2023

DEPARTMENT OF MOLECULAR & INTEGRATIVE PHYSIOLOGY

SCHOOL OF MOLECULAR & CELLULAR BIOLOGY

Greetings from the Head

I hope 2023 has been filled with good health, joy, and exciting plans for the future for all of you. For me, as the Head of MIP, the highlight of this year has been the success of our three assistant professors (**Dr. Xinzhu Yu**, **Dr. Ben Auerbach**, and **Dr. Patrick Sweeney**) in securing federal funding, publishing papers, and getting recognized with highly prestigious awards. Congratulations to the three of them and my warmest wishes for continued success!

This issue of the MIP Newsletter features an interview with **Associate Professor Hee Jung Chung** about her research and role as DEI advocate; an interview with **Associate Professor Erik Nelson** regarding the plans for the new Cancer Center building; brief descriptions of new MIP courses offered as part of the new Neuroscience major; alumni updates from **Dr. Daphne Lodes** (Tsai lab) and **Dr. James Nguyen** (Anakk lab), as well as a special update from **Dr. William Shofner**, former graduate student in the lab of the late Al Feng, who served as head of the MIP department. We also feature information about this year's Prosser lecture ("Bats, echoes, and reverb!" by **Profs. Jim and Andrea Simmons**, from Brown University) and the Albert Feng Neuroscience Graduate Student Research Award ceremony (awarded to **Dr. Catie Cutia**, from the Christian-Hinman lab); updates on faculty and PhD student achievements; and an In Memoriam celebrating the life of **Dr. Mary Jane Beasley** (a long-time research scientist in Professor Benita Katzenellenbogen's lab).

Lastly, I hope that our alumni and friends remain actively committed to MIP. Such support is increasingly crucial to our scientific enterprise, and it helps us achieve our goal of keeping our department as one of the most prestigious places to do research and receive education in modern molecular and integrative physiology.

I wish you all a healthy, peaceful, and productive 2024!

Claudio Grosman

2023

In This Issue

Exploring Science, Innovation, and Inclusivity with Dr. Hee Jung Chung

Dr. Hee Jung Chung is Associate Professor of Molecular & Integrative Physiology. Her lab focuses on the mechanisms of homeostatic plasticity and seizure disorders. Dr. Chung also serves as a member of the Diversity, Equity, & Inclusion (DEI) Committee for the School of MCB and chair of the Diversity Committee for the Neuroscience Program.

How did your passion for science develop?
My passion for science developed during my high school time. I had an extremely wonderful chemistry teacher, Dr. Sonia Glazer, who was an excellent educator. She was Jewish and a Holocaust survivor. She emanated confidence and kindness. She commanded respect. She loved science and chemistry. I got hooked on science and chemistry because of her. She was an inspiration.

How did your doctoral and postdoctoral research experience shape your research career?
When I entered the graduate program at Johns Hopkins University School of Medicine, I wasn't exactly sure which field I wanted to go into, just like many MCB students here at UIUC. However, I wanted to explore neuroscience because of a Howard Hughes Medical Institute (HHMI) summer undergraduate fellowship I did in college, which introduced me to neurophysiology. Furthermore, I had close family members who suffered from neurological disorders; my cousin has multiple sclerosis, and my dad, a Korean war veteran, had post-traumatic stress disorder from the war. I gathered up my courage and did my rotation in Dr. Richard Huganir's lab in the Department of Neuroscience.

I just loved my rotation, which was very unexpected. Rick was an amazing mentor and my graduate training under Rick has shaped my current research on ion channels because my PhD thesis focused on how activity-dependent modifications of glutamate receptors, which are ligand-gated ion channels, regulate their function and density at excitatory synapses and mediate synaptic plasticity that underlies learning and memory.

For my postdoctoral training, I wanted to study different ion channels. I was extremely fortunate to join Dr. Lily Jan, a Professor of Physiology and Biophysics at the University of California, San Fransico (UCSF). She is a brilliant female scientist who cloned the first potassium channel. Importantly, she also understands the challenges that many female scientists face to balance work and family life as well as motherhood. She gave me freedom to work on any topic I wanted, as long as it pertained to the potassium channels that her lab was focused on.

I came up with the hypothesis that GIRK potassium channels that are expressed in the dendritic spines are regulated by neuronal activity and modulates excitatory synaptic transmission and plasticity. I obtained my own NIH National Research Service Award (NRSA) postdoctoral fellowship to test this hypothesis and published two *Proceedings of the National Academy of Sciences* (PNAS) papers on this project. My postdoctoral experience shaped me to formulate and drive the multi-year research projects independently.

