



SPRING 2023

Biomedical Laboratory Diagnostics Program

MSU

College of Natural Science | Newsletter for Alumni and Friends



Instincts lead to **transformative work** on life-threatening pathogen

Professor Leonel Mendoza, an MSU infectious disease researcher, began studying a skin disease affecting animals known as pythiosis more than 40 years ago. Since then, he has written numerous papers, developed a reference lab, and created a immunotherapeutic vaccine for its treatment.

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From the Program Director...

The Biomedical Laboratory Diagnostics (BLD) Program is doing well, but we are missing a few very familiar faces across the faculty and staff. Professor Frances Pouch Downes retired, Mariane Wolfe left

BLD for a position with the Association of Public Health Laboratories and our “rock of Gibraltar,” Ellen Rzepka, has retired (see page 4). Considering our size, this leaves a big hole. The hardest part in this new environment is finding replacements. Luckily, as always, our faculty and staff are digging in and helping to keep everything moving forward.

We have 31 students going out to clinic over the next year and at least 30 applications for the following cohort. We will have some clinic openings going unfilled again. There is truly a need to get young people excited about entering this profession. As you all would agree, the opportunities in this profession are restricted only by our own energy, creativity and drive.

Our new spiral curriculum is working well, and we are told by our clinics that our students are well prepared. The student group, BLDSA, is more active than ever, and they seem to have a meeting or project about once a week. Our support to the students continues to grow due to our generous alumni and the Health Resources & Services

Administration (SMiLeS) grant we received. BLD provides some level of support to almost 20 percent of our students (this is not counting support they may get from MSU Financial Aid). Thanks to all for helping to educate the next generation of laboratorians.

By the time you all read this, the recent tragedy on campus will be a bit distant but it will never be forgotten. It was random, senseless and all the other descriptors you can think of, but it did happen. Lives were lost, several others changed, and all Spartans are forever affected.

I would like to relay to those reading how I personally got messages

from alumni, colleagues and friends a few hours after the news broke. There were many people I hadn't heard from in a long time, but they all shared their shock and outrage and offered comfort and solace to the entire Spartan and BLD community. What an amazing network of compassionate and soulful people BLD has; it truly speaks to the passion we all have for MSU and this profession. I can always count on you all to be there when BLD needs anything.

I will close now and let you go on to read about all that is happening in BLD. Please, if you are in the area, stop in. All the faculty like to catch up with the latest developments in your careers and lives. Thank you for your time and GO GREEN! 🍀



“What an amazing network of compassionate and soulful people BLD has; it truly speaks to the passion we all have for MSU and this profession.”



John Gerlach, Director
Biomedical Laboratory Diagnostics Program
gerlach@msu.edu



Andrew Davidek, biomedical laboratory science, '18, is attending medical school at Lake Erie College of Osteopathic Medicine, Erie, Pa., and will be starting his clinical rotation years this summer. Prior to starting medical school in 2021, Davidek was a medical laboratory intern at the Detroit Medical Center, Detroit, Mich., for two years.

Meredith Herman, biomedical laboratory science, '17, is a fourth-year medical student at MSU College

of Osteopathic Medicine. She was one of 23 medical students in the country to receive a 2022 College of American Pathologists Distinguished Medical Student Award, which is among the highest honors for a student who wants to pursue pathology for residency.

William Shuster, medical laboratory science, '21, has taken a full-time position as a clinical laboratory scientist at Sparrow Hospital in downtown Lansing.

Zachary Sokolowski, clinical laboratory science, '16, has worked in molecular diagnostics at the University of Michigan, Ann Arbor, since he graduated, and then took a promotion in September 2022, moving to the Molecular Genetics Lab as a medical technologist specialist.

> In Memoriam



Sheila Marie Method

Sheila Marie Method, alumna and long-time donor to the BLD Program, died on December 23, 2022. She was 66.

Method received her B.S. in medical technology from MSU in 1978 and completed her medical technology internship at Battle Creek, Mich., hospitals. She then received an M.S. in administration from Central Michigan University, Mt. Pleasant, Mich., in 1995. Method worked for 40 years for the Owosso Memorial Hospital in medical technology and informational services, most recently as a senior clinical analyst.

