



RESEARCH AT MERRIMACK

INSIGHTS AND INNOVATIONS



SUMMER / FALL 2021



CONTENTS

- 2** **Research at a glance**
- 6** **THRIVE Lab**
Helping all children THRIVE
April Bowling
- 8** **NOURISH Lab**
Embracing lunchtime:
Measuring the impact of
time on school nutrition
Juliana Cohen and
Eleanor Shonkoff
- 10** **MitoCure Lab**
Aging in our cells (and ourselves):
Unlocking the secrets to longevity
Leena Bharath
- 12** **Green technology: Phyto-**
remediation and the power
of botany
Azam Noori
- 14** **Stars in their eyes: Mapping the**
universe from Merrimack
Chris Duston
- 16** **Media marathoning: The**
surprising emotional benefits
of “binge watching”
Lisa Glebatis Perks
- 18** **Outdoor fun for mind and body**
Jessica Peacock
- 21** **Enhancing student soft skills:**
Exploring the efficacy of virtual
service learning
Jimmy Franco
- 22** **Environmental fieldwork**
on campus
Cynthia Carlson
- 24** **Books behind bars: Accessing**
education in jail
Brittnie Aiello and
Emma Duffy-Comparone
- 26** **Predicting cognitive health**
through walking
Ruth McKenzie
- 28** **Following the money: Nonmarket**
forces in American economies
Rodrigo B. DeMello
- 29** **“X” marks the spot: Algebra**
in elementary school
Rena Stroud
- 30** **A new paradigm for police**
training: The Merrimack College
Police Academy
Alicia Girgenti-Malone
and Alyssa Yetter
- 32** **Preparing for earthquake**
catastrope
Jim Kaklamanos
- 34** **Honors and grants**
- 38** **Recent faculty publications**
-

RESEARCH ADMINISTRATION

John “Sean” Condon
Provost

Jonathan Lyon
Vice President of Institutional Effectiveness,
Planning and Research Initiatives

Erin Mathis
Senior Director of Grants

LEARN MORE

Visit www.merrimack.edu/research
Email research@merrimack.edu

RESEARCH AT MERRIMACK

Perhaps more than ever, the events of the past year have underscored the importance and power of life-changing research. At Merrimack, from investing in lab benches to getting involved in the surrounding communities, our commitment to funding and catalyzing research has never been stronger.

One of the key goals in the College's strategic plan, the *Agenda for the Future*, is to ensure that our faculty have the resources and facilities they need to do their best work, push the boundaries of their fields, and inspire and educate the next generation of researchers and innovators.

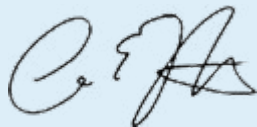
As their ongoing accomplishments gain wider recognition, these educator-scholars help position Merrimack as a school that is known for both academic excellence and world-class research.

Our first Center of Excellence at Merrimack, the Center for Health Inclusion, Research and Practice (CHIRP), embodies the best of Merrimack: laboratory science, policy prescriptions, and a mission to ameliorate a social ill, in this case the systemic health disparities that afflict too many of our most vulnerable neighbors.

In these pages, you'll learn about the founders of CHIRP and read stories about faculty who are developing new methods to remove toxins from our environment—committed educators who are modeling improved educational opportunities for everyone, from children to incarcerated adults, and a professor who is finding unorthodox ways to predict and diagnose dementia. These accounts represent a small sampling of the original thinking, practical applications and immersive educational opportunities happening on campus.

At Merrimack, we understand that our institution has limitless potential to impact the lives of others, communities and the world at large, and it all starts with research.

Best,



Christopher E. Hopey, Ph.D.
President



RESEARCH

AT A GLANCE





\$6,822,106
in research grants
awarded FY16–FY21



\$1,845,666
for education and
community service
programs FY16–FY21



127
papers in research
publications in FY21



173
research experiences
for undergraduates
in FY21

MAJOR AWARDS

Merrimack’s sponsored-research portfolio grew by almost 10 percent since fiscal year 2019 and included two major grants, one from the National Science Foundation (NSF) and one from the National Institutes of Health (NIH).

Rickey Alfred Caldwell Jr., assistant professor of Mechanical Engineering, received a \$999,523 NSF grant for “Merrimack Achieves Collegiate Holistic Support Scholars — MACHS Scholars,” a program to help high-achieving, low-income students obtain the education and skills necessary to launch a fulfilling career in STEM (Science, Technology, Engineering and Mathematics).

Co-principal investigators include Dr. Gwyne White (Psychology), Dr. Brandi Baldock (Chemistry and Biochemistry), Dr. William McDowell (Biology), Dr. Russell Olwell (Education and Social Policy), and Dr. Julia St. Goar (Mathematics).

Leena Bharath, Pasini Professor of Health Sciences and assistant professor in the College of Health Sciences, received \$434,151 from the NIH for “Mitochondrial Aging Promotes Inflammation.”

The grant will support the research-lab training of undergraduate students and will cover their travel costs to conferences and offer financial support during the academic year.

To learn more about sponsored research at Merrimack, visit www.merrimack.edu/research.

INTRODUCING

The Center for Health Inclusion, Research and Practice



CHIRP

In the spring of 2021, Merrimack launched the Center for Health Inclusion, Research and Practice (CHIRP), which brings together the labs of three professors in the School of Health Sciences: Dr. Leena Bharath, Dr. April Bowling and Dr. Juliana Cohen.

The mission of CHIRP is to close the gap in health disparities by conducting research, applying interventions, and proposing and evaluating policies that promote wellness and prevent physical and mental disease, especially among our most vulnerable populations.

CHIRP is the first research center envisioned in the College's strategic plan, the Agenda for the Future.

“At Merrimack, we are deeply committed to promoting and facilitating meaningful student-faculty collaborative research and scholarship,” said President Christopher E. Hopey, Ph.D. “Over the last several years we have been reinventing the way that Merrimack approaches research in order to drive innovation and respond to real-world problems facing our society. We have limitless potential to improve the lives of others, and research is critical to that effort.”

Bowling and her colleagues share the College's vision. “We really draw faculty that are energetic and want to be a part of their communities to take on some pretty wicked problems,” she said. “Problems that are hard to get funded from a research perspective at other universities we're able to take on here, and it's allowed us to attract a really high standard of researcher who is also very interested in teaching and mentoring students.”

In the following pages, dive into the research at CHIRP and meet the researchers who are committed to strengthening Merrimack's reputation as a world-class research institution.



LEARN MORE

Dive deeper into the research of CHIRP, the first of Merrimack's Centers of Excellence, by scanning the QR code or visiting merrimack.edu/chirp.

HELPING ALL CHILDREN THRIVE



PRINCIPAL INVESTIGATOR

April Bowling, Sc.D.

Assistant Professor, Health Sciences

Research Interests:

- Exercise
- Behavioral health
- Nutrition
- Childhood obesity

Eat more vegetables, get more steps, turn off phones an hour before bedtime. We all know the things we *should* do, but it's not always easy — and for children with developmental or mental health disorders, it's even harder. Helping those kids develop healthy habits is the goal of Assistant Professor April Bowling.

Bowling's Translational Health Research and Innovation for Vulnerable ChildrEn and Teens (THRIVE) Lab focuses on school-aged children who have been diagnosed with neurodevelopmental or mental health disorders (ND/MHD) — diagnoses like autism, anxiety, depressions and ADHD. "These kids are at an extremely high risk of very unhealthy behaviors, being more sedentary than their peers, getting less quality sleep than their peers and certainly eating less healthily than their peers," said Bowling. "There's this huge gap between what can actually help them feel better and what actually happens in real life."

Bettering the health of these children could have huge consequences. According to Bowling, people with moderate to severe mental illness live about a quarter century less on average than the general population. "I hope that by intervening on health habits in childhood, we can really bend that curve."

Research has shown that introducing more physical activity into daily routines can alleviate symptoms, and in some cases, even treat underlying diseases. "Especially in younger children, proper nutrition and physical activity actually changes the architecture and chemistry of the brain." Bowling points out that her interventions are meant to be an adjunct to medication, not a replacement.

Discovering her mission

Before embarking on her academic career, Bowling, a former triathlete, worked as an endurance coach and volunteered for programs aimed at youth and families. "We started getting kids in the door who had been referred by their pediatrician because they were overweight or obese, but we discovered that many of them actually had underlying diagnoses. We started seeing more kids on the autism spectrum and more kids with depression and anxiety."

Discovering a lack of intervention options for this population, Bowling took on the challenge of filling the gap. She enrolled in the Harvard T.H. Chan School of Public Health and wrote a doctoral thesis, "Understanding Effects of Exercise and Diet to Improve Mental and Physical Health in Children with Behavioral Health Disorders."

"Once I got fully engaged with the population and started doing interventional work, I realized there were huge challenges associated with conducting this type of research."



“I came to Merrimack because you need a nimble, entrepreneurial, community-engaged approach to research to bridge the gap between what happens in the lab and what happens in real life. We have to find ways to help meet these kids where they are and adapt or pivot as we learn more or gain access to new technologies that can help.”

To that end, in 2018, Bowling and her colleagues started the THRIVE Lab to practice inclusion team science, an approach that speeds the translation of research to the real world. “Our collaborators include clinical and developmental psychologists, researchers with expertise in specific disabilities, individuals with lived experience and their family members and caregivers, graduate and undergraduate students, and community practitioners.”

How to THRIVE

Bowling’s advice to parents and caregivers? First, take care of yourselves. When parents work on their own habits, they are relieved of the burden of trying to change someone else’s behavior, can accept support for their own mental health, have a new motivation for learning optimal behavior, and become healthy role models for their children.

For kids, the first habit she encourages is trying to get a little exercise every day. “Physical activity builds something called self-efficacy: The kid thinks, ‘I wanted to make a change, so I went for a walk, and I did it. I made a change in my life.’” Plus, more activity naturally leads to a better appetite and better sleep.

Part of THRIVE’s methodology is to understand the children and their families and promote activities that kids enjoy, instead of those they are told to do. “Often-times parents are like, ‘All right, every day for the next week, we’re going to go out and we’re going to go for a run together,’ and of course that’s just setting everybody up for misery and failure.” In contrast, some parents in her studies volunteered that the best partner in encouraging their kids to exercise was the family dog.

Participants would tell the lab, “I hate exercise, but I like walking my dog.”

That same approach led THRIVE to incorporate exergaming, video games that involve physical exertion in playing. These games are popular with both boys and girls, 95 percent of whom cite video games as one of their hobbies. THRIVE also uses telehealth coaching, which connects health coaches to kids and parents without ever making them leave home. Those coaches can take some of the burden off parents while helping kids find ways of being healthy that work for them.

Students in the lab

Along with collecting data, Merrimack students evaluate and maintain the library of exergames and play them with the kids. Bowling finds that her younger collaborators are more naturally engaging in their interactions with the research participants. “The kids respond so well to young people, in ways they wouldn’t with professional academic staff. In return, Merrimack’s students graduate and become health professionals who are acutely aware of the challenges that these populations face.”

Getting the word out

To make her research more accessible, Bowling recently launched a podcast with clinical psychologist James Slavet. “The goal of the podcast is to provide parents with realistic tips to promote health in kids with disabilities. We try to include the science in a digestible way for parents who are overwhelmed with misinformation on social media.” The podcast is called “Healthy Enough” because Bowling understands that “good enough” is often better than “not at all.”

“We work really hard to make sure that perfection is not the enemy of good. Oftentimes in our society, it seems like it’s all or nothing. You’re either living on a co-op in Maine raising your own blueberries, or else you’re eating McDonald’s three times a day. Most of us don’t exist in either one of those spaces.”

“Most of us are just trying to navigate a very busy, very full life with many competing interests. So we try to help parents understand the incremental changes that can have real impacts on their child’s health and well-being without everything turning into a huge struggle.”



EMBRACING LUNCHTIME

Measuring the impact of time on school nutrition

PRINCIPAL INVESTIGATORS



Juliana Cohen, Sc.D.

Associate Professor, Health Sciences

Research Interests:

- Health disparities
- Nutrition
- Public health



Eleanor Shonkoff, Ph.D.

