DEPARTMENT OF

Molecular & Integrative Physiology

SCHOOL OF MOLECULAR & CELLULAR BIOLOGY

WINTER 2020 NEWSLETTER

IN THIS ISSUE

ABOUT THE NEWSLETTER

The Molecular and Integrative Physiology Newsletter is an annual publication of the Department of Molecular and Integrative Physiology in the School of Molecular and Cellular Biology at the University of Illinois, Urbana-Champaign. The newsletter is written by MIP faculty and friends, and designed by MCB Communications.

Our alumni are important to us. We want to hear from you. Send us your latest news, and we'll include it in the next newsletter's MIP Family News. We also welcome articles and suggestions for future newsletters. Here's how to reach us:

Molecular & Integrative Physiology
University of Illinois at Urbana-Champaign
524 Burrill Hall
407 S. Goodwin
Urbana, IL 61801
email: mip-news@illinois.edu

GREETINGS FROM THE HEAD

Claudio Grosman

Welcome everyone to the 2020 edition of the MIP Newsletter!

I would not want to sound trite, but what a strange year 2020 has been! From school classes to work, from family celebrations to informal friend gatherings, and from grocery shopping to doctor visits, it seems as though no aspect of life will finish this year unscathed. I hope, however, that our families and friends have managed to stay healthy despite the many challenges the pandemic has posed. On the bright side, most of our labs reopened in June, and to some extent, our research activities resumed. As for teaching, online instruction proceeded smoothly, a clear demonstration of our ability to adapt quickly to unexpected changes. I am very proud of the faculty of MIP!

The year had its happy highlights, though. Two MIP junior faculty (Dr. Nien-Pei Tsai and Dr. Erik Nelson) were promoted to Associate Professor with indefinite tenure, two new Assistant Professors—coming to us from postdoctoral positions at UCLA (Dr. Xinzhu Yu) and the University at Buffalo (Dr. Benjamin Auerbach)—have joined our department, several of our graduate students completed milestones, many grant proposals were awarded, and many papers were published. And, to top it all off, Assistant Professor Dr. Catherine Christian got married! Not bad at all for a year that did not look very promising back in the early spring!

This issue of the MIP newsletter features interviews to our newly promoted Associate Professors, introductions to our new Assistant Professors, highlights of life-after-graduation from some of our most recent graduate students, a list of student and faculty academic achievements, and some accounts of our experiences dealing with a particularly difficult year.

The newsletter also expresses our sadness about the passing of our colleague, Professor Emeritus Dennis Buetow. Dennis was a faculty member of our Department for many years, and the Head of Physiology and Biophysics between 1983 and 1988. MIP will miss him dearly.

Finally, and given the uncertain funding climate for science, we hope that our alumni and friends will remain actively committed to MIP. Such support is 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 physiology.

I wish you all a safe and, more than ever, healthy 2021!

PROFESSOR ERIK NELSON: FISHING FROM NUCLEAR RECEPTORS TO CANCER

by Anushna Sen (Sayee Anakk's lab)

Dr. Nelson's lab focuses on determining how different hormones and metabolite factors impact breast and ovarian cancer progression.

How did you first get interested in science?

My interest in science was piqued at an early age as I grew up next to the Rocky Mountains in Calgary, Canada, that made me inquisitive of nature and science. As a teenager in the Netherlands, the wonder of chemistry was impressed upon me by my middle school science teacher. Our chemistry teacher threw a little bit of potassium into the canal, which of course exploded and I was hooked on chemistry. She also let us observe her beehive and observing their social behaviors solidified my interest in the interface of chemistry and biology.

How was your doctoral and postdoctoral experience?

I decided to get my Ph.D. in Endocrinology studying goldfish at the University of Calgary, which was ideal as it connected both my passion for chemistry and zoology. For a brief period, I contemplated being a park ranger, but ended up pursuing a Ph.D. My post-doctoral training at Duke University is where my interests and studies on breast cancer began. I initially worked on a cholesterol compound that mimicked estrogen action, leading me to study its role in bone and breast cancer. At Duke, I also actively interacted with breast cancer advocates (typically cancer survivors), which channeled my goal towards more patient-centric science.

When did you decide to become a professor?

I admit that I was unsure whether to continue in academics or join industry. As a Ph.D. student, I thought I would become an instructor teaching undergraduate biology. It was during my post-doc studies at Duke when I realized I could simultaneously contribute to the field of breast cancer and instruct undergraduates- train the next generation of cancer biologists. I could have the best of both world. That was that!

