



MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

2022 Newsletter

Department of Pharmacology



IN THIS ISSUE

Letter from the Chair	2
2022 by the Numbers	4
Remembering Edward Domino	6
Remembering James Offord.....	7
Awards, Honors, and News	8
Celebrating Diversity and Inclusion.....	12
Welcoming our New Students and Faculty...	14
Research	16
Research Lab Highlights	18

Letter from the Chair

Dear Friends of Michigan Pharmacology,

I hope that you and yours are safe and well and that you are enjoying the holiday season with friends and family. I am proud to report that Michigan Pharmacology has had an impressive, and largely in-person, year! We are excited to share our accomplishments with you and look forward to continuing our momentum and resulting high level of world-class scientific impact in 2023.

Some of our highlights include:

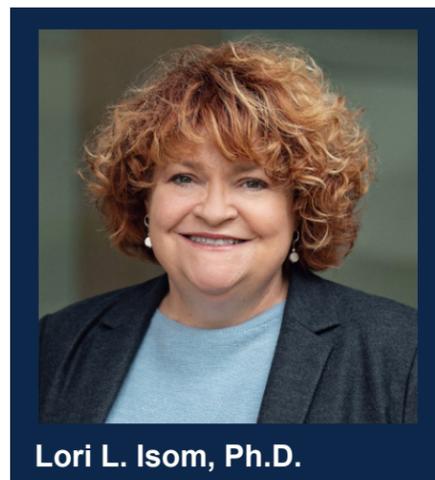
- We were fully present as a Department in 2022, able to hold our courses, seminars, and social events in-person.
- We held our first in-person, overnight Departmental retreat since 2019.
- We hosted the annual Alumni Steering Committee weekend in October 2022, capped off by a football win over MSU. Dr. Ezra Lowe, graduate of the Osawa Lab, received the 2022 Outstanding Alumnus Award.
- According to the final NIH Rankings for FY21, the Department of Pharmacology ranked 15th amongst Departments of Pharmacology in the US, compared to 11th in FY20, and 22nd in FY19.
- Three of our Assistant Professors received NIH R01 or R35 grant awards. One of these amazing colleagues received two R01s!
- The NIH-funded Pharmacological Sciences Training Program T32 is training 12 pre-doctoral fellows.
- Our two NIH U grants, with Michigan Pharmacology faculty members as principal investigators, are going strong.
- We published 315 research articles.
- We established the Pfizer-Upjohn Research Professorship in Pharmacology.
- We recruited two new graduate student cohorts for Fall 2022: 10 Ph.D. students and 12 M.S. students.

We are excited to welcome five outstanding new faculty members to our Department:

Dr. Erica Levitt joined the Department of Pharmacology as Associate Professor with tenure. She was also appointed to the Department of Anesthesiology as a joint faculty member and is an affiliate member of the Michigan Neuroscience Institute. Dr. Levitt's research program focuses on understanding mechanisms of central apnea in opiate overdose.

Dr. Laurie Svoboda joined the Department of Pharmacology as a joint Assistant Professor with a primary tenure track faculty appointment in the School of Public Health, Department of Environmental Health Sciences. Her research program focuses on understanding developmental and environmental exposures, epigenetics, and long-term health.

Dr. Frank Kwarcinski joined the Department of Pharmacology as a Research Investigator in the Tall lab. His research is committed to improving early-stage drug discovery efforts, utilizing chemical biology and medicinal chemistry to identify inhibitors of dysregulated proteins.



Lori L. Isom, Ph.D.

Dr. Chunling Chen joined the Department of Pharmacology faculty as an Assistant Research Scientist in the Isom lab. The focus of Dr. Chen's research is understanding mechanisms of developmental and epileptic encephalopathy with SUDEP.

Dr. Samantha Hodges joined the Department of Pharmacology as a Research Investigator in the Isom lab. The focus of Dr. Hodges' research is understanding the mechanism of action of sodium channel B1 subunits in regulating neuronal and cardiac excitability.

Finally, we are excited to welcome the following faculty who will join Michigan Pharmacology in 2023:

Dr. Michelle Hastings will join our faculty in Spring 2023 as the inaugural holder of the Pfizer Upjohn Research Professorship in Pharmacology. She will also serve as Director of the new M-RNA Therapeutics program within the University of Michigan Biosciences Initiative Center for RNA Biomedicine. Dr. Hastings is currently Professor of Cell Biology and Anatomy and Director of the Center for Genetic Diseases at the Chicago Medical School at Rosalind Franklin University of Medicine and Science.

Dr. David Lorberbaum will join our faculty in Spring 2023 as a Tenure-Track Assistant Professor of Pharmacology with membership in the Elizabeth Weiser Caswell Diabetes Institute. Dr. Lorberbaum is currently a postdoctoral fellow in the Barbara Davis Center for Diabetes at the University of Colorado Anschutz Medical Campus.

As we again take stock of the things we value, I ask you to reflect on the impact that your University of Michigan appointment, education, or training has had on your life and career. Please consider making or renewing a tax-deductible gift to our Pharmacology Fellowship Fund to help us continue our mission to provide national leadership in pharmacology research and training.

- The Pharmacology Fellowships Fund: Our goal is to endow doctoral education in pharmacology by providing tuition and stipend support to all Ph.D. students in our department who are not awarded a training grant slot or an individual fellowship following their first year of Program in Biomedical Sciences (PIBS) support, or who need an additional year of support as senior students following training grant support. This funding mechanism will give students the freedom to work in any lab in the department that interests them, instead of being limited to only labs with sufficient funding and will be a particularly important factor in the success of our young faculty who are working toward promotion and tenure.

Thank you for your continuous support of Michigan Pharmacology. I love hearing from our alumni, and I encourage you to share your ideas with me as we continue to move our Department forward.

Go Blue!

