



This UWM alum's mission is to end homelessness in city.
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Making a home in Milwaukee

College of Letters & Science



IN FOCUS

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Fire circle at UWM honors Native American presence

UWM has installed a fire circle in front of Merrill Hall to recognize Indigenous peoples and provide a place of celebration for Native American students and others.

A ceremonial gathering was held Oct. 26. The gathering included the posting of an eagle staff and singing of sunrise songs as the moon set and the sun rose in the east over the campus.

The fire circle includes 16 granite stones, with carvings on a central stone depicting Lake Michigan, the confluence of the three rivers that meet in Milwaukee and the historical location of Potawatomi, Ho-Chunk and Menominee villages. (The central stone is still in transit and will be installed when it arrives.)

These three nations were stewards of the region until the early 1800s, when they were removed by the United States Army and several treaties limited the area where they could live. Today, although their nations are located north of the city, citizens of these and other Indigenous nations remain an important part of Milwaukee.

Fire circles are found in all parts of the globe, said Margaret Noodin, professor of English and American Indian Studies and director of the Electa Quinney Institute for American Indian Education. Noodin is also the associate dean of humanities in the College of Letters & Science.

“It helps us remember that Indigenous people have centered themselves around the land and water they live on.”

Milwaukee has the largest population of Indigenous peoples east of the Mississippi, but native people can feel invisible, Noodin said. “Having this fire circle at the heart of campus pays homage to an often-overlooked group.”



The fire circle sits just outside the front doors of Merrill Hall. (UWM Photo/Troye Fox)



A sunrise song is sung during a ceremonial gathering in October to mark the installation of a fire circle at UWM in front of Merrill Hall. (Photo courtesy of Kari Pink)

Chris Cornelius, an enrolled member of the Oneida Nation of Wisconsin and founding principal of studio:indigenous, designed the fire circle. A member of the UWM architecture faculty since 2004, and an alumnus of UWM’s School of Architecture and Urban Planning, Cornelius was recently chosen as the chair of the Department of Architecture at the University of New Mexico, effective Nov. 1. He is a prominent advocate for the awareness of architecture’s connection with culture, particularly American Indian culture.

Chancellor Mark Mone said he sees the fire circle as “important for celebrating our Indigenous cultural events and more — as a gathering place for celebrations, commemoration and honor. It is a place of ceremony and honoring tradition — of ancestors, roots, the earth in respectful and meaningful ways.”

“In that sense,” he added, “it is a grounding or touchstone for us to cherish, and I’m grateful for the leadership of Drs. Noodin and Cornelius and the staff of the Electa Quinney Institute and American Indian Studies program to help support this. I am also very grateful for the generous support from Bader Philanthropies Inc. and Dr. Isabel Bader.”

Developing a fire circle has been one of Noodin’s goals ever since she arrived on campus in 2014, she said. After she and others in the community met with Isabel Bader, an ally of First Nations (the term describing most Indigenous

people in Canada), the project became a reality with funding from Bader Philanthropies.

The fire circle will provide a visible space for performances, educational activities and ceremonies to increase the awareness of Native Americans in Milwaukee and at the university, according to Noodin. For example, it will provide a place for people to gather and sing in a space where they are reminded of their ancestors. “In many Indigenous traditions, stories, songs, drums and stones are all considered to be animate parts of the world we share, with the power to heal and connect us.”

The fire circle will be shared with other groups, Noodin said. For example, the Celtic Studies program planned to use it for Samhain, a Gaelic holiday celebrating the harvest and the beginning of winter.

The gathering at the fire circle installation honored the heritage of Native American people at the university and in the community. The eagle staff present at the gathering belongs to the UWM campus community. It was designed by Diane Amour, longtime coordinator of American Indian Student Services on campus, and created by Michael Zimmerman Jr. as a symbol of strength and protection.

By Kathy Quirk, University Relations

Water down the oil well

Geoscientists win grant to clean ‘produced water’ from oil drilling

Joshua Swigart and Charles Paradis are hoping to stop earthquakes and change the oil industry for good, and they were just awarded a \$50,000 Catalyst Grant to help them do it.

Swigart is a UWM graduate student working toward his PhD in geosciences with Paradis, an assistant professor of geosciences, as his advisor. Swigart, who has an extensive background in water remediation and in the oil and gas industry, has an idea to address “produced water,” a problematic byproduct of conventional oil and gas drilling.

Together, they applied to the UWM Research Foundation’s grant program with hopes of bringing Swigart’s idea to market. To date, the Research Foundation has awarded over \$23 million in Catalyst Grant funding.

A problem in the oil fields

For every barrel of crude oil pumped out of the ground, up to 10 barrels of “produced water” are pumped with it. Produced water is just that – a byproduct produced as a result of pumping oil and gas.

“It’s the remnant of an ocean that was there millions of years ago,” Swigart explained. “There’s brine water deep down in the strata, so this is brine water and it has a few heavy metals.”

Those contaminants leave oil producers with a quandary: What to do with this water?

There are a few alternatives, including land farming, where oil producers spread the produced water over soil and work the land until the soil can remediate the water. Afterwards, the land can be used to grow plant life like Bermuda grass. But the cheapest method, said Swigart – and until



Joshua Swigart

recently, the one that caused the least liability – is for oil and gas companies to inject that water right back into the ground in a saltwater disposal well.

But that causes its own set of problems.

“Currently seismic activity in West Texas has increased exponentially, and this is a direct result of this down-hole injection of produced water,” Swigart said.

In fact, it was an earthquake that inspired him to begin researching a way to reclaim produced water. Swigart recounted how, several years ago, he was working at the University of Texas Permian Basin when he heard what sounded like a train engine barreling down the track.

“(I) immediately thought that might be an earthquake. I felt the wave come through me and pass through my body. It was my first time ever experiencing an earthquake,” he said. “I already knew that deep well injection was linked to earthquakes in West Texas,



Charles Paradis

so the next day I went to working on how I could stop the problem.”

Swigart has worked in oil fields and as an environmental remediation consultant, so he has the background and knowledge to invent a product or process that can reclaim produced water. What he didn’t have was the funding or the business savvy, but Paradis knew where to find that.

Winning the Catalyst grant

Paradis suggested that the two sign up for Milwaukee’s NSF I-Corps program, which connects academics with business mentors to help them learn how to bring a product or idea to market. Paradis describes it as a “business bootcamp for scientists,” and he thinks it helped make the difference in their Catalyst Grant application.

With grant money in hand, Paradis was ready for the next steps. That meant sending Swigart to Texas to gather 40 samples from 40 saltwater disposal wells.