Assistant Clinical Professor, Health Sciences

Research Interests:

- Nutrition
- Childhood obesity
- Community-based interventions

The Anchorage School District had a problem — not all students were thriving academically. To give their students the best chance at success, the district’s leaders turned to an unorthodox solution: nutrition and activity.

“There’s growing evidence that what kids eat and how much they move impacts their behavior and academic performance,” explained Juliana Cohen, an associate professor of Health Sciences at Merrimack College. “Nearly 30 million children in the United States receive a school meal every day. And many children from low-income households rely on school meals for up to half of their daily energy intake.”

Shortchanging school lunch and physical activity

Although there are regulations governing what kind of food schools should serve, there is no national standard for the length of a school lunch period. “By the time kids stand in the lunch line, wait for their food, and walk to their table, some may only have five minutes to eat,” explained Cohen.

For children in low-income households, school lunch is often the most important meal they eat. School officials in Anchorage hypothesized that by extending the length of lunch breaks, children would have enough time to get the nourishment they need to thrive.

In conjunction with the longer lunches, the Anchorage School District wanted to extend recess and add movement breaks into the school day. Like school lunch lengths, there is also no national standard for physical activity in schools. While most states have policies mandating physical activity, the majority of children don’t get the recommended 60 minutes of moderate to vigorous activity a day.

Cohen said, “When I heard that Anchorage was going to test longer meal times and more movement breaks throughout the day, I was intrigued and immediately offered my help.”

Piloting a better path

The school district gladly accepted Cohen’s assistance in evaluating their pilot wellness initiative, and last December, she flew to Anchorage to conduct student surveys and focus groups with teachers, principals, cafeteria staff, and parents. Professor Eleanor Shonkoff, an assistant clinical professor of Health Sciences at Merrimack College, joined forces with Professor Cohen to develop the survey and analyze the results. Back on campus, Merrimack graduate and undergraduate students also assisted with data entry, coding and analysis.



After reviewing the focus group data and surveying thousands of students on their self-reported hunger, happiness, and stress levels, the team found that longer lunch periods and more opportunities for physical activity had the potential to reduce students' hunger and improve behavior in the classroom.

“Even though teachers had to cut a few minutes of academic time to ensure more movement and eating, they noticed that their students were better learners in the classroom,” explained Cohen.

“Longer lunch periods also allowed for more social and emotional learning because children had the time to talk with their friends and teachers in a calmer, less rushed environment,” added Shonkoff. Based on the results, the Anchorage School System is planning to expand the pilot program when schools return in person next year.

Advancing the future of wellness

As the founder of the NOURISH Lab, an interdisciplinary research lab in the School of Health Sciences at Merrimack College, Cohen and her colleagues evaluate novel interventions and policies to address diet-related health disparities in children.

In collaboration with Merrimack graduate and undergraduate students, they are making an impact on children in Anchorage — and in their local community.

Locally, NOURISH Lab members work with the student-powered Food Recovery Network to ensure surplus food from Merrimack's campus is delivered to people in need and to raise awareness about food insecurity; they also advocate for childhood obesity issues and provide valuable assistance to local public schools.

“NOURISH is an acronym that stands for Nutrition Opportunities to Understand Reforms Involving Student Health, but I think the word ‘*nourish*’ really sums it up,” explained Cohen.

“At the heart of our research, we want to show kids that they are cared for and loved by providing them with opportunities to eat healthy, delicious food.”



Aging in our cells (and ourselves)

Unlocking the secrets to longevity



PRINCIPAL INVESTIGATOR

Leena Bharath, Ph.D.

Assistant Professor, Health Sciences

Research Interests:

- Age-associated metabolic dysregulation
- Mitochondrial function
- Inflammaging

To Assistant Professor of Health Sciences Leena Bharath, a single cell is endlessly fascinating: “With electron microscopy, we have the ability to visualize the tiny organelles in cells, and it’s a universe in itself. Mystery lives in the cells. It’s like detective work, figuring out how things work.” In her laboratory at Merrimack College, Professor Bharath may be contributing to the answer to one of the greatest mysteries facing humankind: how to extend life. And she’s not interested in just living longer; Professor Bharath wants to extend the “health span,” increasing the number of healthy years we enjoy.

We spoke to Professor Bharath about her National Institutes of Health (NIH) funded research in cell biology and about the pharmaceutical drug Metformin.

Q: How did you come to focus on this particular research?

A: I started at the micro level examining cellular pathways. Sometimes something can go wrong in this tiny cell, and it then perpetuates and brings down the entire organism. It made me curious to understand what was happening at the cellular level. How can we prevent some of these changes, or fix them, so that the macro level is functional and there’s no harm from aging?

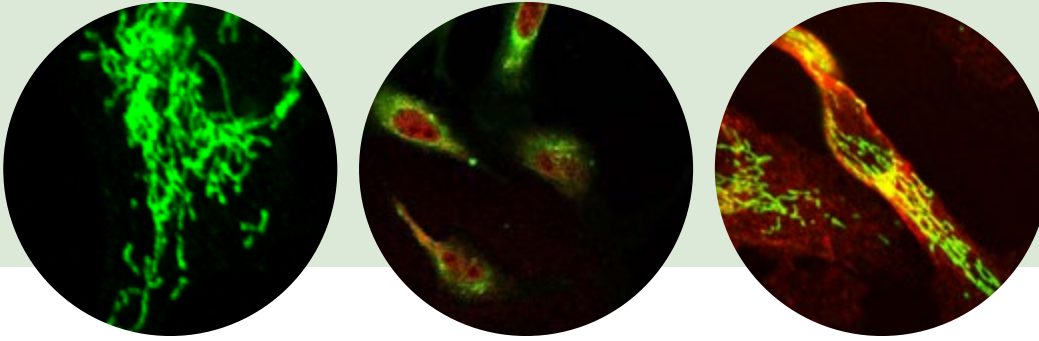
Q: Tell us about the cellular aging processes you’re studying.

A: “Inflammaging” is a chronic state of inflammation that happens as we age. It eventually results in cellular tissue damage, which then propagates or accelerates biological aging. Inflammaging seems to be related to the fact that as we age, we accumulate excess organelles in our cells, damaged dysfunctional proteins and so on. That’s where autophagy comes in. Autophagy is our cellular cleanup system, a way to take out the recycling. Cells put all that excess and misshapen material into an autophagosome, which is like a trash bag, and bring that to a recycling bin called the lysosome. As we age, autophagy slows down. This decline has been linked to conditions such as dementia, Alzheimer’s, Parkinson’s and other neurological conditions. In my lab, we are focusing on how autophagy relates to diabetes, obesity and immune cell aging.

Q: What’s an example of a “mystery” you’ve found in studying cells?

A: When I was looking at the immune system, at white blood cells, I compared samples from people around 30 years old to those of people over age 60. Our immune systems decline as we age, so I was expecting the mitochondria from the older people’s samples would be slower and not as efficient. To our surprise, there was demonstrably more mitochondrial activity in the T-cells from older subjects than from younger subjects. So that was a mystery.

When you find something contrary to your expectations, the first thing you have to do is run more experiments to prove that what you’re seeing is true. Once that’s confirmed, as it was here, you need to broaden and reframe your research questions.



Images from the MitoCure lab of microscopic endothelial cells.

That's an exciting part of doing science.

So, what was happening? The older group, because they were using their mitochondria so much, they were actually creating an imbalance within the cell, overproducing something called reactive oxygen species.

Remember, for older individuals their autophagy is lower. They were making more reactive oxygen species, but with lower autophagy, there was less clearance of those molecules, leading to inflammaging.

Q: Can you tell us about the so-called “anti-aging drug” Metformin?

A: There's a popular book by Harvard Professor of Genetics David Sinclair, “Lifespan,” that suggests Metformin has the potential to extend the human life span to 120 years. Nir Barzilai, the director of the Institute for Aging Research at the Albert Einstein College of Medicine, is leading another study to examine Metformin's effects.

We are kind of testing this drug backward. Already on the market, Metformin is a prescription drug for diabetes management. That said, nobody really knows the mechanism of action of Metformin. It's not metabolized in the body. You take the medicine and when it gets excreted from the body, the molecule is still intact. But somehow it produces all these beneficial effects in the human body. We think that Metformin is promoting autophagy.

All the research points toward the possibility that Metformin could be taken to improve health span, but I'm not involved in those medical studies, I'm just focusing on the cell.

Q: What can we do to promote autophagy and slow the effects of aging?

A: That's a great question. There are lifestyle changes we could make to naturally enhance autophagy in our cells and the first one will sound very familiar: You could exercise more! Exercise is a great promoter of autophagy and I would encourage more people to work out. A second habit that seems to help is calorie restriction, like you would experience with a pattern of intermittent fasting. The logic of calorie restriction is pretty straightforward: If you deprive your cells of a constant flow of energy from food, they will try to clean up and recycle what they have — that's autophagy — and it promotes overall health.



GREEN TECHNOLOGY

Phytoremediation and the power of botany



PRINCIPAL INVESTIGATOR

Azam Noori, Ph.D.

Assistant Professor, Biology

Research Interests:

- Phytoremediation
- Biotechnology
- Natural medicines

It almost sounds like science fiction: Someone uses a small, inexpensive machine to extract petroleum waste, lead and arsenic from contaminated soil. But, over the course of six months, Merrimack Assistant Professor Azam Noori did just that—removing 55 percent of contaminants from brownfields near oil refineries in Tehran. She calls this machine *Leucanthemum vulgare*. You might know it as an oxeye daisy.

✘ “Brownfield” describes previously used industrial or commercial land with suspected soil contamination from hazardous waste.

Plants as technology

Noori’s research focuses on phytotechnology, the use of plants as technology, and she specializes in phytoremediation, the practice of using plants to remove environmental contaminants. At its core, the process is simple: First, you seed a contaminated area, then you let the growing plants draw contaminants from the soil, and last, you harvest and destroy the contaminated plants.

“We don’t want the plants to die where they are and then get reabsorbed into the soil,” she explained. However, the knowledge required to safely conduct these processes is broad and multidisciplinary. “My work involves finding the right plants to remove contaminants. Doing so requires an understanding of plant physiology, plant molecular biology and genetics,” Noori explained.

“I need to see what happens to the expression of genes, growth and hormones when the plants are exposed to contaminants.”

✘ In Professor Noori’s projects, the plants are harvested after one growing season and destroyed. Other phytotechnologists have proposed using plants to absorb heavy metals like nickel and then harvesting the plants in a process of “phytomining.”

Furthermore, phytoremediation requires understanding how plants function within the greater ecology. “We want to make sure we are not using a plant that would be eaten, not even by animals. It should be something that’s right for the food chain and doesn’t end up in the environment again in another form.” The oxeye daisy, for example, is not something local grazing cattle would eat.



Professor Noori and students conducting experiments in Merrimack College's Palmisano Greenhouse.

Nanotechnology: Exciting possibilities, new forms of waste

Noori is already looking ahead to different applications of her work. New frontiers in nanoscience, including the ability to manipulate atoms and molecules at scales of just billionths of a meter in size, have allowed scientists to discover new quantum-mechanical properties of various elements. For example, nanoparticles of silver may be used for drug delivery systems or to sterilize clothing without hot water.

But what happens once these tiny particles are released into the environment? Noori is anticipating a greater need for phytoremediation. "I have nothing against nanotechnology — there are nanoparticles in our cell phones — but as somebody who cares about the environment, I'm wondering what's going to happen in 20 years when we have a lot of nanoparticles in the environment?"

Noori is researching what happens when nanoparticles get into plants, and how they might get into our food. "I'm looking at the effect of nanoparticles on the membrane transporters of tomatoes." Using an inductively coupled plasma spectrometer machine, Noori was able to isolate differences between the ionic forms of silver and nanoparticles of the plant.

- ✕ Inductively coupled plasma spectrometers separate the individual constituent elements in a sample so that they can be identified at the milligram or nanogram level.