With warmest regards and best wishes for a healthy and happy 2023,

A handwritten signature in blue ink, appearing to read 'L. Isom', written in a cursive style.

Lori L. Isom, Ph.D.
Maurice H. Seevers Professor and Chair of Pharmacology

2022 by the Numbers

“Michigan Pharmacology continues to promote a diverse, equitable, and inclusive culture: To create a climate that is safe, diverse, and inclusive – a scientific home where individuals from all backgrounds feel valued, welcomed, and appreciated. To be a place where faculty, staff, and trainees enjoy working, learning, and growing together. To be a place where people know that their voices are heard. To be a place that our alumni are proud to call ‘home.’

- Dr. Lori Isom

12

Masters Students

45

Ph.D. Students

16

Postdoctoral Fellows

251

2022 Publications

22

Primary Faculty

12

Research Faculty

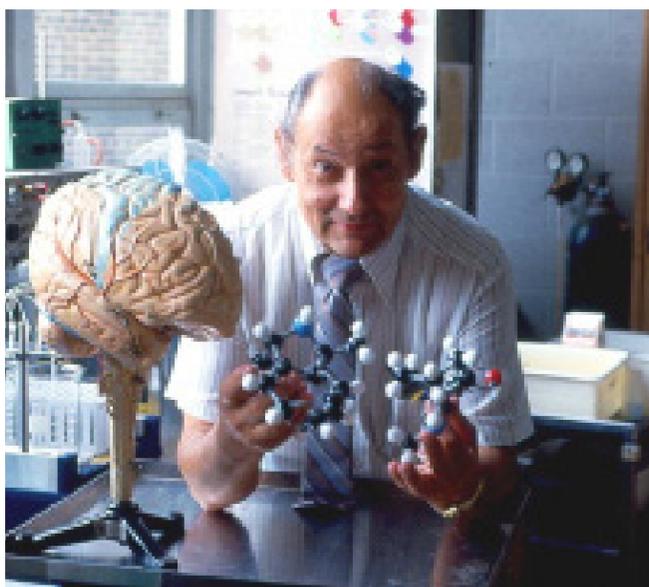
Remembering Dr. Edward Domino

by Steve Domino

Our Michigan Pharmacology colleague, **Dr. Edward Felix Domino**, passed away on November 3, 2021, at the age of 96. Ed was born in Chicago in 1924 of Polish immigrant heritage. He proudly served in World War II as an Electronic Technician's Mate First Class on the USS Pittsburgh. He attained degrees from University of Illinois in 1948, 1949 (MS), and 1951 (MD). Since 1953, he had a long and productive scientific career at the University of Michigan, Ann Arbor, which he called home with his wife Antoinette ("Toni") F. Domino for 50 years.

As a teacher, Ed played a major role in courses for medical and graduate students. He trained many students and postdoctoral fellows from around the world. His research interests spanned the broad field of neuropsychopharmacology, with its implications in anesthesiology, gerontology, neurology, psychiatry, and toxicology. He viewed psychoactive substances as molecular probes into the human brain.

Even after retiring in 2000, Ed never stopped learning as an Active Emeritus Professor of Pharmacology. He came to the Department every day, keeping up to date on current research, talking with colleagues, mentoring trainees and junior faculty, attending seminars, and writing papers. At seminar, his questions were always the best in the room. He was honored by the University of Michigan with the naming of the Department of Anesthesiology Edward F. Domino Lecture in Consciousness Science in 2016, the Department of Pharmacology Edward F. Domino Research Professorship in 2017, and the Department of Pharmacology Edward F. Domino Research Center in 2018. When he wasn't in his office, he was jetting around the world to work with scientific collaborators, often taking a family member or friend with him. They will all remember those special trips with him.



Ed was preceded in death by Toni in 2002. Also, preceding him in death were his brother James, his son Laurence and his wife Valorie. He is survived by his sister Pat Torres (Tony), sister-in-law Lucy Domino, and his children Karen Domino (Gene), Debra Pulley (Craig), Kenneth Domino (Zarina), and Steven Domino (Karen). He was also blessed with 10 grandchildren: Willa and Noah Brenowitz (Lauren), Deanna, Laurel, and Daniel (Corrine) Domino, Elizabeth Boerckel (Daniel), Alan Pulley, Joseph (Rachael), Alexander, and Eric Domino (Vanessa). He marveled at the recent births of four great grandchildren: Parker and Everett Domino, Asher and Jackson Boerckel. He is also survived by Kathleen Baines, his significant other for 13 years, and her sons Andrew (Jamie) and Brian. He was "Grandpa Ed" to Andrew's sons Thomas and Anderson Baines.

For a recent teaching video clip of Ed discussing the discovery of ketamine as a faster-acting antidepressant alternative and the need to "tame the ketamine tiger" (9:21 long): <https://www.med.umich.edu/mva/library.html>

A service was held on Saturday, November 20, 2021 (Ed's 97th birthday) at St Andrew's Episcopal Church in Ann Arbor. Donations in support of the Edward F. Domino Research Center at the University of Michigan can be made by visiting the website victors.us/edwarddomino or by contacting the Department of Pharmacology directly.

Remembering Dr. James Offord

by Nicholas Denomme

James David Offord, affectionately known as Jim, was a jovial scientist and midwestern family man whose curiosity and compassion were everlasting. Jim always carried a fountain pen in his breast pocket, a Scooby Doo lunchbox, and a rip-roaring laugh. When Jim roared with laughter, which he did quite often, every atom of negativity lingering in the air was instantly transformed into absolute joy.

I once asked Jim how old he was and he said, "Dinosaurs roamed the earth when I came along." I have now come to learn that Jim was Indiana-born in 1956, slightly missing the Mesozoic era. Jim grew up in Indianapolis, Indiana with his brother Scott and loving parents John and Ruth. A passionately curious and precocious child, his prodigious mind quickly led him into science, and he decided to pursue an undergraduate degree at Illinois State University. It was here that Jim made his greatest discovery, Christine B. Litz. Chris, as Jim called her, was the love of his life, his absolute foundation whom he stood by and adored up until the very end. Chris was not only Jim's wife, but the mother of his beloved daughters, Marie and Samantha, whom he loved as deeply as humanly possible.