“They’re in the lab and we’re running them for water quality measures – metals, pH, alkalinity, conductivity – to better get a sense of the quality of this water coming into this system so Josh can better design it,” Paradis said.

As they began analyzing the samples, they realized that there are actually some very valuable materials in all of that produced water – things like leftover oil, silver, uranium, mercury, and lithium, to name a few.

“We’re learning more and more that there’s likely valuable resources that can be recovered, and the profits from that can be used to make Josh’s system more economical,” Paradis said. “Josh’s system is expensive. Reverse osmosis is expensive.

Enhanced volatilization is expensive. But if we can identify important resources that are in that water and add a step or two ... in Josh’s system to pluck out lithium for batteries for Elon Musk and his cars, or uranium for the Department of Energy for fuel purposes, then that (proves) the economic viability of Josh’s system.”

And, Swigart added, if his system works as intended, oil companies will have clean water at the end of the process – an extremely valuable commodity in many of the drought-stricken areas where oil is pumped.

The next steps

For now, Swigart and Paradis are still working on analyzing the produced water samples. They’ll use that analysis to tweak Swigart’s process and better understand how to remediate the produced water.

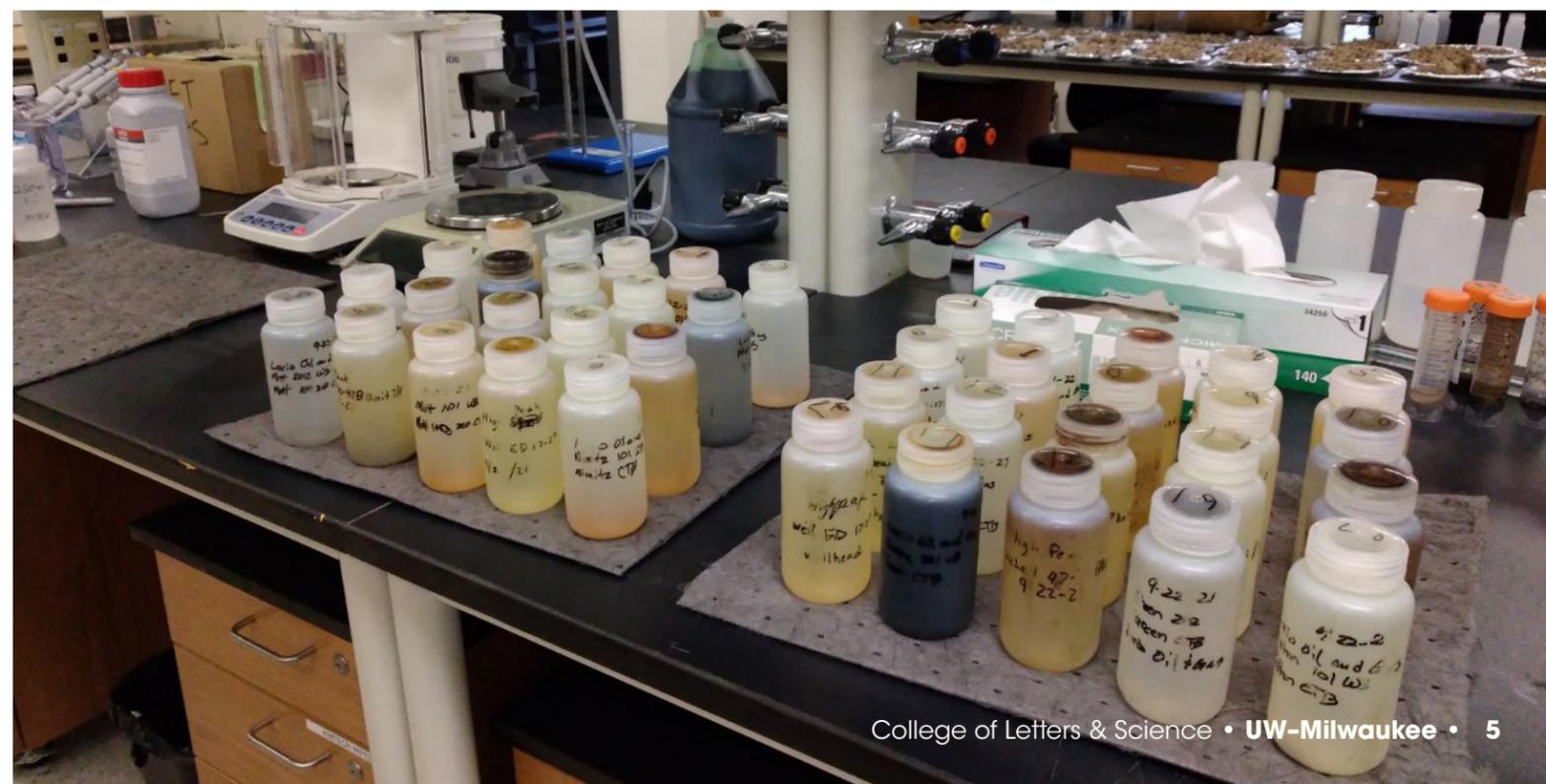
They’re both on the hunt for more funding. A \$50,000 grant is exciting and helpful, but Paradis is on the lookout for the next \$50,000 to help them on their way. Swigart plans to talk to investors and even contact the Gates Foundation.

Long-term, he hopes that his process will not only have a positive impact on the oil industry, but in places where water scarcity is an issue. It may be that his process can help people clean their drinking water, improving their health and communities.

“So, there are two goals,” Swigart joked. “One is to make a bunch of money off of the oil companies, and the other is to help people.”

By Sarah Vickery, College of Letters & Science

These samples of produced water, collected by Joshua Swigart from 40 saltwater disposal wells in Texas, may include contaminants like petroleum, silver, lithium, mercury, and uranium. Swigart and his advisor, Charles Paradis, won a Catalyst Grant to develop a process to reclaim this water. Photo courtesy of Charles Paradis.



A different kind of homemaker

Alum helps Milwaukee's homeless through COVID and more

It was March of 2020 and Rafael Acevedo was scrambling to protect nearly 1,000 of Milwaukee's most vulnerable citizens.

As the city's grant compliance manager, Acevedo is responsible for overseeing Milwaukee's efforts to end homelessness. He works closely with nonprofit groups and homeless service providers all around the city – and in March of 2020, as the first wave of the COVID-19 pandemic swept across the United States, those crowded shelters were about to become a dangerous place.

"We were like, we have to figure this out. We have to mitigate the spread," Acevedo recalled. "We have a shelter with close to 200 people in it and they're all in this big room. We've got to decompress all of the shelters."

