

FSU

DEPARTMENT OF
BIOMEDICAL SCIENCES
COLLEGE OF MEDICINE

NEWSLETTER

MAY 2026 ISSUE



DISSERTATION DEFENSE



MIA X. TRUIPIANO

**PhD Candidate
Dr. Pradeep Bhide's Lab**

May 27th, 2026

Early-Life Nicotine Exposure Disrupts Striatal Inhibitory Circuits and Motivated Behavior

ABSTRACT: Smoking during pregnancy remains a major public health concern due to its adverse effects on both maternal health and offspring development. Long-term neurodevelopmental consequences of early-life nicotine exposure include alterations in motivation and emotional regulation. However, the underlying neural mechanisms remain incompletely understood.

Using a mouse model of early-life nicotine exposure, I have replicated alterations in motivated behavior reported in humans, as well as identified a significant reduction in the density of striatal parvalbumin (PV) interneurons, a class of neurons critical in regulating emotional, cognitive, and motor functions. Using a targeted chemogenetic approach, I demonstrate a causal link between striatal PV interneuron circuit function and motivated behavior. Transcriptomic analyses reveal substantial gene expression changes in the striatum following early-life nicotine exposure, particularly in pathways associated with motivation and reward processing. Together, these findings identify motivation as a critical and underrecognized behavioral domain affected by early-life nicotine exposure and implicate striatal inhibitory circuitry as a key substrate underlying these effects. These findings further demonstrate that early-life nicotine exposure produces persistent alterations in neural circuits with potential relevance to neurodevelopmental and neuropsychiatric disorders, thereby underscoring the public health significance of this work.

DISSERTATION DEFENSE

**MEAGHAN NAVARRETE-MATHEWS**

**PhD Candidate
Dr. Yi Zhou's Lab**

June 5th, 2026

Investigating the Neurobiology of Psychosis-Associated Behavior using 14-3-3 Mouse Models

ABSTRACT: Psychosis is characterized by hallucinations and delusions, and often occurs in those experiencing mental disorders like schizophrenia. While antipsychotic medications can temporarily alleviate symptoms, there is currently no cure for psychosis. Thus, we use different models of 14-3-3 disruption to study the neurobiology of psychosis-like behavior in mice. Previously, we showed that 14-3-3 inhibition in the dorsal CA1 (dCA1) induces hippocampal hyperexcitability that leads to heightened dopaminergic activity in the ventral tegmental area (VTA) and novelty-induced hyperlocomotor behavior, phenotypes that mirror human psychosis. Using state-of-the-art neural tracing, we delineated a di-synaptic circuit wherein the dCA1 and VTA are connected via the lateral septum (LS). We then show that circuit-specific chemogenetic modulation of the dCA1-LS projection attenuates novelty-induced hyperlocomotor behavior and hyperdopaminergic activity in the VTA. In addition, we created a Ywhae conditional knockout model to study the isoform-specific effects of 14-3-3 ϵ loss in the forebrain of mice and its impact on behavior. Together, our results underscore the role of a previously uncharacterized dCA1-LS-VTA pathway in psychosis-like behavior and help us better understand the role of 14-3-3 proteins in psychiatric disorders. These studies contribute to our knowledge of the neurobiology of psychosis and highlight potential new routes for treatment discovery.

2ND YEAR STUDENT SEMINARS

APR-MAY
2026

ANOTHER SUCCESSFUL RUN!