After graduating from Illinois State, Jim continued his education in science, completing a Ph.D. in biochemistry at the University of Iowa in 1986. Jim went on to further training as a post-doctoral fellow at the University of Washington, where he made fundamental discoveries related to the biology and pharmacology of voltage-gated calcium and sodium ion channels. He then took his talents to Parke-Davis pharmaceutical company (now Pfizer), where he led a long and successful career as a card-carrying pharmacologist making broad contributions to the preclinical development of numerous drugs to treat epilepsy, chronic pain, and psychiatric disorders. Jim's work elevated our understanding of the structure and function of sodium channel α and β subunits in normal physiology and pathological conditions such as epilepsy. He was instrumental in elucidating the calcium channel $\alpha_2\delta$ subunit as the molecular target responsible for the therapeutic effects of gabapentin, an anticonvulsant, analgesic, and anxiolytic medication still widely prescribed the world over.



Jim eventually retired from Pfizer in 2011 to begin a second career as a Research Professor of Pharmacology here at the University of Michigan. He was a towering and inspiring figure to his students. His endless patience, immensely deep knowledge on an astronomical range of topics, and contagious passion for unraveling the biological mysteries of Nature will always inspire us.

A student of life and all its wonders, Jim loved wielding his sage-level wisdom to relentlessly deliver piercing aphorisms in every conversation. Wherever a conversation could go, Jim could go further. From Shakespeare to genetics, Babylonian military history to computer hardware, no topic ever seemed to slip through the webs of his enigmatic mind.

Humble, brilliant, hilarious, full of integrity both in science and in life, Jim shared all that he had with generous grace. We will carry his spirit and all that he shared with us forever.

"From quiet homes and first beginning, Out to the undiscovered ends, There's nothing worth the wear of winning, But laughter and the love of friends."

From all at Michigan Pharmacology and beyond, thank you for being a wonderful friend, Jim.

Awards, Honors, and News

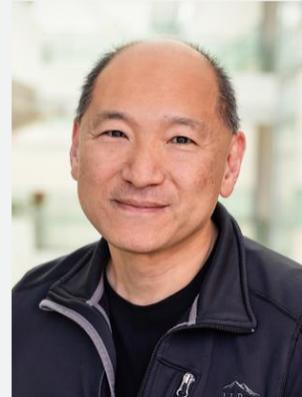
Dr. Chunling Chen receives the 2021 EBS Research Staff Award for Pharmacology

Dr. Chunling Chen, Director of the Isom Lab for over 20 years, has an impressive record of scientific productivity. She is an author on 26 papers in high impact journals, with 5 as first-author. Her most recent contribution was as second author on the publication, Antisense oligonucleotides increase Scn1a expression and reduce seizures and SUDEP incidence in a mouse model of Dravet syndrome, published in *Sci. Trans. Med.* in 2020. This work, describing the first gene modulatory precision therapy for the developmental and epileptic encephalopathy, Dravet syndrome, provided the pre-clinical evidence for two on-going FDA approved clinical trials in pediatric Dravet syndrome patients in the US as well as a similar trial that is now beginning in the UK.



Dr. Yoichi Osawa receives the 2021 EBS Teaching Award for Pharmacology

Dr. Yoichi Osawa, Associate Chair for Innovation and Wellness, has made and continues to make significant contributions to our Departmental teaching mission, including to Pharm 646, Pharm 601, Pharm 502, and the Medical School Diagnostics and Therapeutics course. During the 2020-2021 academic year, Dr. Osawa contributed ~51 hours of student instruction. We are deeply grateful to him for his extensive service.



Departmental Fellowship Recipients

Lucchesi Graduate Education Fellowship – Anthony Garcia (Osawa Lab), Liz Jaeckel (Birdsong Lab)

Dr. Alan Smrcka Elevated to Associate Chair for Diversity, Equity, & Inclusion in Pharmacology



Dr. Alan Smrcka was appointed Associate Chair for Diversity, Equity, & Inclusion in Pharmacology in Fall of 2022. Dr. Smrcka previously served for a number of years as DEI Lead in Pharmacology. Because of the critical importance of DE&I in our departmental community, we have elevated this position to the level of Associate Chair.

Please join us in thanking Dr. Smrcka for his on-going service to the Department of Pharmacology.

Congratulations to our newly minted Ph.D's who successfully defended their dissertations in 2022



Joshua Lott, Ph.D. - "Delineating the Specificity of Cannabinoid Effects by Investigating Cannabinoid Receptor-1 Trafficking and Signaling"



Nicholas Denomme, Ph.D. - "Neuropharmacological Studies of Sodium Channel-Linked Developmental & Epileptic Encephalopathies"



Andrea Pesch, Ph.D. - "Targeting DNA Damage, Apoptosis, and the Cell Cycle for the Radiosensitization of Aggressive Forms of Breast Cancer"



Cara D'Amico, Ph.D. - "Droplet Microfluidics Coupled to Mass Spectrometry for Pharmacological Applications"



Yang Zhao, Ph.D. - "The Role of SWI/SNF Chromatin Remodeling Complex Subunit SMARCD1 in Vascular Diseases"

Postdoc Training Fellowships

- **AHA fellowship** – Kobina Essandoh (Brody Lab)
- **MENG T32** – Julie Finnell (Ferrario Lab)
- **CVC T32** – Adriana Yamaguchi (Holinstat Lab)

Faculty Promotions

Dr. Morishima Yoshihiro was promoted from Assistant Research Scientist to Associate Research Scientist. (*Sept. 1, 2022*)