What motivated you to join academia and set up your research lab at UIUC?
I have always wanted to be a professor at an academic institution because I really like teaching students and learning new things. I admire a teacher who effectively and clearly explains the subject. I also like an academic institution which protects academic freedom and provides diverse and inclusive environment where one can pursue and share scientific knowledge and discovery regardless of how you look or where you came from or whether you're rich or not.

UIUC was an ideal place for me and my husband, Dr. Eric Bolton, to set-up our labs, which focus on neuroscience and endocrinology, respectively, as the MIP department has strengths in both. Also, Dr. Byron Kemper, a MIP

chair who recruited us, as well as his successor, Milan Bagchi, were extremely supportive when we were junior faculty. I really like the collegial environment in MIP, the School of MCB, and across the campus which stimulates collaborations. Due to this collegial and supportive environment now provided by Dr. Claudio Grosman, I think that junior faculties in MIP are doing very well.

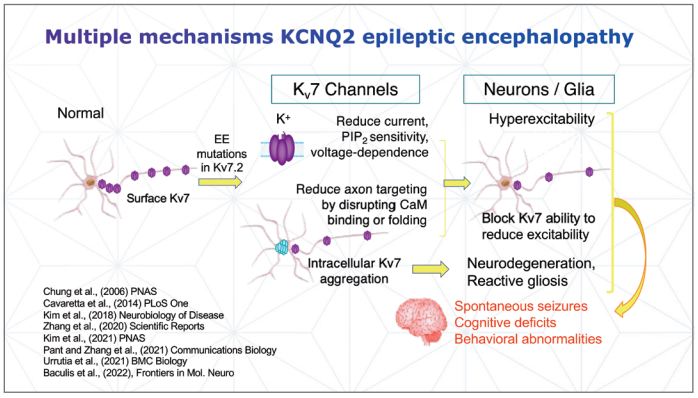
What is the latest scientific focus of your lab?
My lab has a keen interest in determining the specific neuronal location and function of ion channels in health and diseases such as epilepsy and Alzheimer's disease. My lab focuses on voltage-gated KCNQ/Kv7 potassium channels. Mutations in these channels are associated with neonatal epilepsy including epileptic encephalopathy (EE), which causes profound intellectual disability, autism, and speech delay in humans.

My postdoctoral studies discovered that KCNQ channels are preferentially expressed on the axonal surface compared to the somatodendritic surface. Subsequently, my lab has determined the detailed mechanisms mediating this axonal targeting of KCNQ channels and how EE mutations disrupt this axonal localization. My lab then made a knock-in mouse containing one of these mutations. These mice recapitulate many symptoms of the human condition, and interestingly, display widespread neurodegeneration and neuroinflammation. Understanding various pathogenic mechanism underlying KCNQ-associated EE mutations are crucial to develop potential therapeutics for children who suffer from this devastating disease.

My lab is currently trying to comprehensively identify the membrane lipid PIP2 binding sites of the KCNQ channels, as PIP2 regulates their gating. We have very interesting data showing that PIP2 binding regulates KCNQ trafficking as well. Intriguingly, many of the EE mutations are concentrated in the PIP2 binding sites that we identify for KCNQ2 homomeric channels.

We recently received an R01 grant to study the PIP2 binding landscape together with the lab of biochemistry professor Dr. Emad Tajkhorshid. The plan is to comprehensively study the PIP2 binding sites of all the KCNQ channels and their effect on function, trafficking, and EE. We also continue to study the role of STEP (striatal enriched tyrosine phosphatase) in epilepsy and neuronal intrinsic excitability. This is very exciting because STEP's role was only studied for synaptic transmission and my lab last year published one of the first studies showing that STEP regulates neuronal intrinsic excitability as well.

What favorite piece of advice do you have for students, post-docs, and young scientists?
First, particularly for students and postdocs, you need to find out what field of science really interests you and that you can do well in. Second, when you find it, you have to put your full soul and every energy into pursuing that interest. You need motivation and excitement, but if your work ethic is bad, that's not going to get you anywhere. Third, you have to have a good, honest conversation about expectations between mentor and mentee. And, it has to be two-sided. If you are a mentor, you have to clearly deliver your expectations to students and postdocs, i.e., what is expected if he or she wants to successfully complete their PhD or move on to the next level. But the students should also be able to say what they are looking for from their P.I. If that honest conversation and expectation is really mapped out well at the beginning, I think it makes it easier to navigate the four to five years of training.