Working with community partners and private businesses, he and his colleagues managed to do just that, avoiding major outbreaks of the disease among people already hit by hardship.

The start of his service

Acevedo grew up in Milwaukee's Riverwest neighborhood, the son of Puerto Rican immigrants. After he graduated high school, he deferred college in order to work, but eventually enrolled in college at UW-Milwaukee at age 23. It was familiar territory; Acevedo's father is a UWM alumnus as well.

Acevedo found himself drawn to sociology, interested in how it could help him in a community-oriented career.

Outside of the classroom, he started to get hands-on experience as a community organizer and activist. He served as the president of the Latino Student Union, and he had a role in advocating for the creation of UWM's [Roberto Hernández Center](#).

"During my tenure there, I and a lot of other students lobbied and protested at times for a new center on campus," he recalled. In fact, Acevedo's friend, who served as president of the Latino Student Union one year after Acevedo did, is none other than Alberto Maldonado, who oversees the Roberto Hernández Center today.

After graduating in 1999, Acevedo took a series of nonprofit jobs, including with Public Allies' Milwaukee Office, the Greater Milwaukee Foundation, and the Latino Health Organization. About seven years ago, he transitioned to working for the City of Milwaukee as the grant compliance manager, responsible for overseeing federal funding meant to mitigate and prevent homelessness.

No place to call home

At any given time, Acevedo said, Milwaukee has between 800-900 people experiencing homelessness. The majority are able to find refuge in shelters, but Acevedo estimates there are 100-150 people sleeping on the streets at night.

The causes are myriad; everything from lack of affordable housing to disabilities to drug addiction to unemployment can drive someone out of their house and into the street. Acevedo keeps that in mind when he thinks of housing as a public health issue.



Rafael Acevedo

"We have what we call a 'housing first' approach. Our approach is, let's get you into housing right away," Acevedo said. "Then we can work with you on ... employment or filling out paperwork for disability benefits."

After all, he added, it's easier for someone to maintain employment or manage their mental health issue if they're not also sleeping in their car or worried about their next meal.

He also works with landlords to try and keep people in their homes by ensuring that people can use housing vouchers to help pay their rent. He proudly reports that one of the larger landlords in the city recently adopted a 'mediate first' policy – pledging to try and mediate with tenants about any issues before evicting them.

Acevedo meets regularly with the directors of nonprofits and shelters like the Guest House, Community Advocates, Hope House, and others. Together, they talk about best practices and work to address gaps in services so they can better serve Milwaukee's homeless population. Thanks to their combined efforts, "we've been able to reduce homelessness by about 42 percent in the past seven years. At one time, we were at about 1,500 (individuals experiencing homelessness)," Acevedo said.

But then came COVID.

Pandemic planning

A federal moratorium on evictions during the pandemic kept Milwaukee's number of people experiencing homelessness from ballooning as Acevedo had feared, but in March 2020, the shelters were still too crowded to be safe.

"We, right away, called hotels in Milwaukee. We needed to put folks from the shelters in these hotels and keep them a room, safe, where they're not getting infected," Acevedo said.

He and his community partners were able to get rooms from the Ambassador Inn in Milwaukee, and talked to the archdiocese about using Clare Hall, which formerly housed nuns, as a COVID-19 isolation site. All told, Acevedo managed to secure three hotels with close to 200 rooms. The Milwaukee Rescue Mission, which experienced a COVID-19 outbreak, went from housing 210 individuals to a much more manageable 60. The Milwaukee Health Department provided N95 masks to be handed out at homeless shelters back when the mask shortage was acute, and later helped set up testing and vaccination locations.

But Acevedo isn't resting on a job well done. He's working hard to secure more hotel rooms so he can keep people out of the cold during the coming winter. Long term, he hopes he puts himself out of a job by ending homelessness in Milwaukee altogether.

Community members can help by making donations to any of Milwaukee's shelters and organizations working to address homelessness. A listing of these agencies can be found at www.milwaukeeccoc.org. And, Acevedo added, a little bit of empathy goes a long way.

"For anyone who is experiencing mental health (issues) or addiction, those are extremely difficult to overcome," he said. "(To have) someone who is unstably housed makes it even more challenging for them to get the understanding and the support that they need."

By Sarah Vickery, College of Letters & Science

Rafael Acevedo works closely with community partners like the Guest House, shown here, to address homelessness in Milwaukee.

UWM debuts Peace Corp prep

Students interested in joining the Peace Corps after graduation will be more ready than ever before, thanks to a new undergraduate certificate program.

UW-Milwaukee has partnered with the Peace Corps to offer Peace Corps Prep, a series of classes and requirements for students interested in preparing themselves for a stint with the organization. The program, under the umbrella of the Global and International Studies program, debuts in January 2022.

“Several students in both the Global Studies degree program and the International Studies major express interest in Peace Corps service every year and we have had several graduates in both programs go on to serve in the Peace Corps,” said Christine Wolf, the assistant director both Global Studies and International Studies and the new Peace Corps Prep program coordinator. “This program will help students by giving them a guided pathway through coursework and experiences to make themselves stronger candidates for Peace Corps Service after graduation.”

The Peace Corps, founded in 1961, is a federally-run volunteer program providing international social and economic development assistance around the world.

The Prep program will help students get ready for their applications by helping them develop their language proficiency, hone their skill sets in the different Peace Corps sectors, develop their professional and leadership skills, and increase their cultural competence.

UWM had to apply to partner with the Peace Corps and now joins about 150 other institutions around the nation with preparation programs. Given the requirements of Peace Corps Prep, Wolf said that she knew UWM’s Global and International Studies programs would be a perfect fit.

“These programs are innovative and reflect the kinds of skills and culturally sensitive systems thinking the global workforce needs today and that the Peace Corps is looking for,” she said. “That said, the Peace Corps prep program is open to all majors as there are many other terrific programs at UWM that are also a good fit.”

“Peace Corps Prep is an opportunity for undergraduate students to develop competencies that will fortify their aspirations to serve abroad,” said La’Teashia Sykes, Peace Corps Director of University Programs, in a press release. “Congratulations to UWM on joining the Peace Corps family. We are thrilled to work together to spark students’ interest in Peace Corps service.”

Wolf, a UWM alum who majored in history and earned a certificate in women’s studies, is a veteran of the Peace Corps herself and served in Poland in the 1990s not long after the fall of the Berlin Wall.

“It was absolutely one of the hardest and most life changing experiences I can imagine,” she said. “To be a tiny part of the evolution of a country emerging from decades of political oppression was humbling to say the least. Those experiences have continued to shape my career and my dedication to helping others have access to similar experiences.”