Gifts may be made in her memory to Michigan State University for Medical Technology at givingto.msu.edu.



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Retirements



Frances Pouch Downes

Frances Pouch Downes, professor, retired in December 2022. Prior to joining MSU in 2012, she served for 12 years as the State Public Health Laboratory director and administrator of the Bureau of Laboratories at the Michigan Department of Community Health. She has more than 22 years of experience in public health laboratories.

She was president of the Association of Public Health Laboratories from 2008-2009 and served on the board of directors from 2004-2012. She served on federal advisory committees addressing microbiological safety of food and tuberculosis control and was appointed to the Centers for Disease Control and Prevention's Scientific Advisory Committee. She also worked as a Peace Corps volunteer in West Africa and provided laboratory quality and technical assistance in Mozambique and China.



Ellen Rzepka

Ellen Rzepka, office supervisor and fiscal officer, retired in February 2023. She first joined the BLD Program in 1988, under the leadership of Jerry Davis, the program's fifth director. Rzepka had previously held two positions in the Department of Chemistry.

Although retired, Rzepka plans to participate in the monthly Zoom meetings of the BLD Alumni and Friends Group, and be a part of the planning committee for BLD's 100th anniversary celebration in 2026. (See related story on page 7).

New Staff



Brad Childs

Brad Childs, M.S., M(ASCP)^{CM}, academic advisor and graduate program coordinator, joined BLD in October 2022. He received both his bachelor's and master's degrees from MSU's BLD Program. A "microbiology fanatic," he has spent the past 12 years reading every available resource to further his understanding of the field. He has worked in the areas of food, environmental, and clinical microbiology.



Paul Henderson

Paul Henderson joined BLD as communications manager in April 2022. Before coming to MSU, he was a videographer in the University Communications Department at Central Michigan University. In addition to his work being featured on Google's "Year in Review" video, CNN News also featured his work. Previously, he held jobs at a small multimedia company in Lansing, and the *Lansing State Journal*. Henderson received his journalism degree in 2011 from MSU.

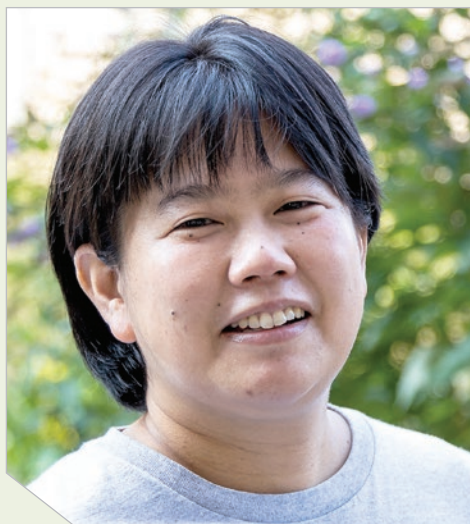


Kasandra Liske

Kasandra Liske, MLS(ASCP)^{CM}, joined BLD in November 2022 as laboratory coordinator. She received her B.S. in medical laboratory science from Ferris State University in 2017, and completed her internship at MidMichigan Medicine in Midland, Mich. She then held positions at McLaren Greater Lansing and MSU's Veterinary Diagnostic Laboratory. She is now working on her master's degree in public health through Ferris State University in Big Rapids, Mich.



Kedzie Hall
Home of the
BLD Program



Yukari Nishizawa-Brennen, Ph.D., MLS (ASCP)^{CM}, SC (ASCP)^{CM}, MT (Japan)

Yukari Nishizawa-Brennen, BLD assistant professor, received the 2022 NatSci Faculty Advising Award.

“As a professor who teaches (full-time) difficult science courses, Yukari strives to motivate students to meet the challenges of her coursework by creating a supportive environment where students can grow while maintaining high academic standards,” said Rachel Morris, BLD graduate program director. “She is always ready to answer a question or help with a concept. There is no wonder she made an exceptional transition to advising, even considering the difficulties and pressures it presented in our unit this year.”