The data proved that silver nanoparticles had, in fact, accumulated in plants. "That was a big deal because researchers have been reporting the concentration of silver in plants, fish, amphibians and other organisms, but they couldn't distinguish between different forms of silver. "The spectrometer enabled me to separate the two."

Furthermore, this study showed that plants exposed to silver nanoparticles experienced less toxicity than those exposed to larger, ionic forms of the metal.

A brighter future

Noori's interest in phytotechnology was born out of her love of nature. She recognizes the enormity of the environmental challenges we face, but says, "I'm an optimistic person. With the research we're doing, more government support for science, and more people concerned about the environment and doing their part, I do believe we're headed in a positive direction."



STARS IN THEIR EYES

Mapping the universe from Merrimack



PRINCIPAL INVESTIGATOR

Chris Duston, Ph.D.

Assistant Professor, Physics

Research Interests:

- Mathematics of gravity
- Mendel Observatory

The sky is not the limit for the Merrimack College Astronomical Research Group (MCARG). With the guidance of Assistant Professor of Physics Chris Duston, undergraduate students at Merrimack are making original contributions to astronomical research, using the College's Mendel Observatory and other resources to scan the galaxy and observe planets, double stars and nebulae. Among the celestial bodies they've studied in detail are:

Star clusters

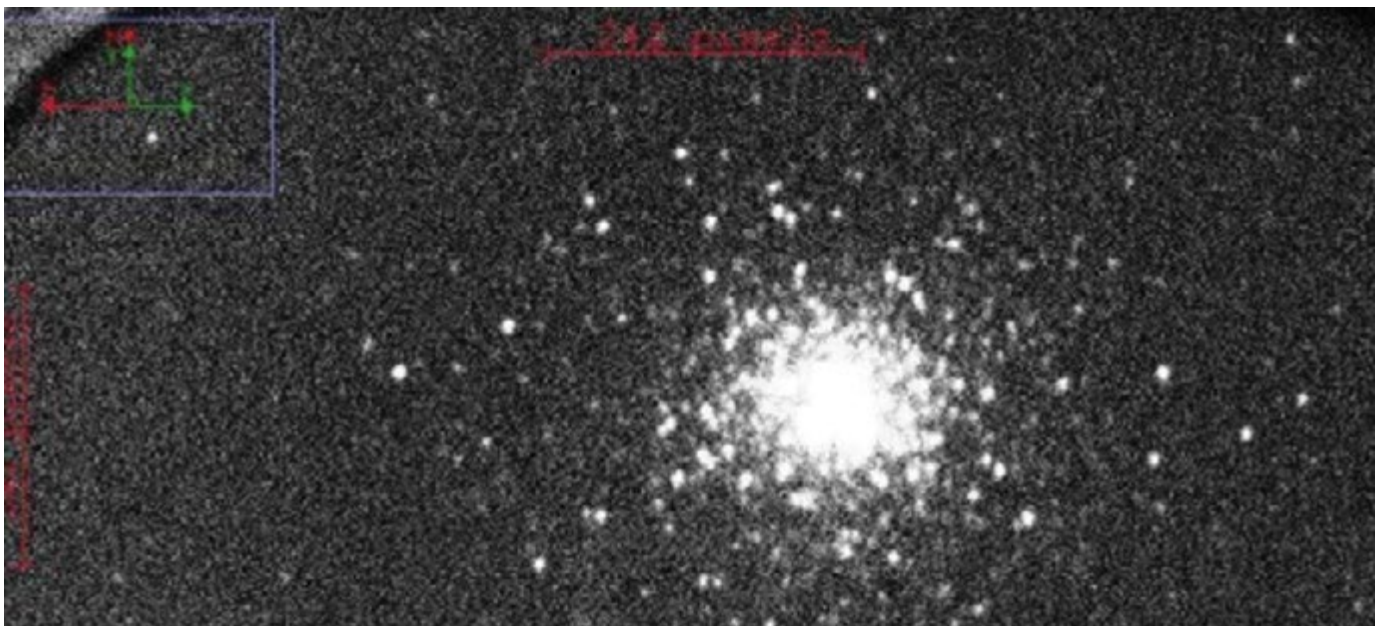
Globular star clusters are gravity-bound groups of hundreds or millions of old stars, while open star clusters have less than a hundred younger stars. James Biegel '18 studied examples of both in "Photometry of Star Clusters from Mendel Observatory" (Across the Bridge, 2019). His project involved creating Hertzsprung-Russell (or H-R) diagrams, scatter plots that astronomers use to understand the evolution of star clusters. Biegel notes in the paper that his research demonstrated the capability of the Mendel Observatory to obtain "scientifically relevant photometry data."

Cataclysmic variable stars

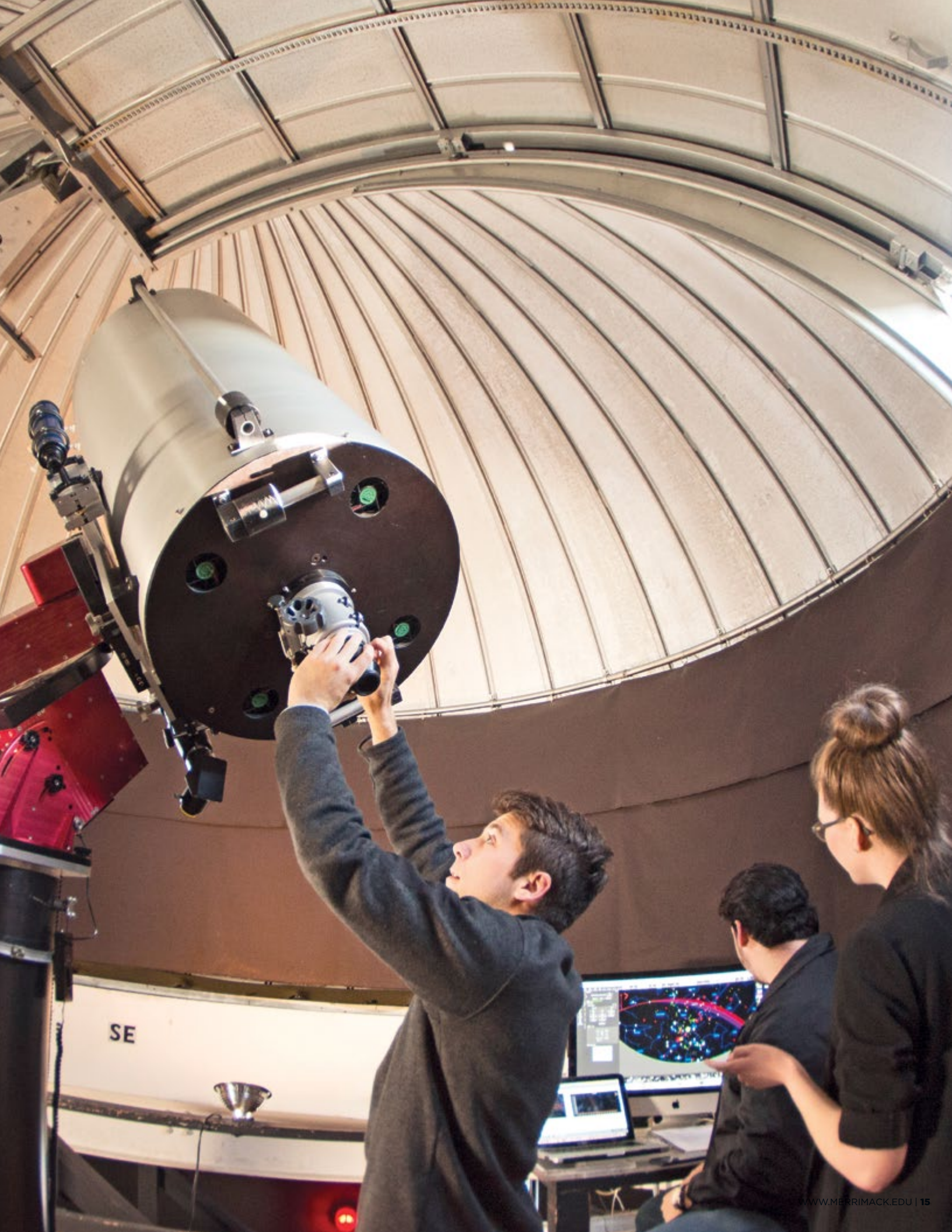
Cataclysmic variable stars irregularly change in brightness — and occasionally explode. In a study published on their website, MCARG used iTelescope, a network that allows users to remotely access public telescopes, to shed new light on a mysterious cataclysmic variable star called V426 Oph, a binary system whose brightness was noted to change periodically.

Asteroids

Duston reports that current MCARG students have been taking images of the asteroids Vesta and Nemausa.



M3 through a red filter. Image taken at Merrimack Observatory.



SE

MEDIA MARATHONING

The surprising emotional benefits of “binge watching”



PRINCIPAL INVESTIGATOR

Lisa Glebatis Perks, Ph.D.

Associate Professor and Department Chair,
Communication and Media

Research Interests:

- Media studies
- Binge watching
- Media representation

“Are you still watching?” It’s a common prompt on screens across the nation — and a clear signal that you’ve strayed into binge-watching territory. But do you need to feel guilty? Maybe not, says Merrimack College Professor of Communication and Media, Lisa Glebatis Perks.

According to Perks, binge watching — or “media marathoning,” to borrow her own term — can actually provide a host of benefits, particularly in times of high stress. “People often feel guilty about the behavior, worrying that they’ve wasted time.” Perks said. “But I think by feeling guilt, people overlook the positives, like sharing the stories with family and friends and making those connections.”

One of the major findings of Perks’ research, which has been informed by open-ended survey data, but also one-on-one interviews, is that many people are intentional about their marathoning behaviors — it isn’t always accidental. “A lot of folks were very involved with the characters. They were intentionally investing a lot of time and cognitive resources in the stories,” she noted.

Binge-watching while bedridden: A healthy coping mechanism?

Perks has also discovered that extensive media engagement occurs more while people are navigating health challenges. The trend is so striking that in 2019 she dedicated two academic journal articles to the topic: “Media Marathoning Through Health Struggles: Filling a Social Reservoir” (Journal of Communication Inquiry) and “Media Marathoning and Health Coping” (Communication Studies).

“That data was really captivating. I found a lot of people were marathoning while sick for social reasons, because they were lonely. But it also was for social connections — you know, if you go back to work after being sick and you don’t know what shows everyone else is talking about, then there’s not as strong of a connection,” she explained.

Her interest in the topic of illness and media consumption was enhanced by one particularly profound story.

“One of my interviewees told me that she had experienced a miscarriage several years earlier. While she recovered, she read the whole Harry Potter series again, and for her, seeing the difficult decisions the characters made and their ability to achieve positive outcomes through hardship, that helped pull her through. And that made me want to research more.”

Perks’ recent work builds on her 2015 book, “Media Marathoning: Immersions in Morality,” which takes a deep dive into the behavioral, emotional and cognitive effects of media bingeing.

One of the core theories of the book is that extensive engagement with a text, whether it be a book, film, or television show, can actually be a positive learning experience, as it affords viewers or readers the chance to apply lessons from the narrative to their own lives and personal struggles.

“People are so heavily engaged with these stories that they often distill or discern important life lessons or broader messages about humanity from the texts,” Perks explained.

Exploring the influence of the pandemic

But how has the COVID-19 crisis impacted marathoning behaviors? We do know that with countless people homebound due to lockdown restrictions, media engagement has exploded.

Comcast reported that in early March 2020, the average U.S. household watched 57 hours of content per week, but by May 2020, that number jumped to 66 hours.



Perks suggests that the spike in viewership can be attributed — at least in part — to the fact that stories can help viewers cope with pandemic-driven anxieties. “Amid the stress of the pandemic, I think there’s a strong measure of hope around messages related to togetherness and working in pursuit of a common goal.”

Looking ahead, Perks is eager to continue exploring the impact of the pandemic on media bingeing, but with an emphasis on engagement with what she labels “nostalgic” content: in other words, movies, films or books that viewers or readers have consumed in the past, and then returned to later in life. Her shift to focusing on the impact of nostalgic bingeing can be attributed to her own personal marathoning behaviors over the past year.

