

# Biological Sciences

**Happy Holidays from Biological Sciences at  
Western Michigan University.**



We present you with the 2020 Biological Sciences Newsletter. It has been an eventful year and we want to share some of the highlights from the ever changing ways of teaching and research. We hope you will feel part of our department as you read.

1

2020

**A YEAR OF CHANGE  
& FLEXIBILITY**

2

**DEPARTMENT ACTIVE,  
DESPITE PANDEMIC**

3

**LEADING THE WAY TO  
THE NEW NORMAL**

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## Letter from the Chair

Dear Friends and Alumni of the Department of Biological Sciences,

We have had an unprecedented year and yet the department has thrived throughout the challenges. Our undergraduate programs include about 700 students and the graduate program holds 68 students. We are among the largest departments at WMU.

Life in the department was normal and very active until March when the state declared a shelter in place. Classes turned 100% remote with a 3-day notice. No one was allowed on campus so research came to a screeching halt. All doors were locked for 5 weeks. There were only a few people allowed inside to maintain living things – animals, plants, etc. In May, they required “return to research plans” from anyone wanting to return to research labs.

Before the state closure in March, students presented their research at conferences. Since closure, remote presentations have been the new normal experience. Students remotely hold committee meetings and defend their thesis/dissertation. Faculty creatively taught classes on line during the summer sessions and many chose to continue that format during fall semester. Many events were canceled last spring while everyone was sheltered in place. Events began in the fall but are mostly virtual due to social distancing requirements.

With the Covid crisis, WMU cut all budgets by 20% and no department was immune to the pain. Theresa McGee was part of the “reduction in force” and chose to retire so she was not laid off. The office administration had to make a huge adjustment without her assistance. We will miss Theresa but she seems very happy in retirement.

Dr. Steve Kohler took advantage of an early retirement offer so others have filled in to teach his popular course offerings. Steve will be missed greatly.

With all the changes, there have been many accomplishments. Faculty and graduate students have gone above and beyond in being flexible to meet everyone’s needs.

Biological Sciences is a thriving, productive and dynamic department that continues to serve our students and community.

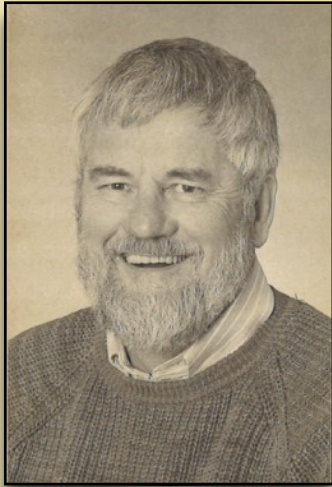
Cordially,

John Spitsbergen, Chair  
Biological Sciences  
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[wmich.edu/biology](http://wmich.edu/biology)



**WESTERN MICHIGAN UNIVERSITY**  
College of Arts and Sciences  
Department of  
Biological Sciences

## Condolences to the families of Emeriti Faculty



**Robert Cree (Bob) Eisenberg, Ph.D.** of Kalamazoo, Michigan, died in hospice care on Friday, April 10, 2020, at the age of 81. His wife, Dinah Rank Eisenberg, was at his side.

Bob was born in Denison, Texas on August 5, 1938 to Alfred Granville Eisenberg and Katherine White Eisenberg. Bob grew up in Texas and Missouri. He graduated from Oregon (MO) High School. He earned his undergraduate degree from North West Missouri State University and his doctorate in microbiology from North Carolina State University.

A scientist and a teacher, Bob was a Professor in the Department of Biological Sciences at Western Michigan University, Kalamazoo, Michigan, from 1967 to 2001, when he retired. Former students remember him as a wonderful man, a great teacher and scientist, a legend in their life.

**Joseph G. Engemann, PhD**, the invertebrate zoologist whose contributions to the theory of evolution will, he predicted, go unnoticed for perhaps a hundred or so years, died September 10, 2019 in Kalamazoo.

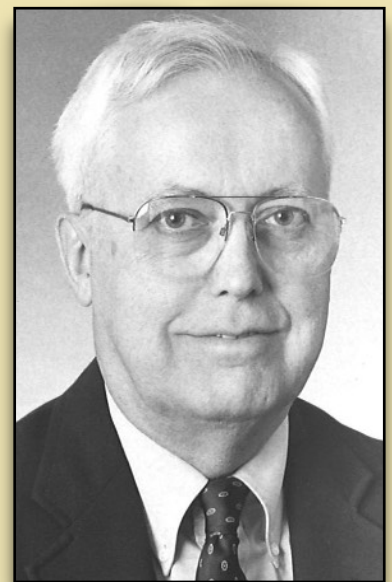
Born in 1928, Joe attended Washington Elementary School and later Belding High School where he graduated in 1946. He graduated from Aquinas College as North Korea invaded South Korea. When drafted on November 1, 1950, he set aside dreams of graduate school and chose to serve his country. Stationed in Munich, Germany, he served as a medical technician and later as a neuro-psychiatric technician in the 43rd Army Infantry Division, rising to corporal and then staff sergeant.