“I really appreciate my colleagues and students who were involved in my nomination,” Nishizawa-Brennen said. “I would like to point out that I had to start advising after one week of training by the former advisor. I couldn’t/cannot do my advising without all the help from NatSci advisors.”

BLDAF call for nominations

by Cindy Sue Raven, MT(ASCP), CHS(ACHI)

President, Biomedical Laboratory Diagnostics Alumni and Friends Board

The Biomedical Laboratory Diagnostics Alumni and Friends Board (BLDAF) is currently seeking new members for three-year terms.

The purpose of the BLDAF is to promote and support the Biomedical Laboratory Diagnostics Program at Michigan State University and to foster connections among the alumni, students and friends of the Program. The board meets online, once each month (except for summer);

so even if you are out of state, you can participate.

If you are interested in serving on our board, please contact me, Cindy Raven, at craven@charter.net, and include your name, contact information, a short biography and a CV/resume **by April 21**. Come and join the fun!

Your input is greatly appreciated.

From all of us at BLDAF, **Go Green!**

Contact Us

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Instincts lead to transformative work on life-threatening pathogen

Leonel Mendoza didn't expect to study *Pythium insidiosum* (*P. insidiosum*), but he is happy he did.

In the early 1980s, Mendoza, a medical microbiologist who, at that time, had no background with animals, was hired to begin investigating a skin disease in horses while working at the National University of Costa Rica School of Veterinary Medicine. To his surprise, he found that the same skin disease was previously reported at the beginning of the 20th century, but later abandoned. He started with the isolates he recovered from the infected Costa Rican horses.

“I can die with no regrets because I know I have made a difference to those suffering from this life-threatening infection.”

“Sometimes you just have to follow your instincts,” Mendoza said.

After graduating from the University of Texas-Austin with a Ph.D. in medical mycology, Mendoza continued his studies on the fungal-like pathogen.

Pythiosis, caused by *Pythium insidiosum*, is commonly diagnosed in animals (horses and dogs) but can also affect humans. The disease is acquired from contaminated soil in wet environments and can enter the body through a small

wound. If not treated early, the host could develop a life-threatening infection with large, open lesions on the skin.

“My idea of research is to explore,” Mendoza said. “We knew there may be some problems because, when I joined MSU, pythiosis was not even in the veterinary curriculum.”

In 1996, Mendoza arrived at MSU with hopes of developing a reference lab for pythiosis while continuing his research on *P. insidiosum*. Since then, his research laboratory at MSU has acquired the largest collection of the pathogen in the world. These isolates are available to the scientific community upon request, a valuable contribution to the international effort to understand the virulence factors of this neglected pathogen.

“Physicians and animal owners who had cases contacted us and asked us questions about how to manage, how to diagnosis, and what tools are available to perform those analyses,” he said. Collaborators (around the world) are essential (to this research).” Dr. Raquel Vilela, the director of the Instituto Superior de Medicina and professor at the Federal University of Minas Gerias—both in Brazil—has been a key partner in Mendoza’s research.



Professor Leonel Mendoza (right) and undergraduate members of his lab are looking into the ancestral origin of *P. insidiosum*.



Pythiosis, commonly diagnosed in animals (horses and dogs) is acquired from contaminated soil in wet environments, often through small wounds. If not treated early, it could become a life-threatening infection with large, open lesions on the skin.

Mendoza’s contributions on pythiosis include a developed immunotherapy “vaccine” that is used to treat the infection. It uses antigens to trigger a host’s immunological response, which damages the cells of the pathogen. Mendoza said this therapy has an 80 percent effective rate for curing pythiosis in horses.

“I can die with no regrets because I know I have made a difference to those suffering from this life-threatening infection,” he said.

Currently, Mendoza has undergraduate students looking into the ancestral origin of *P. insidiosum*, to investigate if it came from the sea—as is the case of its closest relative *P. grandisporagium*.

“We hope this study will shed light on its ecological preferences, putative virulence factors and its management,” Mendoza said. 🌱

Long-time, dedicated employee retires from BLD family

Ellen Rzepka (B.A., communication arts, '75) has been a part of the Biomedical Laboratory Diagnostics (BLD) family for 35 years. She has transitioned with the program through two separate positions, two campus locations, three accounting systems and four directors. But she felt that she was finally ready to retire this year; her last day in the office was February 3.