Students interested in their own Peace Corps experiences can learn more about the Prep program [here](#).

By Sarah Vickery, College of Letters & Science



Global and International Studies programs director Christine Wolf smiles during a trip to Ecuador in February 2020. Wolf is the new coordinator of the Peace Corps Prep program at UWM.

Physicists create breakthrough tool for molecular movies

Scientists are trying to discover the exact sequence of events that occurs when light strikes photoactive proteins, changing their atomic structure, or “shape.” That biochemical process unfolds in processes like photosynthesis.

Until now, only the first and last states of a molecule before and after certain ultrafast chemical reactions could be determined. Scientists want to know how the absorbed energy affects the protein’s shape in the course of the reaction. Only then can they discover how the protein accomplishes its job.

A team of researchers, led by Abbas Ourmazd, UWM distinguished professor of physics, and Robin Santra from the Deutsches Elektronen-Synchrotron (DESY), has created a machine-learning approach to track the way in which the photoactive yellow protein (PYP) undergoes changes in its structure in a fraction of a second after being excited by light. The details were published Nov. 3 in the journal *Nature*.

100 times more information

The event occurs so quickly that current methods of molecular imaging could not capture it. Now, the research team has used their technique to make a 3D movie of it.

Their algorithm used data from a 2016 molecular movie that showed PYP changing its shape upon sensing light. But the older movie captured what happened on a longer time scale. The new movie reveals how the protein changes in a time window that was so lighting quick, it was “hidden” within the older version.

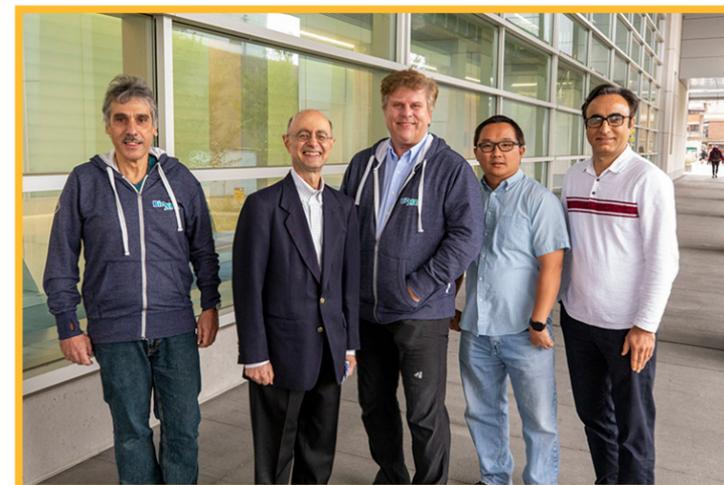
“Essentially, the algorithm can extract 100 times more information from 100 times less experimental data,” said Ourmazd. “You don’t have to do anything other than apply the algorithm.”

Quadrillionths of a second

The resulting movies show the way PYP’s atomic structure changes as the 2,000-atom protein passes through a “conical intersection” in only a few femtoseconds (quadrillionths of a second).

Their movie shows how the protein changes even before the photon’s energy is manifested as heat after it is absorbed, said Marius Schmidt, a UWM professor of physics. Schmidt led the 2016 experiment that generated the data used for this project.

The new data-science technique “captures” ultrafast motions of the protein as it reacts to the absorption of a photon, said Ahmad Hosseinizadeh, UWM scientist and the paper’s first author. “This has been done in the presence of



UWM researchers who contributed to the paper include Peter Schwander (from left), Abbas Ourmazd, Marius Schmidt, Russell Fung and Ahmad Hosseinizadeh, who is the first author. (UWM Photo/Troy Fox)

extreme noise and with almost 97% incomplete information,” Hosseinizadeh said.

Implications for health

Besides its application to structural biology, the algorithm can be used to solve other problems involving timing uncertainties. For example, in 2020 the UWM group used the algorithm to greatly improve the estimation of the fetal gestational age, when the exact date of conception is unknown. This is important for predicting premature birth, the leading cause of death in young children.

Work described in the just-published *Nature* paper was performed in association with BioXFEL, a Science and Technology Center created in 2013 by the National Science Foundation to use X-ray Free Electron Lasers (XFELs) to create 3D movies of molecular events, such as drugs binding or proteins working on ultrafast timescales. The development of underlying algorithms was supported by the U.S. Department of Energy.

XFELs produce a stream of extremely intense X-rays, firing in short pulses so rapid that they can capture images of some of the fastest processes in nature. In XFEL imaging, Ourmazd’s team mathematically reconstructs the multitude of single images produced by X-ray scattering to form 3D movies. Their algorithm dramatically improves that process.

The UWM team also included Associate Professor Peter Schwander and Senior Scientist Russell Fung.

By Laura Otto, University Relations

Grad student's new book tackles mental health and media

Christopher Olson has coped with anxiety and depression his entire life. One day, he watched an episode of the Netflix series “BoJack Horseman,” an animated show about an alcoholic former television star navigating Hollywood. In that episode, the audience hears the titular character’s **inner monologue** (be warned, the linked video contains profanity), complete with frenetic scribbled animation.

“As I was watching that episode, I was like, how did they get into my head? That’s the litany that ran through my head for years,” Olson said.

That, he noted, was the driving reason he wanted to make his **newly-published book**, “Normalizing Mental Illness and Neurodiversity in Media: Quieting the Madness.”

Olson is working toward his PhD in media studies at UWM. He’s authored, co-authored, and co-edited several books focusing on topics like cult movies and television shows and professional wrestling, but this book is a bit more academic than his previous work.

“(Co-editor Malynda Johnson and I) noticed ... the preponderance of shows and movies and other media that are starting to very frankly deal with the issues of neurodiversity and mental health,” Olson said. “I was like, we need to do something with this. This is a topic that I think people need to dig into and talk about.”

Others agreed; Olson and Johnson’s book garnered an Honorable Mention award in the Best Edited category at the Midwest Popular Culture Association’s book awards ceremony in October.

A book is born

Olson met Johnson, an assistant professor of communication at Indiana State University, at a conference hosted by the Midwest Popular Culture Association a few years ago. After the two discovered their mutual interest about mental health portrayals in media, they sent out a call for papers and approached the publisher Routledge with their idea.

Routledge bit and the papers flowed in. Olson and Johnson compiled them in a loose order: One grouping deals with the portrayal of therapy in shows like “Modern Family” and a children’s show called “The Loud House;” another examines eating disorders in media, and another focuses on neurodiversity.