When he mustered out of the army, he returned to his dreams of furthering his education. He taught part time in the zoology department at Michigan State University while attending graduate school and researching the effect of colony conditions on growth rates of lipids in a protozoan. In 1956, he obtained his masters in zoology.

During his doctorate studies in zoology at MSU, a Fulbright scholarship led him to study at the University of Tasmania. He did a comparative study of the Tasmanian and Michigan isopod (commonly referred to as “roly polys”) as both live in watery habitats approximately the same distance from the equator. This research steeped his thoughts on evolution and “things fell into place,” leading to his life-long fascination with Pogonophora.

In 1960, he left MSU and began his career with Western Michigan University, teaching in the Department of Biological Sciences. In 1964, he met and married Nancy Doneth and had three children.

He generously shared his expertise with students and local community, becoming involved in the city of Kalamazoo’s Environmental Concerns Committee. After 36 years of teaching at Western Michigan University, he retired in 1996. While he cleaned out his lab and hung up his hip waders, he did not shrug off his curiosity and love for the natural world.





## Dr. John Geiser transitions to online teaching of Molecular and Cellular Biology

About two weeks into the pandemic lockdown in March, I realized I needed to start planning Molecular and Cellular Biology, BIOS 1610, for fall semester. Trying to teach a large lecture or provide an in-person lab experience was not going to be safe for anyone. Instead of trying to figure out how to just make do until things got back to “normal”, I decided to engage it positively and design a class that was as good as, if not better than, an in-person semester of BIOS 1610. Moving forward to a new “normal”. (It also gave me something constructive to do while wondering about the future.)



I had made a transition to a partially flipped classroom approach in BIOS 1610 about 5 years earlier. In many ways, this was just finishing that flip. I had been teaching online summer classes for at least 10 years, so I was aware of some of the right things to do and some of the pitfalls of online teaching. One important consideration for assignments was to make them problem based. Ones that required thought and applying what was learned while reading the text and/or listening to my short lecture videos. I threw out exams and instead, concentrated on using assignments to assess student knowledge and ability.

Lab took most of the work. It was easy to find many publishers that had online labs they wanted to sell to students, but they were either prohibitively expensive or had nothing to do with learning how to think about science. Many were just busy work. I settled on a series of simulations and then used them as the nucleus to teach the scientific process. This required building a whole new curriculum around the labs that expanded what the simulations targeted and wove them together from week to week.

The big take home message is online teaching of BIOS 1610 is feasible. It takes work on the part of the instructor and the student, but there is nothing inherent about learning and success that requires an in-person course. While not perfect, I see the first semester as a success. I have had more interaction with students this semester than in any of my past 21 years of teaching. Attrition is about the same as compared to past in-person semesters. Grade distributions are likely to be similar as past in-person semesters. All that it takes is wrapping your mind and expectations around a new “normal”.



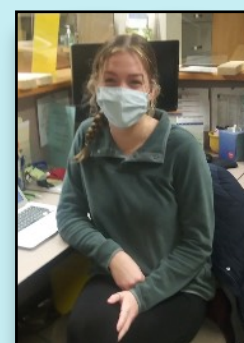
**Angie Riedel**

### Students help staff the front desk.

The front office of Biological Sciences has two students working to greet visitors and help with general office work.

Angie Riedel is a junior at WMU and is about to begin her 3rd semester of the nursing program!

Jaedyn Viane is in her second year at WMU and is studying Early Childhood Education.



**Jaedyn Viane**

## Dr. Tiffany Schriever describes field work during 2020 COVID-19 pandemic

I live for field work. The best part of my job is field work. Field work doesn't feel like work. Field work is where fun and inspiration meet. I connect with my students during field work. The possibility of not having a field season was dreadful, not just in terms of the lack of fun, but also the lack of data. My research progress depends on data such as insect, frog, and fish counts, and water samples collected from wetlands in Michigan.