What is your latest scientific focus?

Cholesterol is required for building cell membranes and steroid hormones like estrogen and testosterone, and elevated cholesterol levels have been implicated in breast and ovarian cancer. The initial work in my lab was looking at a metabolite of cholesterol (27-hydroxycholesterol, 27HC), as a mediator of many of these effects. 27HC can bind two hormone receptors, Estrogen Receptor (ER) and Liver X Receptor (LXR), both associated with breast cancer. Ongoing work involves understanding whether 27HC may be changing signaling through these receptors. We were surprised when we learned that cholesterol metabolism is not only important for cancer cells themselves, but for immune cells as well. Cancer cells are very adept at hijacking the immune system to their own end. By upregulating cholesterol metabolism and spewing out cholesterol metabolites like 27HC, cancer cells can suppress immune cells and prevent them from attacking cancer cells. So, we are developing strategies based on cholesterol homeostasis to re-educate the immune system to start fighting cancer again. The lab is currently collaborating with chemists and clinical partners to translate these findings.

How did your earlier work lead to this new area of research?

My desire to contribute to the field of cancer therapeutics began when my relative stated she would never undergo breast cancer treatment again. The notion was if cancer recurrence occurred even after "Radical Mastectomy", it was because some cancer cells were still at large. I realized breast cancer was a huge problem. But also, if the patients didn't want radical therapy, there was something grossly wrong with it. So at Duke, I picked up a breast cancer project with the notion, that we need to do better for breast cancer patients. At the time I began studying a cholesterol metabolite that was working like estrogen. This led to establishing that this metabolite itself could impact cancer recurrence and metastasis.

What advice to you have for young scientists and trainees?

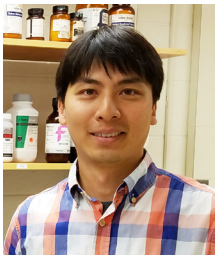
My biggest advice for young scientists is to be persistent and critical. I want to stress upon the need to accept critical feedback and use it to strengthen one's science. I personally believe that the importance of critical thinking and the use of data to guide beliefs in the scientific community rather than base them on pre-existing notions is fundamental. If you believe something, support it with data. Don't be led by someone's opinion instead of scientific fact. Being persistent can lead to a change in paradigm.

What do you most enjoy outside of the lab?

In addition to work (which is also fun for him), Dr. Nelson enjoys camping and hiking. In short, enjoying life. Good food and trips to cities top his list of fun things to do.

PROFESSOR NIEN-PEI TSAI: BAMBOOS TO NEURONS- A HYPEREXCITING JOURNEY

by Ryan Shaw (Sayee Anakk's lab)



Dr. Tsai's lab focuses on understanding the molecular mechanisms underlying neuronal excitability imbalance in neurological and psychiatric disorders including epilepsy and autism.

How did you first get interested in science?

Dr. Tsai developed an interest in science very early on as a kid, as he recalls dreaming about being a veterinarian. He said, "While that dream wasn't entirely accurate, I'd say it wasn't too far off from where I ended up. My major pull towards biology became more evident in my senior year in college when I worked in a plant biology laboratory back in Taiwan where I was studying bamboo. My work in the plant biology lab although did not directly involve growing bamboo; instead he was learning to clone and purify proteins after expressing one of bamboo's genes in E.coli. I thought, Wow, a bamboo in a microbe as my imagination and the excitement sealed my passion for biology, rather more specifically, molecular biology."

How was your doctoral and postdoctoral experience?

Fast forwarding many years, Dr. Tsai moved to the United States to pursue his Ph.D. at the University of Minnesota where he focused on molecular pathways and translational control. "True to my interest, my thesis work was primarily

focused on mRNA transport and control, a purely molecular biology work. The environment was different from Taiwan, here I worked in a huge laboratory where members would often collaborate with each other that helped provide great insight and depth to ones' own project". Dr. Tsai said, "As with any lab, there was no shortage of long workdays and lab meetings, but that training experience was memorable. Despite the arduous the hours, this experience made me adept in molecular biology and fostered my interests in mRNA-associated diseases. Several years later, my postdoctoral training at UT, Southwestern was in a completely different environment. Truly, Texas is not "Midwest". I was given a lot of independence, and although we interacted and helped each other, we were responsible for conducting the first experiment to the last experiment for our projects. In retrospect, because of my experiences with two very different lab environments, I was able to find a balance between the two and apply that to my laboratory today."

