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New Research Funding

The Department of Biological Sciences has been very active on the research front. In the past five years, our faculty have received more than $12 million in new research funding. Each year, our faculty produce 40-50 peer-reviewed publications in health sciences, molecular and cellular biosciences, and ecological sciences. Here are some research highlights from 2017-18:

Dr. Rupali Datta received new funding from U.S. Housing and Urban Development (HUD) for a project titled “A Novel Phytoremediation Method to Cleanup Lead-Based Paint Contaminated Soils: Phase III – Demonstration Study.” The grant is valued at $492,633.

Dr. John Durocher received a $465,854 U.S. Department of Health & Human Services, National Institutes of Health (NIH R15) grant for the project “Mindfulness and Neural Cardiovascular Control in Humans.” Additionally, Dr. Durocher is a co-investigator, with affiliated professor Dr. Jason Carter (KIP), on a project titled “Alcohol and Neurovascular Control in Humans.” The project received a $422,845 research and development grant, with a potential value of $1,871,688 over five years.

Finally, congratulations to Dr. Thomas Werner on receiving a new National Science Foundation (NSF) grant titled “Dimensions: Collaborative Research: Integrating Phylogenetic, Genetic, and Functional Approaches to Dissect the Role of Toxin Tolerance in Shaping Drosophila Biodiversity.” This is a five-year collaborative project worth a total of $397,019.

Summer Undergraduate Research Fellowships

Three biology students earned Summer Undergraduate Research Fellowships (SURFs) in 2018. Congratulations to the following students and their advisors:

- **Gilliane Kenyon**, Medical Laboratory Science  
  Establishing the Impact of DNA Minor Groove Alkylation on DNA Replication and Transcription.  
  **Advisor:** Marina Tanasova, Chemistry

- **Zoe LaLonde**, Biochemistry & Molecular Biology  
  Toxicity of Lactic Acid in Neuron Cells Mediates Toward Neurodegenerative Disease  
  **Advisor:** Qing-Hui Chen, Kinesiology & Integrated Physiology

- **Brenna Rosso**, Biochemistry & Molecular Biology  
  Assessing the Expression and Purification of Recombinant MS2-arg Tagged Coat Proteins  
  **Advisor:** Ebenezer Tumban, Biological Sciences
MLS Program NAACLS Accreditation Update

This past spring, the Medical Laboratory Science (MLS) program underwent their National Accrediting Agency for Clinical Laboratory Science (NAACLS) site visit.

Three reviewers from NAACLS were on campus intensely evaluating curricula, laboratories, and outcome measures and talking to University administrators, current students, recent graduates, clinical affiliates, and the MLS advisory board. They were especially interested in evaluating the support the administration has given to accredit the MLS program at Michigan Tech.

The accreditation procedure has been a four-year process, starting in 2014. It began with a preliminary study, followed by a self-study, and culminated in the successful site visit, which took place in April, 2018. The MLS program passed without deficiencies, which is unheard of for a first-time program accreditation.

NAACLS accreditation allows Michigan Tech MLS students to complete practicums at any hospital with which the university shares an affiliation agreement. In the past, students were limited to conducting practicums at NAACLS-accredited hospitals only.

Gaining this accreditation thus allows MLS students much greater freedom and opportunity when choosing a practicum. This accreditation will allow the MLS program to grow, send more students to clinical sites, and help alleviate the critical need for medical laboratory scientists not only locally, but across the country.

The final step in the process will be confirmation by the NAACLS Executive Board, which will take place in September 2018.

Biological Sciences Department Community Outreach

29th Annual Bioathlon

The Bioathlon is a long-standing tradition that we look forward to hosting each year! 48 students from 12 Upper Peninsula high schools participated in the day long competition this year. The first place team was Calumet High School. Second place went to A.D. Johnston, and third place went to West Iron County.

All teams tackled the same four problems: dissection of a snake, microbe analysis, ecology field identification, and basic medical laboratory techniques. The first-place team received $400, the second-place team received $200, and the third-place team received $100. All participants received a custom designed t-shirt.