Dr. Yukun Yuan was promoted to Research Assistant Professor to Associate Research Scientist. (*Sept. 1, 2022*)

Grad Student Training Fellowships

- **NIH F99** – Jean Rodriguez Diaz (K Jones Lab)
- **Rackham Predoc** – Lauren Hein (Parent Lab), Kelsey Kochan (Traynor Lab)
- **AHA fellowship** – Tyler Lefevre (Smrcka Lab), Yang Zhao (Chen Lab), Robert Goldsmith (Brody Lab), Joseph Loomis (Smrcka Lab), and James Teuber (Brody Lab)
- **NIH F31** – Alex Vizurraga (Tall Lab), Ian Chronis (Puthenveedu Lab), and Lauren Rysztak (Jutkiewicz Lab)
- **NSF** – Rachel Baliira (Parent Lab), Loyda Morales-Rodriguez (Puthenveedu Lab), and Nathalie Momplaisir (Smrcka Lab)
- **RMF** – Gissell Sanchez (Smrcka Lab), Juan Valentin-Goyco (Auchus Lab), Ashley Mello (Lee Lab), and Cristian Martinez Ramos (Osawa Lab)
- **CVC T32** – ChiChi Ukachukwu (D Jones Lab)
- **CMB T32** – Sam Collie (Parent Lab), and Kendall Perkins Dean (Jenkins Lab)
- **PSTP T32** – Cassidy Jungles (Green Lab), Tenzin Ngodup (Lee Lab), Claire Shudde (Courtney Lab), Behirda Karaj (Brenner Lab), and Livia Stanger (Holinstat Lab)
- **Lucchesi** – Elizabeth Jaeckel (Birdsong Lab) and Anthony Garcia (Osawa Lab)

Awards, Honors, and News

2022 Department Retreat

The Department of Pharmacology held its annual retreat at Maumee Bay Resort and Conference Center on September 26-27. Faculty, staff, and students participated in many festivities including a trainee book club, faculty workshop, poster sessions, oral presentations, and a lecture given by keynote speaker, Shaomeng Wang, Ph.D., Warner-Lambert/Parke-Davis Professor in Medicine and Professor of Medicine in U-M Pharmacology and Medicinal Chemistry.



Dr. Shaomeng Wang gives his presentation



2022 Department of Pharmacology Group Photo

2022 Alumni Steering Committee Meeting

The annual Alumni Steering Committee meeting took place this year on Friday, October 28th. Committee members were able to meet with our departmental faculty, as well as our students and trainees. Dr. Ezra Lowe, 2022 Outstanding Alumnus Awardee, presented a seminar to the department.

To wrap up the meeting festivities, the Committee members and the rest of the department were invited to a Michigan vs. Michigan State football tailgate at Dr. Lori Isom's home on Saturday, October 29th. The game was enjoyed by all and Michigan beat Michigan State 29-7.



Dr. Yoichi Osawa presents Dr. Lowe with his award



Pictured left to right: Pat Gussin, Ezra Lowe, Lori Isom, Bob Gussin

Tom Larmee's Retirement Party

On September 2nd, the Department of Pharmacology threw a surprise retirement party for Tom Larmee and celebrated his 50 years of employment with the department and the University of Michigan.

On September 1, 1972 Tom joined the department right out of High School as an apprentice to the then current Pharmacology Shop Instrument Maker, Bob Astin. After Bob retired several years later, Tom was promoted to full-time Pharmacology Instrument Maker and years later to Facilities Coordinator/Manager.

During his time in Pharmacology, he has worked for a total of 6 interim and permanent Chairs including Hank Swain, Bert LaDu, Ray Ruddon, Ray Counsell, Paul Hollenberg, and Lori Isom.

Congratulations on your retirement, Tom! And thank you for your 50 years of service to the Department of Pharmacology and the University of Michigan.



Pharmacology Chair Chat - Summer Internship Experiences

On November 11th, three of our Pharmacology Ph.D. trainees (*listed below*) shared their experiences as 2022 summer interns at a Chair Chat meeting. While each one of them experienced a different industry perspective, they were able to share application processes, positive and negative experiences, as well as lessons learned and suggestions for future students looking for internships. The Department would like to thank these trainees for their helpful knowledge and input.

Chiamaka Ukachukwu (Chi-Chi), D. Jones Lab
Merck (Oral Formulation Sciences), Rahway, New Jersey



Juan Valentin-Goyco, Auchus Lab
Primary Pharmacology Group of Pfizer's Research and Development facilities, Groton, Connecticut



Loyda Morales-Rodriguez, Puthenveedu Lab
Field Medical Affairs Strategy Intern at Takeda Pharmaceutical Company; (remote - but office was located in Cambridge, Massachusetts)



Celebrating Diversity and Inclusion within Pharmacology

Newest DEI Initiatives

- **Implicit bias training sessions led by Rackham and the Michigan Medicine Office of Health Equity and Inclusion (OHEI).**
- **A DEI Book Club was started at the in-person Annual Retreat in Maumee Bay Ohio.** "The Vanishing Half" was the first book chosen for this planned ongoing series.
- **First Annual Pharmacology in Color Symposium - June of 2022**



"The Pharmacology DEI committee has been busy this year coordinating events and starting new initiatives. We are committed to continuing to build a diverse and inclusive environment that fosters a sense of belonging, high quality education, and research in Pharmacology. We look forward to continuing our efforts in the coming year. Happy Holidays!"