Anthony DeLuca

Dr. Michelle Arbeitman's Lab

"Context-dependent DNA binding of the transcriptional regulator fruitless via BTB-Domain proteins in sexually dimorphic neural circuits"



Parisa Taklifi

Dr. Xiaofei Ji's Lab

"Inhibition of HIV-1 Nef Mediated Immune Evasion"



Carson Mickey

Dr. Julia Wang's Lab

"Overnutrition Induced ER Stress Drives Epigenetic Remodeling in Pancreatic β -Cells in Type 2 Diabetes"



Steven Muti

Dr. Akash Gunjan's Lab

"Targeting DNA Double Strand Break repair pathways for therapeutic purposes"



Abigail Kizer

Dr. Jarrod Mousa's Lab

"Developing monoclonal antibody therapies for drug-resistant bacterial pathogens"



Sophia Owutey

Dr. Yanchang Wang's Lab

"The Role of SUMOylation in DNA Damage Response Proteins Localization"



Gallage Ariyaratne

Dr. Stephen Chelko's Lab

"Osteopontin is a Driver of Myocardial Inflammation and Cardiac Dysfunction in Arrhythmogenic Cardiomyopathy"



Madison Sterling

Dr. Jarrod Mousa's Lab

"Targeting Multiple Respiratory Viruses Using Bispecific Antibodies and Novel Vaccine Candidates"

STUDENT NEWS



SHIV PATEL

Undergraduate Student
Dr. Jerome Irianto's Lab

Shiv Patel is an undergraduate student on the pre-med track. He is majoring in Exercise Physiology while researching in Dr. Jerome Irianto's lab.

JOHN ROBERT LEWIS SCHOLAR & FELLOWSHIP PROGRAM 2026 BARRY GOLDWATER SCHOLARSHIP

The **John Robert Lewis Scholars & Fellows Program** is a public policy and civil rights program that will allow **Shiv** to collaborate, on an impactful project, with peers and mentors across interdisciplinary backgrounds. **Shiv Patel's** extensive background in research and public health leadership is lead by his passion to provide effective health care to those within the Tallahassee community.



The **2026 Barry Goldwater Scholarship** is a nationally recognized scholarship, that supports sophomores and juniors who have the making of being the next generation of research leaders. **Shiv Patel** is among four winners who have shown that their curiosity and discipline can be the recipe to becoming impactful leaders in their areas of research.



MED IT | TIP OF THE MONTH

"You do not have to power your device off every day. Doing so can prevent it from updates that are normally applied outside of normal business hours. You can just lock your screen by pressing the Windows+L key and it will still be on in the background to download the updates. I would recommend doing a complete shut down before the weekend starts."

-Rodney Greathouse | IT Technician

GRADUATE STUDENT NEWS

FAMU-FSU COLLEGE OF ENGINEERING DANFOSS GRADUATE RESEARCH SYMPOSIUM



Dr. Cesar Rodriguez (second to the left) and Erin Petkus (middle) attend the Danfoss Graduate Research Symposium at the FAMU-FSU College of Engineering on April 16th.

ERIN PETKUS

The **Danfoss Graduate Research Symposium** and award ceremony was held at the High-Performance Materials Institute (HPMI) within the Materials Research Building (MRB) at FAMU-FSU College of Engineering on April 16th.

Erin Petkus is a PhD student from the Department of Chemical and Biomedical Engineering and is completing her research in **Dr. Cesar Rodriguez's** lab.

Erin earned first place with her research presentation on *"Coupling Nonthermal Gas-Liquid Plasma Reactors with Bioreactors for Wastewater Treatment"*.

BRYAN W. ROBINSON ENDOWMENT FOR THE NEUROSCIENCES GRANT AWARDEES

The **Bryan W. Robinson Endowment** was founded in December 1972 with the focus on supporting research and education in neurology and neurosurgery. The Endowment offered six grants, this year, to encourage PhD, MD (Resident), or MD/PhD degree programs in neuroscience specialties. Two of our **PhD graduate students won** this year's **Bryan W. Robinson Endowment Grant for the Neurosciences**:

- **Danah Alquraish**, *"Peripheal FMRP Loss in Spiral Ganglion Neurons Drives Auditory Hyperexcitability and Audiogenic Seizures"*
- **Heyje Sumajit**, *"Targeting LSRP6-mediated collagen I synthesis to inhibit GBM growth and invasion"*

The **Annual Meeting & Award Ceremony** will be held on **June 3rd** at the **FSU, College of Medicine**.