High School Visits

During the spring semester, Upper Peninsula high school classes are invited to visit our campus. Visits include attending our Anatomy and Physiology lecture, hands-on activities with current college students, lunch at Wadsworth Hall, and meeting with our faculty to discuss careers. This past year 148 high school students, from five different schools visited our campus!

HOSA Future Health Professionals

We are excited to build relationships with the local Health Occupations Students of America (HOSA) chapter. Both Houghton and Baraga/L’Anse HOSA chapters visited our campus to learn more about medical laboratory science through hands-on activities. We also traveled to the regional competition in Escanaba to participate in the college fair.

Summer Youth Programs

Due to the flooding that took place in Houghton county early in the summer, the first week of SYP programs was canceled. Thankfully, the campus and the community pulled together to ensure the rest of programs ran as scheduled. Throughout June and July, 53 middle school students and 123 high school students from around the world lived on our campus for a week to learn more about topics in biology. We offered classes in forensic science, medical physiology, medical laboratory science, biotechnology, and aquatic ecology.
Recipients of the Songer Research Award competition announced

Matthew Songer, MD (Biological Sciences ’79) and Mrs. Laura Songer (Biological Sciences ’80) recently donated funds to support a research project competition for students interested in human health and medicine. The Songer’s gift supports one award for undergraduate research ($4,000) and a second award for graduate research ($6,000).

A review committee consisting of Shekhar Joshi, Biological Sciences Department Chair, Jason Carter, Kinesiology and Integrative Physiology Department Chair, and Matt and Laura Songer reviewed the 13 applications for the award.

Because the quality of the proposals was so high, the committee struggled to identify a single winner in each area. Consequently, the College of Sciences and Arts agreed to match the Songer’s support to allow a second winner at each level.

Congratulations to the 2017-18 Songer Research Award winners!

- **Abby Sutherland**, Kinesiology and Integrative Physiology undergraduate student - A New Age-Predicted Maximum Heart Rate Equation For Upper-Body Exercise Prescription.
  *Advisor*: Steve Elmer, Kinesiology and Integrated Physiology

  *Advisor*: Ebenezer Tumban, Biological Sciences

- **Gilliane Kenyon**, Medical Laboratory Sciences (Biological Sciences) undergraduate student - Establishing the Impact of DNA Minor Groove Alkylation on DNA Replication and Transcription.
  *Advisor*: Marina Tanasova, Chemistry

- **Jeremy Bigalke**, Kinesiology & Integrative Physiology graduate student - Orexin Control of Arginine Vasopressin in DOCA-Salt Hypertension.
  *Advisor*: Jenny Shan, Kinesiology & Integrative Physiology

Koivunen donates 40 acres to Michigan Tech

One of our distinguished alumni, Dr. Jon Koivunen and his wife, Valerie, have donated about 40 acres of wooded land at the tip of the Keweenaw Peninsula to Michigan Tech. Access to local ecosystems for both short and long-term studies is essential for promoting our missions in both educational and research endeavors, and the strategic development of rigorous empirically-based learning programs. The generous donation of this tract of land greatly enhances our ability to engage students in terrestrial field biology and promote these areas of study for years to come.

Teaching Lab Upgrades

In 2017-18, the Department of Biological Sciences invested $65,000 in updates to our teaching labs. Some of the improvements include:

- Compound microscopes for general biology and medical laboratory science labs
- Dissecting microscopes for the genetics lab (used for fruit fly experiments)
- Cell phone adapters for microscopes – these allow students to view and capture images of specimens
- Serofuges for the medical laboratory science labs
- New stirring hotplates
- A new data acquisition system (LabQuest) and sensors for the general biology labs
- Plant light banks
- Anatomy in clay sets – used in the Anatomy and Physiology labs

Biology Learning Center Update

The Biology Learning Center had a busy year, with over 1,500 students seeking help in many different classes. Coaches worked with small groups in the fall, facilitating lab discussions and helping students prepare for their first General Biology exam. In the spring, MCAT review sessions were in full force, prepping students for medical school exams. Two fun new initiatives were also started this year: Anatomy Art night, where students review human anatomy in creative ways, and the BLC Book Club. Both allowed students a new experience in the BLC. Director Brigitte Morin and the coaches are looking forward to the fall 2018 semester.
New Resources for Michigan Tech Pre-Health Students