“I’ve been watching old movies with my family, and I don’t think I’m alone in that,” Perks said. “I’ve seen some anecdotal evidence, but I want to gather interview data about how people are using old stories as they work through this pandemic — hopefully with some optimism.”



Amid the stress of the pandemic, I think there’s a strong measure of hope around messages related to togetherness and working in pursuit of a common goal.”

— Lisa Glebatis Perks

OUTDOOR FUN

for mind and body



PRINCIPAL INVESTIGATOR

Jessica Peacock, Ph.D.

Assistant Professor, Health Science

Research Interests:

- Physical activity and academic performance
- Pedagogical innovations

Jessica Peacock, assistant professor of Health Science, wants to help kids learn science. Her suggestion? Send them to camp to engage in outdoor activities.

Active Science outdoors

Upon arriving at Merrimack, Peacock joined her colleagues Kyle McInnis, Kevin Finn and April Bowling on the Active Science research project, which uses mobile apps and activity monitors to promote physical activity and STEM learning. While earlier efforts were focused on indoor exercise, the latest iteration includes outdoor venues, including day camps.

“We took this whole idea and mission to promote physical activity and improve science learning to outdoor settings,” said Peacock. When the Merrimack Valley YMCA partnered with Lawrence public schools to provide a three-week day program for underprivileged fourth graders at Camp Otter in Salem, NH, Peacock and her team recognized the possibility for a research project.

“It was an opportunity for these children to be outside in an environment that may be totally new to them. Because they live in an inner city, and resources are often limited, they’re not able to explore camp-type environments and engage in the outdoors,” Peacock explained.

“The outdoor environment not only enhances physical activity; it allows kids to explore some of the concepts they’re learning in school and apply them to team-based activities in a practical way.”

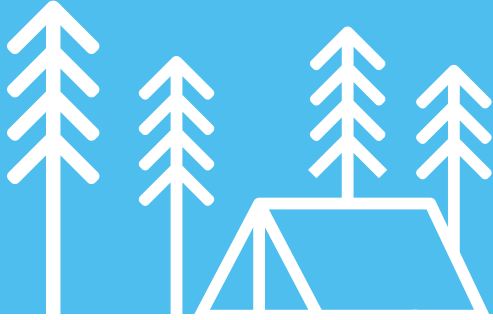
STEM benefits and more

The camp-based curriculum included environmental science lessons, with topics like oil spills, recycling and natural disasters. Traditional camp activities proved to be natural candidates for demonstrations of physical science. For example, paddling a canoe incorporated lessons on propulsion, resistance, friction and currents.

At the conclusion of the camp, Peacock and her colleagues reported progress on multiple fronts:

- ⬆ Participants took part in more than an hour of moderate to vigorous activity, an increase of 25 percent over previous indoor programs.
- ⬆ Science knowledge improved significantly.
- ⬆ Students reported high levels of enjoyment and engagement with the science material.

“We found that when students are outside, they are more likely to engage in the moderate to vigorous cardiovascular activity that correlates to improvements in academics,” Peacock said.



“It was like going to Disney World for some of these students, and having the opportunity to engage in these lessons is motivating in itself. Students are more apt to be attentive to lessons that aren’t taught by their teacher in school.”

Next steps

Going forward, Peacock plans to study a number of variables in more detail — like whether moderate versus vigorous activity makes a difference in learning and whether gender plays a factor in a participant’s experience — and perhaps track some participants longitudinally to evaluate long-term effects. Peacock would also like to explore the program’s social and emotional benefits.

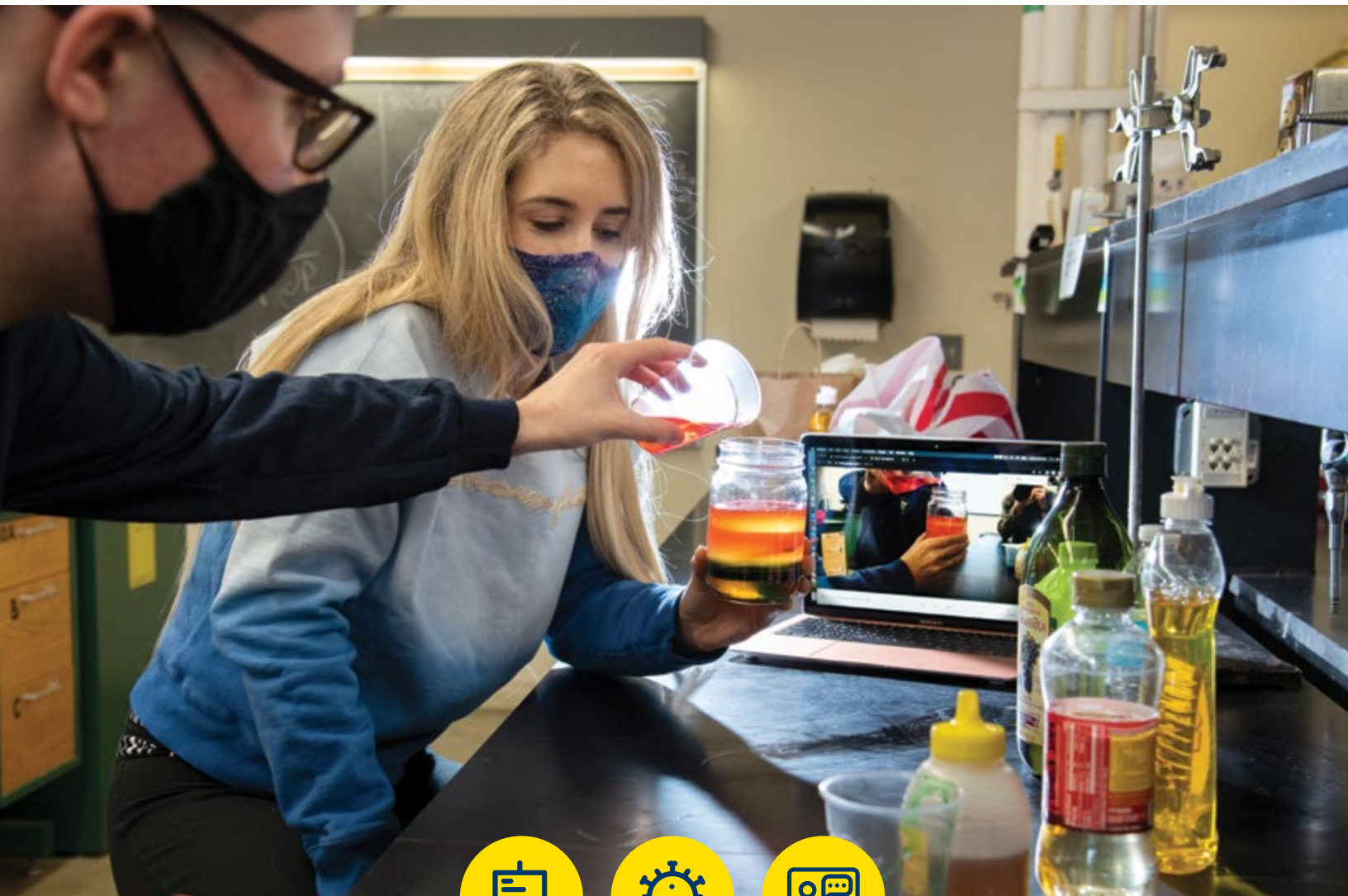
“In this camp environment, the kids seemed more likely to work as a team and cheer each other on when they were trying to overcome a challenging obstacle.”

The publication of the findings included anonymous comments from teachers who reflected on the value of the program. “Boating: many students thought they could never do it. They were so worried and felt incapable. After going out the first day, they gained confidence. They also developed their understanding of how to cooperate to row the boat where they wanted it to go. Confidence soared after they accomplished the tasks! Very different from what they usually get to do.”

One teacher summed up the program well: “Being in nature can be therapeutic for students who are often surrounded by chaos.”



PANDEMIC PEDAGOGY



The coronavirus pandemic disrupted teaching at Merrimack College as faculty, staff and students had to adapt to new circumstances. Merrimack faculty reimagined semester-long course structures, got creative with their classroom spaces (or lack thereof) and found new ways to provide the quality teaching for which they are known. Many of the innovative projects and teaching methodologies proved so successful that they will be incorporated into future lesson plans beyond the pandemic.

Moreover, Merrimack professors are publishing descriptions of these pedagogical models in academic journals and publications — serving as examples of best practices for other institutions of higher learning around the country.

Enhancing student soft skills: Exploring the efficacy of virtual service learning



PRINCIPAL INVESTIGATOR

Jimmy Franco, Ph.D.

Associate Professor, Chemistry and Biochemistry

Research Interests:

- Biochemistry
- Chemical education

When the pandemic forced Merrimack College to transition to a remote-learning model, faculty in the Department of Chemistry and Biochemistry were compelled to get creative. From offering pre-recorded course materials to implementing live-streaming labs and virtual classes, the department worked hard to ensure a quality learning experience for all students.

Faculty also found a way to continue Merrimack's proud tradition of service learning — in a virtual format. Students were asked to contribute to their community by presenting basic science activities to elementary school students over Google Meet. Kelly Dovi, a Merrimack student whose capstone project encompassed this work, and department professors Joseph Chiarelli and Jimmy Franco detail the experience in an article for the *Journal of Chemical Education*, "Service Learning for a Multiple-Modality Environment."

We sat down with Associate Professor of Chemistry and Biochemistry Jimmy Franco to learn more.

Q: What is service learning? And why is it so important at Merrimack?

A: Service learning is essentially the process of learning something new while also giving back to the community. Merrimack has a really nice service-learning tradition. Pre-pandemic, the entire campus has come together for service-learning events, with students going to different sites to help with various community service programs. One time I went with a group of students and we helped clean up a field that provides produce for a food pantry.

Q: You managed to continue the Merrimack tradition of service learning throughout the pandemic, but in a virtual format. Can you tell me more about the experience?

A: We had students present an activity to elementary school students, teachers and parents using Google Meet. The students were tasked with choosing a suitable topic and designing the activity so that the elementary students could follow along online and complete it, either in class or at home with adult supervision. And all of the activities used common household supplies. For example, one of the activities was creating a volcano in a bottle, while another was extracting DNA from strawberries. The fantastic thing about the virtual format was that it allowed us to easily reach many students.

Q: What would you say the primary value of service learning is for your students?

A: One thing I've talked about a lot is the importance of soft skills, a set of attributes that allow a person to effectively work with and interact with others. These skills are critical for any professional, regardless of industry. So, our challenge was figuring out how to integrate soft skills with chemistry knowledge. And the service-learning project was a fantastic solution, as it allowed our students to engage with chemistry and practice communicating concepts to audiences who are not familiar with the material.





Q: How did your students respond to the challenge?

A: We obtained feedback from our students from an anonymous Google Forms survey, and they seemed to really like the assignment. My colleague Assistant Professor of Chemistry and Biochemistry Joe Chiarelli taught an advanced chemistry class and it was interesting to see his students navigate the challenge, because I think they get caught up in the advanced terminology. He had to keep stressing, “remember, you’re explaining this to kids — an elementary student isn’t going to understand the terms we learned earlier this semester.” So, it makes the students really think about what they’re saying and how they’re communicating the concepts, which is an essential skill.

Q: Will you continue the virtual service-learning initiative after the pandemic?

A: Yes! The virtual service learning is a great supplement to the lab work our students are doing. And going forward, I think it would be great for every student who comes through our department complete at least one service-learning assignment. It would be nice to see them give back and do more.

Q: You’ve explained that further research may be needed into the efficacy of virtual service learning for the audience. Where do you plan to take this next?

A: One of the things we’d like to do is get approval to assess the response of the elementary school children and determine whether they learn better with an instructor in person or virtually. And we’d like to ascertain whether virtual service learning has a different impact contingent on the socio-economic group of the audience. So, one thing that’s unique about Merrimack is our proximity to Lawrence, which is a lower-income area compared to North Andover. And because of that disparity in resources, I’d like to see whether that makes a difference in terms of virtual service-learning efficacy for the elementary school students. The ultimate goal is to make these programs as impactful as possible.