After receiving her bachelor's degree from MSU, she worked first in the office of a psychological services company, and then for a condo development association. She learned that administrative work was her forte.

She then held two positions in MSU's Department of Chemistry—as a secretary for organic chemistry, and then as a graduate secretary, where she handled the finances and appointments for more than 300 grad students, in addition to managing the graduate budget.

In 1988, she joined the BLD family as an administrative assistant to the director—Jerry Davis.

"It was smaller than chemistry, but I was super impressed with the program," Rzepka said. "The professors were so connected with the students. It was a close-knit group where you could really establish relationships."

When Rzepka had been employed in the chemistry department, MSU had instituted a new accounting system (DEPACT), and she had been one of their beta testers. Rzepka applied this knowledge to her new job.

"When I first came to BLD, they were still using paper ledgers," said Rzepka, who took the initiative to migrate the program's financial records into MSU's accounting



Ellen Rzepka

system and took additional courses offered through MSU to improve her skills and keep the unit running efficiently.

When MSU Global introduced the first online course in 2001, BLD—and Rzepka—became the pioneer in online learning at MSU.

GIVING "I believe in philanthropy. I will continue to give to MSU; I love our university."

"It was wildly successful and very lucrative," Rzepka noted. "Our online courses benefited programs across the country in the training of medical laboratory scientists." New technologies—such as molecular testing and flow cytometry—were being developed; but students who had graduated from these types

of programs in the early years never received training in these technological advancements.

"Over 20 years, thousands of students have gone through these online programs," she added.

"These are the types of creative things people in BLD have been doing—which kept me interested in staying."

In 2002, BLD began offering an online master's degree. Currently, the program offers three online master's degrees and six online certificate programs.

"BLD is very much a family unit within the larger university," Rzepka said. "Our students appreciate the education they receive, and they stay connected with our program. This is reflected in the many endowments that have been established by our alumni."

Rzepka will personally continue to support the BLD program and MSU.

"I believe in philanthropy. I will continue to give to MSU; I love our university," said Rzepka, who has also supported WKAR and the Wharton Center for Performing Arts.

Outside of work, Rzepka has been a member of the Lansing area Sweet Adelines International—an a cappella group—for more than 30 years, and serves as president of the MSU women's golf league. She is also looking forward to an upcoming trip to Hawaii.

Although retired, Rzepka plans to continue to participate in the monthly Zoom meetings of the BLD Alumni and Friends group. "I love being involved with them," she said.

And she intends to be a part of the planning committee for BLD's 100th anniversary celebration in 2026. 🍀

BLD Student Association update

by Mikayla Sague, BLDSA Executive Board

The role of the Biomedical Laboratory Diagnostic Student Association (BLDSA) is to foster meaningful connections between BLD students, introduce students to professors outside of the classroom and spread awareness of opportunities within the BLD and MLS majors. BLDSA creates a variety of events each semester including volunteer opportunities, social events, speaker series and study sessions to promote student involvement and success in the BLD community.

This past year, we hosted open house events to share pizza and information about BLDSA with students; and invited guest speakers—Kristin Koshar, MT, and Dr. Brandy D. Gunsolus, DCLS, MLS(ASCP)^{cm}—to share their collegiate and professional experiences with students over Zoom.

BLDSA helps provide opportunities for students to give back and help one another. We held a student panel in collaboration with MSU Women in STEM where students could

ask senior-year students for advice on navigating campus, classes, and more; hosted study sessions where professors and upper-level students were available to help answer questions before exams; and organized a fundraiser with Raising Canes to raise money for Sparrow

Hospital's Gift Give Back program.

I am excited to see what the future holds for BLDSA, and grateful to be a resource for all BLD students. I would like to thank all those who have contributed to the success of this student association.



Current BLDSA officers and members posing outside of MSU's Kedzie Hall.

BLD graduate program update

by Rachel Morris, Graduate Program Director

This past year was an exciting time for the Biomedical Laboratory Diagnostics graduate program for several reasons. First, as the strains of the pandemic on our profession and society have eased, we have seen a small group of students finally have the time to return to their studies and prepare to defend their final research projects. Two defenses are scheduled for this spring, with more possible.