The Chung lab has discovered multiple mechanisms underlying KCNQ2-associated epileptic encephalopathy including reductions in current and CaM-dependent axonal surface expression of Kv7 channels, as well as disruptions in their voltage-dependent activation, PIP2-dependent regulation, and protein stability. These disruption of Kv7 channel function and expression leads to neuronal hyperexcitability and degeneration, which together contributes to the development of epileptic encephalopathy.

What do you enjoy most outside of your research?
Oh, that's easy. I love spending time with my children. They are in high school and are more aloof, but my husband and I try to make it so that at least one parent goes to their sports games or any competitive or volunteer events. For example, my both kids are on a local robotics team, and they build robots and go to tournaments and do a lot of STEM outreach events. My husband and I drive them to these events a lot. In general, I like to have fun with them, watching movies, cooking for them, going to weight training, etc. Life is too short, and they're going to go to college in a few years. I love spending time with my husband and walking our dog. We have a tiny Bichon who shows unconditional loyalty and love. I also try to visit to my mother in South Korea as often as I can.

If you were to delve into a new area of research, which is unrelated to your current domain, which field would you find most interesting or intriguing?
I would like to delve into the research that develops and tests therapeutic interventions for neurological diseases. I am interested in human stem cell differentiation to neurons and organoids as well as gene therapy. I really began to feel the necessity to move to these fields based on my years of investigating mechanism underlying KCNQ2-associated epileptic encephalopathy. I have been excited about my collaboration with Dr. Hyunjoon Kong in Chemical and Biomolecular Engineering who develops nanoparticles that act as drug delivery cargo, because not every drug can pass through the blood-brain barrier.

I know you are a big advocate for diversity, equity, and inclusion in science. As a woman PI in STEM, do you have some insights for the other aspiring women in STEM or would you like to talk about your role on the DEI committee?
Oh, that's a tough one. As female scientists, I think we must aspire and try hard to be an expert in our chosen science fields. Such expertise will overcome subconscious bias that females are not as good scientists as males. I feel that female scientists take on many committee assignments and tasks at work which do not help to advance their careers. This issue has even been discussed in the career column section in *Nature*. I think it is important for female scientists to learn to say, "No". This is not easy, and I am still learning.

Overcoming bias is even more challenging for students from diverse backgrounds and especially students from social or economically disadvantaged environments. This bias also applies to international students. We (our university, graduate programs, the mentors) have to provide an inclusive and supportive environment for them to thrive and succeed. This is one important mission that the MCB DEI committee and Neuroscience program diversity committee are working hard to achieve.

All About the New Cancer Center Research and Innovation Building with Dr. Erik Nelson

Dr. Erik Nelson is an MIP Associate Professor and affiliate of the Cancer Center at Illinois. His lab focuses on endocrine and metabolic control of breast and ovarian cancer initiation and progression. We sat down with Dr. Nelson to discuss recent plans for the development of an exciting new Cancer Center Research and Innovation Building.

Tell us about the new Cancer Center Research and Innovation building (CCRIB). Where did the idea for the facility come from and what is its goal?
The Cancer Center at Illinois (CCIL) unites world-class faculty who uncover fundamental knowledge, innovate new technologies, and enable cancer-free lives. Our interdisciplinary expertise in science and engineering, exceptional facilities, and novel educational experiences are changing the way we take on cancer.

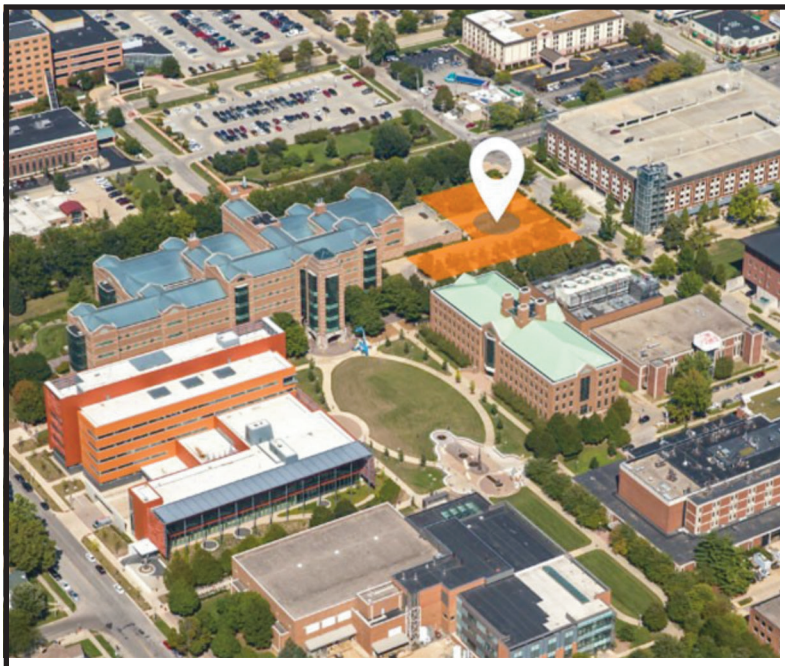
Currently, cancer research is spread across campus. In order to facilitate collaborative, cancer-related research, the University of Illinois has decided to build a state-of-the-art facility, with the goal of transforming cancer research, detection, and treatment. The new facility will provide space and facilities to support research, education, and office infrastructure for multi-disciplinary high impact initiatives. Being on the northeast corner of our campus will promote translational interactions with our clinical partners right across the street.

