DEPARTMENT OF

Molecular & Integrative Physiology

SCHOOL OF MOLECULAR & CELLULAR BIOLOGY

WINTER 2019 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 2019 edition of the MIP Newsletter! I hope that this year has been healthy, and productive for everyone, and that 2020 bodes even better for realizing our dreams—scientific or otherwise.

Yes, time flies; one more year has gone by. If I had to identify one of the happiest moment for me, in 2019, in my role as Department Head, I would definitely choose the promotion of our colleague Sayee Anakk to Associate Professor with indefinite tenure. Congratulations Sayee! It gives me immense joy to see young faculty succeeding not only scientifically but also in teaching and service to the Department. I find that despite being a small Department, the faculty of MIP step up to a number of administrative tasks and devote time outside of the labs or the classroom. I am very grateful for that.

This issue of the MIP Newsletter has been revamped to feature interviews of MIP faculty --Assoc. Prof. Lori Raetzman and Assoc. Prof. Dan Llano conducted by graduate students Adam Nelson (Nelson lab) and James Nguyen (Anakk lab), respectively. It also features updates from three of our student alumni Dr. Janelle Mapes (Bagchi lab), Dr. Kirsten Eckstrum (Raetzman lab), and Dr. Congcong Chen (Bolton lab) as they take exciting positions in Academia, Government, and the Corporate world. As usual, the Newsletter also offers a snapshot of our Annual Departmental Retreat—held in beautiful Allerton Park in May 2019—which featured a talk by former MIP alumni Dr. Nathan Hatcher (Gillette lab), currently a Principal Scientist at Merck. We are pleased to highlight the success of our Departmental trainees and faculty in terms of publications, grants awarded, and milestones.

With a tight funding climate in the US, we hope that our alumni and friends will remain actively committed to our Department so as to support our continued growth and sustain our rank as one of the most prestigious places to do research and receive education in modern Physiology.

I wish you all a wonderful 2020!

PROFESSOR LORI RAETZMAN: FROM BACKYARD BIOLOGY TO PITUITARY

by Adam Nelson (Erik Nelson's lab)

Professor Lori Raetzman joined the University of Illinois at Urbana-Champaign in 2005. Since joining, the Raetzman group has produced highly impactful work regarding the development and function of both the pituitary gland and the hypothalamus. Over the past 14 years, students from the Raetzman lab have won many prestigious awards and training grants, and have gone on to careers in academia, government research, pharmaceutical development, and clinical medicine. In addition to her success as a principal

investigator and a research adviser, Professor Raetzman has been committed to ensuring that U. of I. continues to be an institution that promotes academic excellence through her roles on several groups, such as the Toxicology Training Program Executive Committee, the LAS Courses and Curriculum Committee, and the MCB Distinction Committee. In recognition of her contributions to the MIP department, and the school of MCB, we took the opportunity to speak to Professor Raetzman about her journey as both a scientist and an educator.

How did you first get interested in science?

Professor Raetzman recalled that her interest in biology stemmed back to her early childhood. The home she grew up in was located near a small creek, and using DIY nets and jars, she would catch and inspect an assortment of wildlife, such as frogs and liver flukes. Despite this early intrigue, Professor Raetzman admits that throughout high school, the idea of becoming an experimental biologist never crossed her mind. However, during her time as an undergraduate, she took the opportunity to complete a summer internship at the Mayo Clinic, which she jokingly admitted was partly motivated by the fact that "It paid more than working in the bakery, which is what I had done for the previous summer." Despite this humorous, but very relatable, rationale for taking the summer internship, Professor Raetzman's time at the Mayo Clinic would reignite her childhood interest in biology, and ultimately start her on the path to becoming a biological researcher.

How was your doctoral and postdoctoral experience?

After graduating Summa Cum Laude from Ripon College, Professor Raetzman went on to Case Western Reserve University for her graduate studies. Under the tutelage of Professor Ruth Siegel, she received her Ph.D. in Neuroscience, which was primarily focused on the development of the cerebellum. Reflecting back on her time as a graduate student, she emphasized the impact of having a strong female adviser on her development as a scientist, "Seeing her navigate the waters and being one of the few women in the department and seeing how she succeeded in that environment inspired me to do my best." After her Ph.D., Professor Raetzman completed a postdoctoral fellowship at the University of Michigan, Ann Arbor in theaboratory of Professor Sally Camper, who served as yet another source of deep inspiration, "She was the first woman department chair … and had established one of the first transgenic animal facilities in the country." Ultimately, her experience in the Camper lab led her to a career-long focus on studying pituitary development, function, and disease using transgenic mice.