- Alan Smrcka
Associate Chair for DEI

Upcoming Initiatives

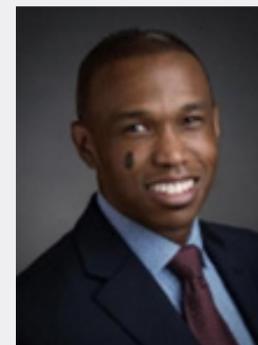
- **Planning for Pharmacology in Color for 2023.** Colleen Carpenter, Ph.D., Assistant Professor in Biology at the University of Richmond, and former Ph.D. student in Dr. Gnegy's laboratory will be the keynote speaker. Multiple Michigan Alumni will be invited to attend to present work and ideas and to provide mentoring support. The 2023 event will be held in person June 8-10 at UM.
- **Continuing the DEI Book Club.** *Book recommendations welcome.*
- **DEI Movie Lunches for building community.** *Movie recommendations welcome.*

Chiamaka Ukachukwu (Ph.D. Student - Jones Lab) attended the 2022 Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) conference as a representative of the Fulbright Program. While there, Chiamaka had the opportunity to network with scholars to discuss opportunities with the Fulbright program as a scientist.



Pharmacology in Color Symposium - June 8, 2022

On June 8, 2022, the Department of Pharmacology hosted its inaugural Pharmacology in Color Symposium. This symposium was created to give the opportunity to build networks with alumni of color and trainees across multiple disciplines and help foster community amongst trainees of color and allies. In line with the Department of Pharmacology's commitment to fostering Diversity, Equity, and Inclusion, the symposium provided a safe space for students to establish new relationships with those who are underrepresented in their programs and share their experiences. The symposium also gave opportunities to connect trainees with alumni and to build a lasting network of support while fostering an inclusive space for trainees from all backgrounds.



Keynote speaker – Ezra Lowe, Ph.D.
Executive Director, Clinical and Preclinical Pharmacology at Galectin Therapeutics. Dr. Lowe has extensive experience in the Pharmaceutical Industry where he has held leadership position at numerous companies including Bausch + Lomb, and Ortho Dermatologics, Salix Pharmaceuticals, and Valeant Pharmaceuticals International, Inc. In the course of his career, he has completed 10 different global drug approvals, and he was twice awarded the Bausch Health CEO award. Ezra holds a B.A. in Chemistry from Colgate University and a Ph.D. in Pharmacology from the University of Michigan. He is also an alumnus of the McKinsey Black Executive Leadership Program.

DEI Mini-Grant Initiative:

Funding is available for anyone interested in organizing DEI related activities! Grants are up to \$750. This year funds were used to support Wolverine Pathways, the Pharmacology in Color Symposium, and access to period products. To apply for a grant submit your idea to the Pharmacology DEI committee at pharmacologydei@umich.edu.

Want to find more DEI information?

Pharm DEI committee meets monthly for planning purposes. The minutes of the meetings are posted on our [website](#).

Email: pharmacologydei@umich.edu

We encourage feedback and ideas on how the Pharmacology Department is doing in terms of its DEI efforts. Please use this [feedback form](#) to provide any comments or suggestions.

Welcoming our new students and faculty to UM Pharmacology!

Welcome to our 2022 Incoming Masters Students!

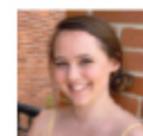


Madhi Husseini Sarvatha Mukundan Annelies Ondersma Alexander Powell Nirvisha Singh Jaelyn Thomas



Jacob Viere Dajia Wang Xinye Wang Xinyu Wang Hanbo Zhang Rongxi Zhang

Welcome to our 2022 Incoming Ph.D. Students!



Kaelyn Bird
Michigan State University



Kaitlyn Digsby
University of South Carolina



Tingzhen Shen
CUHK-Shenzhen M.S. Univ. of Michigan



Jae Bucknor
Cornell University



Krista Goerger
University of Sioux Falls



Jun Zhou
China Pharmaceutical Univ. M.S. Univ. of Michigan



Jakub Cikowski
University of Illinois-Chicago



Zehui Gu
China Pharmaceutical Univ. M.S. Univ. of Michigan



Catherine Demery
University of Michigan M.S. Manchester University



Krystal Santiago Colon
Univ. of Puerto Rico-Cayey

Our New and Incoming Faculty



Dr. Erica Levitt
Associate Professor

Dr. Levitt joined the Department of Pharmacology's Edward F. Domino Research Center on November 1st. She also joined the Department of Anesthesiology as a joint faculty member and is an affiliate member of the Michigan Neuroscience Institute.



Dr. Michelle Hastings
Professor

Dr. Hastings will join our faculty in Spring 2023 as the inaugural holder of the Pfizer Upjohn Research Professorship in Pharmacology. She will also serve as the Director of the new M-RNA Therapeutics program within the University of Michigan Biosciences Initiative Center for RNA Biomedicine.



Dr. Laurie Svoboda
Assistant Professor

Dr. Svoboda joined the Department of Pharmacology in Fall 2022 as a joint faculty member with a primary tenure track faculty appointment in the School of Public Health, Department of Environmental Health Sciences,



Dr. Frank Kwarcinski
Research Investigator

Dr. Kwarcinski joined the Department of Pharmacology in Summer 2022 as a Research Investigator in the Tall lab. His research is committed to improving early-stage drug discovery efforts, utilizing chemical biology and medicinal chemistry to identify inhibitors of dysregulated proteins.



Dr. David Lorberbaum
Assistant Professor

Dr. Lorberbaum will join our faculty in Spring 2023 as an Assistant Professor of Pharmacology with membership in the Elizabeth Weiser Caswell Diabetes Institute. Dr. Lorberbaum is currently a postdoctoral fellow in the Barbara Davis Center for Diabetes at the University of Colorado Anschutz Medical Campus.



Dr. Samantha Hodges
Research Investigator

Dr. Hodges joined the Department of Pharmacology on November 1st as a Research Investigator in the Isom lab. She completed her PhD at Baylor University where she examined cellular mechanisms that underlie epilepsy and autism. She continues to work on epilepsy at UM.



Dr. Chunling Chen
Assistant Research Scientist

Dr. Chen joined the Department of Pharmacology faculty in Summer 2022 as an Assistant Research Scientist in the Isom lab. Her research focuses on understanding mechanisms of pediatric epilepsy.



