

**AUGUST 2022
BIOCHEMISTRY NEWS**



Welcome Back Everyone!

**CONGRATULATIONS TO...
August Graduates...**

Masters



Matt Russon

Next Stop: Life Sciences Sales Rep for NCI Inc., a Thomas Scientific Company

Undergraduates:



Audrey Ellis

Next Stop: Chemistry teacher at Rossville Middle/High School

Clint Chapple was the Ph.D. keynote speaker during the summer commencement ceremony on August 6th. To read his full commencement speech click [here](#).



Bridget Kaiser (Mesecar lab) was awarded the NIH T32 training fellowship called The Purdue Drug Discovery Training Program (PDD-TP). This is a two-year fellowship for students with drug discovery and development-focused research projects. Her project proposal title is "Structure-Guided Drug Discovery for Alzheimer's Target PLCG2".

Dr. Majid Kazemian will be a honoree at the Provost's Celebration of Teaching Excellence Ceremony on September 27th for his Distinguished Faculty for Research Award, a student nomination award through the Purdue University Residences Favorite Faculty.

UNDERGRADUATE SUMMER PROGRAMS...

Summer is a busy time for Purdue Biochemistry. We had 8 Biochemistry students participate in the SCARF (formerly MASI) Summer Research program and 9 students who traveled to campus for the REU research program.

2022 Biochemistry students who participated in SCARF:

Olivia Bradford, Emily Johnson, Jacob Fawley, Ogas lab, Using Genotoxic Stress to Investigate the Contribution of the Chromatin Remodeler PKL to DNA Repair in *Arabidopsis thaliana*.

Ryan DeBernardis, Weake lab, The effect of S-adenosyl-methionine regulation on histone methylation levels in the eye of *Drosophila*.

Ashley Fow, Forney lab, Construction and Analysis of Cdc14 Gene Knockouts in *Tetrahymena*.

Joshua Kaluf, Jacob Fawley, Ogas lab, Functional Characterization of the ATP-dependent Chromatin Remodeler PKR2 in *Arabidopsis thaliana*.

Cameron Matthews, Ejeta lab, Laboratory screening of sorghum line for incompatibility, a post-attachment resistance mechanism to the parasitic weed *Striga hermonthica*.

Mario Perez-Ahuati, Khan (Gowher) lab, Effects of the Point Mutation on DNMT3B Activity.

Shelby Sliger, Ogas lab, Determining the Contribution of Histone Variant H2A.Z to the Promotion of the Epigenetic Mark H3K27me3 in *Arabidopsis thaliana*.

Payne Turney, Briggs lab, Determining the Role of Histone Methyltransferase *DOT1* in Oxidative Stress, Antifungal Resistance, and Pathogenesis.

2022 REU students and their projects:

Briana Mercado, Mesecar lab, Investigating The Divalent Cation Dependence of the SHIP1 Catalyzed PIP3 and IP4 Hydrolysis

Michelle Shanguhya, Tao lab, Optimization of Digestion Condition in EVTOP Method Using Urine Samples.

Madeline Burghaze, Briggs lab, Using CRISPR-mediated deletion analysis to identify the intermediate sterols required for azole-induced Set4 expression in the human pathogen *Candida glabrata*,

Geordan Bolden, Gowher lab, Effect of disease associated mutation on DNMT3A activity.

Eliam Jearim Hernandez, Puthiyaveetil lab, Determining the midpoint redox potential of Lumen Thiol Oxidoreductase involved in the regulation of State Transition 7.

Jackson Pierce, Ogas lab, Functional characterization of the CHD chromatin remodeler PICKLE in *Arabidopsis thaliana*.

Juan Colberg Martinez, Kirchmaier lab, Understanding the Role of Fumarase in DNA Damage Response.

Andrea Laboy, Weake lab, The role of cryptochrome in the circadian rhythm in the eye.