We are also excited about the increase in master's degree enrollment. Five new students entered the program for fall semester 2022, and we admitted six new students

for spring semester 2023. We are so happy to welcome this 2022/2023 cohort and look forward to the diversity of experience and insight that they will bring to our classes this coming year.

Finally, the BLD graduate program welcomed one of its own as our new graduate program coordinator in October of 2022. This critical role is now filled by Brad Childs, who graduated from our M.S. BMLO program in 2016. Mr. Childs is the student's first line of contact with BLD, and he provides support and advising throughout the student's time in our program.

Grad student works on life-changing gel

In the dermatology clinic at Stanford University School of Medicine, John Dolorito, a science research professional, encountered patients suffering from a painful skin disease.

“I wanted to do something for them,” said Dolorito, who is completing his master of science degree online in biomedical laboratory operations at Michigan State University.

For the past two years, Dolorito has been helping Peter Marinkovich, M.D., a dermatologist with Stanford University School of Medicine, develop a topical gel to combat the skin disease known as *Epidermolysis bullosa*.

Epidermolysis bullosa, also known as “butterfly children” disease, is a rare skin disease that causes the skin to be so fragile the slightest bump or scrape could lead to blistering and chronic wounds.

In 2015, Marinkovich began working on the gel, which helps heal and regrow skin by regenerating the collagen VII protein. Without this protein, human skin is very fragile.

“What we are trying to do is to avoid any invasive therapy or any therapy that requires surgery (for the patient),” Dolorito said.

Dolorito’s project is to scale up production and purification of the gel while meeting U.S. Food and Drug Administration (FDA) requirements. In addition to ensuring cells reach the target level of collagen VII, he must ensure that the recombinant proteins manufactured are free of impurities.

“Helping these patients really motivates me,” he said. Giving



John Dolorito, an MSU graduate student completing his master’s degree in biomedical laboratory operations, is working with a Stanford University dermatologist to develop a topical gel to combat a rare skin condition, *Epidermolysis bullosa*, an inherited disease that makes the skin incredibly thin and brittle.

IFE-CHANGING

“Helping these patients really motivates me. Giving them something that can ease their pain even for a few days gives me encouragement . . .”

them something that can ease their pain even for a few days gives me

encouragement that they have more tools to fight their everyday struggles.”

Currently, Marinkovich is preparing for a pre-IND (investigational new drug) submission to the FDA for the gel.

Dolorito has completed his coursework for his master’s degree, leaving him with only a thesis to complete. His mentors felt this project would fit in well for the Good Manufacturing Practice (GMP) facility at the University of California-Davis.

In short, Dolorito’s work started in a research and development lab and his thesis is to bring the whole process of purification to expansion to propagation to the GMP facility.

“I like being a part of this project; to work on my thesis as part of this project really excites me,” he said. ♡

BLD alum puts heart and soul into his work

André Lee considers himself a lucky guy. And Lee, co-founder of Heart and Soul Hospice in Nashville, Tenn., has made the most out of that luck.

Lee graduated in 1966 with a degree in medical technology (now known as medical laboratory science in Michigan State University's Biomedical Laboratory Diagnostics Program). During his time at MSU, he was also a part of the Army ROTC program.

After completing an internship at a hospital in the Detroit, Mich., area, he enlisted in the Army as an officer and oversaw two different laboratories in Texas and Colorado for six years.

When he finished his military service, Lee applied to Cornell University to pursue his master's degree. With "\$1,000 to his name" he traveled to New York and met with Cornell admissions staff in his Army uniform. By the end of the visit, he was awarded a full-ride scholarship to study health administration.

Following graduation, Lee returned to Michigan to work as a hospital administrator in Detroit. When the hospital's chief executive officer resigned three months later, the hospital board hired Lee for the position.

"All of a sudden, I was a CEO (of a hospital) after just finishing graduate school! That's pure luck," Lee said of the opportunity.

While in this position, he used the GI Bill to study public administration

and earn his Ph.D. through Nova Southeastern University, a Florida-based institution that allowed him to take courses in Michigan.

