THE UNIVERSITY OF TOLEDO

COLLEGE OF NATURAL SCIENCES AND MATHEMATICS

BIOLOGY **NEWS**

DEPARTMENT OF MOLECULAR, CELLULAR AND DEVELOPMENTAL BIOLOGY **FALL 2025**

Dear friends,

Bill Gates predicts that coders, biologists, and energy experts are the only three types of jobs likely to survive the AI revolution. I do not know about the other two areas, but I do appreciate it when anyone thinks biological research still demands human creativity and critical thinking, especially when that person is Bill Gates.

We are not just overjoyed or scared by Bill Gates' words. In the department, we do keep the future in mind and focus on our educational and research missions to prepare our students ready for the future. As you might have known, we adopted new department name since July 1, 2025, now calling ourselves Department of Molecular, Cellular and Developmental Biology. We want to assure our alumni, students and parents that the name change will only enhance the opportunities that our students receive top-notch education.

Inside this issue, you can find a list of scholarship winners representing our undergraduate students. There are also a few stories of our graduate students. We are grateful to all the donors who have supported the department. It was a great pleasure for me this semester to meet with Dr. James Hatfield again and Mr. John Capobianco for the first time. Both were our graduate program alumni and have provided generous financial support for our students. Realizing the importance of graduate education based on their personal experiences, both gentlemen have expanded their scholarships this year to make current graduate students also eligible to apply. At my invitation, Mr. Capobianco contributed a "Words of Wisdom" article explaining why he decided to set up the *Joseph A. and Mary A. Capobianco Memorial Fund* in honor of his parents to benefit students of need and merit. Dr. James Hatfield wrote the first article for our "Words of Wisdom" collections. Another contributor to the series this year is Dr. Lori Pile, who obtained her B.S. in Biology degree from our department. She is currently Professor in the Department of Biological Sciences and Associate Dean for Undergraduate Studies in the College of Liberal Arts and Sciences at Wayne State. Dr. Pile has also been a longtime donor to our Department Progress Fund.

You can find more alumni stories inside. We are always happy to read these stories. For one, these stories are encouraging and inspiring for myself and other professors: if education indeed changes people's lives, not as cold statistical numbers but in real personal stories, we will always find strength to overcome the various difficulties we face every day. Secondly, current students can always learn something from our alumni as our young friends explore their own ways forward. So, all alumni, please keep sharing your stories!

One outstanding feature of this department is its increasingly established status in research, not just any research, but research that involves our undergraduate and graduate students and gives them hands-on experiences. We are proud to report that the number of undergraduate students who registered for BIOL4910 research courses increased from 116 in 2021 to 178 in 2025. Our goal within the next few years is to have every undergraduate student graduate with at least one semester of research lab experience! An authentic research experience not only gives our graduates a competitive edge in today's job market but also equips them with the skill to learn new concepts and tackle unknowns. Related to this, we are also thrilled to report that The University of Toledo is currently ranked #3 nationally in acquiring NIH R15 grants, which promote undergraduate research, and our department has contributed a large share to this ranking (see story inside)! These competitive grants secured by the faculty in our department provide direct financial support to student researchers and cover the ever-inflating cost of reagents and instruments. To further help undergraduate researchers, a departmental Director for Undergraduate Research Experience position was set up to facilitate lab placement and activity coordination. Recently, former Director Dr. Heather Conti was tapped to be Associate Dean in the College of Natural Sciences and Mathematics. Dr. Scott Crawley has taken over as the new Director. I want to thank Dr. Conti for her tireless efforts to improve the undergraduate research experience in the past few years and I look forward to working with Dr. Crawley in the future.

The department is conducting searches for a tenure track assistant professor and a visiting assistant professor. The details of the positions can be found at UToledo Careers. Please help spread the news and encourage strong candidates to apply for these jobs.

Happy Holidays to All!

Song-Tao Liu

Professor and Chair, Department of Molecular, Cellular and Developmental Biology, UToledo

INSIDE THIS ISSUE

New and Newsworthy ...

A Year of Accomplishments: From ASH Recognition to Scientific Publication

By Hafiza Sidra Bashir, 5th year Graduate student, Fan Dong Lab

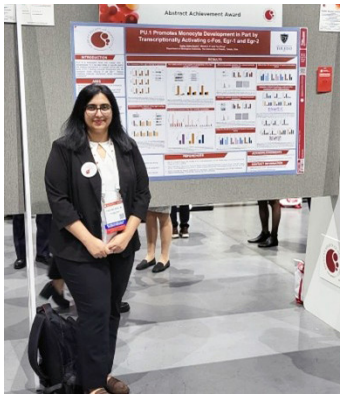
"Every milestone begins as a small step."