Environmental fieldwork on campus



PRINCIPAL INVESTIGATOR

Cynthia Carlson, Ph.D.

Associate Professor, Civil Engineering

Research Interests:

- Water resources engineering
- Public health

Without indoor labs or group field trips, Associate Professor of Civil Engineering Cynthia Carlson drew on her personal background to develop a new lab for her Environmental Engineering course.

“I have some experience with field monitoring rather than working in a traditional indoor lab,” she said.

After demonstrating how to test the water quality of Mendel Pond, she assigned her students the task of testing four other bodies of water on campus, and remote students were encouraged to test water sources local to wherever they were.

The students tested the water for phosphate, nitrate, pH, dissolved oxygen, biochemical oxygen demand, and turbidity, a measure of a liquid’s opacity. These records of how much oxygen and sunlight reaches organisms in each ecosystem set a baseline for ecological health and will become more meaningful as future classes participate in the project.

“As we do this again next year and in subsequent years, we will be able to monitor the environmental changes in local bodies of water,” explained Carlson. Data will be shared publicly through monitorwater.org.





.....

“Last spring when labs went completely remote, it was so difficult for me. Being able to do the work again in person has definitely been so much easier. I’ve been able to really pay attention and I can learn a lot better. I feel more engaged and interested in my work. It’s been really motivating.”

— Delia Cormier, a student in Carlson’s course

BOOKS BEHIND BARS

Accessing education in jail

PRINCIPAL INVESTIGATORS



Brittne Aiello, Ph.D.
Associate Professor, Criminology
and Criminal Justice

Research Interests:

- Incarceration and motherhood



Emma Duffy-Comparone,
M.F.A.
Assistant Professor, English

Research Interests:

- Fiction writing

Nearly 1 out of every 100 people in the United States is incarcerated. Once they're behind bars, they lose their freedom and often their access to higher education. In fact, according to the Vera Institute of Justice, only 35 percent of state prisons provide college-level courses — and jails, which typically house local residents serving short-term sentences, provide far fewer educational opportunities.

However, Brittne Aiello, an associate professor of Criminology and Criminal Justice at Merrimack College, knows that education is a proven pathway to a brighter future. That's why she and her colleague Emma Duffy-Comparone, an assistant professor of English, started the Jail Education Project, an initiative that brings credit-bearing college courses inside the walls of local community jails.

“National studies show that incarcerated people who have access to education reoffend at drastically lower rates, have a better chance of finding jobs and are more confident in themselves,” said Professor Aiello.

Helping envision a better life outside the walls

According to the Rand Corporation, incarcerated people who participate in correctional education programs have 43 percent lower odds of recidivating than those who did not. “Jails are the gateway to the criminal justice system,” explained Professor Aiello. “We often encounter people who were just incarcerated for the first time, and we have the opportunity to make an impact on their lives.” Professor Duffy-Comparone added, “Merrimack is located in close proximity to the jails where we offer classes, so we can often cultivate a longer-term relationship with inmates after they're released.”

Teaching Merrimack courses behind bars

So, how does college work in an environment where students have limited access to technology, little control over their day-to-day schedules, and could be released well before final exams?

The first essential ingredient, according to Professor Aiello, is Merrimack's staunch support. “President Hopey encouraged us to pursue the initiative, and my department provided essential resources and support.”

Second, professors Aiello and Duffy-Comparone continually improve the program based on lessons learned along the way. Currently, they're running two courses popular with incarcerated people — Oral Communication and Counseling Across the Professions. Each course is taught on a compressed 8- to 10-week schedule to give students the best chance of finishing before being released.



All courses are capped at 15 participants — the discovered “magic number” for good engagement and effective classroom management. And all courses are credit bearing and designed to fit most general educational requirements so they can easily transfer to schools on the outside.

Finally, both professors Aiello and Duffy-Comparone were quick to credit their teaching assistants (TAs) for keeping the program afloat in the face of myriad logistical challenges. “They go in twice a week at night just to staff the computer labs because the students won’t be allowed in otherwise,” Duffy-Comparone explained. “They enter potentially stressful environments with maturity and humanity, and they do great work.”

Changing lives now and in the future

To date, dozens of incarcerated people have earned college credits through the program, and 17 TAs have gained valuable teaching and research experience. Thanks to these initial successes and a generous grant from the Bernard and Audre Rapoport Foundation, the Jail Education Project will launch the new Bridge Program this fall. This initiative will expand course offerings to include Creative Writing, Intro to Criminal Justice, and Intro to Psych, and will provide one-to-one coaching for the participants involved. The Bridge Program will also begin tracking the reoffense rates, employment and educational attitudes among students after release.

Beyond its potential to reduce recidivism rates, the Jail Education Project has given incarcerated people a new perspective on education and their own abilities. One student said,

“It has encouraged me and reminded me that I can always learn anything with practice and an opportunity, like this Merrimack College course.”

“Jail can be a pretty negative place and many incarcerated students have had some very negative experiences,” explained Professor Aiello. “But when they take our courses, they often realize just how smart and talented they really are.”



5,837

The number of people in Massachusetts jails, as of Spring 2021



26 years

The length of the ban on federal financial aid for incarcerated students, lifted in December 2020



~463,000

The number of incarcerated people now eligible for Pell Grants



48 percent

The decline in recidivism for incarcerated people who participate in college education programs

Source: Vera Institute of Justice.



Predicting cognitive health through **WALKING**



PRINCIPAL INVESTIGATOR

Ruth McKenzie, Ph.D.

Assistant Professor, Human
Development and Human Services

Research Interests:

- Cognitive aging
- Physical functioning and cognition

How fast do you walk? How fast could you walk without running? According to research by Assistant Professor Ruth McKenzie, those questions could help determine how likely you are to develop Alzheimer's or other cognitive impairments later in life.

Testing more than a thousand twins

Professor McKenzie's work is part of the larger Vietnam Era Twin Study of Aging (VETSA), a longitudinal study that follows research subjects over a number of years.

Drawing from a registry of male twins who served in the U.S. armed forces during the Vietnam War era, VETSA was designed to study cognitive decline and dementia by identifying behaviors related to the development of age-related diseases. The use of twins, some of whom share an upbringing and all of their DNA (identical) and some who share an upbringing and only about half of their DNA (fraternal), allows researchers to isolate factors such as genetic variability in their analysis.

Beginning in 2003, VETSA researchers invited 1,237 individual twins to spend a day in their lab taking a battery of cognitive and physical tests; for example, measuring how well they could recall a list of numbers or how fast they could walk ten meters.

At the initial testing, the men were at the relatively young average age of 55. Age-related diseases like Alzheimer's tend to be diagnosed in patients after age 60. "We had them come back six years later and do the same test in order to predict change and see what was actually going on," Professor McKenzie explained. The men were asked to return for a third round after six more years.

What's a pupilometer?

VETSA researchers administer tests to the volunteer subjects using sophisticated equipment that belies the simplicity of the tests. "We use something called a pupilometer that measures the dilation of the pupil in your eye. When you are trying to think really hard and expend some cognitive effort, your pupil dilates."

So, while two subjects may score perfectly on a memory test, like repeating back a list of seven numbers, Professor McKenzie can use the pupilometer to determine whether one of the subjects had to work harder to get the same result.





It's not just movement that helps, it's also about hitting a peak of that moderate to vigorous activity level."

As veterans of the U.S. armed forces, they had taken similar tests when they entered the military, at an average age of 20. Because those results are accessible through the Department of Veteran Affairs, VETSA researchers now have data for each man at ages 20, 55, 61 and 67.

"These men are representative of the population according to the census data in terms of marital status, education and socioeconomic status. But we don't have a great deal of racial diversity, which is probably the biggest limitation of the study," Professor McKenzie admits. Approximately 90 percent of VETSA subjects are white men.

Walking your way to better health

The VETSA researchers measured two kinds of walking speeds: the subject's regular pace, and how fast they could walk without running (rapid gait speed). "Gait speed is related to all sorts of adverse outcomes," Professor McKenzie reports. "If you are slower, you're likely to have higher rates of falls and frailty and mortality — even morbidity. Cognitively, slower gait speeds correlate with declines in memory, executive functioning and processing speed."

Correlation is not causation, but Professor McKenzie has found that subjects who increased their gait speed between lab visits "actually improved in some of those cognitive domain performances as well. That's what I think is the coolest thing, because we're looking at genes and environment, but environment is where you can have an intervention. If you improve gait speed, you can also improve cognitive domains like processing speed and memory performance."

Professor McKenzie points out that while a person's usual gait speed has some predictive value, their rapid gait speed has a higher correlation with better results. "It's not just movement that helps, it's also about hitting a peak of that moderate to vigorous activity level."

The National Institute on Aging (NIA), which funded VETSA's first three studies, has funded a fourth go-around of tests for the summer of 2021, with participants now averaging age 73.

Professor McKenzie has submitted her own grant proposal to the NIA focusing on how physical abilities relate to aging and hopes to purchase fitness trackers for her subjects to obtain more objective measures of their activity. "I'm interested in learning whether it's vigorous activity or just a minimum of movement that's more important to cognitive health. Come back and talk to me in a few years."



FOLLOWING THE MONEY

Nonmarket forces in American economies



PRINCIPAL INVESTIGATOR

Rodrigo B. DeMello, Ph.D.

Associate Professor, Management

Research Interests:

- Competitive strategy
- Emerging markets
- International business

Growing up in Brazil, Associate Professor of Management Rodrigo B. DeMello saw firsthand the disruptive effects of government policies. “In Brazil in the ’80s and early ’90s, we were living under severe inflation. Brazil changed currency three times in the five years before the monetary stabilization occurred in 1994,” DeMello said.

“Nobody knew what to expect, what would be the next decree, so business as usual was chaos. You have the government changing the rules of the game from night to day.”

Recognizing that capitalist markets were not merely about competing businesses, DeMello began researching nonmarket strategies — including how corporations spent resources on political action through lobbying or direct contributions, and how they defended or co-opted social movements that suited them. By introducing these nonmarket forces to their considerations, businesspeople would have a better understanding of how the economy and markets actually worked and could deploy strategies that could bring competitive advantage.

In the U.S., this field re-emerged in importance around 2008 in the wake of the housing crisis. “All of a sudden, the government was bailing out these corporations, and then we had the emergence of China, which is obviously a government-controlled economy.”

Those years also coincided with growing social media channels that empowered and gave voice to a growing social awareness. At that time, DeMello said, “Researchers were trying to catch up with what was going on in the real world.”

One of DeMello’s recent presentations that garnered acclaim from his peers in the Strategic Management Society examined the political posturing against foreign multinational corporations during the initial invasion of

Iraq in 2003. At that time, Republican lawmakers sought to shame corporations that were based in countries that did not support the invasion, and their displeasure was signaled most publicly in the renaming of french fries in the congressional cafeteria as “freedom fries.”

This sudden demonization allowed DeMello and his colleagues to investigate the public filings of 40 multinationals that were targeted by the GOP to gauge their short-term responses. On average, in reaction to the political stigmatization, these corporations spent 23 percent more money on lobbying, spent 9 percent more on external lobbyists, and shifted about 9 percent of their direct political contributions from Republican party candidates to Democrats.

“This is a signal that these companies sent to the politicians. The amount of money is not enough to change an election because there are donation limits,” explained DeMello. “But it’s enough to introduce electoral uncertainty and signal potential punishments in the future.” Another recent work by DeMello delves into how state-owned enterprises in Latin America remain vital and powerful even though various countries have had their politics swing from left to right or have developed democracies out of authoritarian states.

[By laying out all the ways these Latin American corporations maintain their relevance, DeMello hopes to provide insights into how governments play a key economic role and how such enterprises are chartered to advance political agendas both regionally and globally.](#)

DeMello, who considers himself a nonideological pragmatist, believes Americans can learn lessons from our southern neighbors, where politicians have been implicated in corrupt reallocations of national resources. “I think Americans should be very proud of their institutions and their rule of law because this is vital for democracy and to provide a level playing field for businesses.”