When did you decide to become a professor?

"After getting my bachelor's degree, I went on to earn a Master's degree in Microbiology, which was my first real experience as I was working on a research project toward a degree. During my Master's, I was given a very exploratory project that was difficult to hypothesize the potential results. My project's wild card nature proved to be a blessing because there was no expected outcome for the project, which gave me the freedom to explore the underlying science. This feeling is incredibly satisfying. This was the moment, I thought running an academic lab as a professor I would be enabled to continue exploring science with for a life time."

What is your latest scientific focus?

My lab studies how neurons decide when and to what extent they can change their levels of excitability. For neurons to communicate with other cells properly, they need to be excited. While the excitement of neurons is an essential function, they can become overexcited causing the host organism to have seizures. My lab's latest focus is to study seizures and the neuronal hyperexcitability in non-epilepsy diseases, such as autism and Alzheimer's disease, characterized mostly by psychiatric abnormalities. However, seizures are common comorbidities of those diseases, and we currently don't know much about why this is. I hope that by understanding a common problem among those seemingly unrelated diseases, we can eventually understand more about how the excitability homeostasis is regulated and dysregulated in the brain.

How did your previous work form a bridge to this new focus?

My earlier work solely focused on autism, in which I studied how neuronal synapses are formed and eliminated in autism spectrum disorders. Although I knew the issue of seizures in autism, this new research area on hyperexcitability was developed after several collaborative projects with Dr. Chung and Dr. Christian-Hinman in our department.

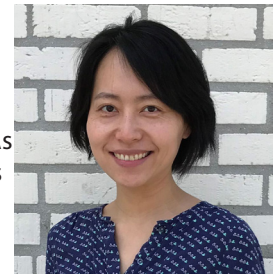
What advice to you have for young scientists and trainees?

My advice for young scientists is always to follow what the science tells you and not be afraid of changing directions during your research. Ninety percent of the time, my projects, or the projects in my lab went in completely different directions than what I initially envisioned. While it can be baffling most of the times, this is the reason why science is exciting! It goes to show how unexpected discoveries are often made. A little turn in your research may delay your project, but the potential outcomes could be groundbreaking. Just follow what the data are telling you.

NEW ASSISTANT PROFESSOR: DR. BENJAMIN AUERBACH

The brain has the remarkable ability to modify its connections and adapt its response properties based on prior experience. This experience-dependent plasticity greatly shapes our perception and behavior, is thought to be the physiological substrate of learning and memory, and is disrupted in a variety of neurological and psychiatric disorders. My research uses the rodent auditory system as a tractable model for elucidating the biological mechanisms and behavioral consequences of experience-dependent modification in the brain. We use a multidimensional approach to address these questions, combing quantitative sensory behavior with high density in vivo electrophysiology, ex vivo biochemical/bioinformatic analysis, as well optical imaging and manipulation of genetically-defined neuronal subtypes. Beyond the advancement of basic insight into brain function, the goal of this research is to identify pathophysiological mechanisms associated with neurodevelopmental and hearing disorders that often present with sound hypersensitivity—particularly autism spectrum disorders and hyperacusis— with the hope of translating our findings into novel therapies and treatment strategies.

NEW ASSISTANT PROFESSOR: DR. XINZHU YU



Our emotions and thoughts are generated and processed by a network of different cell types in the brain, including both neurons and glial cells. As the most abundant glial cells, astrocytes were discovered more than a century ago but were only considered have passive supporting functions. However, this view starts to change. Many recent studies including my previous work have revealed that astrocytes can actively regulate neural circuits and behaviors as well as contribute to the development of neurological and psychiatric disorders. My future research interests are to further determine the cellular and molecular mechanisms by which astrocytes contribute to neural circuit plasticity, motor learning and memory, and the pathophysiology of neuropsychiatric disorders during postnatal development. To tackle these questions, I will take a systematic approach with innovative genetic tools, in vivo imaging, electrophysiological recordings and next generation sequencing. My research aims to advance our understanding of astrocyte physiology as well as offer mechanistic insights into new biomarkers for early diagnosis and potential therapeutic treatments for neuropsychiatric disorders.

ALUMNI HIGHLIGHTS - DR. WILLIAM GUNDLING (WILDMAN LAB)

Your current position and title:
Assistant Professor of Biology at Christian Brothers University in Memphis, TN.

