a variety of perspectives.

“We teach students the skills needed to be successful in whichever field of law they choose,” said Gagliardi. “By staying true to our focus on practice-ready training, our students hit the ground running and become an integral part of the legal community on day one.”

More information about the [U.S. News and World Report rankings](#) is available online.

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UM / News / Global Study Finds While Humans Sheltered in Place, Wildlife Roamed

COLLEGE OF FORESTRY AND CONSERVATION

# GLOBAL STUDY FINDS WHILE HUMANS SHELTERED IN PLACE, WILDLIFE ROAMED

10 JULY 2023

*A black bear sits in a tree above Connell Avenue in Missoula's University District on Aug. 22, 2022. (UM photo by Tommy Martino)*

**MISSOULA** – While humans sheltered in place during the COVID-19 pandemic, wild animals took the opportunity to roam spaces typically avoided by wildlife, according to a [study published last month in Science](#). Photos quickly emerged of wild goats spotted on the city streets of Wales and coyotes touring downtown San Francisco, yet evidence explaining this phenomenon was sparse.

Dr. Mark Hebblewhite, professor of ungulate habitat ecology at the University of Montana, joined an international research team of 175, led by Dr. Marlee Tucker – an ecologist at Radboud University in the Netherlands – in analyzing global data from 2,300 land mammals from around the world tracked by GPS devices.

In locations with strict lockdown policies, animals (from elephants to giraffes to bears and deer) traveled longer distances during the lockdown period. In highly populated areas, mammals moved less frequently and were closer to roads than they were before the pandemic. These results demonstrate how human activities constrain animal movement and what happens when those activities cease.

“The fact that human activity is affecting wildlife on a day-to-day basis across the planet is not new,” said Hebblewhite, who works in the [W.A. Franke College of Forestry and Conservation](#). “But this study exemplifies the global impact human activity has on wildlife everywhere.”

Researchers tracked data from 43 different species of mammals, Hebblewhite said. Surprisingly, the biggest variation in the study was really driven by variation in human lockdowns.

What about Montana? A place where land mammals have the luxury of miles and miles of wild spaces and where humans flocked to escape the lockdown measures in bigger cities?

While some states and countries, such as Europe, had more stringent lockdown requirements – researchers called this the COVID lockdown stringency index – the effects were different in Montana, where there was an increase in human activity in open spaces around cities like Missoula.

“But even in places like Montana and the Western U.S., we saw changes in human behavior,” Hebblewhite said. “People drove less, and there was less human activity at the typical times of day we see animals and humans being active.”

While researchers were able to understand animal behavior during the pandemic by studying the GPS data of 3,200 collared species, they didn't have comparably detailed data about human responses.

"What is it about humans? What do we mean by human activity?" Hebblewhite said. "Humans build infrastructure: highways, railways, golf courses, trails. It's the physical footprint of human development – the human footprint index."

During COVID, that footprint didn't change, but the amount of people on it did.

Researchers discovered three different wildlife responses to the worldwide lockdown:

- On average, animals moved every hour less than prior to lockdown measures because they no longer had to avoid humans as much on a daily basis. Humans are predictably busier on roads, trails and highways in the mornings before 9 a.m. and the evenings after 5 p.m. In California, for example, mountain lions didn't have to avoid urban areas as much because there was less human activity.
- Animal migration increased. Researchers found that animals made long-distance movements more frequently. While on sabbatical in Italy, Hebblewhite studied European brown bears and predicted where the bears might cross highways in connectivity corridors. "Bears during COVID increased long-distance movements in those corridors as we predicted," he said. "Moving between valleys, dispersing, migrating – those things did increase when human activity decreased. They didn't have to avoid humans and could make riskier movements." During the pandemic, bears in Italy used corridors they had never used before because humans were locked in their homes.
- Animals were found closer to roads and in areas heavily used by humans. "Our interpretation is consistent with the first piece on hourly movements. People were no longer driving on roads and highway traffic was down. The roadway was still there, but animals were no longer afraid of it. They moved closer to highways and railways and began crossing them more during the day rather than at night," he said. Researchers found this to be the case across the planet and among all 43 species.

"This is a global analysis of 2.5 thousand GPS animals across 43 species. The result is strong," Hebblewhite said. "As strong as you can get in science with animals."

The study supports the assumption that human activity has profound impacts on animals across the planet, and its impact was recently demonstrated after last summer's flooding in Yellowstone. The event caused humans to once again shelter in place and cease activity in the busy national park. The results from the study allowed researchers and park managers to make exact predictions of wildlife behavior during that time.