I was the first at WMU to submit a research plan to conduct field work during the pandemic. Lucky for us, we work outside, we can maintain distance among workers (most times) and are happy to wear masks if it means we can do what we love. We had to drive in separate cars (bad for GHG emissions, but safer), we couldn't camp together, and we ate lots of energy bars instead of visiting local breweries for dinner, but overall field work was a success! Members of the Schriever lab, Adam Austin (PhD student), Morgan Morin (MS student), Sarah McNichol (field tech), and Madison Holm (undergraduate honors thesis student), and I accomplished sampling fish, aquatic insects, amphibians, plants, and water chemistry from 11 mitigation and 11 reference wetlands for a study comparing natural and mitigation wetland structure and function, and collecting 157 shallow groundwater samples and 72 aquatic insect community samples for an ecohydrology study of interdunal wetlands.





## 2020 DOD grant issued to Dr. Cindy Linn

The adult mammalian retina is typically incapable of regeneration when damaged by blast exposure in combat conditions, disease or age. In fact, ocular injuries are the fourth most common injury in the recent wars in Iraq and Afghanistan. In one recent study of veterans with traumatic brain injury, 66% were diagnosed with ocular trauma, mostly due to blast exposure. Restoration of function would require generation of new adult neurons, something that until recently, mammals were thought to be incapable of doing. However, previous studies from this lab have shown that the  $\alpha 7$  nicotinic acetylcholine receptor ( $\alpha 7$  nAChR) agonist, PNU-282987, induces cell cycle reentry of Müller glia and robust generation of mature retinal neurons in adult rodents when the agonist is applied topically. However, new retinal neurons are useless if they do not make synaptic connections that improve visual function and quality of life.



As a result, the studies outlined in this Department of Defense grant are designed to determine if loss of visual function associated with blast exposure can be reversed using PNU-282987. ERG recordings will be obtained to address any functional recovery in adult mice. It is anticipated that PNU-282987 will induce new neurons, send new axons through the optic nerve to make appropriate synaptic connections in the brain and improve ERG recordings to enhance visual function under all injury paradigms. The implications associated with this study are tremendous and could lead to simple treatments that reduce blindness associated with retinal trauma that occurs in combat, degeneration by diseases, such as glaucoma, retinitis pigmentosa, macular degeneration, diabetic retinopathy, or age. The results of this study can lead to a significant increase in the quality of life of affected individuals, and reduce a major burden on healthcare systems and families.

## 2020 Biological Sciences Distinguished Alumni Achievement Award Dr. Denise Olson

Denise Olson, MD grew up in Byron Center, Michigan. She received her BS degree, Biomedical Sciences, cum laude from Western Michigan University in 1984. She also studied German at Western and in Germany through a scholarship from the Goethe Institute. She then attended Michigan State University College of Human Medicine, completing her clinical years at Bronson and Borgess Hospitals in Kalamazoo, Michigan. Dr. Olson was elected to Alpha Omega Alpha Honor Medical Society upon completion of medical school. Her interests in women's health led her to become an obstetrician/gynecologist. Dr. Janice Werbinski, obstetrician/gynecologist of Kalamazoo, Michigan and graduate of Western Michigan University was Dr. Olson's mentor throughout her student years. Dr. Olson completed her obstetrics and gynecology residency training at Rush-Presbyterian-St. Luke's Medical Center in Chicago, Illinois where she served as Administrative Chief Resident.

Dr. Olson practiced obstetrics and gynecology for one year at Ravenswood Hospital Medical Center in Chicago, Illinois and in Durham, North Carolina at the Durham Women's Clinic for the past 27 years. This long continuity at a single practice has afforded her the opportunity to care for women through many years. She has cared for pregnant women and subsequently their daughters. She has enjoyed seeing two of her adolescent patients go on to become obstetrician/gynecologists. As Dr. Olson's patient population evolved over the years, she devoted more of her practice to primary care for women. She was selected as a participant in Education for Non-Rheumatologists Advisory Board for GlaxoSmithKline in 2017. Prevention of heart disease and osteoporotic fractures has become central to her care for women. She has been diligent in her encouragement of patients with autoimmune disease to adhere to their medical treatment to prevent disease progression. Dr. Olson's personal experiences with MS and rheumatoid arthritis has been an asset when providing encouragement and counseling for her patients.



The Award Ceremony was virtual this year. Biological Sciences is proud to name Dr. Olson as our 2020 Alumni Achievement Award recipient.