Where will the building be located and what is the construction timeline?
The new building will be located on University Avenue in the northeast corner of campus, right next to the Beckman Institute for Advanced Science and Technology, and across the street from our clinical partners. We are now actively fundraising. Campus has already committed finances for half the projected cost.

What is your role in the CCRIB project?
The CCIL has two major programs, and I co-lead one of them: the Cancer Discovery Platforms Bridging the Engineering-Biology Continuum Program. We are trying to incorporate aspects that will aid in our research into the building itself, from large areas for interactions to high-tech research space.

How do you see the CCRIB influencing cancer research at the university and the community?
Bringing together CCIL members into one common place will serve as a catalyst for us to make huge inroads into cancer detection and treatment. It has become clear that we need to take an interdisciplinary approach to tackling this disease. Having researchers with diverse expertise all in one place is key to this mission.

How will the MIP department be involved with the CCRIB?
Several members of MIP are also CCIL members, including Drs. Sayee Anakk, Milan Bagchi, Catherine Christian-Hinman, Benita Katzenellenbogen, and Patrick Sweeney. Collectively, we will all benefit from the shared resources, meeting spaces and ability to interact with our colleagues. The new building will also house the Tumor Engineering and Phenotyping Core Facility, which has state-of-the-art equipment for cancer center members to use.



Location is Everything!

The Cancer Center Research & Innovation Building (CCRIB) will be located east of the Beckman Institute.

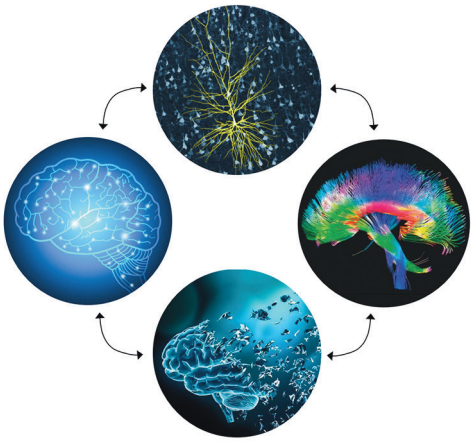
- The facility will be a gateway to basic and translational biomedical research at Illinois and will foster interdisciplinary collaborations.
- CCRIB will facilitate access to established and new core facilities.
- The building will contribute to the development of the northeast corner of our campus.

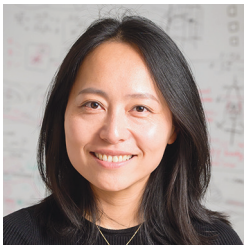
The 135,000-square-foot building will contain 47,000 square feet of lab space and the following features:

- Hybrid research laboratory design
- Space for biology, engineering, and computational research
- Open concepts throughout building
- Moveable laboratory configurations
- Paired floor configurations
- Shared collaboration spaces
- Improved flow & communications
- Indoor & outdoor collaboration spaces
- Faculty offices & student work areas near labs
- Glass-wall visibility into labs

New neuroscience courses offered

The School of Molecular & Cellular Biology has created a brand-new bachelor's program in Neuroscience. The Department of Molecular & Integrative Physiology has been at the forefront of neuroscience research at UIUC for decades and several recent MIP faculty additions have designed new course offerings for the Neuroscience major. Check them out!