This simple truth has guided my journey as a graduate student, and it felt especially meaningful when I stood in the San Diego Convention Center, surrounded by more than 32,000 hematologists, researchers and clinicians from around the world. In December 2024, I had the honor of presenting my work at the Annual Meeting of the American Society of Hematology (ASH). I was also honored with the Outstanding Abstract Achievement Award, which included a $500 prize. This was an unforgettable moment that reaffirmed my passion for, and commitment to, scientific discovery. What began as small steps in the lab led to one of the most humbling and inspiring experiences of my academic career.

As a Ph.D. candidate in the Department of Molecular, Cellular and Developmental Biology, my research delves into the molecular mechanisms that govern blood cell development. All blood cells originate from a common progenitor cell known as a hematopoietic stem cell (HSC). These HSCs differentiate along distinct pathways to become the various types of specialized blood cells, a process orchestrated by complex regulatory mechanisms, including gene expression regulatory proteins and growth factors. My research explores how these different regulatory mechanisms interact and work in concert to guide the precise development and fate of HSCs.

Another major milestone this year was publishing my first first-author research article, "A Critical Role of the Erk1/2 Downstream Targets c-Fos, Egr-1 and Egr-2 in PU.1-Driven Monocyte Development", (PMID: 41206684) in November 2025. This accomplishment represents years of perseverance, troubleshooting and growth. Seeing my research become part of the scientific literature was not only a professional achievement, but also a reminder of how far I have come since my first days as an international student in graduate school. These accomplishments would not have been possible without the guidance of my advisor, Dr. Fan Dong, and the continued support of my colleagues and the department.

Beyond research, I am proud to serve as the College of Natural Sciences and Mathematics Representative in the Graduate Student Association for the 2025-2026 academic year. In this role, I advocate for student needs, strengthen communication between departments and help build a more supportive and inclusive environment. It is important for me to not only grow as a researcher but also to give back to the community that has supported my journey.



As I move forward in my doctoral research, I am committed to expanding my scientific horizons, growing as a scientist and exploring new questions that deepen our understanding of immune cell development and disease mechanisms. My long-term goal is to bridge molecular biology with a real-world translational impact that may eventually benefit patients.

Reflecting on my past year—from the excitement of attending the ASH annual meeting in San Diego to publishing my first manuscript and stepping into leadership roles—I feel both humbled and motivated. Being an international student from a small corner of the world, far from home, I understand what it means to dream beyond boundaries. These milestones remind me that with persistence and support, even the most distant goals can come within reach, and I look forward to the many steps still ahead.

On the Cutting Edge ...

This is the first in a series of articles highlighting the newest advances in the life sciences and how ongoing research in the Department of Molecular, Cellular and Developmental Biology is contributing to the progress.

How neurons drive behavior – a critical question for designing neural prostheses

In the not-too-distant future, patients suffering paralysis or neural injury may be able to communicate and move with the help of robotic devices that they control with their thoughts. It sounds like something out of a sci-fi movie, but the beginnings of this technology are already in place. For example, in 2025, a group at UC Berkeley and UC San Francisco attempted to restore speech in a patient who had suffered a brainstem stroke. The team implanted a sensor array in the brain's speech center to detect neuronal activity patterns and connected it, via computer, to a speech synthesizer. Using AI-based machine learning, the system was trained to recognize activity patterns in the brain corresponding to specific words, translate them and produce speech. The patient simply had to think of a word and the speech synthesizer would say it, using a voice that closely resembled the patient's original voice. Currently, the system can interpret over 1,024 words and do it

quickly enough to make conversation practical. Similar advances are also being made in limb movement for patients suffering spinal cord injury.

To keep improving neural prostheses like the ones described above, we will require intensive research and development. In all cases, a common challenge must be overcome: how do patterns of neuronal activity in the brain correspond to specific sensations and actions? Bruce Bamber's lab in the Department of Molecular, Cellular and Developmental Biology focuses on this question. Their approach is to record neuronal activity patterns across the entire brain as an animal receives a sensory stimulus and formulates its motor response. To make this problem solvable, the Bamber lab studies a comparatively tiny nervous system in the roundworm *C. elegans* (it only has 302 neurons, compared to 86 billion neurons in the human brain!). However, time and time again, we have seen that the fundamentals of how animals function are very similar, no matter which species we look at. Their experiments proceed on two parallel tracks. First, the behavioral responses to stimuli are extensively dissected using microfluidics technologies, video recording, tracking and analysis using custom-written software. Second, the neural responses across the whole brain are recorded using calcium imaging (an optical measure of neuronal activity) under the confocal microscope. In this way, the investigators can correlate neuronal activity patterns resulting from sensory stimuli with the subsequent motor responses and come up with hypotheses about the roles of individual neurons in connecting the two. They can then test these hypotheses by genetically inactivating specific neurons, or groups of neurons, and recording how behavior and brain activation patterns change. Ultimately, they hope to develop a comprehensive computer model for how the *C. elegans* nervous system couples sensory inputs to motor outputs. This experimental system has been undergoing development over the past few years, and we are now beginning to see high impact publications and external funding from NIH. Importantly, the Bamber lab has also invested in creating a highly user-friendly experimental pipeline which can be used to train budding researchers. This semester, 16 undergraduates are participating in the research, and all are generating primary data and performing downstream analysis. Ongoing refinements to the pipeline will make this experiential learning opportunity even more accessible for our undergraduates in the next few semesters.