Dr. Elizabeth Peckham
Clinical Instructor

Dr. Peckham joined the Department of Pharmacology faculty in Summer 2022 as a Clinical Instructor. She obtained her Ph.D. in the Department of Pharmacology at the University of Michigan and then completed a postdoctoral fellowship in the Department of Psychology at the University of Michigan.

Pharmacology Students Present their Research at the 48th Annual Pharmacology Colloquium at Wayne State University

Pharmacology students traveled to the the 48th Annual Michigan Pharmacology Colloquium at Wayne State University on June 24th, 2022. The Colloquium included students from Michigan State University, the University of Toledo, Wayne State University and the University of Michigan.

Michigan Pharmacology winners included Francisco Sanchez-Conde for his second place Podium presentation, “Probing Mechanisms of Long QT Syndrome-Associated Epilepsy with Gene-Edited Stem Cell-Derived Neurons”. Ian Chronis placed third in Podium presentation for his work, “Identifying Novel Regulators of β 2 Adrenergic Receptor Sorting and Signaling at the Endosome”.

In Poster presentation, both Shreeya Bakshi and Kelsey Kochan tied for second place. Shreeya’s presentation was “Investigation of a Pathogenic Splice Site Variant in SCN1B Linked to Dravet Syndrome”, and Kelsey’s presentation was “Positive Allosteric Modulation of the Mu Opioid Receptor: Studies in vivo.”

Congratulations to all of our winners and all that participated.



Shreeya Bakshi
tied for 2nd place in
poster presentation



Kelsey Kochan
tied for 2nd place in
poster presentation

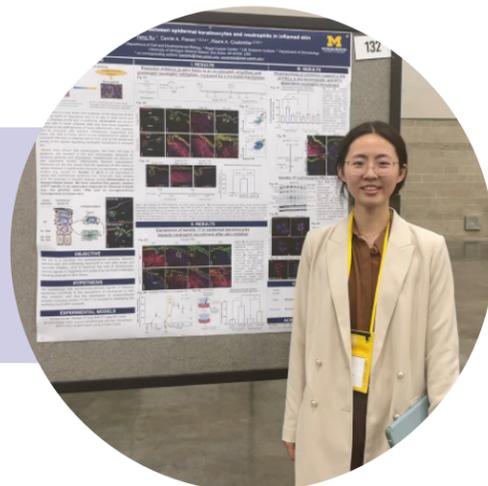


Francisco Sanchez-Conde
took 2nd place in
podium presentation



Ian Chronis
took 3rd place in
podium presentation

Yang Xu (Parent/Coulombe labs) gave oral and poster presentations entitled “*Spatiotemporal interplay between epidermal keratinocytes and neutrophils in inflamed skin*” at the 2022 Society for Investigative Dermatology Annual Meeting.



Faculty Spotlight: Dr. Luis Lopez-Santiago

Luis Lopez-Santiago is an Associate Research Scientist and expert ion channel biologist working in Dr. Lori Isom’s laboratory. Born and raised in Tehuacán, Puebla, México, Luis fell in love with science long before he stepped foot in a lab.

Every weekend growing up Luis would head into town with as many of his mom’s famous tamales as he could carry to sell on the street. What started as a small door-to-door operation eventually grew into a highly successful street food business. By the age of ten, Luis had sold enough tamales to buy a small microscope to get a closer look at the marvelous world around him. He grew a passion for animals, collecting insects, raising guinea pigs and fish, observing the natural world with great intensity and curiosity.

After high school, Luis became the first of ten siblings to attend university. Benemérita Universidad Autónoma de Puebla is where his research career began. In his third semester, a senior graduate student noticed the passion and tenacity in a young Luis and invited him to assist in some membrane physiology experiments. After his first day in the lab, Luis knew that biophysics was his future. Luis’s experimental acumen ultimately led him the institute of physiology at Puebla University, where he used intracellular recording techniques to characterize cardiac action potentials in isolated Purkinje fibers from heart. When presenting this research at a conference, a physiology professor from CINVESTAV (a prominent research institute in México City) took notice of Luis, recommending that he apply for the PhD program. To his surprise, he got accepted.



At CINVESTAV, Luis found Gabriel Cota’s lab and the phenomenal world of ion channels. For his thesis work, Luis investigated the role of voltage-gated calcium and sodium channels in dopaminergic modulation of the pituitary gland. Despite his advisor’s success, equipment and resources for complicated electrophysiology experiments were limited. Luis thrived in this environment. His whole life he had been doing science and investigating the world around him with whatever he had. For example, Luis only had an oscilloscope that would record data in analog form on a piece of paper. With no computer to digitize and analyze his recordings, Luis needed to be resourceful. To measure the capacitance of his cells, Luis discovered that he could cut out and weigh the piece of paper on which the trace was recorded. The larger the cell capacitance (equivalent to cell size) the greater the amplitude of the trace. With proper calibration, he was able to convert the mass of the piece of paper to precisely measure the capacitance of the neurons he was recording. Ingenious. Luis was remarkably successful in his PhD studies. He was the first in his laboratory to pioneer and develop the use of quantitative PCR to measure the expression of ion channel genes.

Emerging from his PhD with expertise in sodium channels and molecular biology, Luis found Dr. Lori Isom’s lab to be a perfect fit for further training as a post-doctoral fellow. The transition was difficult at first. Luis and Lori spoke through a translator when they started working together. Despite the challenges of a new language and a new country, he excelled. Luis enjoyed his post-doc so much that he decided to stay in the Isom lab and move his family to Ann Arbor permanently.