Olson’s own essay in the book stemmed from his interest in professional wrestling, which he says often uses negative stereotypes as cultural shorthand.



UWM PhD student Christopher Olson is the co-editor of a new book focusing on mental health in the media. The book has several UWM ties. Photo courtesy of Christopher Olson.

“One of the main negative stereotypes that you see is the ‘crazy woman.’ She’s shrill and angry,” he noted. “But in recent years, a lot of professional wrestlers have been very open about their own struggles. There were two women who were very open about their eating disorders ... on their reality show, ‘Total Divas.’ We thought, let’s look at what this ancillary program is doing and how that informs the characters that they play in the ring.”

More essays in the book focus on topics like post-traumatic stress disorder in the films “Taxi Driver” and “You Were Never Here,” or how Dory the fish’s short-term memory disorder impacts her relationships in the Pixar movies “Finding Nemo” and “Finding Dory.”

And Olson said, there are a more than a few UWM ties in the book. “(Co-editor) Malynda Johnson is a UWM alum. She got her PhD from UWM (’12, Communication). Then Ali (Gattoni, an assistant faculty associate in the UWM Communication Department) has a chapter in here.”

Mental health and media

If mental health and neurodiversity are becoming more accepted in mainstream pop culture these days, it was a long road to get there. For decades, Olson said, if movies or television shows dealt with mental illness, it was to characterize the villain.

“That’s one of the things that we talk about in the intro to the collection. For a long time, the dominant portrayal of

mental illness was negative in media,” he added. “The villain was the mad scientist or the crazy jealous woman. Horror especially uses mental illness and neuroatypicality to position the ‘monster’ against ‘normal society.’”

That started to change around the turn of the millennium. People gradually became more open about the topic of mental illness, and movies and television soon followed. Then the advent of social media like Facebook, Instagram, YouTube, and now TikTok allowed people to begin sharing their mental health experiences with other people who faced similar issues.

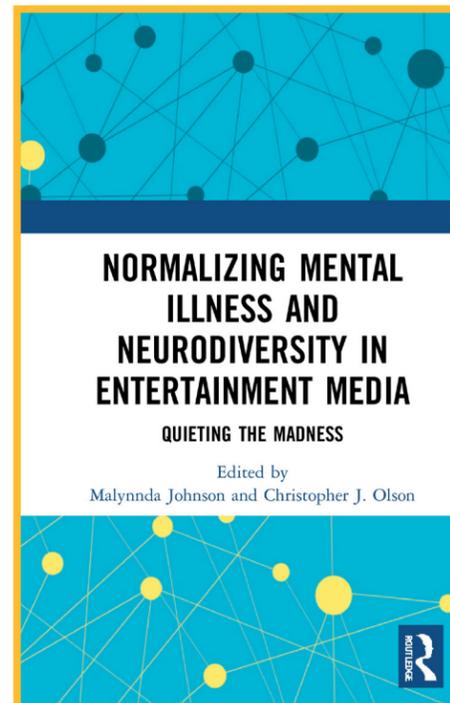
The rise of streaming services played a role too, especially as companies like Netflix, Amazon, and Hulu began to make their own content.

“In the past, you would have network television where they’re trying to appeal to this broad audience, but with streaming, with their algorithms, they’re able to really target niche audiences,” Olson said. “So, for example, there was a show created by comedienne Maria Bamford called ‘Lady Dynamite’ that was on Netflix, about her own struggles with bipolar disorder and depression. ... I think, as we’re seeing the further fragmentation of media into these more niche audiences, you’re seeing more people (saying), ‘I can speak about these things and I will get an audience of people who will watch it.’”

And it’s not just in movies and television. Comic books, video games, and other forms of entertainment have also begun to incorporate mental health in their storylines. Olson regrets that he and Johnson weren’t able to include those forms of media in the book.

But, he said, maybe they can add them in if there’s ever a Volume 2.

By Sarah Vickery, College of Letters & Science



Science Bag returns for a new semester!



Join the UWM campus community for the return of Science Bag, beginning this January!

Proteins are complex molecules responsible with doing most of the work inside our cells and play critical roles related to the structure, function and regulation of our tissues and organs. Join us in exploring how proteins are made, how they acquire their structure and how they use this structure to accomplish their functions.

The January Science Bag is presented by Associate Professor Ionel Popa, Department of Physics.

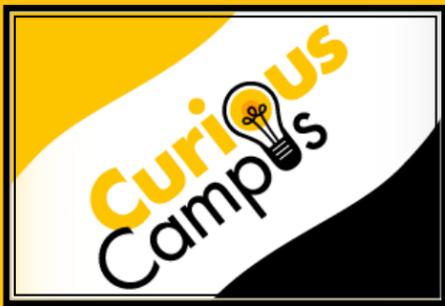
Science Bag is a family-friendly educational program designed to engage all from ages 8 to 88. Shows are every Friday in January at 7 pm plus a matinee on Sunday, January 16 at 2 pm. Location is the UWM Physics Building on the corner of Kenwood and Cramer, Room 137. No registration necessary.

WHAT: Science Bag

WHERE: Physics 137

WHEN: Jan. 7 at 7 p.m.
Jan. 14 at 7 p.m.
Jan. 16 at 2 p.m.
Jan. 21 at 7 p.m.
Jan. 28 at 7 p.m.

MORE INFO: <https://uwm.edu/science-bag/>



Introducing the Curious Campus podcast

Join UWM for discussions on science, discovery and culture. Curious Campus is produced by UWM, in cooperation with its research partners. Our work improves the economic outlook and quality of life of our city, state and global community.
www.uwm.com/show/curiouscampus

Exploring our fascination with Mars

Mars, which is the most accessible planet beyond Earth, is the next frontier in space exploration. Learning about Mars can help us understand more about our own planet and how changes in climate and atmosphere may affect Earth.

It can also help us prepare for the challenges that humans may face whenever we reach the Red Planet. Right now, the two Mars rovers – Perseverance and Curiosity – are exploring the planet’s surface to help scientists learn more about its history, soil and atmosphere.

Reaching Mars isn’t easy. [NASA lists](#) 48 missions to Mars since 1960 by space agencies worldwide, with more than half of the missions ending in failure.

On the [debut episode of Curious Campus](#), we look at Mars exploration with guests Jean Creighton, director of UWM’s Manfred Olson Planetarium, and Darian Dixon, a UWM geosciences alumnus who is a lead Mastcam-Z operator on the Mars rover Perseverance.

Below, Creighton and Dixon answer some questions about Mars exploration, their research and their work.