This 'systems neuroscience' approach being pursued by the Bamber lab, and many other labs across the world, will provide a rigorous theoretical framework for how neural activity patterns represent sensory inputs and internal factors such as cultural values, memories and spontaneous thoughts, and drive motor outputs such as movement and speech. This framework will be indispensable for developing a new generation of neural prosthetics which can interpret natural brain activity with greater range, accuracy and speed to restore speech and mobility to neural injury patients.

For further reading, refer to …

Kaylo Littlejohn et al., **A streaming brain-to-voice neuroprosthesis to restore naturalistic communication**. DOI: 10.1038/s41593-025-01905-6

Hossain-Saad et al., **Olfactory combinatorial coding supports risk-reward decision making in *C. elegans***. eLife https://doi.org/10.7554/eLife.104828

The University of Toledo #3 Nationwide in Grants Awarded for Undergraduate Research

Research at the University of Toledo is supported by funding from a number of important sources. UToledo has had truly outstanding success in obtaining funds from one federal program in particular that supports undergraduate research. UToledo's recent recognition as an R1 research institute in the latest Carnegie Classification of Institutions of Higher Education underscores the high volume of research carried out. Areas of research excellence in astronomy and astrophysics, solar energy, water quality and sustainable technologies and cell architecture and dynamics are now well established. Funding for research comes from many sources which include private foundations and federal agencies like the Department of Defense, National Science Foundation and the National Institutes of Health (NIH). One particular case highlights the success UToledo has had in fulfilling the research mission. The NIH funding program, R15 - Academic Research Enhancement Award - was established to support meritorious research, expose students to research and to strengthen the research environment of the institution. Data available at the NIH reporter shows that UToledo is number three in the United States with respect to the historical amount of R15 funding acquired. This amounts to over 25 million dollars in grants awarded. UToledo is in the top five of total number of R15 grants, with 89 projects supported, and in the top four in total number of currently active R15 grants amounting to 6.8 million dollars in active awards. The impact of these R15 grants is immense. Research articles published in the highest impact journals like Cell Reports, Nature Communications and the Journal of Cell Biology are funded by R15 grants. This adds important knowledge to a number of scientific fields. Also, an important mission of the R15 program is to get undergraduate students involved in research. An R15-funded lab may recruit 5 to 10 undergraduates per year to carry out hands-on research. Over the years, hundreds of undergraduates have benefited from this program. This provides an important opportunity for experiential learning that helps

(Continued from page 3)

prepare students for success in the workplace. Many students with plans to enter professional schools (Dentistry, Medicine and others) opt to carry out research to round out their formal education. Several R15-funded researchers reacted to this news:

"*When was the last time you heard UToledo was top 3 in the Nation? Don't get me wrong. I know we do incredible things here, research and teaching-wise. But schools our size are in a very crowded field,*" – Dr. William R. Taylor, Molecular, Cellular and Developmental Biology.

"*In addition to the cutting-edge research we are able to conduct via the R15 mechanism, these grants also support our commitment to offering outstanding experiential learning opportunities to our undergraduate students. The number of undergrads I have in my lab could not be supported at many other R1 universities that don't have the same undergraduate research focus we have at UToledo,*" Dr. Heather Conti, Molecular, Cellular and Developmental Biology.

"Just this year alone, my R15 grant was able to support 10 undergrad researchers in my lab. This is an excellent experience for young scientists, gaining hands-on training at the bench. It's also an immense resource as a Principal Investigator. We were able to publish three research papers that included all the undergrads as co-authors!"- Dr. Scott W. Crawley, Molecular, Cellular and Developmental Biology.

Toledo CellulART 2025

On October 3rd, 2025, the seventh Toledo CellulART—a regional, one-day scientific meeting integrating cytoskeleton research and art—was held at the Center for the Visual Arts, designed by Frank Gehry, on the Toledo Museum of Art campus. Toledo CellulART 2024 drew 100 attendees from 12 different universities, covering 5 states and offered lectures, presentations and artistic exhibits exploring the intersections of science and art.