"In Banff, based on studies like this, the national park closed down Highway 1A in the spring when wildlife is restricted to lower elevations," Hebblewhite said. "They closed the highway because previous studies like this showed negative effects of human activity on wildlife during that time of year."

In Montana, the study could support road closures during elk hunting season in order to increase elk survival and have more bull elk for harvesting, he adds.

"Now, we can look at this and think of human-restricted activity in order to help people managing elephant activity in Africa," Hebblewhite said. "It's a strong paper that demonstrates the global effect of humans on wildlife. It illustrates the impacts of human activities even in our most protected national parks. Anyone who goes to Yellowstone in summer spends most of the time thinking about how to avoid traffic. If you're thinking about it, then wildlife is thinking about it too."

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UM / News / Historical Threads: Missoula Weavers Guild Invited to Study UM's European Tapestries

COLLEGE OF THE ARTS AND MEDIA

# HISTORICAL THREADS: MISSOULA WEAVERS GUILD INVITED TO STUDY UM'S EUROPEAN TAPESTRIES

07 JULY 2023

*Missoula Weavers Guild members Jennie Meinershagen, left, and Jackie Boshka, joined MMAC Director H. Rafael Chacón in June to review the condition of the museum's Renaissance tapestry "Deeds and Triumphs of Scipio from the*

**MISSOULA** – For members of the Missoula Weavers Guild, it was an invitation to see, first-hand, centuries-old tapestries stored for decades on the University of Montana campus.

For staff at the **Montana Museum of Art and Culture**, it was an opportunity to gather the member's insights and assessments on the pieces' condition, with the goal of displaying one work in the inaugural exhibition of UM's new museum, opening this fall during Homecoming Week.

For both, it was chance to admire, up close – sometimes on hands and knees – large works of art that once graced the walls of Europe's grand palaces, as much for ornament as a means to keep spacious rooms warm.

"I don't know of anywhere else in this part of the country with tapestries as rare and valuable as these pieces," said MMAC Director H. Rafael Chacón during the Guild's visit in June.

"It's remarkable that we have these works here in Missoula and indicative of the quality of UM's Permanent Collection of art," he added.

The University purchased the tapestries, along with a trove of other pieces, in the late 50's with funds donated by East Coast businesswoman and philanthropist Josephine Bay. Made primarily of vegetable-dyed wool, they date back to the 16th century and were woven by Flemish artisans, considered then and now masters of this intricate and time-consuming art form.

"I was really blown away by how well preserved they are," said Jackie Boshka, program director for the Guild, founded 75 years ago and one of the oldest in the country. "As a weaver it's difficult to imagine the magnitude of work that went into tapestries this large and how many of them were made at the time."

During their visit the members closely examined three tapestries under consideration for the museum's grand opening. Joining them was Elizabeth Tritthart of Historic Weaving of Butte who provided her insights on the works' condition.

The first tapestry, carefully unrolled on the floor, was a Renaissance work called “Deeds and Triumphs of Scipio from the Second Punic Wars.” At 10 by 15 feet, it is the largest of the pieces.

Riotous in design and deeply hued, it portrays two ancient armies intertwined in battle, replete with rushing horseman and marching spearmen. Framing the battle scene is a border depicting beasts, cornucopias, flowers, sphinxes, satyrs, mythical gods and fanciful architectural designs.

“It was really fascinating to learn more about the important role these tapestries played in story-telling at the time,” said Guild Communication Director Jennie Meinershagen, “and as a weaver to see how well the colors held up was amazing.”

Embedded among the tapestry's panels though were noticeable separations in the weave – signs of wear that can come with centuries of age and thousands of miles in travels.

“This was the tapestry we had hoped to display for the opening, but it is just too fragile so we are going to wait until we can hire conservators to repair it,” said Chacón, adding that the second tapestry, a Gothic work called “Judith with the Head of Holofernes,” also will wait based on the group's input on needed conservation work.

*Chacon and MFA candidate Dagny Walton, right, unroll an 18th-century Brussels tapestry called “Le Joueur de Cornemuse” (or “The Bagpipe Player”), which will be on display for the opening of the new MMAC building.*



Instead, the museum will display a smaller Brussels tapestry called “Le Joueur de Cornemuse” (or “The

Bagpipe Player”), which was woven in the early- to mid-18th century and depicts a bagpiper with a group of dancers in a busy village. Colored in rich greens, reds and blues, and ornate in design, the Baroque work is in a much better condition to display.