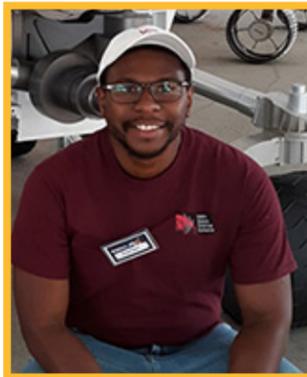
What makes Mars so fascinating?

Jean Creighton: Mars captures our imagination because it is the next big frontier in terms of human space exploration. In the 1960s, the United States had the [Mariner series](#), which sent spacecrafts to orbit Mars. In the 1970s, the Viking series began to send imaging technology to photograph the surface and landed on Mars in 1976.

I feel an affinity to Mars because I studied infrared satellites for NASA while doing post-doc work at Caltech, and visited some of the “sand playgrounds” for Pathfinder, the first successful Mars rover.



Jean Creighton



Darian Dixon

Darian Dixon: Right now, going to Mars will be a major, though challenging, next step. We’re exploring the final frontier. It’s something that fills our hearts with awe and wonder. I don’t think you can put a price on that. You just get to look up and be happy that you are part of something that is much bigger than humanity.

How soon will humans be able to travel to Mars?

Darian Dixon: There are major financial, logistical and scientific problems that remain to be solved. Some people see Mars as part of a simple, logical progression after going to the moon. It’s not that easy. If going to the moon was a one-foot-high step, the second step – getting to Mars – is a 40-foot-high step.

What are the benefits of space exploration overall?

Jean Creighton: Much of technology common in daily life today originates from the drive to put a human being on the moon. Some examples include current technologies behind weather forecasting, GPS and smartphones.

The need to miniaturize computers for space exploration in the 1960s motivated the entire industry to design smaller, faster and more energy-efficient computers, which has impacted nearly all facets of life. Getting to space has allowed people to turn their research efforts toward Earth.

By Kathy Quirk, University Relations

Listen to the full show at WUWM.com or on your favorite podcast app. Listen to the second episode, discussed on the next page, at WUWM.com as well.

The telltale sign of violent events in space

The universe is full of massive celestial bodies that slam into each other. Albert Einstein hypothesized that these cosmic collisions send out invisible shocks called gravitational waves through the universe, warping space-time.

Detecting gravitational waves would tell us about the objects that collide, even if it happened a billion years ago. In fact, one of the two kinds of gravitational waves has already been detected.

But scientists are still looking for the other – the kind called “low-frequency” gravitational waves that are monster-sized compared to the waves that have been detected.

On [this episode of Curious Campus](#), we talk about gravitational waves with Sarah Vigeland, an assistant professor of physics at UWM, and Xavier Siemens, an associate professor of physics at Oregon State University and former UWM faculty member.

Tell us more about these ripples in space-time and about the kind that have already been discovered.

Xavier Siemens: Gravitational waves are produced by very massive objects in space that move very quickly, such as orbiting pairs of black holes. The waves that have been detected recently by an experiment called LIGO are high-frequency gravitational waves that were produced by black holes with masses somewhere around 60 solar masses (60 times the mass of our sun), but some were also detected from neutron star collisions.

Tell us about the low-frequency waves that you are searching for.

Sarah Vigeland: The waves that we are now looking for come from super-massive black hole binaries. These are two black holes that are millions to billions of times the mass of our sun.

LIGO sees gravitational waves with high frequencies – things that are changing on short time scales. But low-frequency waves are being produced on very long



Sarah Vigeland



Xavier Siemens

timescales – months to decades. So you need a completely different instrument in order to detect those.

Our detectors are millisecond pulsars, which are what’s called stellar remnants. So it’s what’s left over after a massive star runs out of fuel. Pulsars emit radio waves from beams near their magnetic poles and as they rotate.

These sweep around like the beams of a lighthouse. This rotation is very stable, so these pulsars basically act like very stable clocks.

That makes them perfect for detecting gravitational waves. If a wave passed by, then there’s going to be a tiny change in the rate at which the pulsar’s “ticks” reach the Earth. Now, we use a whole array of pulsars that are scattered all over the sky.

Why is it so important to find low-frequency gravitational waves?

Xavier Siemens: We’ve learned from traditional astronomy that it’s important to look at many different wavelengths of light. We look at the universe with optical telescopes, with X-ray telescopes, radio telescopes, and all of those paint a very different picture of what’s going on in the universe. It’s important to do this with gravitational waves as well.

Because there’s a difference in the frequency of the waves, there are also very different sources that are producing them. And this brings me to the second part of the answer: The most promising sources of gravitational waves with these periods of years are supermassive black holes that form when galaxies collide. By searching for and studying these kinds of gravitational waves, we’re going to learn about how galaxies grow, merge and evolve in the universe.

By Laura Otto, University Relations



In the Media and Around the Community

Gladys Mitchell-Walthour (African and African Diaspora Studies) was a panelist at the 2nd Course of Brazilian Blackness in PhD Opportunities Abroad (2 Curso Negritude Brasileira no PhD Oportunidades no Exterior) on Oct. 30, where she spoke on “Applying to a Black Studies Department in the United States.” She also serves as a co-leader of the Milwaukee-Madison chapter of Scholars Strategy Network. Her work to bring together members of Wisconsin’s Legislative Black Caucus and researchers to focus on Black issues in the state was highlighted on [SSN’s national webpage](#).



Amanda Seligman’s (History) students researched the history of the Milwaukee County Zoo and presented some of their findings at the Milwaukee Public Museum, where the [Milwaukee Journal Sentinel](#) recorded photographs of the discussions. The [Journal Sentinel](#) also ran a story detailing her students’ study of Zero, the first polar bear born at the Milwaukee County Zoo.

Erin Winkler (African and African Diaspora Studies) presented tips on how parents should talk to their children about race as part of La Crosse’s [Waking Up White Collaborative](#) in November.

Eric Lohman (Journalism, Advertising, and Media Studies) was a panelist for a Nov. 10 [discussion](#) hosted by John Michael Kohler Arts Center following a screening of the documentary “Storm Lake,” which follows a family-owned weekly newspaper.

La Niña will probably bring more snow to Milwaukee this year, but **Clark Evans (Atmospheric Science)** speculated on [WUWM Radio](#) that this will be a warmer winter as well.

There have been badger sightings in all but six of Wisconsin’s counties, and the state should be proud of its badgers’ genetic distinctiveness, **Emily Latch (Biological Sciences)** told the [Milwaukee Journal Sentinel](#).

After two hospital systems in Milwaukee announced pay increases for staff and that they were raising their minimum wages, **Avik Chakrabarti (Economics)** told [TMJ4 News](#) the move was long overdue.