The event featured Dr. Christopher Chen, Founding Director, Biological Design Center, William F. Warren Distinguished Professor of Boston University and Associate Faculty of the Wyss Institute for Biologically Inspired Engineering at Harvard University, as keynote speaker. Dr. Chen has pioneered the use of micro- and nanofabrication technologies to identify the underlying mechanisms by which cells interact with materials and each other to build tissues. The "Scientist/Artist" presenter was Dr. Alex Ritter, Senior Scientist, Altos Labs, who combines his scientific background in state-of-the-art microscopy with glass blowing. Dr. Ritter creates art using hot glass to sculpt 3-dimensional models of biological systems. Also featured was an exhibition by undergraduate students from the Center for the Visual Arts at The University of Toledo. Eleven students created art pieces using a variety of media, inspired in microscopy images from the research groups at the University of Toledo. Additionally, we worked with Andy Martin, an undergraduate at the Center for the Visual Arts, who designed the visual theme for this year's event.

A key attribute of Toledo CellulART is its diverse and inclusive lineup, spanning geographic locations and career stages—from students to established scientists. This year's program included several invited speakers, including an international speaker, Dr. Jaap van Buul from the University of Amsterdam. It also included a poster session and short talks selected from submitted abstracts. To ensure unbiased selection, the abstracts were de-identified and reviewed by an external committee. Our efforts have allowed us to hold seven editions of Toledo CellulART, in which only a single speaker has presented twice.

In line with our commitment to sustainability, Toledo CellulART 2025 used QR-coded programs instead of paper, plastic-free badges, and partnered with local vendors for food and beverages. One example is Balance, who has been providing our lunch for the past three editions. Balance sources their ingredients from local farmers and from their own indoor aquaponics facility, located in downtown Toledo. Efforts were also made to minimize travel emissions by selecting low-carbon footprint flights for invited speakers.

The event also continued its annual image competition, sponsored by Ibidi, where attendees submitted microscopy images judged for their artistic merit by faculty from the Center for the Visual Arts. This year's competition attracted vibrant contributions from a range of scientists, emphasizing the visual beauty inherent in scientific work.

Toledo CellulART was founded by Dr. Rafael Garcia-Mata and is organized each year by a different team of UToledo students. This year's organizing team included Ph.D. students Andoni Mucci, Nahshon Puente, Laleh Yaghutian Nezhad, Lucia Gonzalez-Blotta and Harindi Suriyaarachchi. Several undergraduates volunteered for the day of the event. Their collective efforts successfully brought another engaging event to life, fostering connections among researchers and artists alike.

Dr. Tomer Avidor-Reiss Assumes Presidency of The University of Toledo Faculty Senate

The Department of Molecular, Cellular and Developmental Biology is pleased to highlight the leadership of Dr. Tomer Avidor-Reiss, who is serving as President of The University of Toledo Faculty Senate for the 2025–2026 academic year. In this role, Dr. Avidor-Reiss is advancing initiatives aimed at strengthening shared governance, expanding communication pathways between faculty and administration, and elevating the academic environment across the institution.

As Faculty Senate President, Dr. Avidor-Reiss works closely with the Senate Executive Committee to promote a culture centered on collaboration, transparency and inclusiveness. A significant focus of the current term is establishing more direct and effective communication channels between faculty committees and senior administration. Partnering with our recently appointed President Holloway and Provost McKinney, the Senate is implementing mechanisms that enable faculty perspectives to be incorporated more systematically into policy development. These efforts underscore the central role of shared governance in shaping the university's academic mission.

During his presidency, Dr. Avidor-Reiss has also guided several key initiatives designed to enhance academic innovation. Among these is the creation of a new course designation—Creativity and Innovation (CRE)—which allows students to identify classes that intentionally cultivate imaginative thinking and problem-solving skills. Additionally, the Senate is undertaking an update of the senator election process to increase efficiency and ensure timely representation in governance activities.

Dr. Avidor-Reiss's leadership in the Faculty Senate is strengthened by his long record of scientific accomplishment and educational innovation. He is the Joan L. and Julius H. Jacobson II Endowed Professor in Biomedical Research and an internationally recognized expert in centriole biology. His laboratory has pioneered the discovery and characterization of atypical sperm centrioles, uncovering their roles in early embryonic development across diverse species. These studies have led to influential publications spanning insects to mammals, including humans, and have opened new avenues for understanding infertility. More recently, his group has translated these foundational insights into diagnostics, developing a quantitative assay for sperm centriole assessment now being explored for both clinical and agricultural applications.

Equally notable is Dr. Avidor-Reiss's commitment to undergraduate research training. Through the development of rigorous course-based undergraduate research experiences, he has created opportunities for students to contribute to publishable scientific work, fostering early engagement with authentic research practices.

Dr. Avidor-Reiss's combined strengths in research, teaching and governance position him as a compelling advocate for the faculty community. His presidency marks an important period of constructive dialogue and collaborative progress for the University of Toledo.