When did you decide to become a professor?

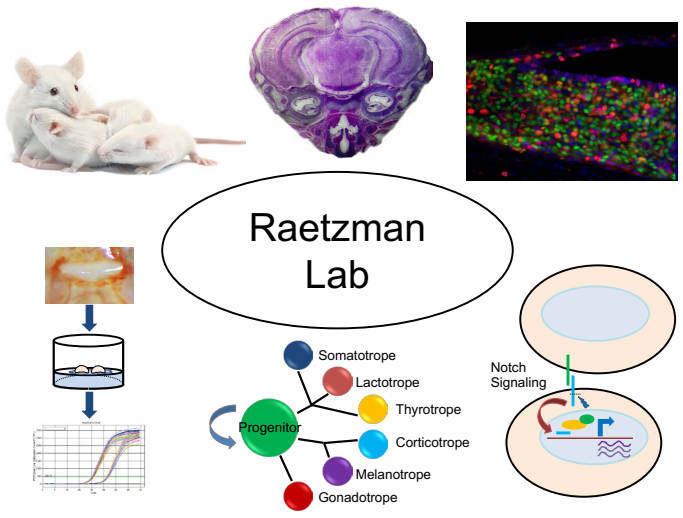
During her time as a graduate student, witnessing the commitment of the departmental faculty members to developing well-rounded student-scientists is what first sparked Professor Raetzman's interest in becoming an university educator. "During my postdoc is when I think I really settled on the fact that what I loved doing is mentoring students," said Dr. Raetzman. When the opportunity arose to join the MIP department at U. of I., she knew this would be the place where she could fulfill her passion for trainee development, "For me this is perfect … I like teaching, I like dealing with the students in my lab, and now I like being the director of graduate studies."

What's an average day in the life of a PI?

Just listening to Professor Raetzman's schedule was enough to make your head spin. A summary looks something like: teaching classes, holding conference calls with the Endocrine Society, lab meetings, individual student meetings, various committee meetings, writing grants, reviewing current literature, reviewing ongoing projects in the lab, and providing expertise to other collaborators. While she does get the opportunity to occasionally do some specialized experimental techniques, such as extracting pituitary glands, Professor Raetzman did admit that one of the harder parts about being a PI is having to move away from the bench. When I asked her if she could envision a time when she could get back to doing experimental work, she laughingly replied, "I would love to do that, but I bet if you asked anyone in my lab they would be horrified, because I wouldn't know where anything was and I would rearrange stuff immediately."

What is your latest scientific focus?

One of Professor Raetzman's primary areas of interest is the molecular regulators of pituitary development and how the differentiation of cells is controlled, "I've always been interested in pituitary stem cells and how they make fate choices" (Raetzman, Cai, and Camper, Dev. Biol., 2007; Edwards and Raetzman, Biol. Reprod., 2018). She explained that "The new stuff I've been doing is how stem cells sense hormonal signals and respond with the appropriate amount of proliferation and the correct directed differentiation." Further, in collaboration with other U. of I. labs, Professor Raetzman has also been investigating how in utero and prenatal exposure to endocrine disruptors, such as bisphenol A (BPA), can alter cell specification within the pituitary gland (Brannick et al., Biol. Reprod., 2012; Eckstrum



et al., Endocrinology, 2018). She stressed that due to the increased rates of maternal exposure to these endocrine disrupting chemicals, it is critical to understand their impact on the developing pituitary gland, "These chemicals might change the fate of stem cells in the pituitary and thus setting up for a disease later in life."