Because Virginia governor-elect Glenn Youngkin distanced himself from Donald Trump, white women felt comfortable voting for him and handed him a victory, **Kathy Dolan (Political Science)** told the [Washington Post](#).

If a missing person has a large social media following, that can help drive interest in their case, **Marc Tasman (Journalism, Advertising, and Media Studies)** noted on [CBS 58 News](#).

A new pill shows promising results for treating COVID-19, but **David Frick (Chemistry and Biochemistry)** said in a [VERIFY article](#) that the treatment may not be enough if a person is sick enough to go to the hospital.



Why didn’t the disappearance of three-year-old Major Harris make national news? **Michael Mirer (Journalism, Advertising, and Media Studies)** explained how newsroom bias may have been at play on [WUWM Radio](#). Mirer also pointed out to [WISN 12 News](#) that Packers quarterback Aaron

Rodgers left a social media trail of proof that he violated NFL rules while unvaccinated for COVID-19, and spoke with them again in a piece covering [Prevea Health’s decision](#) to cut ties with Rogers as a spokesperson. Mirer’s research was also cited in a [New York Times](#) opinion piece regarding sports fandoms. Finally, he opined on [Fox6 News](#) that it was “troubling” that Judge Bruce Schroeder banned MSNBC from the Kyle Rittenhouse courtroom without some sort of process to his decision.

What happened to renters after the federal government’s eviction moratorium expired this summer? **Jamie Harris (Urban Studies)** explained some of the situation in a [Milwaukee Journal Sentinel](#) article.

Abbas Ourmazd’s (Physics) new paper, published in the journal *Nature*, was highlighted on [Phys.org](#) and [Science Daily](#).



Alumni Accomplishments

Michael Beale (‘12, BA Geography) joined the Community Development Department of Sun Prairie, Wisconsin, as an [economic development specialist](#). He will provide administrative, technical and research support for specific economic development initiatives within the city.

Carletta Knox-Seymour (‘94, BA Journalism, Advertising, and Media Studies) started her own business, called Dignity Power Skills Consulting and Training, in September. The business focuses on empowering Black women by teaching them about historic barriers to education, voting, employment, housing, and more, and how to overcome those barriers. Her success was highlighted in Iowa’s [The Gazette](#).



Carletta Knox-Seymour

Nyasha Stone (‘18, BA Journalism, Advertising, and Media Studies) was featured on [TMJ4 News](#) for her company, Carvd N Stone, a local news source that focuses on spreading positive stories and messages in Milwaukee. Stone also provides scholarships for aspiring students and artists in the area.

Britt Gottschalk (‘15, BA Psychology) secured \$400,000 in seed funding from Gateway Capital for her [biotech startup](#), Geno. Me, which links genomic and electronic health record (EHR) data in an open marketplace. The capital will help the company hire more staff and move from Madison to Milwaukee.



Britt Gottschalk

Jodi Kessel Szpiszar (‘05, BA Sociology and Nonprofit certificate; ‘09, MA Urban Studies) began her job as the new [Johnson Creek library director](#) in October. She was previously the part-time director of Butler Library in Waukesha.

Chase Kammerer (‘08, BA Conservation and Environmental Science) joined [Fibre Box Association](#) as the manager of technical services. He will manage the company’s Technical, Environmental, and Health & Safety committees, among other duties.

Joshua Hren (‘12, PhD English) is the co-founder of the nation’s first MFA program in creative writing specifically focused on [Catholic literary and intellectual tradition](#). Hren said the program, started at University of St. Thomas in Houston, is meant to welcome writers of faith.

John Harry (‘21, MA History) was named the first-ever executive director of the [Portage County Historical Society](#). Previously run on a volunteer basis, the PCHS elected to hire Harry to expand its operations. Harry has extensive ties to the community and served on the board of the PCHS in the past.

Britta Keller Arendt (‘02, MA History) is the new registrar and program coordinator of Gonzaga University’s [Jundt Art Museum](#). She has a strong background in museum management and was most recently the senior collection manager at the Chicago History Museum.

Gary Nosacek (‘78, Mass Communication) set a record this summer: As an ordained deacon, he was the first Catholic clergy member to experience [Zero-G flight](#). He rode a Zero Gravity Corp. flight and his experience was even included in a newsletter written by Pope Francis.



Gary Nosacek

Syliva Ortiz Velez (‘09, BA Political Science) was included on the list of Wisconsin’s 36 Most Influential Latino Leaders, as compiled by [Madison 365](#). Ortiz Velez is a Wisconsin state legislator serving Milwaukee’s southside and also sits on the Advisory Board of the United Migrant Opportunity Services.

Lara Fritts (‘95, MS Urban Studies) was named the Executive Vice President of [Community Redevelopment](#), a Miami-based real-estate developer focused on community-oriented real estate in urban and suburban markets. Fritts is a certified economic developer and was most recently the Director of Salt Lake City’s Department of Economic Development.

Jeannine Sherman (‘97, BA Journalism, Advertising, and Media Studies), is the new marketing director of the [Wisconsin Historical Foundation](#). She will head up the organization’s marketing and brand strategy and lead a team of communications, annual giving, marketing and public relations professionals.



Passings

Dr. Carol Edler Baumann, Professor Emerita of Political Science and Director Emerita for the Institute of World Affairs at UWM, passed away on Nov. 6, 2021.

Dr. Baumann was a member of UW-Madison's Political Science Department for four years. She then joined the faculty of UWM's Political Science Department, a position spanning 35 years. At UWM, she was chair of the international relations major for 17 years and director of the Institute of World Affairs for 33 years. Baumann built the Institute into one of the most accomplished of its kind while continuing to teach and inspire students to pursue careers in international affairs and global business. She was the first host of the Institute's television program, *International Focus*.

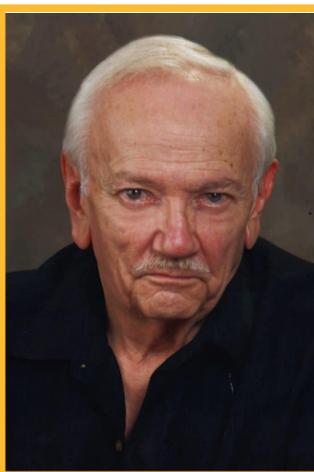
During her time at UWM, Carol was appointed by then-U.S. Secretary of State Cyrus Vance to the position of Deputy Assistant Secretary of State. She served in the Bureau of Intelligence and Research at the State Department in Washington, D.C., from 1979 to 1982. She then returned to UWM and retired in 1997, at which time she was designated Professor Emerita in the Department of Political Science, and Director Emerita for the Institute of World Affairs.