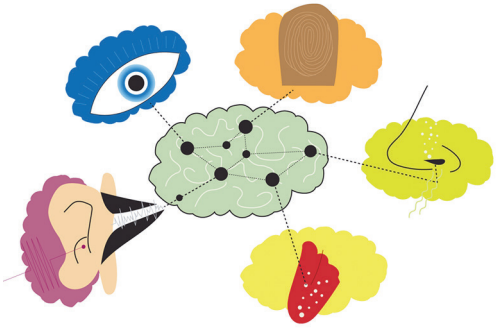


MCB 170: Fundamentals of Neuroscience
Dr. Xinzhu Yu

This introductory course provides a systematic introduction to the central nervous system with an emphasis on the structural and functional organization of the mammalian brain. Students first learn fundamental information about the cellular and molecular building blocks of the nervous system, then build upon this knowledge by exploring various circuits and systems that permit information processing, action execution, emotions and adaptation to environmental challenges. Finally, dysfunction of the mammalian brain under disease and injury is discussed in the context of scientific evidence and history.

MCB 493 NOM: Neurobiology of Mental Illness
Dr. Patrick Sweeney

In this advanced MCB course, students learn the neural circuitry regulating emotion and how this circuitry is disrupted in common psychiatric disorders. Lectures and readings cover the physiology, symptomatology, and current treatment strategies for treating mental illness, with an emphasis on understanding how changes in cellular and molecular pathways impact the neural circuitry regulating emotion.



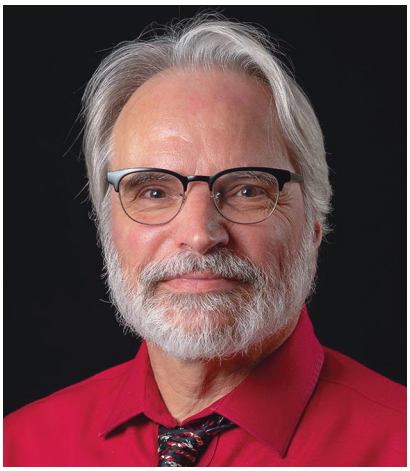
MCB 493 NOS: Neurobiology of the Senses
Dr. Benjamin Auerbach

We interact with and react to an ever-changing environment through the existence of specialized sensory receptors and brain circuits that allow us to detect and interpret external stimuli. This advanced course introduces the major functions of sensory systems and the mechanisms of sensation and perception at the molecular, cellular, and systems level. In addition, it considers the physiological basis of sensory system development, plasticity, and diseases of the senses.

More information about the neuroscience major can be found at: *go.mcb.illinois.edu/neuroscience*

ALUMNI HIGHLIGHT

William Shofner
PhD, Physiology and Biophysics, 1983
Feng Lab



Current position and title:
I'm an associate professor in Speech, Language and Hearing Sciences at Indiana University. I'm also the director of undergraduate studies. From 2013 to 2020, I was also the coordinator for the Doctor of Audiology program.

Career arc and key accomplishments:
When I first came to the the U of I as a graduate student, it was the Department of Physiology and Biophysics. I came to work with Benita Katzenellenbogen to do molecular endocrinology. I quickly realized that biochemistry and I did not fit well together, so I looked for another area that didn't use biochemistry and that was neurophysiology or electrophysiology. So, I joined Al (Feng)'s lab in spring 1978. He happened to work on the neural basis of acoustic communications in frogs and that's how I got into working with frogs. I did my dissertation in his lab looking at the post-metamorphic development of the frog auditory system.

After I graduated, I had this background in neuroethology about hearing in frogs, and I wanted to learn something more about hearing in general, especially mammalian hearing. That's why I went to do a postdoc with Eric Young at Johns Hopkins University. Then an opportunity came up at the Hearing Institute of Loyola University Chicago. They were looking for someone to set up a small mammalian physiology lab, so I went there. I started working with gerbils and then switched to chinchillas. I was there for 19 years as a research scientist. Then an opportunity came up in 2005 for a tenure-track position at Indiana University. I came to Indiana University in 2005 and have been here since then.

It's hard to answer the question about the key accomplishments. I'll let the field determine what my professional accomplishments were. For personal accomplishments for me, I had the privilege to be the associate editor for the *Journal of Acoustical Society of America* from 2002 to 2017 and in 2011 I was elected a fellow in the Acoustical Society of America.

How did UIUC training get you where you are?
When I came to the department, there was a required course on comparative physiology, and I got really interested in it. At the time, there was a large group of faculty interested in comparative physiology. Not only there was Al Feng, but there were James Heath, Arthur Devries and C. Ladd Prosser, who is the father of comparative physiology. [Al Feng's] approach was really neuroethological, looking at the neural basis of acoustic communication in frogs and trying to understand the physiological basis for their behavior. I've taken that with me. Even though I've worked with mammals for a good portion of my career, I've always had that comparative approach in the back of my mind in my research. I was still interested in comparing what was going on in chinchillas with humans and I got this evolutionary perspective in research from the department program.