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

Since joining, Professor Raetzman has continued to build off her postdoctoral work regarding the various roles of the Notch signaling pathway in the pituitary gland. This work then gradually branched out into her more recent projects investigating hormonal regulation of pituitary development and how endocrine disrupting chemicals interfere with this signaling axis. To continue to grow as a scientist, she felt it was necessary to diversify the portfolio of her lab, "I really wanted to start one thing that was very distinct from what I had done." This desire eventually materialized into a project that has primarily focused on the development of the hypothalamus, which has now passed through the hands of several Ph.D. students.

What advice to you have for young scientists and trainees?

As a trainee, I was particularly interested in hearing Professor Raetzman's thoughts about what would be the secret to make graduate school experience enlightening, productive, and a time of overall personal growth? Professor Raetzman emphatically replied, "You need more than one mentor … and I think I was very lucky that I had that." Professor Raetzman further elaborated that the varied life experiences of different mentors can also serve as an invaluable resource when guidance is needed on issues such as career choice and maintaining work-life balance.

What do you most enjoy outside of the lab?

"I absolutely love cooking!" When I inquired about whether she has a preference for any specific cuisine, she replied, "No, whatever is fresh at the market, I used to go with a recipe … but now I just pick the freshest thing there and then I play with trying to make something." I believe this mindset perfectly captures the inescapable fact that Professor Raetzman is a researcher through and through, always trying something new, forever an experimentalist.

PROFESSOR DAN LLANO: FROM SWINGING BATS TO ECHOLOCATING BATS

by James Nguyen (Sayee Anakk's lab)

Prof. Daniel Llano is a neurologist at the Carle Neuroscience Institute and has been a faculty member in the MIP department since 2010. He obtained his B.S., Ph.D., and M.D. at U. of I. before moving to Massachusetts to pursue his clinical training at Harvard Medical School. He later became a post-doctoral research fellow and instructor at the University of Chicago focusing on cognitive and behavioral neurology. He became Associate Medical Director at Abbot Laboratories for a few years before returning to the U. of I. Since rejoining the MIP department and running his lab at the Beckman Institute, he has published highly impactful research articles and garnered many grants as an investigator, co-investigator, and mentor. Most recently he was awarded the prestigious President Early Career Awards for Scientists and Engineers (PECASE) in 2019. We took this opportunity to learn more about Prof. Llano's journey as a professor and a neurologist.

How did you first get interested in science?

Prof. Llano was a U. of I. student who was on his way to finishing up his undergraduate degree and applying for medical school. However, this all changed when he was selected for a Howard Hughes Undergraduate Research Fellowship and spent a summer in Prof. Tony Waldrop's lab, a former physiology professor at U. of I. He came into the lab not knowing what to expect but the experience was transformative. He loved how the lab had a systematic approach such that one experiment and the results obtained could prove or negate the initial hypothesis. The rigorous scientific method and the reward of hard work are what propelled Prof. Llano into applying for the M.D./Ph.D. here at U. of I, a career path he had not previously considered.

How was your doctoral and postdoctoral experience?

He first joined the MIP department and worked in Prof. Victor Ramirez's lab and later developed a strong passion for the thalamic auditory system. This stemmed from an advanced neurophysiology course taught by Prof. Albert Feng. The course was by far one of the most difficult courses Prof. Llano took during his graduate career. But when he was able to finally click with the material, it changed his scientific interest. He recalled Prof. Feng teaching the class about the intricacies of sound location and how bats use echolocation to catch their prey. This sealed his interest in the thalamic auditory system and he switched to Dr. Feng's lab to study bats. His love for the basic sciences was so strong that he highly considered not doing anymore medical training after his graduate studies. But a meeting with a neurologist at Cornell University who was doing innovative neurophysiological research in the thalamus led him to pursue medical training after his graduate studies.

When did you decide to become a professor?

"The old joke goes, "You have to hire an auditory physiologist to replace an auditory physiologist because it's too expensive to move the sound chambers."" Prof. Llano joked. Since auditory physiologists require specific instruments and soundproof chambers for their research, Prof. Llano was the ideal candidate to continue auditory research at U. of I as Dr. Feng was retiring. Apart from research, Prof. Llano enjoys teaching because it forces you to think of details and processes that you would not normally think of. This has helped him become a better scientist and a better neurologist. This has been reflected by the many teaching awards he obtained over the years during his time at Harvard Medical School and currently here at the U of I.