“X” marks the spot

Algebra in elementary school

$$1 + x = 5$$
$$2x + 2 = 6$$
$$E=mc^2$$



PRINCIPAL INVESTIGATOR

Rena Stroud, Ph.D.

Assistant Professor, Education and Community Studies

Research Interests:

- Mathematics education
- Quantitative methodology

Can you teach algebra to third graders? Winston School Assistant Professor Rena Stroud and her colleagues at Project LEAP have found success teaching algebraic concepts in elementary schools. Kindergarten is next.

The algebraic gateway

For many of us, algebra is that part of math where you have to solve for x . That’s not hard when we start with $x+1=5$, but algebra also serves as the basis for more complex tools like the quadratic equation. At its core, Albert Einstein’s statement that $E=mc^2$ is a statement of algebra.

Education researchers recognize that algebra is fundamental to success in all manner of STEM-related careers. Unfortunately, many students don’t get a good foundation in algebra.

Awareness of this issue led Massachusetts educational nonprofit TERC to develop Project LEAP: Learning through an Early Algebra Progression. LEAP’s mission is to identify core concepts in “algebraic thinking” and teach them to elementary school children. Age-appropriate examples of these concepts include understanding the meaning of an equal sign, recognizing the variable in a problem, or identifying whether a mathematical equation is true.

- TERC was founded in 1965 as Technical Education Research Centers, but as the group expanded beyond its original technical and vocational mission, they rebranded as TERC.

At a slightly higher level, young students can learn how to use graphs to interpret math functions and express an exponential function in words. “Ensuring that children attain the requisite skills early on in their academic career will put them in a position to be successful when they take algebra in the middle grades,” said Stroud.

Results from a five-year intervention

LEAP recently published its findings from a five-year study in which teachers from 46 schools in three school districts were given specialized teaching curricula for their third, fourth and fifth grade math classes. “The LEAP team spans multiple states, which has enabled us to garner participation from across the country,” explained Stroud.

“Thus far, we have worked with children and teachers in schools in North Carolina, Rhode Island and Massachusetts.”

At the end of every school year, LEAP participants in each grade outperformed their peers. By the end of the fifth grade, they scored 13 percent higher in math — more than a full letter grade — than the control group. A subsequent study showed that this advantage persisted in the sixth grade without any additional LEAP lessons. The rate at which the control group closed the gap with the LEAP students is helping researchers pinpoint where further interventions may be helpful.

Up next, the researchers have developed curricula for younger students. “After completing our initial work in the third through fifth grades, we set our sights on the kindergarten to second grade span,” said Stroud. “We have two current projects at those grades levels and we recently submitted a new grant that would allow us to expand our work with young children.”

A NEW PARADIGM FOR POLICE TRAINING

The Merrimack College Police Academy



PRINCIPAL INVESTIGATORS



Alicia Girgenti-Malone, Ph.D.

Associate Professor, Criminology and Criminal Justice

Research Interests:

- Inequality in the criminal justice system
- Capital punishment



Alyssa Yetter, Ph.D.

Assistant Professor, Criminology and Criminal Justice

Research Interests:

- Stratification
- Mobility and crime
- Domestic violence

Amid a nationwide conversation on the role of policing in America, Merrimack is spearheading an innovative approach to officer education by combining a police academy training regimen with a master's degree in criminology and criminal justice — the first program of its kind in the Commonwealth.

The Merrimack College Police Academy, launching in Fall 2021, will serve as a case study to determine the impact of officers beginning their careers with a higher level of educational achievement.

“We are training the next generation of police leaders,” said Associate Professor Alicia Girgenti-Malone. “While they start out as patrol officers, by completing graduate-level coursework aimed at developing broader perspectives, critical thinking and problem-solving skills, we expect they will rise in the ranks.”

Girgenti-Malone will be overseeing the Merrimack College Police Academy along with the academy's director, Merrimack alum and retired Sergeant Detective Raymond Mooney. Girgenti-Malone will also be working with Assistant Professor Alyssa Yetter to assess the academy's educational and training approach.

A new kind of training

In Massachusetts, the minimum educational requirement prior to academy training is a high school diploma or GED. Bachelor's degrees are also common among police candidates. Local municipalities often hire candidates and then sponsor their training at a local police academy. At Merrimack, things will be different, from application requirements to graduate degree completion.



“We’re offering the academy to students who have already completed their bachelor’s degree,” explained Girgenti-Malone, “and students will be concurrently enrolled in the Master of Science in Criminology and Criminal Justice program.” At the end of the one-year program students will have finished the state police training certification and earned a master’s degree.

During the day, student officers will have a rigorous schedule based on the state’s police training curriculum, which will be supplemented at Merrimack with implicit bias training and additional professional development workshops on officer health and wellness.

While all firearm training and the Emergency Vehicle Operations Course (EVOC) will be done off campus, the student officers and their instructors will use the College’s classrooms and gym facilities. In the evenings, the student officers will take their master’s courses on topics such as criminological theory, justice administration and management, and criminal law and procedure.

Researching police training

The dual-enrollment model will be evaluated for efficacy and researched as a potential model for police reform.

“There’s a history of research on the influence of different characteristics of police officers that has focused on distinguishing between those with a high school diploma or GED and officers with some college or a bachelor’s degree. These studies track a lot of different outcomes, such as their performance in their careers, their career trajectories, and their mental health and wellness during their careers,” said Yetter.

Other scholars have determined that officers with a college degree are almost 40 percent less likely to use force, and that those with at least a two-year degree are less likely to lose their jobs due to charges of misconduct.

Girgenti-Malone and Yetter’s research centers on issues of evolving police training and education methodology.

“Our graduate program’s learning outcomes and our faculty are very social justice oriented,” said Girgenti-Malone.

One of the stated learning outcomes, for example, asks that graduates demonstrate awareness of collaborative efforts among criminal justice, social service, public health, and educational professionals in fostering interdisciplinary strategies to tackle complex social issues. In subsequent years, the researchers plan to follow their graduates through a longitudinal study that compares outcomes with officers who pursue a more traditional path in their training.

“We are hoping to partner with the Municipal Police Training Committee, a state agency, to examine our candidates and approach versus the more traditional approach to police education in Massachusetts,” says Yetter.

PREPARING FOR earthquake catastrophe

A Q&A with Jim Kaklamanos



PRINCIPAL INVESTIGATOR

Jim Kaklamanos, Ph.D.

Associate Professor, Civil Engineering

Research Interests:

- Earthquake site response models
- Geotechnical engineering

Associate Professor of Civil Engineering Jim Kaklamanos entered college thinking he wanted to be a lawyer. Two major global catastrophes — the Indian Ocean earthquake and tsunami in December 2004 and Hurricane Katrina in August 2005 — changed everything, shifting his interests toward civil engineering and designing infrastructures that can withstand natural disasters.

Today, Kaklamanos uses data to test and create models that predict how specific sites will move during an earthquake. He spoke to us about his research, and how his models can be used to create safer building codes and better hazard maps.

Q. You work in the field of geotechnical engineering — can you tell me more about your discipline and what it entails?

A. Geotechnical engineering is the subdiscipline of civil engineering that deals with earth materials and how they interact with infrastructure, including how they interact during extreme events such as earthquakes. Designing earthquake-resistant infrastructure requires not only engineers, but also seismologists, physicists, geologists, economists and public policy professionals. It's one of the reasons I really like working in this field, because it involves such a broad array of disciplines.

My particular research is on site response, which is the study of near-surface geologic materials, like soils and rocks, and their impact on seismic waves that propagate from the earthquake source to the ground.

Q. Can you provide an example of how surface materials affect the power and impact of an earthquake?

A. Different geologic materials have very different responses to seismic waves. For example, in 1989, the double-decker Nimitz Freeway in Oakland, California, collapsed during the Loma Prieta earthquake. Dozens of lives were lost, but the whole structure didn't collapse.

The dotted red line showing the collapse of the freeway corresponds to the part of the structure built on soft mud, represented as light gray on this map. Source: USGS fact sheet



NO.	YEAR	LOCATION	M _w	DEATHS
1	2010	Haiti	7.0	316,000
2	1976	China	7.5	243,000
3	2004	Indonesia	9.1	228,000
4	1920	China	7.8	200,000
5	1923	Japan	7.9	143,000
6	1948	Turkmenistan	7.3	110,000
7	2008	China	7.9	88,000
8	2005	Pakistan	7.6	86,000

Four of the eight deadliest earthquakes recorded since 1900 have happened in the last twenty years.

“Our population is growing, and so is the number of people who live in seismic hazard zones,” said Associate Professor Jim Kaklamanos.

You see, in Oakland, there are three main types of subsurface materials: bedrock, sand and gravel, and San Francisco Bay mud. If you look at a map of the geology underneath the city, the portion of freeway that collapsed was built on the softest soil.

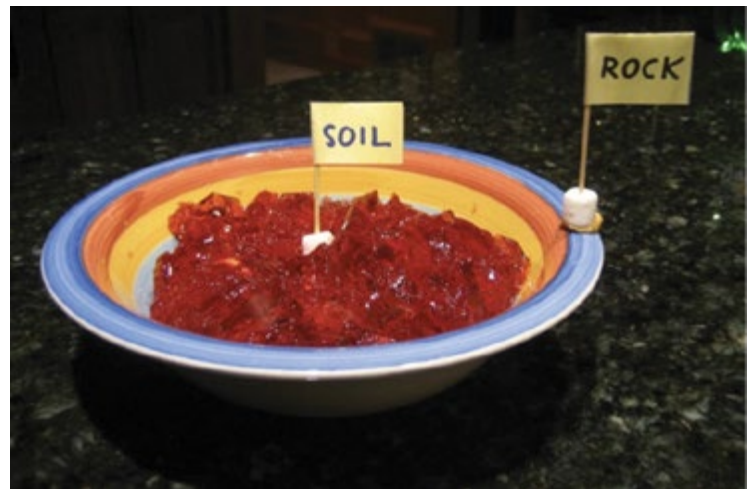
The soft soil amplified the ground motion a lot more than the other surface materials did, and led to accelerations that were too large for the elevated highway to handle.

Q. Why do softer materials end up shaking more?

A. Going back to fundamental laws of physics, softer materials have lower seismic velocities. That means waves traveling through them are going to slow down. And from conservation of energy, when the speed decreases, the amplitude of the waves increases.

This is what I like to call the “Jell-O effect.” If you shake a bowl of Jell-O, the bowl behaves like rock and the Jell-O behaves like soft soil, shaking a lot more than the bowl.

The influence of geologic materials leads to very different earthquake damage patterns, even over short distances. My research looks at models that predict how seismic waves are influenced by near-surface soils and rocks.



Source: Kaklamanos photo.

Q. What kind of data models are you using to predict seismic effects?

A. When we’re modeling site response, there are linear, equivalent linear and nonlinear models. Linear models assume that soils behave in a really simple way. Equivalent linear models are a bit more complicated and are the state of the practice today. And nonlinear models involve more complex behavior. My research evaluates different types of site response models, works to improve the accuracy of earthquake ground motion predictions and tries to identify when each model is appropriate.

Q. How does your work affect the built environment?

A. I contribute ideas and modifications to site-response models that are then used to establish building codes and seismic hazard maps that directly impact infrastructure design. The ultimate goal is to design infrastructure that’ll be sustainable and resilient, and ultimately save lives when a seismic event happens.

HONORS AND GRANTS

Faculty Research Catalyst Fund



The Faculty Research Catalyst Fund encourages faculty to develop and submit proposals for sponsored research.

This program provides internal seed funding to support researchers in efforts to develop research aligning with Merrimack's strategic initiatives in the Agenda for the Future and position themselves for external funding.

2021-2022 award recipients include:

Ruth MacKenzie for “The Role of Physical Activity in Cognitive and Brain Aging in VETSA”



Alzheimer's disease is widely recognized as a public health problem that is continuing to grow, with new cases estimated to double by the year 2025. This study will examine the relationship of physical activity with age-related maladies — such as cognitive functioning, mild cognitive impairment, and biomarkers associated with Alzheimer's disease — by adding data on objectively measured physical activity to supplement the comprehensive data collection of the Vietnam Era Twin Study of Aging (VETSA).