In 2017-18, Michigan Tech invested heavily in improving our commitment to supporting undergraduate students who choose to continue their education with graduate-level health programs. Nicole Seigneurie (pictured pg. 6), who joined Michigan Tech’s College of Sciences and Arts in 2017 in a new position, has been instrumental in improving existing resources and developing entirely new ones. One of her most important roles in this new position has been the creation of the new Pre-Health Professions resource website.

On the website, pre-health students can find information about the pathways to health careers, tips for success and a news/events feed (including blogs about Michigan Tech pre-health students and their success stories), and application and preparation materials for various health programs. Finally, the page includes a unique “Get Experience” resource, which highlights options for students to gain and get involved.

In addition to designing and improving the pre-health website, coordinating pre-health events on campus, and maintaining dialogues with health programs nation-wide, Nicole also works directly with students interested in health careers. She assists students with navigating program application processes, understanding admissions requirements, and helping to connect students with resources and shadowing/volunteering opportunities.

For more information about pre-health at Michigan Tech, contact Nicole at nmseigne@mtu.edu

Visit Michigan Tech’s new Pre-Health Professions website at mtu.edu/pre-health/

Awards and Honors

The International Association of Bryologists (IAB) dedicated a recent issue of “Bryophyte Diversity and Evolution” to Dr. Janice Glime, Professor Emerita of Biological Sciences. In addition, two new species were named after Professor Glime to honor her lifetime achievements in the field.

Assistant professor John Durocher was elected president of the Michigan Physiological Society (MPS) in 2017. Established in 2013, the MPS is an officially sanctioned local chapter under the umbrella of the American Physiological Society. The 2018 annual MPS conference was held at Michigan Tech this past June.

Clinical Practicum Coordinator Kelsey Johnson was selected as Career Ambassador for the American Society for Clinical Pathology (ASCP) in 2017. In 2018, she was announced as a recipient of the ASCP Career Ambassador 2.0 Award in recognition of her outstanding volunteerism. She will accept her award at the ASCP National Meeting in Baltimore, MD, on October 4, 2018.

Ashley Coble (PhD 2015) received the Manierre award from the Huron Mountain Wildlife Foundation in August 2018 in recognition of her two papers published in 2016 in Biogeochemistry and Journal of Geophysical Research-Biogeosciences.

Pictured (L to R): Dr. Janice Glime, Dr. John Durocher, Kelsey Johnson, and Ashley Coble
**Morin wins University Distinguished Teaching Award; Three Other Biological Sciences Faculty Honored**

*Brigitte Morin’s* parents are educators, so it is not surprising that she became a teacher herself. In fact, she's become a very good one. Morin knew she wanted to teach since she was a kid. It was in her blood she says. “Both my parents were educators—my mother was a first-grade teacher and my father taught high school English and French.” Morin is the recipient of Michigan Technological University’s 2018 Distinguished Teaching Award in the Lecturer, Professor of Practice, or Assistant Professor category.

Bruce Seely, former dean of the College of Sciences and Arts says, “Brigitte's infectious enthusiasm is apparent to everyone who knows her and there is no surprise she has received this recognition. She clearly loves teaching—and her students know it.”

In one student’s words, “I couldn’t have asked for a better teacher than Brigitte. She realizes the importance of good grades, but she looks deeper than that. She challenges us, but makes it manageable. She cares about our well-being, not just our scores. She makes an impact.”

**2018 Society for Freshwater Science Meeting**

*Dr. Casey Huckins* and *Dr. Amy Marcarelli* represented Michigan Tech at the 2018 Annual Meeting of the Society for Freshwater Science (SFS), which was held this year in Detroit, MI on May 20-24. Eight Michigan Tech students accompanied them: one undergraduate (Andrea Norton), one MS (Ryan Van Goethem) and six PhDs (Christopher Adams, Colin Brooks, Brian Danhoff, Erin Eberhard, Kevin Nevorski, Bradley Wells).