How did your earlier work lead to this new area of research? What is your latest scientific focus?

The main interest of Prof. Llano's research group is to understand the organization of the auditory system. They are investigating top-down information, which refers to how one perceives things from their own cognition instead of receiving an external stimulus for their brain to process. They are using this approach to understand how auditory system process ambiguous or difficult-to-understand sounds. Their main tool is a multi-photon microscope in the Beckman Institute that allows them to image hundreds of cells of the auditory system with cellular level resolution in an awake behaving animal. By imaging the lower brain regions while the animals are engaged in a task and then by manipulating the auditory cortex allow the researchers to observe any alterations in the task performance and the response of the cells in the lower brain regions. They hope to understand how the auditory cortex communicates with lower brain regions. Prof. Llano's research group also collaborates with other groups on campus to study (i) how aging affects the auditory system through imaging the vasculature using Super Resolution Ultrasound Microscopy, (ii) how toxins that cause peripheral hearing loss affect the central auditory system, (iii) how aging impacts cognitive function and the benefit of exercise, and (iv) developing novel multi-photon imaging technologies.

What advice to you have for young scientists and trainees?

Prof. Llano recommends students to look carefully into whether they want to pursue a M.D./Ph.D. degree. He also wants everyone to recognize that one does not need both a M.D. and a Ph.D. degree to do great science. He gave the example of Nobel Laureate Dr. Eric Kandel who is a M.D. psychiatrist that studied learning and memory using sea slugs. For students pursing a Ph.D., Prof. Llano hopes they can understand that pursuing this graduate level degree is an emotional process as much as it is a scientific process. As research outcomes are often more negative than positive, one must love investigating the unknown, asking questions that they are passionate about, constantly thinking, and be part of advancing knowledge in their field.

Prof. Llano does acknowledge that there are challenges of being a faculty member that is not really appreciated before one becomes a faculty member. There are many on-the-job trainings, such as how to get the lab moving forward, how to keep things funded, how to keep students supported and motivated. However, this also gives room for growth, and allows one to constantly strive to become a better scientist and physician. "In the end, it is a matter of always being vigilant."

How was it like hearing that you were selected for the PECASE award?

"Yeah, I didn't think it was real." There were other people who knew before Prof. Llano did and he believed it was a mistake. It was not until he heard from his program officer that he said, "Yeah, I guess this is real." He was happy to accept the award on behalf of the university and MIP and glad to serve as a representative of the U. of I.

What do you most enjoy outside of the lab?

Prof. Llano tries to spend as much time with his family "which is never enough." He is a huge baseball fan (points to his White Sox shirt) and "a White Sox fanatic". He also played baseball when he was a kid and then coached for many years. He was described as "extremely demanding" by his players back in the day but he enjoyed every moment, rain or shine. Although the White Sox have not been performing well, he believes 2020 will be their time!

ALUMNI HIGHLIGHTS - DR. JANELLE MAPES (BAGCHI LAB)

Your current position and title:

Assistant Professor of Anatomy, College of Osteopathic Medicine, Pacific Northwest University of Health Sciences (PNWU)

Your career arc and key accomplishments:

I worked as a teaching assistant throughout the majority of my graduate career in the MIP department, primarily as a laboratory TA in Anatomy and Physiology. This experience revealed a passion for teaching that significantly influenced my career path into academic medicine. With support from fantastic mentors, I completed two teaching certificates from the Center for Innovation in Teaching and Learning, was presented with the School of MCB Outstanding TA Award, and consistently received student evaluations that secured me a spot on the List of Teachers Ranked as Excellent by their Students while I was in the MIP department.

How MIP training got you where you are:

The experience and training I acquired in the MIP department fostered the growth and skills necessary to be successful as a junior faculty member in the College of Osteopathic Medicine at PNWU. I received positive student and peer evaluations in my first two years of teaching, which prompted me being given the responsibility of teaching a majority of the histology curriculum for first- and second-year medical students. During this time, I have also been appointed as co-director of a course and co-chair of a university committee. To advance my research, I was awarded an internal grant that allowed me to set up a tissue culture facility and significantly expand the capabilities of the biomedical research lab on campus.