GRADUATE STUDENT NEWS

HEART RHYTHM SOCIETY 2026 | ANNUAL MEETING



From left to right: Emily Shiel, Dr. Stephen Chelko, Gallage Ariyaratne, and Andrea Villatore are attending the HRS Annual Meeting in Chicago, IL.

The 47th Heart Rhythm 2026 Meeting is an internationally recognized conference with a commitment to advance the field of heart research through prominent forums. Dr. Stephen Chelko, Gallage Ariyaratne, Emily Shiel, and Andrea Villatore from BMS, attended the HRS Meeting in Chicago, IL on April 10th. There they were apart of almost 2,000 sessions, posters, roundtables, and hands-on experiences who highlighted their latest breakthroughs.

POSTER TITLES & PUBLISHED ABSTRACTS

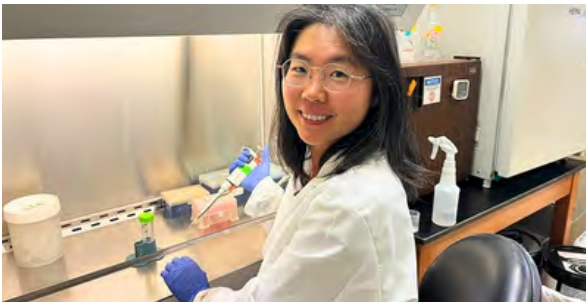
Each title links to the respected abstract.

"NETOSIS IS A KEY MEDIATOR OF INFLAMMATION AND REMODELING IN ARRHYTHMOGENIC CARDIOMYOPATHY" by Emily Shiel

"DESMOSOMAL "HOT-PHASE" CARDIOMYOPATHY WITH MULTIFACTORIAL FULMINANT PRESENTATION" by Andrea Villatore

"GENETIC ABLATION OF OSTEOPONTIN MITIGATES MYOCARDIAL INFLAMMATION, ARRHYTHMOGENESIS, AND CARDIAC DYSFUNCTION IN ARRHYTHMOGENIC CARDIOMYOPATHY"
by Gallage H.D.N. Ariyaratne

FACULTY INSIGHT



DR. TIMOTHY MEGRAW LAB

Dr. Tim Megraw's lab investigates the molecular and cellular functions of microtubule-organizing centers (MTOCs). MTOCs are essentially control centers inside each cell. These critical structures vary by cell type, and coordinate cell shape, polarity, organelle location, and intracellular trafficking. The molecules that function at MTOCs, impact diverse physiological processes, and are responsible for a variety of human diseases.

Lab members: Ling-Rong Kao (Research Faculty), Chunfeng Zheng (Researcher), Tania Sultana (Ph.D student), Natalia Piwko (Ph.D student), Ava Adriana (undergraduate student, Jenny Jones (undergraduate student), Sriya Kolli (undergraduate student).

Here are a few published works you may be interested in exploring:

Morton, GM., Toledo, MP., Zheng, C., Sultana, T., Wang, Y.J., Zheng, Y., Megraw, TL. **"A distinct isoform of Msp300 (nesprin) organizes the perinuclear microtubule-organizing center in adipocytes."**

Molecular biology of the cell vol. 36,7 (2025): ar92. doi: [10.1091/mbc.E25-01-0003](https://doi.org/10.1091/mbc.E25-01-0003)

Sultana, T., Zheng, C., Morton, G., Megraw, TL. **"Zika virus NS3 drives the assembly of a viroplasm-like structure."** bioRxiv : the preprint server for biology 2024.09.16.613201. 16 Sep. 2024, doi: <https://doi.org/10.1101/2024.09.16.613201>. Preprint.