The group presented a diverse array of talks and posters:

- **Spatial And Temporal Movements Of Brook Trout In A Southern Lake Superior Tributary** – Christopher Adams, Casey Huckins, Amy Marcarelli (oral presentation)
- **Use Of Structure-from-motion Photogrammetry To Evaluate Fluvial Substrates** – Brian Danhoff, Casey Huckins (oral presentation)
- **Patch Dynamics Of Nitrogen Fixation And Denitrification In Streams** – Erin Eberhard, Amy Marcarelli, Caleden Baxter, Stephen Techtmann (oral presentation)
- **Restoration Of A Coaster Brook Trout Population And A Spawning Site Impacted By Fine Sediments** – Casey Huckins, Anthony Matthys, Brian Danhoff, Amy Marcarelli, Edward Baker (oral presentation)
- **Of Small Streams And Great Lakes: Integrating Tributaries To Understand The Ecology And Biogeochemistry Of Lake Superior** – Amy Marcarelli, Ashley Coble, Karl Meingast, Evan Kane, Colin Brooks, Ishi Buffam, Sarah Green, Casey Huckins, David Toczydlowski, Robert Stottlemyer (oral presentation)
- **Does Denitrification Get Memorial Day Off? An Examination Of Variation In Denitrification Over Daily To Seasonal Time Scales In A Forested Streams** – Kevin Nevorski and Amy Marcarelli (oral presentation)
- **Denitrification And Nitrogen Fixation – Do They Occur In Lake Superior Tributaries?** – Andrea Norton, Kevin Nevorski and Amy Marcarelli (poster presentation)
- **Effects Of Invasive Macrophytes On Littoral Primary Producers In North-temperate Lakes** – Ryan Van Goethem, Amy Marcarelli, Casey Huckins (oral presentation)
- **Influence Of Fine Sediments On Interspecific Competition In Salmonids** – Bradley Wells and Casey Huckins (poster presentation)

*Read the full story and see the group’s other activities at streamnitrogen.mtu.edu/2018/06/15/2018-society-for-freshwater-science-meeting/*
New Faculty, Staff, and Administration

**Dr. Paul Goetsch** - Assistant Professor, Biological Sciences
Dr. Paul Goetsch joined the Department of Biological Sciences as assistant professor of genome editing and bioinformatics. He comes to Michigan Tech from the University of California, Santa Cruz, where he spent the last two years as an American Cancer Society’s postdoctoral fellow. Paul received his PhD from University of Wisconsin, Madison in 2015. His research interests are developmental biology and epigenetics, and how they could be applied to the diagnosis and treatment of human diseases like cancer.

**Dr. Chunxiu (Traci) Yu** – Research Assistant Professor, Biological Sciences
Dr. Chunxiu Yu (Traci) joined the Department of Biological Sciences as Research Assistant Professor in 2018. She works with Deep Brain Stimulation (DBS) and Parkinson’s Disease (PD). Traci came to Michigan Tech from Duke University and she has already brought in one NIH grant with her. Traci graduated from Weizmann Institute of Science, Israel, with a doctoral degree in Neurobiology. The long-term goal of her work is to understand the circuit mechanisms underlying the therapeutic effects of DBS for PD using a combination of electrophysiology, anatomy, optogenetics, and behavior.

**Nicole Seigneurie** - Pre-Health Coordinator (College of Sciences and Arts)
Nicole graduated from Oakland University with a BS in Health Sciences in 2011 and received her MS in Exercise Physiology from Oakland University in 2014. While obtaining her masters, she taught undergraduate exercise science courses at Oakland University from 2012-14. After graduating, she worked for a healthcare company from 2014-17 before joining Michigan Tech in July 2017.

**Dr. David Hemmer** – Dean, College of Sciences and Arts
Dr. Hemmer began as Dean of Michigan Tech’s College of Sciences and Arts (CSA) on July 1, 2018. Hemmer comes to Michigan Tech from the University at Buffalo, The State University of New York where he was chair and professor of mathematics. Hemmer succeeded retiring Dean Bruce Seely, who led the College for the last decade.