## In times of struggle, Dr. Monica McCullough finds a new way

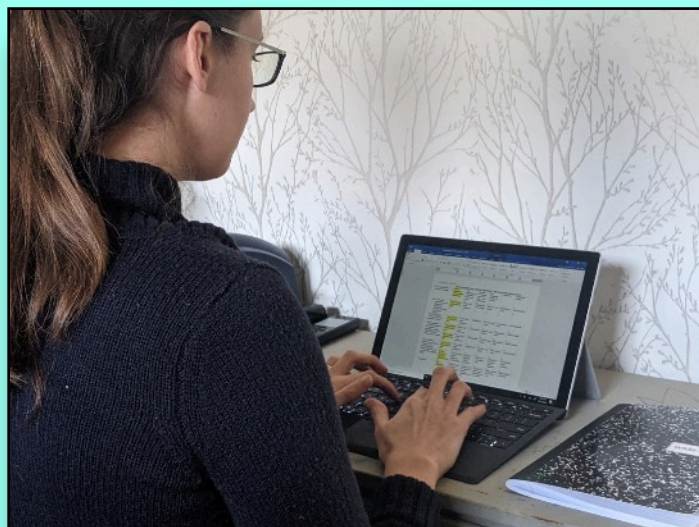
"Change is inevitable, but growth is intentional" is a philosophy many realize during this pandemic. The economy is changing. Education is changing. Even how we grocery shop is changing. During this time of massive uncertainty, one underlying consideration that everyone needs amid incertitude is compassion and empathy. And so, as we had transitioned quickly to online/virtual learning, that was what I focused on in developing my online Biology courses for 460 students.

Entering into this term, I attempted to consider all the uncertainty in my student lives. How was their health? How was their family's health? Did they have a stable home environment? Did they have reliable technology access? Could they find work/life balance in this new 'normal'? How was their mental health? With all of this weighing on me, the first decision I made was to develop courses as a 'learn at your own pace'. Student choice and voice were considered in this as I allowed students to complete online assignments and labs as they were able. During this time of hardship, the least I could do was to be flexible with time. Coursework could be completed until the last day of the semester.



A second consideration I made in developing my online courses was empathizing with students' experiences in the world that surrounded them. In a time where one can feel disconnected, it was essential to find a way that my courses could create connectedness and unity. Students were asked to select a topic they had a personal, vested interest in my classes. In one course, they were asked to choose a physiological dysfunction of a disease they knew someone had. In my other course, students analyzed the biological characteristics of the plants and animals that live within their very own community. I hoped that connecting the learning to the world they were living in would bring a sense of belonging, calm, and ownership of the feelings and places they were now tied to more closely than ever before.

The "traditional" student schedule has changed with this pandemic. More and more students have deviated to include additional caretaker roles for loved ones or a breadwinner for changing households. In this 'new normal', I chose to support them by being flexible with my office hours by being available anytime between 8am and 9pm. This was especially ideal for our international students. The silver lining of virtual meetings is that the participants can be anywhere and connect at a moment's notice. My decision to meet with students outside of traditional business hours supported their academic and socio-emotional needs and helped me accommodate my own new normal of teaching my four children at home.



Amidst this time of change, I have chosen to grow with what my students need. Having flexibility with what is normal academia has been a journey that has made this virtual transition quite meaningful. I have been able to hear students' voices, see where their interests align, and have allowed them to grow and make mistakes with a little less pressure during this most uncertain time.



## Dr. Hector Quemada works with Gene Convene Global Collaborative



The World Health Organization (WHO) estimates that in 2019, there were 229 million cases of malaria and 409,000 deaths attributable to the disease, most of which were in Africa, and in children under 5. While progress in reducing cases and deaths has been made since 2000, in recent years progress has stalled. This has caused concern among health authorities around the world, leading to a call for the development of new tools to fight this disease.

Biocontrol of insects (such as using lady beetles to control aphids in the garden) is a well-established strategy for pest management. More recently, genetic biocontrol has become possible because of the ability to genetically engineer insects. One of these strategies, using a phenomenon called gene drive, holds much promise for controlling mosquito vectors of malaria. Like all new tools, it is important that it be safely, ethically and rigorously evaluated for safety and efficacy.