Your favorite memory related to the time you spent in MIP:

I have many fond memories from my time spent with students and faculty on the 5th floor of Burrill Hall; access to a supportive environment and strong female mentors made it a truly great place to learn and grow. Although MIP Halloween parties and holiday gatherings were always fun, it was the ability to walk down the hall to ask for help with an experiment, borrow a reagent, or just get advice that really made the MIP department special.

ALUMNI HIGHLIGHTS - DR. KIRSTEN ECKSTRUM (RAETZMAN LAB)

Your current position and title:

Biologist Staff Fellow in the Division of Toxicology in the Office of Applied Research and Safety Assessment (OARSA) in the Center for Food Safety and Nutrition (CFSAN) at the Food and Drug Administration (FDA)

Your career arc and key accomplishments:

I began my career as an ORISE fellow contractor at OARSA in June of 2017. Since then, I was hired as a federal employee in 2018 and became the team lead on a liver organ chip project investigating the use and applicability of microphysiological systems in a regulatory environment. The results of multiple studies are currently being prepared for publication.

How MIP training got you where you are:

My training in MIP gave me the skills necessary to identify and troubleshoot problems in study design and assay performance. It also gave me the skills to present my findings both orally and in writing. Graduate school also gave me the foundation I needed to be able to organize a new project, delegate tasks, and lead a team.

Your favorite memory related to the time you spent in MIP:

My favorite memories from my time at MIP are from the lab cookouts. It was great being able to hang out in a non-laboratory setting and, as it turned out, everyone was a pretty good cook, so food was always great!

ALUMNI HIGHLIGHTS- DR. CONGCONG CHEN (BOLTON LAB)

Your current position and title:

Data Science Manager at Wayfair Inc.

Your career arc and key accomplishments:

I joined Wayfair two and half years ago after graduating from MIP and working shortly at IGB. At Wayfair, I worked as a Marketing Data Scientists for 2 years, and focused on machine learning research in application to automated advertising bidding platforms. Recently, I switched to a more managerial role, and am currently the head of Measurement Data Science org, where I lead a team of 7 data scientists to conduct statistical research and tooling development in order to evaluate and optimize the efficacy of Wayfair's multi-billion marketing investment.

How MIP training got you where you are:

While the training I got from the Stats M.S. program prepared me well regarding the data science techniques, I strongly believe it was my six years of MIP training and research experiences that made me a critical thinker and an independent researcher, which are the root drivers of long-term success in the field of data science. Specifically, my years of research training with Dr. Bolton enabled me to think creatively and proactively, plan strategically and thoroughly, conduct research and troubleshoot independently, and communicate results effectively. I believe such capabilities are indeed transferable to most fields, regardless in academia or in industry, being an individual contributor or a manager.

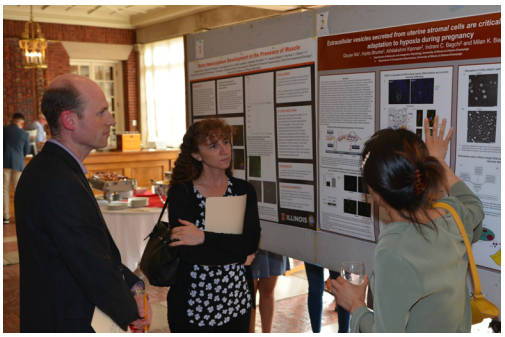
Your favorite memory related to the time you spent in MIP:

Bolton & Chung lab outings (e.g. pumpkin patch, dining in the Black Dog); Searching for Pokemons around campus while waiting for immunoblots.

NEW MIP GRADUATE STUDENTS

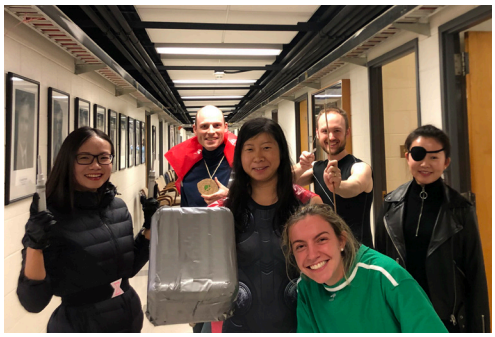
We welcome three new talented graduate students joining MIP in early 2019 (left to right): Daniel Castro (Jonathan Sweedler's lab), Adam Nelson (Erik Nelson's lab), and Ryan Shaw (Sayee Anakk's lab).