**Dr. Richard Koubek** – President, Michigan Technological University
On April 13, 2018, the Michigan Technological University Board of Trustees elected Dr. Richard J. Koubek, executive vice president and provost of Louisiana State University, to be the University’s 10th president. Dr. Koubek succeeded President Glenn D. Mroz on July 1, 2018.

Goodbyes

**Emily Betterly** - Administrative Aide, Biological Sciences
After 25 years at Michigan Tech and 11 years with the Department of Biological Sciences, Emily Betterly retired from her position as an administrative aide in July 2018. She is currently enjoying her retirement.

**Dr. Bruce Seely** - Dean, College of Sciences and Arts
On June 30, 2018, Dr. Bruce Seely retired after serving as the Dean of College of Sciences and Arts for 10 years. Under Dr. Seely’s leadership, the College of Sciences and Arts attracted and retained world-class faculty, improved and maintained facilities, prompted interdisciplinary collaborations among scholars, and increased supplemental educational opportunities for our students to create the future. We are grateful to Dr. Seely for his strong support of the Department of Biological Sciences and wish him well in his future endeavors.

**Dr. Glenn Mroz** - President, Michigan Technological University
During his tenure as 9th president, Michigan Tech reached record-breaking enrollment levels for undergraduate, graduate, and women students. The University expanded its research spending to more than $72.5 million—the highest ever—and correspondingly increased the significance, value, and renown of its creative work. Thank you, President Mroz, for your leadership.
2017-18 Biological Sciences Scholarship Winners

Lillian MacFarland Baklarz Endowed Scholarship
- Dominque Aleo, Biological Sciences, Pre-Professional, Class of ’19
- Sami Bolles, Biochemistry & Molecular Biology, Class of ’21
- Maya Braden, Biological Sciences, Pre-Professional, Class of ’19

Kathy Jean Jensen Scholarship
- Dana Anderson, Biochemistry & Molecular Biology, Class of ’20
- Gavin Rye, Biological Sciences, Pre-Professional, Class of ’20

Medical Endowed Scholarship
- Piersan Kimmes, Biological Sciences, Pre-Professional, Class of ’19
- Callie Swaney, Biological Sciences, Pre-Professional, Class of ’21
- Matthew Tocco, Biological Sciences, Pre-Professional, Class of ’19

Soldan 4+1 Scholarship
- Melanie Batchelor, Medical Laboratory Science, Class of ’18

Kathryn Cramer Scholarship
- Ashley Videtich, Medical Laboratory Science, Class of ’18

Tech Is Scholarship
- Caitalyn Nielson, Medical Laboratory Science, Class of ’18

Cornish-Kimball Endowment
- Caitalyn Nielson, Medical Laboratory Science, Class of ’18
- Taylor Tienhahara, Medical Laboratory Science, Class of ’18
- Marissa Kinney, Medical Laboratory Science, Class of ’18
- Sara Halonen, Medical Laboratory Science, Class of ’18
- Peyton Gast, Medical Laboratory Science, Class of ’20
- Jennifer Siffer, Medical Laboratory Science, Class of ’20
- Jamie Brisson, Medical Laboratory Science, Class of ’20

Faculty Promotions and Tenure

Congratulations to the following biological sciences faculty members who were promoted in the 2017-18 academic year:
- Dr. Thomas Werner (pictured pg. 2), Assistant Professor, was promoted to Associate Professor with tenure.
- Dr. Rupali Datta (pictured pg. 2), Associate Professor with tenure, was promoted to Full Professor.

Giving Opportunities

The Department of Biological Sciences is dedicated to providing students with the greatest possible opportunity to succeed. However, we cannot provide the best education for our students without the best faculty, staff, equipment, and facilities. Your generosity helps us make our goal of providing the best undergraduate and graduate experiences a reality.

You can find more information at mtu.edu/biological/department/giving, or contact the department chair at cpjoshi@mtu.edu.

Thank you for your support!

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Congratulations to our 2017-18 Graduates!