John Gallagher for “Synthesis and Characterization of Photomechanical Artificial Muscles for Biomechatronic and Orthopedic Prosthetic Applications”



This research involves working on strength-to-weight and strain-to-power ratios of a novel material for use as an artificial muscle in actuation of biomechatronic and orthopedic prosthetic applications. This material has the potential to revolutionize both of these applications by providing a lightweight, inexpensive and safe alternative to current electromagnetic motors and shape-memory alloys.

Katelyn Kurkul for “Teachers’ Perceptions of and Responses to Children’s Difficult Questions”



This project aims to explore factors that influence teachers’ responses to children’s difficult questions — questions that children’s informants have difficulties answering in specific, satisfying ways. Dr. Kurkul will apply a novel coding scheme to recordings of 10 early childhood classroom sessions that were collected in fall 2020 (mixed-modality instruction) and collect 10 more recordings of the same teachers during fall 2021 (on-ground instruction) to examine the types of difficult questions children are expressing and teachers’ responses to these questions. Additionally, she aims to gather survey data from 200 early childhood teachers to explore factors that influence their responses to children’s difficult questions.

Azam Noori for “Determining the Anti-cancer and Anti-oxidant Properties of Natural Medicines”



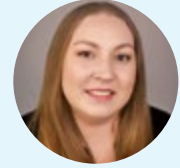
Advancements in the pharmaceutical industry have enabled the production of novel compounds to treat and cure a variety of diseases. Many of these compounds were first identified in plants and have traditionally been used as “natural medicines.” The side effects and high cost of synthetic medicines have increased the interest in the use of natural plant-based medicines. This study aims to understand the anti-cancer properties of selected plant metabolites and their effect on mitochondrial function.

Zi Yan for “An Eight-week Peer Health Coaching Program to Promote Physical Activity, Nutrition, Sleep and Mental Health: A Pilot Study”



This pilot study stems from the Community-Based Health Coaching program (CBHC) in the School of Health Sciences, with collaboration from faculty in different departments across campus. The program will explore a model for health science students to practice one-on-one health coaching skills while serving the Merrimack College community and prepare the students to be career competitive.

Alicia Girgenti-Malone and Alyssa Yetter for “Next Generation Law Enforcement Education and Training: Assessment of the Merrimack College Police Academy”

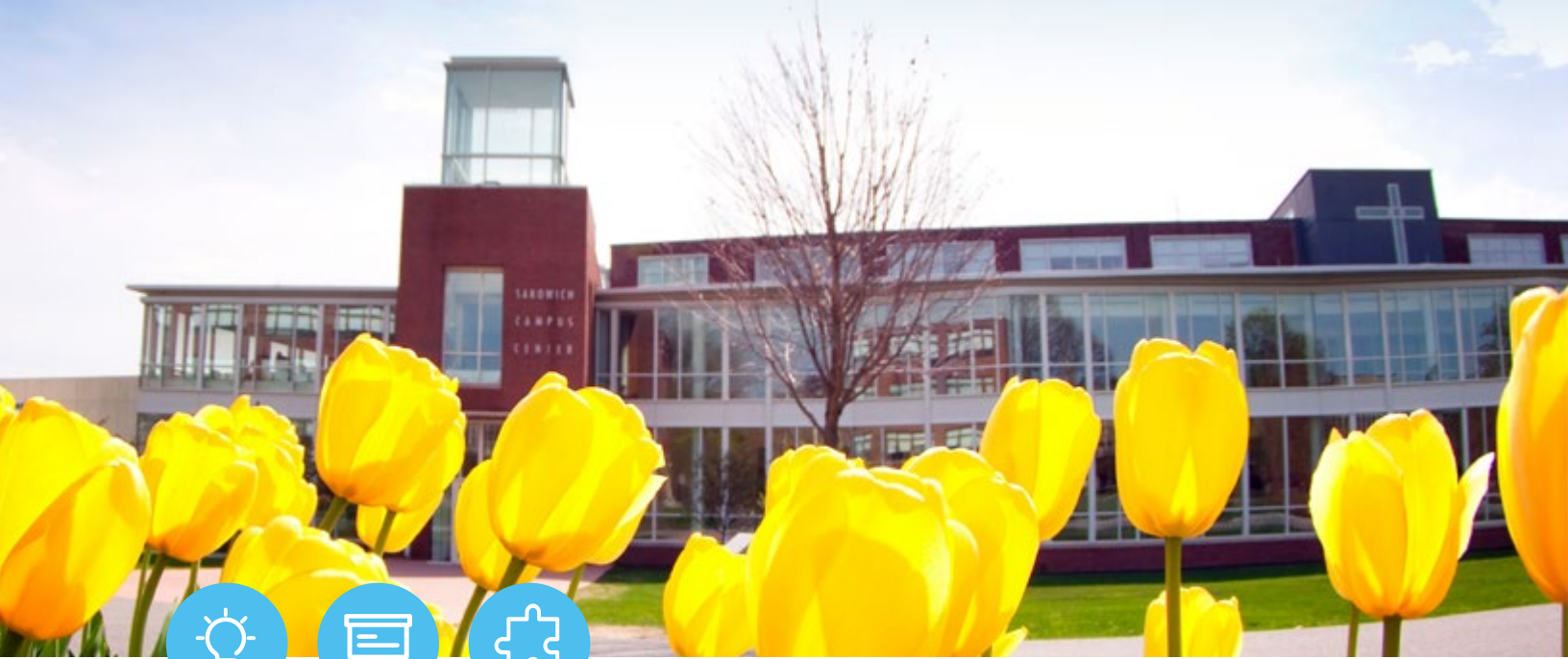


The Merrimack College Police Academy (MCPA) is a new, Commonwealth-approved, full-time police academy. Distinct from other academies, student officers will complete the academy while concurrently enrolled in Merrimack’s master’s program in Criminology and Criminal Justice. The continuation of the program will be contingent on demonstrating the success of the pilot year to the Massachusetts Municipal Police Training Committee (MPTC). We aim for this assessment to examine the effectiveness of the MCPA in achieving the learning objectives of the Commonwealth’s police training curriculum as well as those of the Master of Science in Criminology and Criminal Justice. This grant provides for longitudinal research on the careers and job performance of our graduates. Drs. Girgenti-Malone and Yetter aim to collect data on ethical violations, citizen complaints, use of force, service awards, requests to serve on specialized task forces or units, and rank and promotion. This data collection will be made possible through partnership with the MPTC and POST Commission.

Eleanor Shonkoff for “Checklist Approach to Obesity Treatment through Family Meals and Peer Support (COMER study)”



This research will further develop and pilot test a checklist and social support intervention to treat child obesity among Hispanic youth aged 6–11 years in an under-resourced local community. The objective is to pilot the intervention and examine the feasibility of this low-cost, community-delivered approach. Delivering minimal but effective interventions through community organizations increases potential for immediate scalability and sustainability; theory and evidence suggest efficacy of a checklist and peer social support intervention but none has been tested. The proposed research will conduct a pilot intervention in a diverse community that has high rates of child obesity and food insecurity. Primary outcomes include parent feeding practices, parent stress, child dietary intake, family mealtime stress and parent attitudes toward the intervention. Exploratory outcomes include spillover effects on physical activity and screen time and identification of potential barriers to implementation.



SCURCA Grants

Sakowich Center for Undergraduate Research and Creative Activities (SCURCA) grants are provided to faculty-led projects that provide research opportunities for Merrimack College students.

SCURCA grant recipients*

John Adams, Azam Noori, John Gallagher

"Plant Growth and Stress Responses due to Piezoelectric Effects"

April Bowling, Christopher Stuetzle

"GamerFit mHealth Application Development and Beta Testing"

Joseph Chiarelli

"Investigating Multiple Cyclodextrin Complexes Simultaneously in Solution"

Juliana Cohen

"Development of a Culturally Appropriate Food Frequency Questionnaire for Alaska Native Children"

Christopher Duston

"Monitoring and Analysis of Cataclysmic Variable Stars and Supernovae"

Stephanie Garrone-Shufran, Kirstie Dobbs, Laura Hsu Youth Voice

"Civic Engagement"

Stephanie Garrone-Shufran, Rory Tannebaum

"Exploring how Graduate Students in a Teacher Education Program Operationalize Core Theories and Concepts Related to Diversity, Social Justice, and Ethics"

Zachary Kissel, Christopher Stuetzle

"Research Experience for Undergraduate Students in Computer Science"

Katelyn Kurkul, Laura Kurdziel

"Brain Food: A Health-Promotion 'Whole Child' Approach to Teaching Executive Function Strategies"

Ruth McKenzie

"Physical Functioning and Physical Activity in Late Middle Age: The Relationship to Mental Health and Cognition"

Omer Unsal, Mary Papazian

"Green Bonds and Socially Responsible Eco-Financing"

*for FY2021



Zampell Family Faculty Fellowship

Zampell Family Faculty Fellows are an elite group of academics pursuing scientific inquiry, research, artistic creation, clinical/technical expertise and innovative teaching.

The Zampell Family Faculty Fellowships are made possible through the generous support of Christine '75 and James Zampell '75.

Zampell Family Faculty Fellows*

Sadegh Asgari

"Cooperative Financed Based Scheduling for Construction Projects"

Anthony Fernandez and Joseph Chiarelli

"Empowering Student Engagement in Computational Chemistry Using Mobile Technology"

Alicia Girgenti-Malone and Alyssa Yetter

"Next Generation Law Enforcement Education and Training: Assessment of the Merrimack College Police Academy"

Allison Seitchik and Laura Kurdziel

"Online Longitudinal Assessment of the Relationship Between Mild Traumatic Brain Injury, Emotional Regulation, and Sleep"

Zi Yan, Sarah Benes, Eleanor Shonkoff, Luis Saenz de Viguera Erkiaga, and Seungbin Oh

"Building A Community-Based Health Coaching Program to Support Student-Learning, Research, and Community Service"

Melissa Zimdars, Kilhoe Na and Megan Cullinan

"Facebook Groups, Health Misinformation, and Mistrust of Science: A Mixed Methods Research Study"