Your career arc and key accomplishments:
Currently I am lecturing and acting as lab coordinator for the full year Anatomy and Physiology sequence. Also, I am working on developing new courses for the university including courses in Histology and Genomics as well as their respective labs. In addition to teaching, I am developing an undergraduate research program focusing on how genetic variation and natural selection may be contributing to the epigenetic regulation of various genes primarily associated with cell fusion in skeletal muscle and placental tissue.

How MIP training got you where you are:
During my time in the MIP Department, I was a teaching assistant for the Anatomy and Physiology course sequence. This gave me the experience and knowledge I needed to run my own Anatomy & Physiology and Histology courses at my current university. Also having roughly 30 students in each lab section at UIUC gave me the confidence I need to thrive in a small school environment. As for research, organizing and managing undergraduate research projects at UIUC has been helping me in developing research projects for my current undergraduate students.

Your favorite memory related to the time you spent in MIP:
One of my favorite memories was when my lab performed a blind taste test of barbecue from both the Champaign and Urbana Black Dog restaurants to determine which one was the best; we declared the Champaign location to be the winner. As for MIP Department memories, some of my favorite memories included organizing the scavenger hunt during the MIP retreat at Allerton Park and the MIP graduate student happy hours where graduate students had a chance to hang out together outside of the lab.

ALUMNI HIGHLIGHTS - DR. SISI HE (NELSON LAB)

Your current position and title:
Scientist at NGM Biopharmaceuticals

Your career arc and key accomplishments:
I've only been at my current position for a couple of months, so I think my only accomplishment so far is completing a couple of experiments that will eventually go into our IND-filing package for a new immuno-oncology drug. My career goal is to bring the current drug I'm working on to the clinical trials, and I'm excited to see what the results will be. And it would definitely be very exciting if the drug passes clinical trials and benefits cancer patients.

How MIP training got you where you are:
What I do now is actually very similar to what I was doing during my PhD. The ability to design experiments to address research questions, and analyze results critically is definitely very important. In addition to that, at Erik Nelson's lab, I also collaborated with other labs on different projects, and through which, I learned how to work with others which is also quite important in the industry.

Your favorite memory related to the time you spent in MIP:
I definitely enjoyed our Halloween parties. Nelson lab was the winner for the best group costume award for the last couple of years, and I really enjoyed we dressing up as a group. Especially last year we went as Avengers, and Erik started our walk by calling out "Avengers assemble".

ALUMNI HIGHLIGHTS - DR. TYLER HARPOLE (GROSMAN LAB)

Your current position and title:
Data Scientist at Polaris

Your career arc and key accomplishments:
I started at UIUC in 2006 doing my undergraduate studies in MCB and went on to do graduate work in the Biophysics and Quantitative Biology department with Claudio Grosman studying pentameric ligand gated ion channels. After finishing in 2016, I did a one year post doc in Stockholm with Lucie Delemotte studying voltage gated potassium channels. During my academic tenure, my major accomplishments are my paper about the -1' ring of glutamates in the acetylcholine receptor and my paper with Lucie Delemotte and Baron Chanda about signal transduction networks between the voltage sensing and pore domain of voltage gated ion channels. From there, I took my current role of Data Scientist in the Post Sales Surveillance department where my major accomplishments are productionalizing my statistical modeling code that is used by many members of our engineering department.

How MIP training got you where you are:
From working with Professor Grosman, I gained a strong understanding of the importance of applying theory as a scientist. Understanding theory is important because it sharpens your math and logical reasoning skills, while the application of theory is important in creating successful projects in academia and industry. From MIP specifically, I gained a broad understanding of both experimental and computational techniques used to answer questions and how they apply to a diverse set of topics within physiology.

Your favorite memory related to the time you spent in MIP:
Favorite memory has to be either taking Professor Grosman's undergraduate course and discovering ion channel biology or being able to spend many mornings discussing theory with Professor Grosman in the lab.

STAYING TOGETHER. APART

Designed by Anushna Sen (Sayee Anakk's lab)

ERIK NELSON

I was able to spend much more time with my growing puppy & explore a new teaching modality.

SAYEE ANAKK

I learnt new recipes which took several hours of cooking. Bottom line that fizzled out rather quick! After 7 years of deferring, we adopted Maya (Labrador-Staffordshire Terrier mix) and are learning that she is a Diva.