New Leadership Appointments: Dr. Heather Conti named Associate Dean in NSM, Dr. Scott Crawley named Director of Undergraduate Research Experiences in MCDB

Dr. Heather Conti, Associate Professor in the Department of Molecular, Cellular and Developmental Biology, has been appointed to the position of Associate Dean in the College of Natural Sciences and Mathematics. Dr. Conti will work with faculty, staff and program directors to provide leadership for undergraduate programs within NSM. This will include modifications to the undergraduate catalog, assessment and accreditation of undergraduate programs, course scheduling oversight and program support. She will also assist with strategic planning initiatives and contribute to university-wide leadership discussions. She will be officially starting her role on June 8, 2026. Until that time, she will be spending some time learning the role from Drs. Brian Ashburner and John Plenefisch.

Dr. Conti will maintain her research on fungal immunology in the MCDB department. Dr. Conti will be taking over from Dr. John Plenefisch who will be retiring in 2026. Dr. Plenefisch has provided outstanding service to the college, both as an Associate Dean and Interim Dean as well as other leadership positions over the years. Dr. Plenefisch's outstanding expertise and generosity has set a high standard, and Dr. Conti will undoubtedly continue in that spirit!

(Continued from page 5)

Dr. Scott Crawley will take over Dr. Conti's current role as Director of Undergraduate Research Experiences in the MCDB Department. In her tenure as Director, Dr. Conti expanded our undergraduate research programs significantly. The number of students who registered for mentored research in MCDB labs increased from 116 in 2021 to 186 in 2024 and 178 (and counting) in 2025! Dr. Conti deserves recognition for her tireless coordinating efforts to ensure all students gain a good research experience!

The MCDB department continues to make it a priority for all majors in the department to have hands-on undergraduate research experiences. With President Holloway's initiative to make sure every undergraduate student gets an experiential learning component during their education at UToledo, Dr. Crawley's work in this role going forward will be more important than ever. Like Dr. Conti previously, Dr. Crawley will oversee all aspects of undergraduate research in the department, from holding individual and group discussions with students, to helping place students in labs within and outside the department, to hosting research presentations and guiding the community building of undergrad researchers.

We congratulate Drs. Conti and Crawley on their new appointments, providing crucial leadership to both the MCDB Department and the College of Natural Science and Mathematics!

Awards and Scholarships

The following undergraduate awards and scholarships were presented in 2025. We applaud these students for their outstanding academic achievements and we thank our generous scholarship donors for making these important awards possible.

Biology Merit Scholarship
Neysha Agosto-Coss
Brooke Moreland

Joseph A. and Mary A. Capobianco Memorial Scholarship
Anna Gasser
Hamzah Jallad
Jaclyn Kauer
Kiran Kaur
Emily McConocha

Dr. Charles Creutz Scholarship
Favour Ohaezu

Dr. Bruce A. Crider Memorial Scholarship
Leena Ahmed
Justin Girdham
Alice Lu
Alexander Shaffer

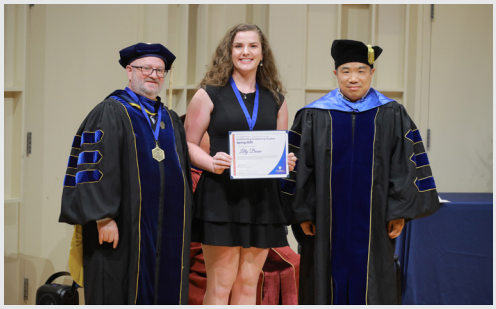
France Stone Foundation Natural Sciences and Mathematics Scholarship
Ava Barwiler
Noura Khatib

Dr. Peter C. Fraleigh Memorial Scholarship
John Mendoza

Fred O. Hartman Scholarship
Shalika Sangras

Dr. James S. Hatfield College of Natural Sciences and Mathematics Scholarship
Danielle Adjei
Azin Ghanadan
Achintya Pothireddy

The C.V. Wolfe Scholarship
Joelle Obri



2025 Spring Departmental Outstanding Graduating Biology Student
Lilly Boone, '25, B.S. in Biology with minors in Chemistry and Legal Specialties

2025 Fall Departmental Outstanding Graduating Biology Student
Favour Ohaezu, '25, B.S. in Biology, pre-med concentration with a minor in Chemistry

Trick-or-Research Halloween Celebration

MCDB celebrated Halloween with a building-wide Lab Decoration and Costume Contest. Labs transformed their spaces, students and faculty dressed up, and undergraduates trick-or-treated through the halls while learning about research in each lab.

The event brought undergraduate students, graduate students and faculty together in a fun setting. It highlighted the creativity of the MCDB labs, encouraged interaction across groups and gave everyone a quick break during a busy semester. With strong participation, the atmosphere was welcoming and full of energy.