2019 MIP RETREAT AND HALLOWEEN PARTY



POSTER SECTION AT MIP RETREAT

SOCIAL EVENT AT MIP RETREAT



COSTUME CONTEST AT HALLOWEEN PARTY

STUDENT AND POSTDOC AWARD/FELLOWSHIP

Jinjing Chen (Kemper Lab), Postdoctoral Fellowship from American Diabetes Association, "Bile acid and glucose regulation by FXR-induced long non-coding RNA, FincoR."

Jiang Li (Christian Lab), C. Ladd Prosser Scientific Achievement Award from the Neuroscience Program

Liqian Ma (Nelson Lab), Endocrine Society Outstanding Abstract Award for ENDO2019, "27-hydroxycholesterol acts on myeloid cells to inhibit T cell expansion."

Sayyed Hamed Shahoei (Nelson Lab), Embassy of France in the United States, 2018-2019 STEM Chateaubriand Fellowship, "Evaluating the Immunomodulatory Role of Small Heterodimer Partner in Breast Cancer."

PHD GRADUATES

Mariam Bonyadi Camacho (Anastasio Lab; NSP) Hanna Erickson: (Anakk Lab; MIP) Will Gundling: (Wildman/Raetzman Lab; MIP)

Song-Soo Jang (Chung Lab; MIP) Alexandria Lesicko (Llano Lab; NSP) Dai-Chi Liu (Tsai Lab; NSP) Bhoomika Mathur: (Anakk Lab; MIP)

Alison Hantak Neff: (Bagchi Lab; MIP) Georgiy Yudintsev (Llano Lab; NSP) Jiuhe "Rosa" Zhu: (Tsai Lab; MIP)

ALUMNI UPDATES

Anna Bergamaschi (postdoc with Benita Katzenellenbogen)—now Principal Scientist/Project Manager at Bluestar Genomics, Inc, San Diego, CA

Sangwon Byun (postdoc with Jongsook Kemper) —now Senior Scientist and Faculty at Korean Research Institute of Bioscience and Biotechnology, Korea

Sungsoon Fang (grad student with Jongsook Kemper) —now Assistant Professor at Yonsei University, Korea

Sung-Soo Jang (grad student with Hee Jung Chung) —now Postdoctoral Fellow at Gladstone Institute, UCSF

Donghyun Kim (postdoc with Jongsook Kemper) —now Research Professor at Chonnam National University, Korea

Kyuri Kim (grad student with Benita Katzenellenbogen)—now Senior Scientist at Stanford Research Institute (SRI) International

Jiyoung Lee (grad student with Jongsook Kemper) —now Assistant Professor at George Washington University

Dai-Chi Liu (grad student with Nien-Pei Tsai)—now Scientist at GE Life Science

Bhoomika Mathur (grad student with Sayee Anakk)—now Postdoctoral Fellow at UT Southwestern Medical Center

Joshua Stender (grad student with Benita Katzenellenbogen)—now Senior Scien tist II at AbbVie Pharmaceuticals, Chicago, IL

Yuechao Zhao (postdoc with Benita Katzenellenbogen and Milan Bagchi)—now Senior Scientist at Enanta Pharmaceuticals, Inc, Boston, MA

Jiuhe "Rosa" Zhu (grad student with Nien-Pei Tsai) —now Postdoctoral Fellow at Northwestern University

FACULTY GRANTS NEWLY AWARDED

Sayee Anakk, American Cancer Society, "Elucidating Mechanisms Underlying Gender-biased Incidence of Liver Cancer"

Sayee Anakk, Campus Research Board, "Studying the role for IQGAP1 scaffolding protein in the liver."

Sayee Anakk, Division of Nutritional Sciences "Understanding the sex-differences in microbiome mediated gut - liver communications "

Tom Anastasio, Alzheimer's Disease Research Fund, "Machine Learning of Human Cognitive-decline-with-age Trajectories."

Hee Jung Chung, Campus Research Board Co-I (Hyun-Joon Kong, lead PI), "Active ApoE4 Modulator Delivery to Reduce Tau Pathology in Alzheimer Disease."