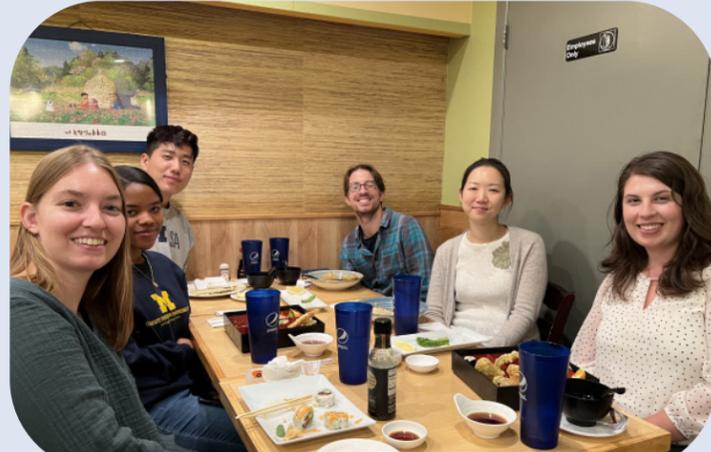
Luis has made broad contributions to our understanding of neuronal and cardiac sodium channel function in normal physiology and inherited epilepsies. Of his many scientific achievements, Luis told me he is most proud of his work elucidating the different sodium channel subtypes present in nociceptive dorsal root ganglion neurons. His advancements in the acute isolation techniques and voltage protocols necessary to record sodium current in DRG neurons are still widely cited to this day.

Luis Lopez-Santiago embodies a ground truth of science: Science is way of thinking and looking at the world. I asked him what his advice to an aspiring scientist would be. “Work with what you have.” You do not need to sit atop an ivory throne with a million-dollar microscope to view the world with a scientific lens. No matter where you come from or what resources you have, anyone can be a scientist. Follow your curiosity. Study hard. Be careful not to fool yourself and you never know what you might discover.

Research Lab Highlights

Kyoung Lab

The Kyoung lab studies how oxygen regulates pancreatic tumorigenesis. Pancreatic cancer cannot make functional blood vessels, carrying oxygen and nutrients. As a result, pancreatic cancer exists under quite low oxygen conditions, known as hypoxia. Using pancreatic organoid models and human single-cell RNA sequencing, Tenzin Ngodup and Ashley Mello in our lab found that hypoxia makes fibroblasts produce cytokines and chemokines in pancreatic cancer. Their work has been recently published in *Oncogenesis*. We are currently investigating how these cytokines and chemokines secreted from fibroblasts lead to immune suppression in pancreatic cancer, which could be targeted to sensitize pancreatic cancer to immunotherapies.



From left to right: Abigail Vallie, Ashley Mello, Tenzin Ngodup, Sean Hannifin, Kyoung Lee, Jordan Key

Jenkins Lab

Large scale genetic screens have identified many significant genes that contribute to neuropsychiatric and neurodevelopmental diseases, like bipolar disorder and autism spectrum disorders (ASD). What we lack is an understanding of how these genetic alterations impact protein function and ultimately brain activity and behavior. Ankyrins, encoded by the ANK1-3 genes, have been implicated in a wide range of brain diseases. Ankyrins are intracellular scaffolding proteins that have critical functions in the formation of plasma membrane domains in polarized cells throughout the body, especially in the brain. The Jenkins laboratory is interested in ankyrins, their protein partners, and how dysfunction of these protein complexes contributes to disease. Recently, we have identified convergent mechanisms linking two top ASD-associated genes, ANK2 and SCN2A, in the control of dendritic excitability, and have determined mechanisms regulating this novel dendritic function. In the upcoming year, we will be examining disease-associated variants in these genes to understand the effects of these genetic changes on protein localization and function. Other studies in the laboratory have been examining the link between ANK3 and bipolar disorder and epilepsy. In the next year, we will use mouse models and patient-derived neurons to understand the role of ANK3 in disease and to understand how therapeutics affect these pathways.



From left to right: Lia Min, René Caballero-Florán, Lucas Tittle, Carina Elvira, Kendall Dean, Paul Jenkins, Clayton Kramm, Jean Setenet, Monica Mesecar

Brody Lab

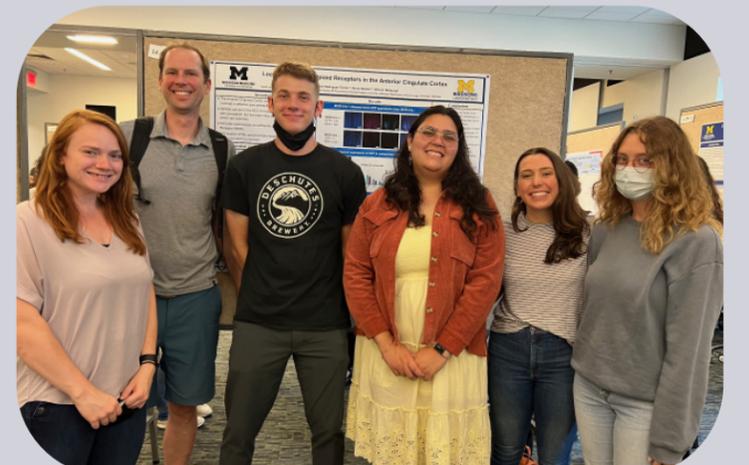
Our research program investigates intracellular signaling pathways that underly cardiac hypertrophy and heart failure. We are interested in uncovering novel regulatory mechanisms that control pathogenic intracellular signaling in cardiac cells and have directed significant efforts in understanding how post-translational lipid modifications of soluble signaling proteins catalyzed by zDHHC enzymes at the Golgi apparatus modulate signal transduction and cardiac maladaptation. Major projects in the lab include molecular regulation of cardiomyocyte exocytosis and natriuretic peptide secretion, regulation of cardiac hypertrophy and oxidative stress through palmitoylation of Rac1, modulation of cytokine receptor signaling and myocardial inflammation by palmitoylation of Jak1, and regulation of cardiac fibroblast activity and myocardial fibrosis by zDHHC enzymes. All trainees in the lab have been awarded pre- or post-doctoral fellowships from the American Heart Association to fund their work, recent R01 applications to NHLBI on palmitoylation-dependent regulation of myocardial oxidative stress and cytokine receptor signaling received fundable scores, and our research on regulation of atrial natriuretic peptide secretion by zDHHC9 was just published in *Journal of the American College of Cardiology: Basic to Translational Science*.