“It’s of such high quality and in relatively stable condition that it can go on view in September, at least for a few months,” Chacón said. “It also will eventually need minor conservation work, but I would like Montanans to experience this masterpiece at the opening. We are not shy about exhibiting works of art as they are.”

This is not the first time the Weavers Guild has lent their expertise to the University’s art collection. They’ve spent the past several years cataloguing weavings by UM chemistry professor William G. Bateman, who served on faculty 1912 to 1937. Bateman developed innovative patterns for his weaving, based on mathematical principles, that still influence the craft today.

“He left a portion of his collection to UM,” Boshka said. “We did analysis of the works, and they are now being photographed.”

“We owe an enormous debt to the Guild for countless hours dedicated to researching this unique collection and maintaining the legacy of Dr. Bateman,” Chacón added. “This collection was one man’s passion, almost his obsession. It’s good to see that same level of devotion in the members of the Guild.”

Later this summer Chacón will turn again to Guild members for help displaying “Le Joueur de Cornemuse” for the museum opening in September. They plan to remove the tapestry’s existing hanging rings as Tritthart suggested, and create a new, safer system for displaying it. Researching how to best conserve all three tapestries will follow.

The MMAC’s ability to tap into the deep talents of Montana-based artists and specialists, Chacón said, makes this work particularly rewarding.

“We have a great collection and a highly skilled and knowledgeable community,” he said, “When they come together, it really shows the magic of this institution.”

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UM / News / UM Student's Journey from River Guide to Environmental Lawyer

SCHOOL OF LAW

# UM STUDENT'S JOURNEY FROM RIVER GUIDE TO ENVIRONMENTAL LAWYER

06 JULY 2023

*UM law student Meridian Wappett plans to use her degree to protect the rivers she loves.*

**MISSOULA** – University of Montana law student Meridian Wappett's connection to rapid waters goes all the way back to her preschool days.

"I've been rafting since I was 5 years old," said Wappett, a native of Moscow, Idaho. "I started navigating Class IV rapids when I was 12. It's safe to say I grew up on the river."

Wappett's love for the river guided her toward the sciences early in her childhood. Her high school teachers encouraged her to volunteer with state environmental organizations, where Wappett got a taste for what's required to organize rallies, draft and pass climate change legislation, and spend days testifying at the state legislature.

*Wappett, a native of Moscow, Idaho, has been rafting rivers since she was 5 years old.*

When Wappett decided to attend college, she wanted to gain skillsets to help protect the rivers she grew up on. This led her to Utah State University, where Wappett pursued a degree in conservation and restoration ecology, working toward a career as a scientist.

After spending a few summers conducting undergraduate research, Wappett realized her scientific studies wouldn't be enough to protect the environment in the way she had planned.



Thanks to her continued work with environmental nonprofits, Wappett had an opportunity to work on a congressional campaign as the communications director and environmental policy drafter. It was there that she realized her true love was the blending of ecology and policy.

"I wanted to do more with my ecology degree," said Wappett. "Policy felt like the missing piece I was looking for." Wappett explored careers in environmental policy but found the impact she sought in environmental law.

Wappett spent her last year of undergrad serving as a college of natural resources senator, studying for the Law School Admission Test and applying to the West's best environmental law schools.

During it all, Wappett always kept a connection to water, working as a guide on the Middle Fork of the Flathead River and the main and middle fork of the Salmon River.

“Ultimately, I chose to go to [law school in Montana](#) because of its fantastic environmental law program and reputation for being a hands-on learning environment,” said Wappett. “That made going to Montana for law school a no-brainer.”

Navigating law school hasn't been as natural as reading the river for Wappett. She said the learning curve is steep but worth the time and effort. Wappett has found her place at the law school, where she is on the Public Land and Resources Law Review and is the incoming co-chair of the Environmental Law Group.

Wappett says her science background has been a big help to her in school and practice. In moving from ecology and conservation into policy and law, she will be better positioned to protect the environment.

“Law school is what you make of it,” said Wappett. “I'm already getting to intern at a nonprofit, public interest environmental law firm protecting the rivers I grew up on. I am finally making the change needed to protect my important places”

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UM / News / UM Research: AI Tests Into Top 1% for Original Creative Thinking



COLLEGE OF BUSINESS

# UM RESEARCH: AI TESTS INTO TOP 1% FOR ORIGINAL CREATIVE THINKING

05 JULY 2023

*Erik Guzik is an assistant clinical professor in UM's College of Business. (UM photo by Ryan Brennecke)*

By Cary Shimek, UM News Service

**MISSOULA** – New research from the University of Montana and its partners suggests artificial intelligence can match the top 1% of human thinkers on a standard test for creativity.