After working at a number of hospitals and earning his Ph.D., Lee was looking to change careers.

"I thought about home healthcare, but I wasn't too excited about doing that," Lee said.

ALUM
"Clearly, there was a need for Black representation in hospice."

At a health conference, Lee met a Black woman who worked for a financial aid government agency, and she asked if he had ever thought about going into hospice care. She relayed that when she attends National Hospice Association



André Lee has worked to open several hospice care centers, including his most recent venture—Heart and Soul Hospice in Nashville, Tenn. — with fellow MSU alum Dave Turner.

meetings, there are typically about 600 participants, yet there are never more than four or five Black people in attendance.

"Clearly, there was a need for Black representation in hospice," Lee said.

From that conversation, Lee investigated opening a hospice care center. The challenge was he didn't know how to start one and there wasn't a manual on how to begin. He eventually located a gentleman in California who had started one, and Lee flew out to meet with him.

From there, Lee never looked back. He has opened several hospice care centers, including his most recent venture—Heart and Soul Hospice in Nashville, Tenn.—with fellow Michigan State alum Dave Turner.

Lee and Turner hope to reach more of the Black community with this hospice care, but it has been slow going.

"We have been trying to (educate) through the Black churches, but it has been difficult," Lee said. "You have to reach them in order to reach the Black community."

Being a Black-owned hospice care center, Lee likes to think they are symbolic for Black people, but they don't discriminate.

"We have always emphasized that Heart and Soul is here to help people who are transitioning," Lee said. "We are all dedicated (health) professionals who love to help people."

Lee, who has already written several books, intends to write one on minority care or hospice care in the minority community. 🌱

Q&A: BLD's online certificate programs

Q: When were online certificates first offered in MSU BLD?

A: John Gerlach, BLD program director: We started the molecular series using distance education—coding/decoding (CODEC)—optical lines in 1997 before going online in 2001.

Q: What online certificates are offered?

A: Rachel Morris, graduate program director: We offer certificates in:

- molecular laboratory diagnostics
- immunodiagnostics and flow cytometry
- advanced flow cytometry
- managing biomedical laboratory operations
- clinical mass spectrometry
- transfusion service management

We are hoping to add certificates in medical laboratory science pedagogy and clinical microbiology in the future.

Q: Who are the certificates designed for?

A: Morris: The certificates are geared toward working professionals who would like to obtain or update their skills in these areas.

Q: How have the courses changed throughout the years?

A: Gerlach: Our courses are continually updated to reflect changes in technology and applications.

Q: Why should lab professionals enroll in a certification program?

A: Morris: Laboratory science technology and practices change as medical research discovers new diagnostic markers and methods. The regulatory and billing environments also change regularly. This evolution in our field requires us to be lifelong learners. The certificate programs we offer provide up-to-date knowledge in six credit hours. The six credit hours can also transfer into a master's program if a student decides to pursue a degree.



Students in summer graduate lab prepping polyacrylamide gel electrophoresis (PAGE) gels in BLD 832, Molecular Pathology Laboratory.



Graduate students working on DNA isolation in BLD 852, Immunodiagnostics Laboratory.



Dr. Leann M. Mikesch, an assistant professor, helps a student load a pipette in BLD 872, Clinical Mass Spectrometry Laboratory.

c/o College of Natural Science
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BLD football tailgate 2022

The BLD 2022 tailgate was packed full of fun.

Alumni, students and friends gathered outside North Kedzie Hall for food and fun. This year, attendees participated in the competitive “Lab Olympics”—winning gold, silver and bronze medals in events such as pipet tip throwing and plate stacking.

As participants enjoyed the tailgate food, the Spartan Marching Band serenaded them; this was arranged by alum Margo Ross’s husband Scott, a former member of the marching band. After the tailgate event, many attendees walked over to Spartan Stadium to watch MSU beat Wisconsin in overtime. What a great way to top off the day.

For information about the BLD 2023 tailgate, go to <https://msuspartans.com/sports/football/schedule/2023>. We hope to see you there!



Spartan Marching Band serenading tailgate participants at the MSU vs. Wisconsin football game last fall.



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