Do you have any special recollections of working with Al Feng?
Al was very supportive of his graduate students. When I started in his lab, I was trying to do some single neuron recording in the auditory nerve for my dissertation. I was having a lot of difficulties learning the surgical and recording techniques. Al offered me to collaborate with him on a follow-up study that he wanted to do on some sound localization work. I worked closely with him, and he trained me in surgical and recording techniques. That really helped me do my dissertation successfully. The other is taking his students to scientific conferences. Al always wanted his students to go and when he took his students, he always made an effort to introduce us to the people in the field and took us out to dinner with them. He let us meet a lot of people including big names in the field.

Fun fact about yourself:
When I started classroom teaching, I generally began wearing a necktie to class. I would just usually wear a tie when I talked, but over the years I usually wear tie every day. I have accumulated a number of novelty ties, particularly those having cartoon characters. I've accumulated so many of these ties that I can wear a different tie every day during the semester, and you will never see me wear the same tie twice.

ALUMNI HIGHLIGHT

Daphne Lodes

PhD, Molecular and Integrative Physiology, 2022
Tsai Lab

Current position and title:
Part-time biology instructor at Central New Mexico Community College

Career arc and key accomplishments:
I took some time off after graduate school to stay home with my daughter, but my accomplishments as a graduate student helped me enter the work force again! My accomplishments include being awarded the AHA Predoctoral Fellowship and the James E. Heath Excellence in Teaching Award.

How did MIP training get you where you are?
MIP training set me apart as a candidate for this job! Community colleges are often looking for instructors with a good background in physiology, so my coursework and research were beneficial to me in that way. Further, my experience as a teaching assistant in Anatomy and Physiology labs gave me an advantage.

Your favorite memory related to the time you spent in MIP:
I enjoyed, and miss, the MIP Halloween parties and pumpkin carving competitions! I loved doing that with my lab mates each year.

Fun fact about yourself:
I love iced mochas, and I love to visit new local coffee shops!

PhD Graduates for December 2022, May 2023, and August 2023

December 2022

Xiyu Ge (Raetzman Lab)
"Discovering the Effects of Intrinsic and Extrinsic Signals on the Developing Pituitary Gland"

Adam Nelczyk (E. Nelson Lab)
"Nuclear Receptor TLX and Dietary Habits: Identifying New Targets for the Treatment and Prevention of Metastatic Breast Cancer"

Tauseef Shah (Nowak Lab)
"Glial Activation in a Mouse Model of Endometriosis and Impact of DI (2-Ethylhexyl) Phthalate on Glial Cells, Ileum, and Colon"

Hao Sun (K. Kemper Lab)
"MicroRNA-802 and AMPK in Development of Non-Alcoholic Fatty Liver Disease: Mechanisms and Potential Therapeutics"

May 2023

Harvey Andersen (Sweedler Lab)
"Analysis, Fractionation and exploratory recombinant expression of Novel Eukaryotic L/D Peptide isomerases and Free D-Amino Acid Racemases"

Greg Tracy (Chung Lab)
"A Novel Postsynaptic Location for Kv7 Channels and their role in Memory and Nanoparticle Advancement for Dementia Therapeutics"

August 2023

Daniel Castro (Sweedler Lab)
"High-Throughput Matrix-Assisted Laser Desorption/Ionization Mass Spectrometry for Single-Cell and Single-Organelle Measurements"

James Nguyen (Anakk Lab)
"Characterization of Intestinal Small Heterodimer Partner and Farnesoid X Receptor in Bile Acid and Lipid Metabolism"

Anushna Sen (Anakk Lab)
"Deciphering the Roles of Scaffold Proteins (IQGAP1 and IQGAP2) AND Xenosensor (Car) in Liver Biology"

ALUMNI HIGHLIGHT

James Nguyen
PhD, Molecular and Integrative Physiology, 2023
Anakk Lab

Your current position and title:
Postdoctoral Research Scholar in the Department of Neuroscience and Pharmacology at the University of Iowa

Career arc and key accomplishments:
I obtained both my BS and MS in chemistry with a concentration in biochemistry from San José State University working in Dr. Alberto A. Rascón's research group characterizing Aedes aegypti midgut serine proteases. Under his mentorship, I was able to better develop scientific techniques and critical thinking. I was then accepted into the University of Illinois at Urbana-Champaign where I was accepted into Dr. Sayeepriyadarshini Anakk's research group investigating intestine-specific nuclear receptors and their role in bile acid metabolism. During my time in graduate school and her laboratory, I attended and presented at symposia and conferences, aided in grant writing, reviewed and wrote manuscripts, received the Outstanding Teaching Assistant in MCB, and was a recipient of the Career Exploration Fellowship Program. And now I am working at the University of Iowa. I just cannot seem to leave the Midwest.