The study was directed by Dr. Erik Guzik, an assistant clinical professor in UM's **College of Business**. He and his partners used the Torrance Tests of Creative Thinking, a well-known tool used for decades to assess human creativity.

The researchers submitted eight responses generated by ChatGPT, the application powered by the GPT-4 artificial intelligence engine. They also submitted answers from a control group of 24 UM students taking Guzik's entrepreneurship and personal finance classes. These scores were compared with 2,700 college students nationally who took the TTCT in 2016. All submissions were scored by Scholastic Testing Service, which didn't know AI was involved.

The results placed ChatGPT in elite company for creativity. The AI application was in the top percentile for fluency – the ability to generate a large volume of ideas – and for originality – the ability to come up with new ideas. The AI slipped a bit – to the 97th percentile – for flexibility, the ability to generate different types and categories of ideas.

"For ChatGPT and GPT-4, we showed for the first time that it performs in the top 1% for originality," Guzik said. "That was new."

He was gratified to note that some of his UM students also performed in the top 1%. However, ChatGPT outperformed the vast majority of college students nationally.

Guzik tested the AI and his students during spring semester. He was assisted in the work by Christian Gilde of UM Western and Christian Byrge of Vilnius University. The researchers presented their work in May at the Southern Oregon University Creativity Conference.

"We were very careful at the conference to not interpret the data very much," Guzik said. "We just presented the results. But we shared strong evidence that AI seems to be developing creative ability on par with or even exceeding human ability."

Guzik said he asked ChatGPT what it would indicate if it performed well on the TTCT. The AI gave a strong answer, which they shared at the conference:

"ChatGPT told us we may not fully understand human creativity, which I believe is correct," he said. "It also suggested we may need more sophisticated assessment tools that can differentiate between human and AI-generated ideas."

He said the TTCT is protected proprietary material, so ChatGPT couldn't "cheat" by accessing information about the test on the internet or in a public database.

Guzik has long been interested in creativity. As a seventh grader growing up in the small town of Palmer, Massachusetts, he was in a program for talented-and-gifted students. That experience introduced him to the Future Problem Solving process developed by Ellis Paul Torrance, the pioneering psychologist who also created the TTCT. Guzik said he fell in love with brainstorming at that time and how it taps into human imagination, and he remains active with the Future Problem Solving organization – even meeting his wife at one of its conferences.

Guzik and his team decided to test the creativity of ChatGPT after playing around with it during the past year.

"We had all been exploring with ChatGPT, and we noticed it had been doing some interesting things that we didn't expect," he said. "Some of the responses were novel and surprising. That's when we decided to put it to the test to see how creative it really is."

Guzik said the TTCT test uses prompts that mimic real-life creative tasks. For instance, can you think of new uses for a product or improve this product?

"Let's say it's a basketball," he said. "Think of as many uses of a basketball as you can. You can shoot it in a hoop and use it in a display. If you force yourself to think of new uses, maybe you cut it up and use it as a planter. Or with a brick you can build things, or it can be used as a paperweight. But maybe you grind it up and reform it into something completely new."

Guzik had some expectation that ChatGPT would be good at creating a lot of ideas (fluency), because that's what generative AI does. And it excelled at responding to the prompt with many ideas that were relevant, useful and valuable in the eyes of the evaluators.

He was more surprised at how well it did generating original ideas, which is a hallmark of human imagination. The test evaluators are given lists of common responses for a prompt – ones that are almost expected to be submitted. However, the AI landed in the top percentile for coming up with fresh responses.

"At the conference, we learned of previous research on GPT-3 that was done a year ago," Guzik said. "At that time, ChatGPT did not score as well as humans on tasks that involved original thinking. Now with the more advanced GPT-4, it's in the top 1% of all human

responses.”

With AI advances speeding up, he expects it to become a key tool for the world of business going forward and a significant new driver of regional and national innovation.

“For me, creativity is about doing things differently,” Guzik said. “One of the definitions of entrepreneurship I love is that to be an entrepreneur is to think differently. So AI may help us apply the world of creative thinking to business and the process of innovation, and that’s just fascinating to me.”

He said the UM College of Business is open to teaching about AI and incorporating it into coursework.

“I think we know the future is going to include AI in some fashion,” Guzik said. “We have to be careful about how it’s used and consider needed rules and regulations. But businesses already are using it for many creative tasks. In terms of entrepreneurship and regional innovation, this is a game changer.”

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