Chen, J.V., Buchwalter, R.A., Kao, L., Megraw, T. **"A Splice Variant of Centrosomin Converts Mitochondria to Microtubule-Organizing Centers."** Current biology : CB vol. 27,13 (2017): 1928-1940.e6. doi: [10.1016/j.cub.2017.05.090](https://doi.org/10.1016/j.cub.2017.05.090)

FACULTY NEWS



Jarrod Mousa, PhD



Yuan Wang, PhD



Raed Rizkalah, PhD



Deirdre McCarthy, BSc



Robert Tomko, PhD



Jerome Irianto, PhD

PROMOTION AND TENURE

Let us congratulate twelve (12) FSU College of Medicine faculty members who are receiving promotions due to their exemplary work and contributions to our community. Six (6) in which are from within the Department of Biomedical Sciences!

Promotions will take full effect on August 26th. Congratulations to all faculty members for their accomplishments!

Promotion to Professor

- Jarrod Mousa, PhD
- Robert Tomko, PhD
- Yuan Wang, PhD

Promotion to Associate Professor

- Jerome Irianto, PhD
- Raed Rizkallah, PhD

Non-tenure clinical track/specialized promotions

- Deirdre McCarthy, BSc

BETH ALEXANDER RETIREMENT PARTY



Beth Alexander began her career at Florida State University in September 1998 and transitioned into the role of **Flow Cytometry Lab Manager** for the College of Medicine in January 2020.

The Department of Biomedical Sciences faculty and staff thank Beth for over six years of dedicated support to research. Enjoy your well deserved retirement Beth!



PUBLICATIONS



From left to right: Emily Shiel, Dr. Stephen Chelko, Gallage Ariyaratne, and Andrea Villatore are attending HRS Annual Meeting.

Interleukin-1 β Drives Disease Progression in Arrhythmogenic Cardiomyopathy



Penna, VR., Amrute, J., Engel, M., Shiel, E., Farra, W., Cannon, E., Leu-Turner, C., Ma, P., Villanueva, A., Shin, H., Parvathaneni, A., Jager, J., Bueno-Beti, C., Asimaki, A., Lavine, K., Saffitz, J., Chelko, S., "Interleukin-1 β Drives Disease Progression in Arrhythmogenic Cardiomyopathy." *JACC: Basic to Translational Science*, vol. 11, no. 6, June 2026, p. 101542, <https://doi.org/10.1016/j.jacbts.2026.101542>. Accessed 15 May 2026.

Abstract: Arrhythmogenic cardiomyopathy (ACM) is a rare inherited heart disease that can lead to heart failure and sudden cardiac death, with limited treatment options beyond transplantation. In this study, researchers analyzed heart tissue from patients and found specific "hotspots" where inflammation and scarring occur together. This is what contributes to heart damage. Using a mouse model, they identified a key inflammatory signal (IL1B) driving these changes. By blocking this signal it reduced inflammation, improved heart function, and lowered arrhythmia risk—suggesting that existing drugs targeting IL1B may offer a promising new treatment approach for ACM. To read the complete publication visit [JACC](#).

A Paradigm Shift: Arrhythmogenic Cardiomyopathy Is an Inflammatory Disease



Ariyaratne, G. H. D. N., Villatore, A., Peretto, G., & Chelko, S. P. (2026). "A Paradigm Shift: Arrhythmogenic Cardiomyopathy Is an Inflammatory Disease." *Cells*, 15(10), 868. <https://doi.org/10.3390/cells15100868>

Summary: Arrhythmogenic cardiomyopathy (ACM) is a genetic heart disease traditionally viewed as a structural problem, but new research shows that inflammation plays a major role in how the disease develops. Changes in key genes not only weaken heart cell connections but also trigger immune responses. Evidence suggests that this inflammation may begin early and can appear in flare-ups that resemble heart inflammation (myocarditis). This makes diagnosis challenging. Environmental factors like stress can also influence disease progression. This evolving understanding highlights inflammation as a key driver of ACM and points to new treatment strategies targeting immune pathways. To read the complete publication visit [MDPI](#).