Contest Winners:

Best Decorated: **John Arnold Lab**

Best Dessert: **Garcia-Mata Lab**

Best Costume: **Luke Achinger**
(L-R: Luke Achinger, grad student, and Dr. Tomer Avidor-Reiss)

Alumni Spotlight Series ...

OLIVIA (BOLDEN) ARRINGTON

For 2010 UToledo graduate and proud Rocket, Olivia, a biology degree became the launching point for a dynamic global career in biopharmacy—and a lifelong connection to the campus that shaped her personally and professionally.

A Toledo native drawn to UToledo for its proximity to family, she found far more than convenience. She discovered academic rigor, inspiring faculty and a community that pushed her to grow. *"I'm truly grateful for how my biology degree from the University of Toledo laid the foundation for my career,"* she said. "*The deep understanding of scientific principles and the challenges that UToledo provided academically have empowered me to navigate complex challenges and innovate within the field."*

Today, she serves as a Product Manager for one of the world's leading clinical research organizations, contributing more than 14 years of expertise to global health. Her work has taken her across the world, leading investigator meetings for physicians and health professionals from Milan to Barcelona and throughout the United States. She credits her UToledo experience not only for shaping her scientific knowledge but also for cultivating her passion for leadership. *"This background has fueled my passion for leadership, allowing me to inspire and guide teams toward meaningful impact in global health,"* she said.

Though biology was her focus, she found unexpected excitement in an elective: Introduction to Physics. *"I'd never studied physics, and the instructor was fun and engaging. Even as a biology major I could see the great possibilities in other studies as well."* She also fondly remembers the hands-on biology labs and the state-of-the-art equipment available to students.

No research project formally defined her academic journey but the challenges did. She recalls one chemistry course in particular as transformative. "*His class stretched my perception of how to tackle a problem, not within the course, but within myself,"* she said. The course pushed her to rethink her study habits, collaborate more and adopt creative learning strategies. *"The right professors will bring that tenacity out of you and I still use that experience in my day-to-day work life now."*

When she first arrived at UToledo, she planned to become a veterinarian—and even worked at a local veterinary hospital throughout college. She still remembers receiving the job offer while sitting under the Bell Tower. But after graduating, her UToledo education broadened her perspective. *"I saw just how broad my knowledge could stretch beyond the traditional paths. I ventured into human medicine and found it to be even more lucrative than my original veterinary dreams."*

Some of her fondest campus memories are simple ones—like passing the spirit rock between classes with her then-boyfriend, now husband. *"My now husband and I would touch the rock every time we passed it. It was like a good luck charm!"* UToledo didn't just give her a career foundation-it gave her a family. Today, they celebrate 12 years of marriage and have three children.

One thing she wishes she had realized earlier? The importance of exploring campus. *"Get out and explore. UToledo has so many wonderful places to see and utilize,"* she advises to current students. She didn't discover MUO until her third year—her final year, since she graduated early. *"It was a wonderful place to study and be inspired. It gave me hope to see the future in action and reminded me why I went to UToledo."*

Looking back, she hopes her story inspires future students to consider the many paths a biology degree can open. *"I hope this inspires new students to think outside of the box when it comes to the wonderful careers that exist with a Biology degree from UToledo."*

She remains deeply appreciative of the university that shaped her journey. *"UToledo was truly a major part of my life and I am forever grateful. Go Rockets!"*

CLAIRE EIDEN

A 2024 graduate of The University of Toledo, Claire earned her B.S. in Biology with a chemistry minor and a neuroscience concentration, while competing on the women's volleyball team.

"Being a student-athlete at UToledo was an amazing experience, and I thank UToledo for getting me to where I am today."

Now a second-year medical student at the University of Cincinnati College of Medicine, Claire plans to earn her M.D. in 2028. Her decision to attend UToledo was influenced by her siblings' experiences as UToledo alumni, as well as the University's strong pre-med advising and opportunity to compete in Division I athletics. *"I knew I would get a great education while living out my dream of playing college*

volleyball," she said.

At UToledo, Claire conducted neuroscience research with Dr. Bruce Bamber and worked as a medical scribe, gaining early exposure to research and patient care. Competing as a Rocket also helped her develop skills that continue to guide her in medical school. *"Volleyball taught me discipline, time management, determination and grit."*

Reflecting on her time at UToledo, Claire says she would not change a thing. *"Putting on the blue and gold was an honor,"* she said. *"I will always have a home at UToledo."*

She encourages students to embrace the opportunities both on campus and in the city. *"Lean into it, Toledo quickly adopts you as one of its own."*

"Go Rockets," she added. *"TOL forever."*

CURTISS JOHNSON

A 2018 graduate of The University of Toledo, Curtiss earned his Bachelor of Arts in Biology. Originally from Detroit, Michigan, he is currently a resident physician in anatomic and clinical pathology at Mayo Clinic in Rochester, Minnesota.