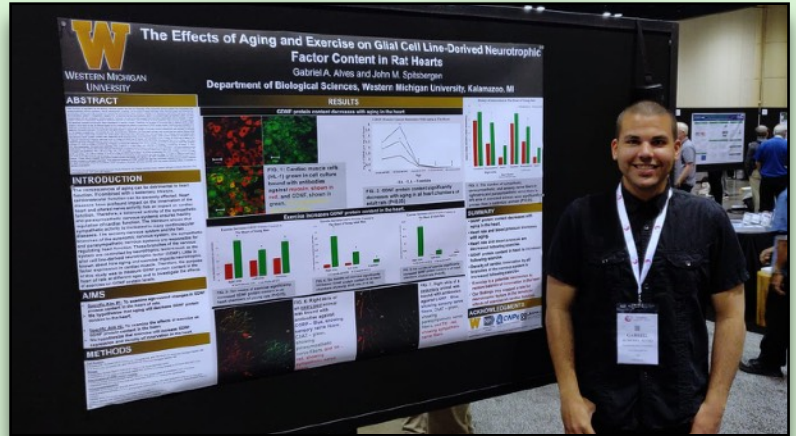
I am part of a team (Gene Convene Global Collaborative, <http://www.fnih.org/geneconvene>) that is an initiative of the Foundation for the National Institutes of Health (FNIH) aiming to foster best practices and informed decision making for development of genetic biocontrol technologies. At Western Michigan University, I work with Sabrina Holley, who is a student working on an interdisciplinary Ph.D. in Evaluation. The GeneConvene Global Collaborative conducts training in risk assessment principles for regulatory agencies in Africa, and research groups developing gene drive applications for malaria control. We also organize meetings and workshops, bring together policymakers and scientists to discuss regulatory challenges presented by gene drive organisms, and organize study visits by African regulators to countries where new genetic solutions for control of malaria are being implemented. In the past, all of these activities would have been held in person. However, the COVID-19 pandemic has forced us to move all these activities online, which has been very feasible, except for the study visits. The latter require travel to the countries of interest, so has not been possible for now. We have been required to learn how deliver online training content effectively. One main activity that has been unaffected by the pandemic is an online resource that collects and shares knowledge genetic biocontrol—the GeneConvene Virtual Institute (<https://www.geneconvenevi.org>). This has been launched as planned. It features a webinar series, organized by a colleague at FNIH, Dr. David O'Brochta, and myself. This webinar series has been held weekly through the Fall, and will be presented again in the Spring and Fall of 2021. If you are interested in learning more about genetic biocontrol, including gene drives, please visit the Virtual Institute site and register.





## Gabriel Alvez, PhD Candidate, presents his research

I feel privileged having the opportunity to travel the country representing WMU, the Department of Biological Sciences, and Dr. Spitsbergen's lab. Places like San Diego, CA; Orlando, FL (photo); Phenix, AZ; and Minneapolis, MN are among the cities that I had the opportunity to present my research. Conferences are a great opportunity to connect with people and learn what is most recent in my research field and other exciting subjects in science. Going to conferences may also open doors to postdoctoral opportunities. I was able to connect with opportunities at the University of California Los Angeles; University of Missouri, Columbia, MO; and Malcom Randall VA Medical Center, Gainesville, FL; besides networking with opportunities in the industry as well.



In Spitsbergen's lab, I study the changes in innervation of heart - target tissue of the peripheral nervous system - that occur with aging and disease. My research focuses on understanding the regulation of expression of target-derived neurotrophic factors by the heart. Doing my career as a graduate student, I had the opportunity to present results from a two-year-long animal study on how aging, sedentarism, and exercise affect the production of neurotrophic factors, such as the glial cell-line derived neurotrophic factor (GDNF) and nerve growth factor (NGF). In addition, I was able to present how these stressors may affect the innervation pattern in the heart of rats. Finally, I also presented results from an additional project which provides new insights into the role of the sensory nervous system in the heart. My projects utilize in vitro and in vivo models, such as HL-1 cells (cardiomyocytes), frogs, and rats.

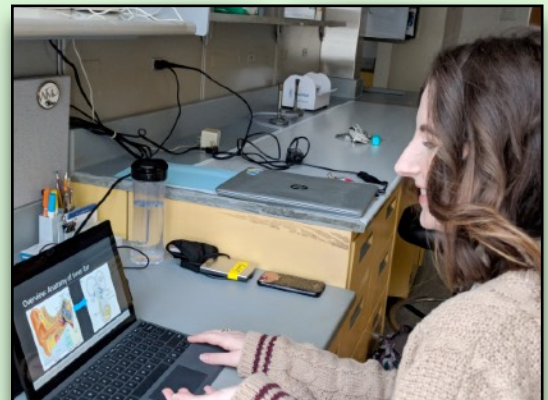
I feel extremely grateful to Dr. John Spitsbergen and the Department of Biological Sciences for the opportunities, mentorship, friendship, and guidance to success.

## Seminar Series is Virtual



**Dr. Jeremy Duncan**

This fall the Department's seminar series, coordinated by Dr. Jeremy Duncan, went virtual. This not only allowed for a safe seminar, but also overcame logistical limitations for speakers who otherwise would not be able to present even during non-pandemic times. For example, we were able to have a very informative presentation by Dr. Sattlegger from Massey University in New Zealand which would not have otherwise been possible.