Hee Jung Chung, Alzheimer's Association Co-PI (Hyun-Joon Kong, lead PI), "Nanotransporter of ApoE4 Modulator to Reduce Pathology in Alzheimer Disease."

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, Capita Foundation, "An Exercise Intervention to Prevent Aging Related Hearing Loss in a Mouse Model."

Erik Nelson, NIH R01, "Impact of Cholesterol and its Metabolites on Breast Cancer Progression."

Erik Nelson, METAvivor, "Targeting an immune-suppressive cholesterol metabolite in the treatment metastatic breast cancer."

Erik Nelson (William Helferich, lead PI), Division of Nutritional Sciences Co-PI, "Mechanisms by which fat derived from frying bacon promotes breast cancer progression."

Erik Nelson (Andrew Smith, lead PI), Cancer Center at Illinois Seed Funding Program Co-PI, "Cancer Immunotherapies for Precision Medicine in the State of Obesity."

Erik Nelson (K.V. Prasanth, lead PI), Cancer Center at Illinois Seed Funding Program Co-PI, "Characterization of Oncogenic Noncoding RNAs in Breast Cancer Progression and Metastasis."

Erik Nelson (Wawrzyniec Lawrence Dobrucki, lead PI), Cancer Center at Illinois Planning Grant Award Co-PI, "Diet-modified Efficacy of RAGE-targeted Prostate Cancer Treatments."

Erik Nelson (Zeynep Madak-Erdogan, lead PI), Cancer Center at Illinois Planning Grant Award Co-PI, "Elucidating Premetastatic Niche-Induced Therapy Resistance Mechanisms in ER(+) Metastatic Breast Cancers."

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

Nien-Pei Tsai, Campus Research Board, "Investigating the role of Mdm2-dependent translation in fragile X syndrome."

SELECTED MIP PAPERS NOV 2018-OCT 2019

Anastasio TJ (2019) Exploring the Correlation between the Cognitive Benefits of Drug Combinations in a Clinical Database and the Efficacies of the Same Drug Combinations Predicted from a Computational Model. Journal of Alzheimer's disease : JAD 70: 287-302

Brown JW, Schaub BM, Klusas BL, Tran AX, Duman AJ, Haney SJ, Boris AC, Flanagan MP, Delgado N, Torres G, Rolón-Martínez S, Vaasjo LO, Miller MW, Gillette R (2018) A role for dopamine in the peripheral sensory processing of a gastropod mollusc. PLoS One 13: e0208891

Byun S, Jung H, Chen J, Kim YC, Kim DH, Kong B, Guo G, Kemper B, Kemper JK (2019) Phosphorylation of hepatic farnesoid X receptor by FGF19 signaling-activated Src maintains cholesterol levels and protects from atherosclerosis. The Journal of biological chemistry 294: 8732-8744

Camacho, MB, Vijitbenjaronk W, Anastasio TJ (2019) Computational analysis of therapeutic neuroadaptation to chronic antidepressant in a model of the monoaminergic neurotransmitter and stress hormone systems. Frontiers in Pharmacology 10: 1215

Camacho MB, Vijitbenjaronk W, Anastasio TJ (2019) Computational modeling of the monoaminergic neurotransmitter and male neuroendocrine systems in an analysis of therapeutic neuroadaptation to chronic antidepressant. European Neuropsychopharmacology (in press)

Erickson HL, Anakk S (2018) Identification of IQ motif-containing GTPase-activating protein 1 as a regulator of long-term ketosis. JCI insight 3:21

Green DJ, Huang R-C, Sudlow L, Hatcher NG, Potgieter K, McCrohan C, Lee C, Romanova EV, Sweedler JV, Gillette MLU, and Gillette R (2018) cAMP, Ca2+, pHi, and NO regulate h-like cation channels that underlie feeding and locomotion in the predatory sea slug Pleurobranchaea californica. ACS Chemical Neuroscience (in press)

Gribkova ED, Ibrahim BA, Llano DA (2018) A novel mutual information estimator to measure spike train correlations in a model thalamocortical network. Journal of neurophysiology 120: 2730-2744