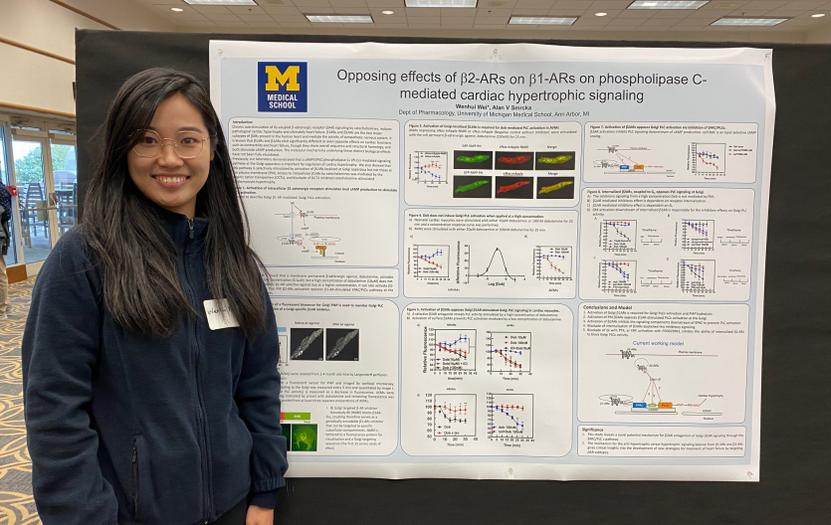
From left to right: Kumar Subramani, Kobina Essandoh, Rob Goldsmith, Matt Brody, James Teuber (missing from photo: Olivia Ferro)

Birdsong Lab

The Birdsong lab is focused on understanding how opioid use reshapes brain circuits involved in processing pain, reward and motivation. This year we had a busy spring and summer. Sweta Adhikary and Liz Jaeckel published their work in the *Journal of Neuroscience* where they discovered that the opioid agonist morphine can act in the striatum to regulate another neuromodulator, adenosine. Liz also received the Dr. Benedict and Diana Lucchesi Graduate Education Fellowship recognizing her hard work through her graduate studies- thank you Lucchesi family. Liz and Marie Walicki traveled to Valencia, Spain to present their work at the International Narcotics Research Conference and then Marie, Liz and Erwin Arias-Hervert presented their work at the Society for Neuroscience conference in San Diego. We also had 4 undergraduate students in the lab over the summer, Kyle Ramsey, Hannah Uebele, Ilanis Rodriguez-Torres and Julia Fernald. To wrap up the summer, Kyle and Ilanis presented their summer projects and we celebrated with a float trip on the Huron River. We're looking forward to more projects wrapping up this year, welcoming Jacob Reeves into the lab full-time after his rotation, and continuing collaborations with other labs in the department.



From left to right: Liz Jaeckel, William Birdsong, Kyle Ramsey, Ilanis Rodriguez-Torres, Marie Walicki, Julia Fernald (missing from photo: Erwin Arias-Hervert, Hannah Uebele)



Please support graduate education at Michigan Pharmacology

Your donations fund learning and training opportunities for our outstanding graduate students, enabling them to advance their knowledge and enhance their skills in basic science research in varied and complex areas of study.

<https://victors.us/pharmacologygradfund>

<https://victors.us/dominoresearchcenter>

For any questions, please contact
Melissa Lynch (lymeliss@med.umich.edu).



MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

DEPARTMENT OF PHARMACOLOGY

University of Michigan Medical School
2301 MSRB III

1150 W. Medical Center Dr.
Ann Arbor, MI 48109-5632 USA

(734) 764-8165

<https://medicine.umich.edu/dept/pharmacology>



[umpharmacology/](https://www.facebook.com/umpharmacology/)



<https://www.linkedin.com/groups/5162943/profile>



[@UMPharmacology](https://twitter.com/UMPharmacology)

2022 Pharmacology Newsletter

Editor and Content Manager:

Katie Hildebrand

Executive Officers of Michigan Medicine: Marschall S. Runge, M.D., Ph.D., executive vice president for medical affairs, dean, University of Michigan Medical School, CEO, Michigan Medicine; David A. Spahlinger, M.D., president, UMHS, and executive vice dean for clinical affairs, University of Michigan Medical School; Patricia D. Hurn, Ph.D., dean, School of Nursing.

The University of Michigan, as an equal opportunity/affirmative action employer, complies with all applicable federal and state laws regarding nondiscrimination and affirmative action. The University of Michigan is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, national origin, age, marital status, sex, sexual orientation, gender identity, gender expression, disability, religion, height, weight, or veteran status in employment, educational programs and activities, and admissions. Inquiries or complaints may be addressed to the Senior Director for Institutional Equity, and Title IX/Section 504/ADA Coordinator, Office for Institutional Equity, 2072 Administrative Services Building, Ann Arbor, Michigan 48109-1432, 734-763-0235, TTY 734-647-1388, institutional.equity@umich.edu. For other University of Michigan information call 734-764-1817.

© 2022 Regents of the University of Michigan: Jordan B. Acker, Huntington Woods; Michael J. Behm, Grand Blanc; Mark J. Bernstein, Ann Arbor; Paul W. Brown, Ann Arbor; Sarah Hubbard, Okemos; Denise Ilitch, Bingham Farms; Ron Weiser, Ann Arbor; Katherine E. White, Ann Arbor; Santa J. Ono (ex officio).