LORI RAETZMAN

I set up a Zoom happy hour for alumni of my postdoc mentor's lab and reconnected with people! This has morphed into a twice monthly meetings. I've introduced my students to a great group of scientists and gotten fantastic feedback on projects. I upped my cooking game to include Thai and Indian curry, Pesto and Romesco sauces.

HEE JUNG CHUNG

I got to spend more time with my husband and children as well as a newest member of our family, a Bichon puppy named Evie.

CLAUDIO GROSMAN

I reconnected with a group of high-school friends after ~35 years; now we communicate every single day! I got to spend more time with my kids, both of whom are college-bound. My parents and parents-in-law have gotten online savvy and I've discovered my wife's previously hidden and amazing baking abilities.

NIEN-PEI TSAI

I was able to spend time and bond with the kids. As a result, we are now all great at playing Super Mario Brothers!

JONGSOOK KIM-KEMPER & BYRON KEMPER

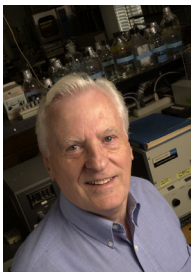
I re-discovered my passions for cooking and making Korean Kimchi! Byron and I enjoyed a short morning walk and a 4-mile afternoon walk. We worked on a floor plan for our new house, enjoyed Zoom chatting with our daughters, watched fun K-dramas and played with our 18-year-old diabetic cat, Oreo.

CATHERINE CHRISTIAN-HINMAN

Getting engaged, planning a (socially distanced, extremely tiny) wedding, and getting married provided a nice distraction! But since that's all taken care of now, I take mental breaks by playing with my dogs, trying new recipes, and watching the Great British Baking Show.

Reconnect

IN MEMORIAM: PROFESSOR DENNIS BUETOW (1932-2020)



We are saddened to share the news that Professor Emeritus Dennis Buetow passed away on Nov. 18, 2020. Professor Buetow had a long and fruitful career at Illinois, where he was a professor in the Department of Physiology and Biophysics, now MIP. He joined the faculty in 1965 and served as head and interim head. His research focused on plastid protein expression during light-induced chloroplast biogenesis and the role of insulin-like growth factor during cardiac hypertrophy. He also identified the genetic material of the antibodies to respiratory syncytial virus (RSV) and invented a process for making a plant-derived vaccine for immunization against the virus. He wrote over 100 book chapters and journal articles and served as editor of "Cell Biology, a Series of Monographs." A memorial service is planned for Spring 2021. Read the full obituary: http://mcb.illinois.edu/news/article/609/

ALUMNI UPDATES

Dr. Ruben Mesa (BS, '91, physiology), has been recently appointed as the executive director of the Mays Cancer Center, the only National Cancer Institute-designated Cancer Center in South Texas.

Ting Fu (grad student with Jongsook Kim Kemper) - now Assistant Professor at University of Wisconsin, Madison

Ekaterina Gribkova (grad student with Rhanor Gillette) – now Postdoctoral Fellow at Coordinated Science Laboratory, University of Illinois

Tyler Moran (grad student with Lori Raetzman) – now Assistant Professor of Medicine at Baylor College of Medicine

Leah Nantie (grad student with Lori Raetzman) – now Scientist at Horizon Discovery in Lafayette, CO

PHD GRADUATES

Sisi He (Nelson lab), "The impact of cholesterol and its metabolites on the ovarian tumor microenvironment and cancer progression"

Jessica Saw (Fouke & Sweedler lab), "Physical, chemical and biological controls on the origin, crystallization and dissolution of human kidney stones"

Sayyed Hamed Shahoei (Nelson lab), "The Immunomodulatory roles of small heterodimer partner and their implications in breast cancer progression"

Bingtao Tang (Roy lab), "Immunotherapy for murine glioma"

STUDENT AND POSTDOC AWARDS/FELLOWSHIPS

Daphne Eagleman (Tsai lab), American Heart Association Predoctoral Fellowship, "The Protective Role of Ubiquitination against ER Stress Induced Cell Death in Stroke"

Sisi He (Nelson lab), AACR-Margaret Foti Foundation Scholar-in-Training Award

Sisi He (Nelson lab), Outstanding Graduate Student Award in the Department of Molecular and Integrative Physiology, University of Illinois

Anushna Sen (Anakk lab), University of Illinois Interdisciplinary Environmental Toxicology Program Scholar

Liqian Ma (Nelson lab), Julie and David Mead Endowed Graduate Student Fellowship

Rosa Zhu (Tsai lab), Outstanding Thesis Award in the Department of Molecular and Integrative Physiology, University of Illinois

FACULTY GRANTS NEWLY AWARDED

Sayee Anakk, Cancer Center at Illinois Seed Funding Program, "Identifying Pathways for Therapeutic Design to Stop Liver Cancer."