Harpole TJ, Grosman C (2019) A Crucial Role for Side-Chain Conformation in the Versatile Charge Selectivity of Cys-Loop Receptors. Biophysical journal 116: 1667-1681

He S, Ma L, Baek AE, Vardanyan A, Vembar V, Chen JJ, Nelson AT, Burdette JE, Nelson ER (2019) Host CYP27A1 expression is essential for ovarian cancer progression. Endocrine-related cancer 26: 659-675

Kim EC, Patel J, Zhang J, Soh H, Rhodes JS, Tzingounis AV, Chung HJ (2019) Heterozygous loss of epilepsy gene KCNQ2 alters social, repetitive and exploratory behaviors. Genes, brain, and behavior: e12599

Kim YC, Byun S, Seok S, Guo G, Xu HE, Kemper B, Kemper JK (2019) Small Heterodimer Partner and Fibroblast Growth Factor 19 Inhibit Expression of NPC1L1 in Mouse Intestine and Cholesterol Absorption. Gastroenterology 156: 1052-1065

Kim YC, Jung H, Seok S, Zhang Y, Ma J, Li T, Kemper B, Kemper JK (2019) MicroRNA-210 promotes bile acid-induced cholestatic liver injury by targeting mixed-lineage leukemia-4 methyltransferase in mice. Hepatology (Baltimore, Md) (in press)

Liu DC, Eagleman DE, Tsai NP (2019) Novel roles of ER stress in repressing neural activity and seizures through Mdm2- and p53-dependent protein translation. PLoS genetics 15: e1008364

Llano DA, Devanarayan P, Devanarayan V (2019) VGF in Cerebrospinal Fluid Combined With Conventional Biomarkers Enhances Prediction of Conversion From MCI to AD. Alzheimer disease and associated disorders (in press)

Naseri Kouzehgarani G, Bothwell MY, Gillette MU (2019) Circadian rhythm of redox state regulates membrane excitability in hippocampal CA1 neurons. The European journal of neuroscience (in press)

Neff AM, Blanco SC, Flaws JA, Bagchi IC, Bagchi MK (2019) Chronic Exposure of Mice to Bisphenol-A Alters Uterine Fibroblast Growth Factor Signaling and Leads to Aberrant Epithelial Proliferation. Endocrinology 160: 1234-1246

Shahoei SH, Kim YC, Cler SJ, Ma L, Anakk S, Kemper JK, Nelson ER (2019) Small Heterodimer Partner Regulates Dichotomous T Cell Expansion by Macrophages. Endocrinology 160: 1573-1589

Slater BJ, Sons SK, Yudintsev G, Lee CM, Llano DA (2019) Thalamocortical and Intracortical Inputs Differentiate Layer-Specific Mouse Auditory Corticocollicular Neurons. The Journal of neuroscience : the official journal of the Society for Neuroscience 39: 256-270

Ujjainwala AL, Courtney CD, Wojnowski NM, Rhodes JS, Christian CA (2019) Differential impacts on multiple forms of spatial and contextual memory in diazepam binding inhibitor knockout mice. Journal of neuroscience research 97: 683-697

Weis KE, Raetzman LT (2019) Genistein inhibits proliferation and induces senescence in neonatal mouse pituitary gland explant cultures. Toxicology 427: 152306

Zhu J, Lee KY, Jong TT, Tsai NP (2019) C2-lacking isoform of Nedd4-2 regulates excitatory synaptic strength through GluA1 ubiquitination-independent mechanisms. Journal of neurochemistry 151: 289-300

MOLECULAR &
INTEGRATIVE PHYSIOLOGY

University of Illinois at Urbana-Champaign
524 Burrill Hall
407 South Goodwin Avenue
Urbana, Illinois 61801

MIP appreciates the support of our alumni and friends. If you wished 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)

Name_____

Address_____

City_____ State_____ Zip_____

Phone_____

Email_____

Spouse/Partner, if a joint gift: _____

☐ My company, or my spouse's/partner's company will match my gift.

Company name: _____

☐ My check, payable to the University of Illinois foundation is enclosed.

☐ I wish to donate by credit card at mcb.illinois.edu/giving/

1KV60419DN001541AM00000006LT