Carol's academic writings include four books, two monographs, two contributing chapters to other books, and numerous articles in newspapers and magazines. In her later years, she wrote fiction and completed two unpublished novels as well as several published short stories.

For additional information, please see Carol's [obituary online](#). A celebration of Carol's life was held on Sunday, Nov. 14 at St. John Lutheran Church in Plymouth, Wisconsin.

Dr. James A. Brundage, professor in the Department of History from 1955-1989, died on Nov. 5, 2021, at the age of 92. Jim received his Bachelor's and Master's from the University of Nebraska and his PhD from Fordham University. After a 34-year career at UWM, including serving as Chair of the Department, he was named Ahmanson-Murphy Distinguished Professor of Medieval History, Courtesy Professor of Law, and, in 2000, Distinguished Professor Emeritus at the University of Kansas.

In addition to fellowships from the John Simon Guggenheim Foundation and the National Endowment for the Humanities, Jim was a Fulbright Lecturer, a Fellow of Clare Hall, University of Cambridge, a Fellow of the Medieval Academy of America and the Royal Historical Society, and on the Board of Directors of the Stephan Kuttner Institute of Medieval Canon Law at the University of Munich. He was the author of twelve books, including *Medieval Canon Law and the Crusader* (1969); *Law, Sex, and Christian Society* (1987); and *Medieval Origins of the Legal Profession* (2008). For additional information, see Jim's [obituary online](#).



Laurels and Accolades

Graduate student **Andrew Whetten (Mathematical Sciences)** had his work on field-subfield spatial cross-validation of random forests published in the *International Journal of Geographic and Environmental Research*. His proposed model was used to validate and further explore a univariately derived spatio-temporal cluster analysis of remotely sensed leaf area index in the Columbia River Basin from 1996-2017 which came from his earlier work on detecting multidecadal changes in regional plant phenology.

Sandra Jones' (African and African Diaspora Studies) book, "Voices of Milwaukee Bronzeville," was recommended as a good Fall read by [Milwaukee Magazine](#). Also included on the list was "The Comfort of Monsters" by **Willa Richards ('19, PhD English)**.

Demetrius Williams (French, Italian, and Comparative Literature) received an \$18,000 [Teacher-Scholar Grant](#) from Calvin University to supplement his year-long sabbatical leave as he works toward completing a monograph entitled, "The Cross of Christ in African American Christian Religious Experience: Piety, Politics, and Protest" (Lexington Books, 2022).

Celeste Campos-Castillo (Sociology) just received two grants. Her proposal, "Chatbots as Social Support Actors (CASSA)," received a \$50,000 award from Facebook. She and Nathaniel Stern (Art & Design; Mechanical Engineering) also received a \$150,000 grant from the National Education Association for their project, "ABLE: Autism Brilliance Lab for Entrepreneurship."

Kimberly Blaeser (English and American Indian Studies) was the November 2021 guest editor for the Academy of American Poets' Poem-a-Day feature, which reaches 300,000 plus subscribers. In an interview [featured online](#), Blaeser discusses her curatorial approach and her own creative work.



People in Print

Meghan M. Howe, Estée C. H. Feldman, Sara L. Lampert, Ansley E. Kenney, W. Hobart Davies, and Rachel Neff Greenley (all Psychology). 2021. Caregiver perceptions of importance of COVID-19 preventative health guidelines, and difficulty following guidelines are associated with child adherence rates. *Families, Systems & Health: The Journal of Collaborative Family Healthcare*. [Online](#).

Craig R. Guilbault, Molly A. Moran ('15, PhD), and Kevin Schreve ('15, PhD) (all Mathematical Sciences). (2021). Compressible spaces and EZ-structures. *Fundamenta Mathematicae*. [Online](#).

Gabriel Courey ('18, PhD), John S. Heywood, and Matthew McGinty (all Economics). 2021. Ownership Shares and Choosing the Best Leader. *Journal of Economic Behavior and Organization*, 191: 482-500. <https://bit.ly/3DhPsTx>

Suraj Pandey, George Calvey, Andrea M. Katz, **Tek Narsingh Malla**, Faisal H. M. Koua, Jose M. Martin-Garcia, **Ishwor Poudyal**, ... **Abbas Ourmazd**, John C. H. Spence, **Peter Schwander**, ... and **Marius Schmidt (all Physics)**. 2021. Observation of substrate diffusion and ligand binding in enzyme crystals using high-repetition-rate mix-and-inject serial crystallography. *IUCrJ*, 8(6). <https://bit.ly/31ocaMT>

Ahmad Hosseinizadeh, N. Breckwoldt, **Russell Fung, Reyhaneh Sepehr, Marius Schmidt, Peter Schwander**, R. Santra, and **Abbas Ourmazd (all Physics)**. 2021. Single-femtosecond atomic-resolution observation of a protein traversing a conical intersection. *Nature*.

Craig Berg, Michael Carvan, Renee Hesselbach, Zhihou Luo, **David Petering (Chemistry and Biochemistry)**, et al. 2021. Meeting the COVID Challenge to a Research-intensive Pre-college Science Education Program. *Journal of STEM Outreach*, 4(2), 1-11. <https://bit.ly/3dccVuV>

Anne Pycha (Linguistics). 2021. Phonological and morphological roles modulate the perception of consonant variants. *Linguistics Vanguard*. <https://bit.ly/3phSyC2>

Marius Schmidt (Physics). 2021. Macromolecular Movies, Storybooks Written by Nature. *Biophysical Reviews*. <https://bit.ly/3lvvEWT>

Jocelyn Szczepaniak-Gillece (Film Studies). 2021. Bombed Pasts, Burning Futures: Notes on Demolition and Exhibition. *Framework*, 62(2). <https://bit.ly/3G53HwE>

DECEMBER 2021						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	



Upcoming Events

December 8
WGS Lunch and Learn: Excavating, Envisioning, and Embodying Trans Femme Apotheosis in Sofia Moreno's Art and Performance at Hans Gallery. Noon. Via Microsoft Teams. Rae Langes, UW-Eau Claire.

January 7-28 and January 16
Science Bag: Proteins – Magical Workers Inside our Bodies. 7 p.m. Physics 137. Ionel Popa, Department of Physics, presents. Family-friendly. This event is FREE. Science Bag takes place every Friday in January with a matinee show on Sunday, Jan. 16 at 2 p.m. <https://bit.ly/3DkmRgi>

GOLDA MEIR
LIBRARY