Rhanor Gillette (Girish Chowdhary, lead PI), Office of Naval Research (ONR), "A CyberOctopus that Learns, Evolves, and Adapts. "

Benita Katzenellenbogen, Breast Cancer Research Foundation, "Genomic Profiling of the Estrogen Hormonal Pathway for Breast Cancer Prevention and Treatment."

Benita Katzenellenbogen, Breast Cancer Research Foundation, "Examination of Estrogen Receptor (Beta) as a Therapeutic Target in Triple-Negative Breast Cancer."

Dan Llano, Kiwanis Neuroscience Research Foundation, "Exercise, synaptic inhibition and aging: an investigation of the mechanisms of aging-associated hearing loss."

Erik Nelson (David Shapiro, lead PI), Cancer Center at Illinois Seed Funding Program, "Using Anticancer Drug-induced Immune Cell Activation to Target Ovarian Cancer for Eradication."

Erik Nelson (Andrew Smith, lead PI), University of Illinois Grainger College of Engineering, Strategic Research Initiative (SRI), "Center for Translational Bioengineering in Large Animal Models."

Erik Nelson (Stephen Boppart and Haohua Tu, lead PIs), NIH R01, "Imaging tumor microenvironment by Optical Fiber-Tethered Simultaneous Lifetime-resolved Autofluorescence-Multiharmonic (OFT-SLAM) microscopy."

Nien-Pei Tsai, NIH R21, "Exploring the role of p53 in synapse development and elimination."

Nien-Pei Tsai, NIH R03, "Study of PAK3 in epilepsy-associated defects in synaptic plasticity."

SELECTED MIP PAPERS NOV 2019-OCT 2020

Camacho MB, Vijitbenjaronk WD, Anastasio TJ. (2020) Computational modeling of the monoaminergic neurotransmitter and male neuroendocrine systems in an analysis of therapeutic neuroadaptation to chronic antidepressant. Eur Neuropsychopharmacol. 31:86-99.

Mathur B, Arif W, Patton ME, Faiyaz R, Liu J, Yeh J, Harpavat S, Schoonjans K, Kalsotra A, Wheatley AM, Anakk S. (2020) Transcriptomic analysis across liver diseases reveals disease-modulating activation of constitutive androstane receptor in cholestasis. JHEP Rep. 2(5):100140.

Bhurke A, Kannan A, Neff A, Ma Q, Laws MJ, Taylor RN, Bagchi MK, Bagchi IC. (2020) A hypoxia-induced Rab pathway regulates embryo implantation by controlled trafficking of secretory granules. Proc Natl Acad Sci U S A. 117(25):14532-14542

Neff AM, Yu J, Taylor RN, Bagchi IC, Bagchi MK. (2020) Insulin Signaling Via Progesterone-Regulated Insulin Receptor Substrate 2 is Critical for Human Uterine Decidualization. Endocrinology. 161(1):bqz021.

Li J, Leverton LK, Naganatanahalli LM, Christian-Hinman CA. (2020) Seizure burden fluctuates with the female reproductive cycle in a mouse model of chronic temporal lobe epilepsy. Exp Neurol. (in press)

Christian-Hinman CA. (2020) Nucleus-specific modulation of phasic and tonic inhibition by endogenous neurosteroidogenesis in the murine thalamus. Synapse. 2020 74(5):e22144.

Zhang J, Kim EC, Chen C, Procko E, Pant S, Lam K, Patel J, Choi R, Hong M, Joshi D, Bolton E, Tajkhorshid E, Chung HJ. (2020) Identifying mutation hotspots reveals pathogenetic mechanisms of KCNQ2 epileptic encephalopathy. Sci Rep. 10(1):4756.

Gribkova ED, Catanho M, Gillette R. (2020) Simple Aesthetic Sense and Addiction Emerge in Neural Relations of Cost-Benefit Decision in Foraging. Sci Rep. 10(1):9627.