**Ms. Sydney Sheltz Kempf, PhD Candidate**

Additionally, graduate students from the Department were able to virtually share their research with the community. Graduate students had 25 minutes to present their research and gain feedback which enabled the Department to get to know the graduate students and their projects. It also served to keep our Department together as a community in a time when many are at home or at home more often. One thing that was made clear is that we have a talented group of graduate students who are taking full advantage of their training, and they are positioning themselves for successful and productive careers.

## Re-imagine how Labs are Taught

The pandemic has certainly created challenges for instruction and for learning. Like many professors, the search for the best path forward began with feelings of constraint, limitation, and difficulty. But in an attempt to find silver linings, my view shifted to one of opportunity. In a very narrow sense, I chose to use the opportunity to re-imagine how I would teach my two courses this semester. I teach a large introductory Ecology and Evolution course and a smaller senior undergraduate/graduate Ornithology course. Given their topics, both lend themselves to outdoor instruction and while I may have included *some* outdoor labs or exercises in past semesters, these offerings were more limited than I would have liked. Ecology and ornithology students should be outside! There's no better classroom than the one nature provides us.



**Dr. Sharon Gill**

My goal in Ecology and Evolution was to explore nature on campus, taking the opportunity to see what most of us likely miss as we walk from class to class, building to building. I was inspired by one of my favorite authors, Nan Shepherd, who after a lifetime of exploration of The Cairngorms in Scotland, writes, "I knew when I had looked for a long time that I had hardly begun to see." I hoped students would begin to see that nature surrounds us on campus and to understand that the ecological processes that may seem so abstract from lecture and textbooks are happening here too. By studying macroinvertebrates in Goldsworth Valley Pond, by documenting connections between native plants and pollinators, by measuring trees and quantifying their benefits, and by looking carefully at those same trees and beginning to know the world of lichens, I hope students gained a better understanding of the complex interdependence of nature and *our* connections with and dependence on nature as well.

In Ornithology, we had the opportunity to focus on fundamental skills for studying birds. We went on walks to learn bird features and cues to bird identification. Students set up mist nets used to capture birds and some were able to band birds themselves. We gained a sense of the changing community of birds on campus, as species arrived on campus only to leave a week or two later to continue their migratory journey. And we came to know species that live with us year-round, as cardinals and chickadees and titmice were our constant companions on our walks and when netting.

All of these efforts were made possible with the amazing efforts of graduate students in Biological Sciences. I'm grateful to Victor de Brito, Parks Marion, Joanna Sblendorio, Nicolette Sexton, and Nicole Stewart, each of whom more than embraced working with students in nature. I couldn't have done this without them!

My most fervent hope is for a world that is back to (close to) normal by fall. We may still be wearing masks and maintaining our distance, but I hope that we really can see the light at the end of the tunnel and we put this year behind us. What I'll retain though is the experience of being outside with students and the opportunity that pushed me to create more chances for students to learn about our connections with nature on campus.

To experience what the students observed this fall, please explore the following iNaturalist pages:

[Pollinators of WMU](#)

[Macroinvertebrates of Goldsworth Valley Pond](#)

[Tree benefits](#)

[Lichens of WMU](#)



Graduate student Parks Marion explains a lab exercise exploring the connections between native and non-native plants and plant pollinators, including bees, wasps and beetles.



Graduate student Stephanie Stanton holds a black-capped chickadee she banded during an outdoor Ornithology class. Credit: S. Stanton.



Graduate student Joanna Sblendorio applies a metal band to this tufted titmouse, demonstrating one of the fundamental tools used in the study of birds. Credit: A. Thean



The majority of faculty members in our department have active funding for their research programs. Included below is a list of current external grants, publication in scientific journals, and presentations by faculty and students at scientific conferences. As you can see, our faculty and students are active in publishing in top scientific journals and in giving presentations at national and international scientific conferences. We are convinced that a strong and vibrant research environment enhances our student's educational experience and adds value to a degree from our department.