How did MIP training get you where you are?
Graduate school is a mental and physical endurance test filled with many beer breaks. The tasks and opportunities that I received allowed me to be comfortable with what I was doing so that I may develop personally and professionally during my training.

Your favorite memory related to the time you spent in MIP:
During my time there, I worked for the enthusiastic Dr. Sayee Anakk who likes parties, had conversations with Dr. Lori Raetzman and her caring soul imparting wisdom, and had multiple interactions with Dr. Erik Nelson while being intrigued by his animated gestures. In addition, the friendships and lasting bonds I made with fellow graduate students from shared struggles and fun hangouts will be remembered.

Fun fact about yourself:
Not exactly "fun," but I didn't leave my house for 86 days during the Shanghai lockdown. Prior to this, I didn't think this would have been possible.

2023 Undergraduate Student Awards and Honors

Archit Bajaj (Chung Lab)
Howard S. Ducoff Award for Outstanding Senior Thesis

Haichao Wang (Auerbach Lab)
C. Ladd Prosser Outstanding Achievement Award

2023 Graduate Student Awards and Honors

Xiyu Ge (Raetzman Lab)
Outstanding Thesis Award

Anjana Asokakumar (Anakk Lab)
James E. Heath Award for Excellence in Teaching

Anasuya Das Gupta (Nelson Lab)
Ann Nardulli Graduate Student Travel Award

Amber Wang (Nelson Lab)
Ann Nardulli Graduate Student Travel Award

Inaugural Albert Feng Neuroscience Graduate Student Research Award

We are pleased to share the news that the first annual Albert Feng Graduate Student Award was presented to Catie Cutia (PhD, Neuroscience, 2023) from Dr. Catherine Christian-Hinman's laboratory. Dr Albert Feng, or Al as he was called affectionately, was a former Director of the Neuroscience Program & Department Head of MIP.

"He was a beloved faculty member, inspiration to many, and his smile was a ray of sunshine," his son Jeff said. "Al so deeply cared about uncovering the mysteries of how the brain and hearing works as his life's work. He was also a dedicated mentor and research advisor to many graduate students at UIUC as well as other researchers in the field. He truly delighted in helping the next generation of researchers and 'paying it forward.' Thus, the Feng family established the **Dr. Albert Feng Neuroscience Graduate Student Research Award** to support graduate students in neuroscience research and support both the community and the field he cared so deeply about."

"My graduate research has focused on characterizing epilepsy-associated changes in pituitary function in a mouse model of epilepsy," Cutia said. "Understanding epilepsy-associated changes in pituitary function can help establish mechanisms that link seizures to the development of comorbid reproductive endocrine dysfunction seen commonly in many patients with epilepsy. Moving forward in my career, I hope to contribute to the research and development of therapeutics for neurological or neuroendocrine disorders."

"Receiving the 2023 Dr. Albert Feng Graduate Research Award has helped my research and future career significantly by providing crucial financial support as I conclude my graduate research, complete my dissertation, and begin transitioning to the next phase of my career in research. It is an immense honor to have been selected for the first award set up in memory of such a profoundly influential and passionate scientist."

We congratulate Dr. Cutia on her recent successful thesis defense and hope this award will continue to help students like her pursue their research passions

2023 C. Ladd Prosser Lecture: Bats, echoes, and reverb!

On October 5, 2023, two pioneering neuroethologists delivered the annual C. Ladd Prosser Lecture. Jim and Andrea Simmons, both Professors of Neuroscience at Brown University, gave a talk entitled "Neural Displays for Perception in Echolocating Bats."

In their presentation, the scientists recounted the pioneering work of the late UIUC professor Dr. Albert Feng when he was a postdoc with Jim Simmons and studying echo-ranging neurons in the bat brain. Over the subsequent years, Jim and Andrea Simmons have continued to study how bats can achieve microsecond precision in their echo-ranging behavior. They provided evidence for a role for oscillatory discharges in the bat's central auditory system to create spectral interference patterns that may be used to extract target distance.

Their lecture demonstrated the power of using a neuroethological approach to understand perception, and their visits with faculty and students will inspire a new generation of scientists to link brain mechanisms to behavior.

IN MEMORIAM: Mary Jane Beasley
research scientist and UIUC booster

The School of Molecular & Cellular Biology is saddened to share news about the passing of Mary Jane Beasley, research specialist and lab manager and enthusiastic supporter of the school, its departments, and the University of Illinois Urbana-Champaign.