Kumar P, Wang Y, Zhang Z, Zhao Z, Cymes GD, Tajkhorshid E, Grosman C. (2020) Cryo-EM structures of a lipid-sensitive pentameric ligand-gated ion channel embedded in a phosphatidylcholine-only bilayer. Proc Natl Acad Sci U S A. 117(3):1788-1798.

Yan S, Dey P, Ziegler Y, Jiao X, Kim SH, Katzenellenbogen JA, Katzenellenbogen BS. (2020) Contrasting activities of estrogen receptor beta isoforms in triple negative breast cancer. Breast Cancer Res Treat (in press)

Dey P, Wang A, Ziegler Y, Kim SH, El-Ashry D, Katzenellenbogen JA, Katzenellenbogen BS. (2020) Suppression of Tumor Growth, Metastasis, and Signaling Pathways by Reducing FOXM1 Activity in Triple Negative Breast Cancer. Cancers (Basel). 12(9):E2677.

Laws MJ, Ziegler Y, Shahoei SH, Dey P, Kim SH, Yasuda M, Park BH, Nettles KW, Katzenellenbogen JA, Nelson ER, Katzenellenbogen BS. (2020) Suppression of breast cancer metastasis and extension of survival by a new antiestrogen in a preclinical model driven by mutant estrogen receptors. Breast Cancer Res Treat. 181(2):297-307.

Ziegler Y, Laws MJ, Sanabria Guillen V, Kim SH, Dey P, Smith BP, Gong P, Bindman N, Zhao Y, Carlson K, Yasuda MA, Singh D, Li Z, El-Ashry D, Madak-Erdogan Z, Katzenellenbogen JA, Katzenellenbogen BS. (2019) Suppression of FOXM1 activities and breast cancer growth in vitro and in vivo by a new class of compounds. NPJ Breast Cancer. 29;5:45.

Byun S, Seok S, Kim YC, Zhang Y, Yau P, Iwamori N, Xu HE, Ma J, Kemper B, Kemper JK. (2020) Fasting-induced FGF21 signaling activates hepatic autophagy and lipid degradation via JMJD3 histone demethylase. Nat Commun. 11(1):807.

Kim YC, Seok S, Zhang Y, Ma J, Kong B, Guo G, Kemper B, Kemper JK. (2020) Intestinal FGF15/19 physiologically repress hepatic lipogenesis in the late fed-state by activating SHP and DNMT3A, Nat Commun. (in press)

Lesicko AMH, Sons SK, Llano DA. (2020) Circuit Mechanisms Underlying the Segregation and Integration of Parallel Processing Streams in the Inferior Colliculus. J Neurosci. 40(33):6328-6344.

Brown JW, Taheri A, Kenyon RV, Berger-Wolf TY, Llano DA. (2020) Signal Propagation via Open-Loop Intrathalamic Architectures: A Computational Model. eNeuro. 7(1):ENEURO.0441-19.2020.

Ma L, Wang L, Nelson AT, Han C, He S, Henn MA, Menon K, Chen JJ, Baek AE, Vardanyan A, Shahoei SH, Park S, Shapiro DJ, Nanjappa SG, Nelson ER. (2020) 27-Hydroxycholesterol acts on myeloid immune cells to induce T cell dysfunction, promoting breast cancer progression. Cancer Lett. 493:266-283.

Liu DC, Soriano S, Yook Y, Lizarazo S, Eagleman DE, Tsai NP. (2020) Chronic Activation of Gp1 mGluRs Leads to Distinct Refinement of Neural Network Activity through Non-Canonical p53 and Akt Signaling. eNeuro. 7(2):ENEURO.0438-19.2020.

Eagleman DE, Zhu J, Liu DC, Seimetz J, Kalsotra A, Tsai NP. (2020) Unbiased Proteomic Screening Identifies a Novel Role for the E3 Ubiquitin Ligase Nedd4-2 in Translational Suppression during ER Stress. J Neurochem. (in press)

Dept. of Molecular & Integrative Physiology
University of Illinois at Urbana-Champaign
524 Burrill Hall
407 South Goodwin Avenue
Urbana, IL 61801
phone: (217) 300-4645

MIP appreciates the support of our alumni and friends. If you wish to make a donation this year, use this form or visit: mcb.illinois.edu/giving/

I would like to make the following contribution to MIP:

$_____ General Support LAS Development Fund - MIP (334866)

$_____ Ann Nardulli Graduate Student Support Fund - (11342006)

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