### Current Grant Funding

#### **Todd Barkman (Co-PI, Andre Venter PI)**

Title: Mechanisms and Applications of Protein Analysis by Desorption Electrospray Ionization-Mass Spectrometry (DESI-MS)  
Source: National Science Foundation

#### **Wendy Beane**

Title: Molecular mechanisms regulating neural regeneration in planarians  
Source: National Science Foundation CAREER Award

#### **Devin Bloom**

Title: Systematics and Evolution of Migration in Clupeiformes (Herring, Sardines, Shads, Anchovies and Their Allies)  
Source: National Science Foundation, Division of Environmental Biology

#### **Kathryn Docherty**

Title: Designer Microbial Consortia for Growing Corn in Mars Simulant Soil  
Source: Michigan Space Grant Consortium Research Seed Grant

Title: Influences of Urbanization on Airborne Microbial Communities  
Source: Faculty Research and Creative Activities Award

#### **Jeremy Duncan**

Title: Determining the molecular landscape necessary for hair cell development.  
Source: National Institutes of Health (NIDCD)

Faculty Research and Creative Activities Award, Western Michigan University

#### **Karim Essani**

Faculty Research and Creative Activities Award, Western Michigan University

#### **Sharon Gill**

Title: Referential alarm calling as a window into the mechanisms and evolution of a complex cognitive phenotype.  
Source: National Science Foundation

#### **Dave Karowe**

Title: Research Experience for Undergraduates (University of Michigan Biological Station)  
Source: National Science Foundation

#### **Ben Koestler**

Title: Characterizing the role of *Shigella* c-di-GMP signaling in human infection.  
Source: Faculty Research and Creative Activities Award, Western Michigan University

#### **Cindy Linn**

Title: Evidence of BrdU positive neurons in adult mammalian retina after treatment with an alpha7 nicotinic acetylcholine receptor agonist.”  
Source: National Institutes of Health/ National Eye Institute

Title: Neurogenesis and Recovery of Visual Function After Blast Exposure.  
Source: Department of Defense

#### **Hector Quemada**

Title: Support for FNIH Gene Drive Research Coordination.  
Source: Funded by the Foundation for the National Institutes of Health (FNIH) and the Bill and Melinda Gates Foundation

#### **Silvia Rossbach**

Title: Identification of microorganisms attached to magnetite and iron-coated sediments.  
Source: Enbridge Energy Partners

## Current Grant Funding - Cont.

### **Tiffany Schriever**

Title: The hydrology of Great Lakes interdunal wetlands and the effects on their macroinvertebrate assemblages.  
Source: Faculty Research and Creative Activities Award

Title: Tracking biodiversity, community assemblage, and gene flow among interdunal wetlands in the Great Lakes.  
Source: Michigan Sea Grant Core Research

## Conference Presentations and Invited Seminars

(**Bold** = Biological Sciences Faculty, underlined = Biological Sciences Graduate Student, *italicized* = Biological Sciences Undergraduate Student)

**Docherty, K.M.** A Micro(be) View of Prairie Restoration, Pierce Cedar Creek Virtual Lunch and Learn (May 28, 2020)

*Nippa, M.* The establishment and success of *Baptisia alba* based on present soil microbial communities (Oct 9, 2020)

Whitacre, Z.J. Land Stewardship at Pierce Cedar Creek Institute (Oct 9, 2020)

**Schriever, T.** The importance of coastal wetlands in generating unique biodiversity and conservation opportunities. Conservation Ecology Seminar Series, School for Environment and Sustainability, University of Michigan February 7, 2020

Kurthen, A., **T.A. Schriever**, R. Van Driesche, D.A. Lytle. 2020. Community dissimilarity of aquatic insects within arid rivers in Southwest USA. Summer of Science virtual conference, Society for Freshwater

## Student Grants, Awards and Presentations

(**Bold** = Biological Sciences Faculty, underlined = Biological Sciences Graduate Student, *italicized* = Biological Sciences Undergraduate Student)

Alves, Gabriel. Department level (February 2020) and All-university level (April 2020) Teaching Effectiveness Award.

de Brito Victor. 2020 Graduate Research Excellent Grant – RC Lewontin Early award from the Society for the Study of Evolution (SSE)

de Brito Victor. 2020. How habitat transition influences body size evolution in fish? Fall 2020 WMU BIOS Seminar Series. Kalamazoo, MI.

VanGyseghem, Julie Katie Easley and Linda Hanson. HIT teaching practices. Presentation at Gardner Institute G2C Symposium.

Whitacre, Z.J. - Pierce Cedar Creek Institute Summer 2020 Land Management Fellowship

Whitacre, Z.J. - Michigan Space Grant Consortium Graduate Student Research Fellowship

Badger Hanson, E. - WMU Graduate College Doctoral Fellowship

*Nippa, M.* - Pierce Cedar Creek Institute Summer 2020 Environmental Research Grant



## Papers

(**Bold** = Biological Sciences Faculty, underlined = Biological Sciences Graduate Student,  
*italicized* = Biological Sciences Undergraduate Student)

Straight, Belinda, **Barkman, Todd**, et.al. Lifetime Stress and War Exposure Timing May Predict Methylation Changes at NR3C1 based on a Pilot Study in a Warrior Cohort in a Small-Scale Society in Kenya. *American Journal of Human Biology* (accepted October, 2020).