Mary Jane Beasley, known to all as MJ, was a dedicated, productive, and talented Research Specialist/Lab Manager, said Benita Katzenellenbogen, Swanlund Professor of Molecular and Integrative Physiology. Prior to joining Katzenellenbogen's lab, Beasley worked with biochemistry professors I.C. Gunsalus and Lowell Hager.

"She was a key member of our research team and was a co-author on many of our publications on breast cancer and on hormones and reproductive health. ... We appreciated her positive 'can do' attitude and her enthusiasm and support for Illinois. She and her husband [Norman Beasley], were full of Illinois spirit," Katzenellenbogen said.

Beasley interacted well with everyone—faculty, staff, and students—and with the lab's many collaborators on campus and at other institutions, Katzenellenbogen said. She assisted in training new people, undergraduates and graduate students, and postdoctoral scientists in the laboratory.

Mary Jane Beasley received her BS degree from the University of Iowa in 1956 and became a Registered Medical Technologist. After working for a few years as a technologist, she joined UIUC's Department of Biochemistry. There she was involved in research related to protein structure and enzyme mechanism. That was followed by her tenure in the Katzenellenbogen lab.

She married Norman Beasley in 1980 in Champaign and the two became active in the Illini Rebounders and Quarterback clubs. After retiring and moving to Arizona, the couple revived a dormant Illini alumni club and were co-presidents for four years. The University of Illinois Alumni Association presented the Lou Liay Spirit Award for Extraordinary Alumni Service to the Beasleys in 2007.

"They were very generous in their financial support to the Molecular and Integrative Physiology and Biochemistry departments and the University of Illinois Foundation. Befittingly, a room in the Alice Campbell Alumni Center is named in their honor. I am very grateful to have known them both personally and professionally," Katzenellenbogen said.

2023 Newly-Awarded Faculty Grants

Benjamin Auerbach

NIH – R01 | "Identifying Convergent Circuit Disruptions Across Genetically Distinct Models of Autism"

Department of Defense (DOD TSCRP) | "Using Sensory Processing to Identify Neural Circuit Deficits and Novel Treatment Strategies in a Rat Model of TSC"

Department of Defense (DOD ARP) | "Defining the Developmental Time-Course and Therapeutic Window for Sensory Circuit Impairments in a Rat Model of Fragile X Syndrome"

Hee Jung Chung (Catherine Christian-Hinman, Co-I)

NIH – R01 | "Dynamic Changes in PIP2 Binding Sites and Their Impact on Axonal Targeting and Function of Epilepsy-associated KCNQ/Kv7 Channels"

Benita Katzenellenbogen

Breast Cancer Research Foundation | "Genomic Profiling of the Estrogen Hormonal Pathway for Breast Cancer Prevention and Treatment"

Daniel Llano

NIH-R01 Renewal | "Functional Organization of the Auditory Corticocollicular System"

NIH-R21 | "Novel Subdivisions of the Dorsal Cortex of the Inferior Colliculus"

Alzheimer Association | "Super-resolution Ultrasound to Measure Vascular Pathology in a LOAD Model"

Erik Nelson

NIH-R21 | "Metabolic Tagging of Tumor Exosomes for Developing Enhanced Exosome Vaccines"

Erik Nelson (Michael J Spinella, lead PI)
Department of Defense (DOD BCRP) | "G0S2 as a Master Regulator of the Local Estrogenic Environment During Breast Cancer Progression and Antiestrogen Therapy"

Erik Nelson (Hua Wang, lead PI)
NIH – R21 | "Metabolic Tagging of Tumor Exosomes for Developing Enhanced Exosome Vaccines."

Lori Raetzman
NIH-R01 Subaward | "Discovery Pipeline for Genetic Defects in Hypothalamic-pituitary Development Using International Mouse Phenotyping Consortium Mice"

Nien-Pei Tsai
NIH – R21 | "Transcriptional Mechanism underlying Neuronal Hyperexcitability in FXS"
FRAXA Research Foundation Fellowship for Vipendra Kumar | "Pharmacologically Activating mGluR7 as a Novel Therapy for Fragile X Syndrome"

Xinzhu Yu
NIH-DP2 | "Functional Structural and Molecular Decoding of Astrocyte-Neuron Interaction"
Brain Behavior & Research Foundation | "Astrocyte Regulation of Synaptic Plasticity and Behavior"

Selected MIP Papers (Nov. 2022-Oct. 2023)

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