*for FY2021



RECENT FACULTY PUBLICATIONS

- Aiello, Brittanie, and Emma Duffy-Comparone. "College in the County: Some Justifications and Suggestions for Providing College Coursework in Jail." *Higher Education Accessibility Behind and Beyond Prison Walls*, edited by Dani V. McMay and Rebekah D. Kimble. IGI Global, 2020, pp. 1–25.
- Alberti, Traci L., and Sybil L. Crawford. "Health Information-Seeking Behaviors and Adherence to Urgent Care Discharge Instructions." *Journal of the American Association of Nurse Practitioners*, vol. 32, no. 6, June 2020, pp. 438–46.
- Bandeira de Mello, Rodrigo. "Corporate Political Strategies." *Oxford Research Encyclopedia for Management and Business*. Oxford Research Encyclopedias, Aug. 2020.
- Benes, Sarah. "School-Based Health Education Research: Charting the Course for the Future." *Research Quarterly for Exercise and Sport*, vol. 92, no. 1, March 2021, pp. 111–26.
- Bharath, Leena, et al. "Metformin Enhances Autophagy and Normalizes Mitochondrial Function to Alleviate Aging-Associated Inflammation." *Cell Metabolism*, vol. 32, no. 1, 7 July 2020, pp. 44–5.
- Cherney, Isabelle, Russ Olwell, et al. "Early College High School/Dual Enrollment 2.0: Evidence-Based Approaches to Engage Youth and Families for Educational, Career, and Community Development." *All In: The Urban Mission*, Philadelphia Conference Issue, special issue of *Metropolitan Universities*, vol. 31, no. 2, July 2020, pp. 18–32.
- Cohen, Juliana, and Marlene B. Schwartz. "Documented Success and Future Potential of the Healthy, Hunger-Free Kids Act." *Journal of the Academy of Nutrition and Dietetics*, Jan. 2020, pp. 1–4.
- Dávila, Maria T., et al. "We Breathe Together." *National Catholic Reporter*, 12 June 2020.
- DeCesare, Michael. "Back to the Past: Imagining the Future of Academic Governance." *Vitality and Continuity in Times of Change*, edited by Sharon F. Cramer and Peter L. K. Knuepfer, Albany, State University of New York, 2017, pp. 147–61.
- DiCarlo, Anthony A., Courtney E. Videchak and Ricky A. Caldwell Jr. "Optimization of Spatially Distributed Soil Conductivities for Horizontal Ground Heat Exchangers." *Applied Thermal Engineering*, vol. 167, Feb. 2020, 114793.
- Dobbs, Kristie Lynn. "Youth Quotas and 'Jurassic Park' Politicians: Age as a Heuristic for Vote Choice in Tunisia's New Democracy." *Democratization*, vol. 27, no. 6, pp. 990–1005.
- Duston, Christopher Levi. "Spinning Cosmic Strings in Conformal Gravity." *International Journal of Modern Physics*. vol. 35, no. 5, 2050024.
- Falk, Audrey Faye, et al. "Appreciative Inquiry and Graduate Students' Professional Development." *Appreciative Inquiry Approaches to Organizational Transformation*, edited by Sudipto Bhattacharya and Tanusree Chakraborty. IGI Global, 2020, pp. 208–24.
- Fernandez, Anthony L. "Using iPads and Apple Pencils to Enhance the Student Learning Experience in Inorganic Chemistry." *Advances in Teaching Inorganic Chemistry*, edited by Rebecca M. Jones, vol. 2. Washington, American Chemical Society, 2020, pp. 79–93.
- Garrone-Shufan, Stephanie. "Preparing Teachers to Teach the Language of History." *Teaching History: A Journal of Methods*, vol. 42, no. 2, Fall 2020, pp. 2–17.
- Garrone-Shufan, Stephanie, and Rory P. Tannebaum. "Introduction to the Special Issue." *Teacher Education to Promote Aspiring Educators to Work with Diverse Students*, edited by Stephanie Garrone-Shufan and Rory P. Tannebaum, special issue of *Journal of Curriculum Studies Research*, vol. 2, no. 2, 2020.
- Glod, Carol, and Susan K. Fraser. "Physiological and Psychological Data Collection Methods." *Research for Advanced Practice Nurses: From Evidence to Practice*, edited by Beth A. Staffileno et al., 4th ed. Springer, 2021, pp. 227–54.
- Hameed, Tahir, and Syed Buhkari. "Predicting 30-days All-Cause Hospital Readmissions Considering Discharge-to-Alternate-Care-Facilities." *Proceedings of the 13th International Joint Conference on Biomedical Engineering Systems and Technologies* - vol. 5. Cognitive Health IT, Feb. 2020, pp. 864–73.

- Hardway, Christina. "Of Interest and Engagement: The Emotional Force of Learning and Development." *Handbook of Integrative Developmental Science: Essays in Honor of Kurt W. Fischer*, edited by Michael F. Mascolo and Thomas R. Bidell. Routledge, 2020, pp. 232–61.
- Hayden, Karen E. *The Rural Primitive in American Popular Culture: All Too Familiar*. Studies in Urban – Rural Dynamics. Lexington Books, 2020.
- Heffernan, George. "Camus and Husserl and the Phenomenologists." *Brill's Companion to Camus: Camus Among the Philosophers*, edited by Matthew Sharpe et al. Leiden, Brill, 2020, pp. 177–98.
- Heiligmann, Katharine St. Germain. *Public Libraries in the Hilltowns of Western Franklin County, Massachusetts*. Illustrated by Carlos Heiligmann. Rowe, MA, Dindesenchas Books, 2020.
- Herda, Daniel. "Ignorance in a Context of Tolerance: Misperceptions About Immigrants in Canada." *Migration Letters*, vol. 17, no. 3, 2020, pp. 411–24.
- Herda, Daniel, et al. "What the Study of Legal Cynicism and Crime Can Tell Us about Reliability, Validity, and Versatility in Law and Social Science Research." *Annual Review of Law and Social Science*, vol. 16, 2020, pp. 1–20.
- Hsu, Laura M., and Divya Anand. "COVID-19 and Black Lives Matter: Examining Anti-Asian Racism and Anti-Blackness in U.S. Education." *International Journal of Multidisciplinary Perspectives in Higher Education*, vol. 5, no. 1, 2020, pp. 190–99.
- Kaklamanos, James, et al. "Sensitivity of 1-D Ground Motion Predictions to Analysis Codes and Material Models Using KiK-Net Vertical Arrays." *Soil Dynamics and Earthquake Engineering*, vol. 133, July 2020, 106113.
- Kaklamanos, James L., Aiswarya N. Moolacattu, Bradley M. Picard and Brendon A. Bradley. "Physical Hypotheses for Adjusting Coarse Profiles and Improving 1-D Site-Response Estimation Assessed at 10 KiK-Net Sites." *Bulletin of the Seismological Society of America*, vol. 110, no. 3, June 2020, pp. 1338–58.
- Kelley, Joseph T., editor, and Arthur Ledoux. *The Relevance of Saint Augustine for 21st-Century Global Challenges: Journées Augustiniennes de Carthage 2019 / Augustinian Days in Carthage 2019*. Lulu Press, 2020.
- Larkin, Benjamin, Taesoo Ahn and Ryan Spalding. "Examining the Impact of Fantasy Sport Participation and Fan Identification on Player Performance and Brand Image Perceptions." *Sport Marketing Quarterly*, vol. 29, no. 3, Sept. 2020, pp. 189–203.
- Lavoie, Raymond, and Corey King. "Virtual Experience, Real Consequences: The Potential Negative Emotional Consequences of Virtual Reality Gameplay." *Virtual Reality*, vol. 25, 2021, pp. 68–91.
- Li, He. "China's Economic Statecraft Toward East Asia." *Social Transformations in Chinese Societies*, vol. 16, no. 2, Nov. 2020, pp. 151–66.
- Mansfield, Aaron C. "'Count the Ways That It Impacts Your Life': New Parenthood and Sport Fandom." *Journal of Sport Management*, vol. 34, no. 5, Sept. 2020, pp. 462–74.
- Marine, Susan, et al. "Feminist Responses to Sexual Harassment in Academia: Voice, Solidarity and Resistance Through Online Activism." *Journal of Gender-Based Violence*, vol. 4, no. 1, Jan. 2020, pp. 9–23.
- Mascolo, Michael. "Emotional Development: The View From Between." *Emotion Review*, vol. 12, no. 4, 2020, p. 233.
- Michals, Debra. "Dads Can Cuddle, Too: Feminism, '60s Sitcoms, and the Making of Modern Fatherhood." *Feminist Fathering/Fathering Feminists: New Definitions and Directions*, edited by Nicole L. Willey and Dan Friedman. Demeter Press, 2020.
- Noori, Azam, et al. "The Mechanism of Chelator Improved the Tolerance and Accumulation of Poplar to Cd Explored through Differential Expression Protein Based on iTRAQ Article." *Journal of Hazardous Materials*, vol. 393, no. 122370, July 2020.

RECENT FACULTY PUBLICATIONS

- Noori, Azam, Trevor Donnelly, Joseph Colbert, et al. "Exposure of Tomato (*Lycopersicon esculentum*) to Silver Nanoparticles and Silver Nitrate: Physiological and Molecular Response." *International Journal of Phytoremediation*, vol. 22, no. 1, 2020, pp. 40–51.
- Oh, Seungbin, and Ann Shillingford-Butler. "The Client Assessment of Multicultural Competent Behavior (CAMCB): Development and Validation." *Measurement and Evaluation in Counseling and Development*, vol. 54, no. 2, 2020, pp. 71–89.
- Peacock, Jessica L., Kathleen Fitzpatrick and Kevin Finn. "Integrating Lecture and Laboratory in Anatomy and Physiology: Student Perceptions and Performance." *Journal on Excellence in College Teaching*, vol. 37, no. 1, 2020, pp. 169–94.
- Polyakov, Emma O'Donnell. *The Nun in the Synagogue: Judeocentric Catholicism in Israel*. University Park, Pennsylvania State UP, 2020.
- Provencher, Brian A., Jimmy Franco, Anthony L. Fernandez, Stephen Theberge and Brenda Zwickau. "Implementation of a 1– 2– 1 Curriculum and Its Effect on Organic Chemistry." *Journal of Chemical Education*, vol. 97, no. 5, 12 May 2020, pp. 1303–09.
- Seitchik, Allison E., et al. "Can the Stereotype Threat and Lift Phenomenon Be Applicable to a Muscular Endurance Task?" *Research Quarterly for Exercise and Sport*, vol. 91, no. 2, 2020, pp. 354–60.
- Shaw, Raymond J. "A Taxonomy for Assessing Educational Change in Psychology." *Assessing Undergraduate Learning in Psychology: Strategies for Measuring and Improving Student Performance*, edited by Susan A. Nolan et al., American Psychological Association, 2021, pp. 141–59.
- Shonkoff, Eleanor T. and Juliana F.W. Cohen. "Weighed Plate Waste Can Accurately Measure Children's Energy Consumption from Food in Quick-Service Restaurants." *Journal of Nutrition*, vol. 150, no. 2, Feb. 2020, pp. 404–10.
- Stroud, Michael J., et al. "APA-Style Citations Can Create a Roadblock to Textbook Comprehension for Less Skilled Readers." *Teaching of Psychology*, vol. 47, no. 2, 2020, pp. 147–55.
- Szivak, Tunde. "Resistance Training and Milk Substitution Enhance Body Composition and Bone Health in Adolescent Girls." *Journal of the American College of Nutrition*, vol. 42, no. 3, 2020, pp. 193–210.
- Tannebaum, Rory. "Controversial Public Issues in the Secondary Classroom: Exploring Teachers' Thoughts and Perceptions." *Teacher Education Quarterly*, vol. 47, no. 1, Winter 2020, pp. 7–26.
- Thistle, Tori N., Andrew Cannon and John A. Gallagher. "Pressure Distribution Across the Handle of an Instrument-Assisted Soft Tissue Mobilization Tool." *Journal of Medical Devices*, MED-19-1107 ser., vol. 14, no. 2, June 2020, pp. 024501-024506.
- Tiffe, Raechel / Raechel Anne Jolie. *Rust Belt Femme*. Cleveland, Belt Publishing, 2020.
- Unsal, Omer. "Two Faces of Corporate Lobbying: Evidence from the Pharmaceutical Industry." *North American Journal of Economics and Finance*, vol. 51, no. 100858, Jan. 2020.
- Williams, Nicole. "Leaning Into First." *Journal of College Admission*, no. 247, Spring 2020.
- Yan, Zi. "Acculturation and Wellbeing Among International Students: Challenges and Opportunities." *Rethinking Education Across Borders: Emerging Issues and Critical Insights on Globally Mobile Students*, edited by Uttam Gaulee et al. New York, Springer, 2020, pp. 303–30.
- Yetter, Alyssa M., and Jeremy Staff. "Is Adolescent Employment Still a Risk Factor for High School Dropout?" *Journal of Research on Adolescence*, vol. 30, no. 2, June 2020, pp. 406–422.
- Zhang, Tingting. "Constructing Inequalities: Tenure Trajectories of Immigrant Workers and Union Strategies in the Milan Construction Sector." *British Journal of Industrial Relations*, vol. 59, no. 2, Aug. 2020, pp. 474–502.
- Zimdars, Melissa, and Kembrew McLeod. *Fake News: Understanding Media and Misinformation in the Digital Age*. Cambridge, MIT Press, 2020.



Merrimack College is at an inflection point. We're firmly recognized as a great place for students, and it's time to let the world know that we are also a great institution for professors and researchers. The word is getting out as the brilliant scholars on campus build their reputations as academics who are dedicated to driving significant real-world change."

– John “Sean” Condon, Ph.D.
Provost and Vice President for Academic Affairs
Merrimack College



**MERRIMACK
COLLEGE**



MERRIMACK COLLEGE

315 Turnpike Street, North Andover, MA 01845
www.merrimack.edu



www.merrimack.edu/research