Piller, K.R., **Bloom, D.D.**, Lyons, J., Mercado-Silva, N. 2020. Systematics and taxonomy of Chapalichthys (Cyprinodontiformes: Goodeidae), a small genus of live-bearers from central Mexico. *Copeia*.

Smith, S.E., Palkovacs, E.P., Weidel, B.C., Bunnell, D.D., Jones, A.W., **Bloom, D.D.** 2020. A Century of Intermittent Eco-Evolutionary Feedbacks Resulted in Novel Trait Combinations in Invasive Great Lakes Alewives (*Alosa pseudoharengus*). *Evolutionary Applications*

Kolmann, M.A., Burns, M.\* , Ng, J., Lovejoy, N., **Bloom, D.D.** 2020. Habitat transitions alter the adaptive landscape and shape phenotypic evolution in needlefishes. *Ecology and Evolution*. 2020;10:3769–3783. <http://dx.doi.org/10.1002/ece3.6172>

Burns, M.\* and **Bloom, D.D.** 2020. Migratory lineages rapidly evolve large body sizes in ray-finned fishes. *Proceedings of the Royal Society of London B: Biological Sciences* 287: 20192615

**Bloom, D.D.**, Kolmann, M.A., Foster, K., Watrous, H. 2020. Mode of miniaturisation influences body shape evolution in New World Anchovies (Engraulidae). *Journal of Fish Biology*. 96(1): 194-201

\*=Bloom lab postdoc

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## Papers - Cont.

(**Bold** = Biological Sciences Faculty, underlined = Biological Sciences Graduate Student, *italicized* = Biological Sciences Undergraduate Student)

Scott D. Haller, Michael L. Monaco, **Karim Essani**. The Present Status of Immuno-Oncolytic Viruses in the Treatment of Pancreatic Cancer. *Viruses (Animal Viruses)*, (accepted 11-25-2020).

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Wessendorf RL\*, **Lu Y** (2020) Photosynthetic characterization of transgenic *Synechocystis* expressing a plant thiol/disulfide-modulating protein. *Plant Signaling and Behavior* 15: 1709708

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Channell, A., Cobern, W., **Rudge, D.** & Bentz, A. Teacher and Parent Perspectives on NGSS Alignment following Professional Development. *Science Education International*

**Schriever TA** and DA Lytle. 2020. Energy flow and isotopic niche variation in desert stream top predators. *Hydrobiologia* 847: 983-997. Our article was also selected for the Journal Cover photo Alberto Cintrón-Colón, Gabriel Almeida Alves, Alicia M. Boynton and **John M. Spitsbergen**. GDNF synthesis, signaling and retrograde transport in motor neurons. *Cell and Tissue Research*. <http://link.springer.com/article/10.1007/s00441-020-03287-6>

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Troy A Burtchett, Chloe Love, Reshma Sarkar and **Brian Christopher Tripp**. A Structure-Function Study of C-Terminal Residues Predicted to Line the Export Channel in *Salmonella* Flagellin. *Biochimica Biophysica Acta* (Accepted Sept. 2020).

## Outreach

### **Todd Barkman and Chris Jackson**

The Native Plant Project: After the University shut down Todd and Chris plowed ahead with transplanting thousands of native seedlings. This involved filling flats and pots, daily watering and feeding. When the University partially reopened in May the crews from WMU landscape services came and picked up thousands of seedlings and proceeded to stage them in areas across campus, slowly getting them in the ground as time permitted. Since I was unable to give permission to our community partners to come to campus I loaded trailer loads of plants and delivered them to one location where our community partners could pick them up and plant them. A few of the many who benefited were SWMLC, Stewards of Kleinstock and the local chapter of Wild Ones. Visit our [website](http://wmich.edu/biology) to read the story on WMU News. ([wmich.edu/biology](http://wmich.edu/biology))

### **Devin Bloom**

Outreach for Kalamazoo River: interviews for popular press: *Flylords Magazine*, WMUK, WWMT <https://flylordsmag.com/dam-drawdown-causing-extensive-damage-to-michigans-kalamazoo-river/> <https://www.wmuk.org/post/morrow-dam-drawdown-polluting-kalamazoo-river> <https://wwmt.com/news/i-team/sediment-flowing-through-morrow-dam-threatens-ecological-disaster-for-kalamazoo-river>



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**Department of Biological Sciences in 1997. Can you name them all?**



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# *Thank you!*