Curtiss chose UToledo for its reputation of excellence in biomedical sciences, its beautiful campus and facilities, and its proximity to family and friends. While interested in the medical field, he was initially uncertain about a specific career path. UToledo's comprehensive health sciences curriculum allowed him the flexibility to explore multiple options and gain experience both inside and outside the classroom.

During his undergraduate years, he worked in residence life and retail pharmacy and volunteered in various clinical settings, experiences that helped him develop an appreciation for preventative care and health maintenance. After graduation, he pursued a Master of Public Health at Ohio State University before realizing he wanted more direct, hands-on patient care.

That decision led him back to Toledo, where he completed a certificate program in medical laboratory science at Mercy St. Vincent Medical Center and was subsequently hired as a clinical microbiologist. A few years later, Curtiss made the decision to apply to medical school and was accepted to Michigan State University College of Osteopathic Medicine.

"Medical school is intense, but I quickly realized how well my coursework at UToledo prepared me," he said. *"Classes like parasitology, organic chemistry and physics gave me a strong foundation that I continue to rely on."*

Now training in his dream specialty, he credits UToledo with preparing him for both the academic rigor and uncertainty that come with a career in medicine.

"UToledo gave me the resources to build a solid foundation, make lifelong friendships and prepare for my future," he said. *"If an opportunity comes your way, take it."*

To current and prospective students, he encourages curiosity, persistence and openness to new paths. *"Surround yourself with people you aspire to be like, pursue your passions, and trust the process. Go Rockets."*

MADALYN SPOHLER

A 2020 graduate of The University of Toledo, this alumna began her academic journey with a major in Biology and a minor in chemistry—an intentional first step toward a lifelong goal of attending medical school. UToledo's biology program aligned closely with pre-medical requirements and provided a strong foundation for the academic rigor she would later face in medical training.

One of the most influential experiences of her undergraduate years was taking physiology with Dr. Maria Diakonova. The course challenged her in new ways and pushed her to exceed her own expectations. Following the class, she joined Diakonova's research lab, where she spent two years conducting hands-on research.

"That experience strengthened my understanding of biological systems and deepened my curiosity about the mechanisms behind health and disease," she said.

Beyond the classroom, she participated in a Global Brigades medical mission trip to Honduras, an experience that profoundly shaped her perspective on healthcare access and cultural competence.

"That trip opened my eyes to what limited access to healthcare truly looks like," she said. *"It continues to influence how I approach patient care today."*

Some of her most meaningful memories at Toledo came from everyday campus life—spending time at the gym, playing tennis, swimming laps and studying late into the night at the library. Walking across campus after hours, she recalls being struck by how the architecture glowed, often reminding her of something out of *Harry Potter*.

After graduating from UToledo, Madalyn continued her medical training at Michigan State University College of Osteopathic Medicine, where she will complete her medical degree this April.

Reflecting on her journey, she credits UToledo as the place where it all began. *"If I could go back, I wouldn't change a thing,"* she said. *"Every step shaped who I am today."*

(Continued from page 9)

ANTHONY WAPPNER

When Anthony graduated from The University of Toledo in 2013, he carried with him not just a degree, but a deep appreciation for the scientific foundations and hands-on experiences that would ultimately shape his career.

"My education from UToledo set me up for the success I am experiencing today as a high school science teacher at a top school in the city. I was able to participate in experiences and learn skills that many students do not receive during their undergraduate years. I received a great education from great teachers and now I get to share that with my students in the classroom."

Choosing UToledo felt natural from the start. Its location kept him close to family and the campus struck the perfect balance—big enough to explore, but not so large as to feel overwhelming. Once enrolled, he thrived across a range of subjects. Genetics, developmental biology and organic chemistry quickly became favorite classes, and even political science stood out as a course that broadened his perspective.

Some of his fondest memories come from these labs: dying a frog embryo and watching it develop in Developmental Biology; running northern, southern and western blots, and PCR in Genetics, and creating synthetic banana-flavored "Laffy Taffy" and even nylon in Organic Chemistry. While he didn't conduct formal research with a faculty member, these hands-on experiences left lasting impressions—ones that he now carries into his own classroom.

After graduation, his career journey took an unexpected path. He worked in the corporate world before pursuing further education, earning an MBA from the University of Findlay in 2020, followed by a Master of Education in 2022. In 2023, he was accepted into a Doctorate of Education program, further shaping his passion for teaching and leadership.

Today, he serves as a high school science teacher, instructing students in chemistry, biology, astronomy and geology for grades 9–12. He also advises the school's robotics club, helping students develop problem-solving skills and creativity beyond the classroom.

He credits UToledo for preparing him well for this chapter. *"My courses and corresponding labs prepared me for the classroom,"* he reflects. *"I received a thorough education that I remembered years later and now apply to instruction."*

If he could offer advice to his freshman-year self, it would be simple but powerful: Stay in class. Take time to study. Stay in tutoring. Don't give up on yourself.

BERNIE ZEIHER

Growing up in Toledo, Bernie was exposed early to the world of healthcare through his father, a hospital administrator at Parkview Hospital. While attending St. Francis de Sales High School, he decided to pursue a career in medicine—a path further reinforced by working as an orderly at Parkview and gaining firsthand experience in patient care.

"My exposure to healthcare at a young age shaped my decision to pursue medicine and set me on a lifelong path."

He enrolled at The University of Toledo for its strong pre-medical program and the opportunity to remain close to home while preparing for medical school. Guided by pre-med advisor Jim Stebbins, he pursued a Biology major while challenging himself with engineering physics and advanced mathematics courses.

One of his most formative decisions was joining the UToledo's Honors Program and enrolling in the year-long Cultural History course taught by Jim Larson. Though the humanities did not come naturally, the course broadened his perspective and sparked an appreciation for architecture, art and music in historical context—particularly from the Renaissance period.

During his undergraduate years, 1981 to 1985, he was involved in Pi Kappa Phi fraternity, serving in multiple leadership roles, including chapter president.

"Most importantly, I met my wife, Paula Butler, a fellow 1985 graduate from the Business College. We married that July, just before I began medical school. We've now been married 40 years, with two sons and two grandchildren-her love and support have been foundational to all of my success."

With strong preparation from UToledo, Bernie excelled on the MCAT and went on to attend Case Western Reserve University, followed by residency and fellowship training that launched a distinguished career in academic medicine and, later, pharmaceutical research and leadership. Over more than two decades in the industry, he helped advance therapies across multiple therapeutic areas, ultimately serving as Chief Medical Officer at Astellas.

"Unexpectedly, I was recruited into the pharmaceutical industry — a path I hadn't considered. I joined Merck as a regional medical director, launching a 20+ year career in drug development."

After retiring from his executive role in 2022, he remains active through board service, consulting and mentorship, while prioritizing time with his grandchildren. Today, Bernie splits his time between Michigan and Ohio, often passing through Toledo—a place he credits with shaping the foundation of his personal and professional journey.

Alumni Words of Wisdom ...

John Capobianco, Sr.

Research Biochemist (retired), Abbott Labs

My first year in pre-med at The University of Toledo was a disaster. Not having a clear vision of my future and lacking specific goals were the reasons for my academic drift. I understand now that this happens to a lot of students. Seeking counsel with the university's career advisor was the approach that helped me plan my future. During the last two years of my undergraduate studies, I made the Dean's List and subsequently was accepted into Graduate School. At that time, UToledo had just initiated its Master's program in Biology. I was able to complete Graduate School with the help of a teaching assistantship granted by the state of Ohio.

Following graduation my wife and I moved to Illinois where I was employed as an Assistant Pharmacologist in the Pharmaceutical Products Division of Abbott Laboratories. At Abbott, I applied the knowledge acquired from my academic studies to various research projects. My first project was in Drug Enzymology, followed by Gastroenterology, Protein Chemistry and finally Anti-infectious Diseases. The latter half of my career was researching anti-fungal and anti-bacterial agents. My expertise was tracking drug transport across bacterial membranes and inhibitor binding kinetics. I retired after 30 years of service, having been promoted three times in that time span.

After retirement I turned to philanthropy as a means of paying forward, establishing the Joseph A. and Mary A. Capobianco Memorial Fund at UToledo. The fund benefits undergraduate and graduate students of need and merit in the College of Natural Science and Mathematics (Departments of Chemistry and Biochemistry, Environmental Sciences and Molecular, Cellular and Developmental Biology). This fund was named after my parents who immigrated to America from Italy in the late 1920s. Coming from a poor farming community they realized the importance of education in achieving success in this new country. Their emphasis on education resulted in all four of their adult children attending college, three of which went to UToledo-my sister (College of Education), my eldest brother (B.S. Ch.E.) and myself (M.S. Biol.).

Pictued above: Sarah Sorell (Chadee Lab) and Jasvinder Bharaj (Crawley lab) take some time out for puppy pets with the Chadee lab's newest mascot!

Above: Nikita Jadhav (Nui Lab) celebrates a birthday with all her friends.

Picture left: Lucia Gonzalez Blotta (Garcia-Mata lab), Autumn Edwards (Bamber lab) and Jasvinder Bharaj (Crawley lab) enjoy some well-deserved relaxation time after their exam in Research Methodology.

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- ✓ Comment on a post

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