Front row, l-r: Amirah Nieves-Medina, Andrea Laboy, Briana Mercado
Back row, l-r: Juan Colberg-Martinez, Madeline Burghaze, Michelle Shanguhya, Jackson Pierce, Geordan Bolden, Eliam Hernandez Santos

Noelle Naughton, a junior majoring in biochemistry, participated in the Herman B Wells Center for Pediatric Research Summer Internship Program at the Indiana School of Medicine. I worked under the mentorship of Dr. Steven Angus and Dr. Wade Clapp studying neurofibromatosis type 1 (NF1). My project focused on how a specific kinase may play a critical role in the growth of human malignant peripheral nerve sheath tumors (MPNSTs) and that agents targeting this kinase, alone or in combination, may prove efficacious in the treatment of MPNST in patients. This experience crystallized my career goal of becoming a physician-scientist. I saw NF1 patients in the clinic and learned how powerful and important the relationship between research and the clinic is. My goal is to see patients and take their stories back into the lab to figure out what is driving the disease and find ways to treat and/or diagnose it. I envision being able to take an idea from the lab and translate it into patient care and help generations of patients in the future.

Martin Emerson, a junior majoring in Biochemistry, completed a Summer Undergraduate Research Fellowship at Cincinnati Children's Hospital Medical Center. He worked in the VanDussen lab, which aims to develop in vitro and mouse models of Crohn's Disease. Specifically, Martin cultured and analyzed intestinal epithelial cells.

NEW FACES...



Sam Pucka is the new Account Clerk in the Biochemistry Business Office, Room 103. He is 21 years old and started his career at Purdue in the pursuit of furthering his Accounting Degree. Before this position, he worked as a manager at The Spine Worx, where he is still employed, but at a lesser capacity. During his free time, Sam likes to play one of his 9 guitars (or mandolin, or banjo), play video games (PC), spoil his cows and 2 dogs, and hang out with friends/family.



Erren Tapia joined us as our new Business Manager last October. She splits her time between Biochemistry/OISC and Entomology/CERIS at the Smith Building. She was previously a Business Manager at Purdue Northwest, assisting the College of CHESS. She brings 18 years of Higher Education experience to Purdue. She relocated from Chicago and is enjoying the Lafayette area very much. During her free time, she likes to read, listen to music, and hang out with her dog Rascal in the sunroom, admiring the beautiful trees, and loving the peace and quiet.

GOING THE EXTRA MILE...

Natalia Dudareva gave a talk titled: "Natural Fumigation: What do we know so far?" at the Gordon Research Conference "Biogenic Hydrocarbons and the Atmosphere. Bridging Ecology, chemistry and Climate" in Oxnard CA. June 12-17th.

Natalia Dudareva also participated in Plant Biology 2022 ASPB Annual Meeting in Portland Oregon, July 9-13th and gave a talk "Almond flavor: How do plants make it?".

Xingqi (David) Huang (postdoc Dudareva lab) received a PSNA travel award and gave a talk "A peroxisomal heterodimeric enzyme is involved in benzaldehyde synthesis in plants" at the Phytochemical Society of North America 2022 Annual Meeting in Blacksburg VA on July 24-28th.

Sandy Rossie traveled to Kassel Germany in June to give a month-long workshop on writing science manuscripts at the University of Kassel. The workshop was sponsored by the faculty of Physiology and was attended by graduate students and postdoctoral fellows from diverse disciplines.

Fabiola Muro Villanueva and **Zhiwei Luo** (Chapple Lab) received NSF-funded travel awards to attend the 61st annual meeting of the Phytochemical Society of North America (PSNA) hosted by Virginia Tech in Blacksburg, VA, on July 24-28th. Fabiola was selected to give an oral presentation titled "Pinoresinol and related dimers rescue the shoot and root growth phenotypes of phenylpropanoid mutants overexpressing *FERULATE 5-HYDROXYLASE*". Zhiwei presented a poster entitled "Discovery of genes in tryptophan metabolism in Arabidopsis for which she received the PSNA best poster award.

The Wisecaver lab traveled to Portland, Oregon for the Plant Biology Meeting. Lab members Joshua Trujillo, Katherine Eastman, and Katelin Burrow presented posters.

GRANTS...

Humi Gowher Khan received \$3667.00 from IU School of Medicine for a project titled " Transcription cycle regulation by nutrients".

RECENT PUBLICATIONS...

Ibrahim, I.M., S. D. McKenzie, J. Chung, U. K. Aryal, W.D. Leon-Salas, **S. Puthiyaveetil**. 2022. Photosystem stoichiometry adjustment is a photoreceptor-mediated process in *Arabidopsis*. Science Reports **12**(1):10982.

Ibrahim, I.M., S. J. L. Rowden, W. A. Cramer, C. J. Howe, **S. Puthiyaveetil**. 2022. Thiol redox switches regulate the oligomeric state of cyanobacterial Rre1, RpaA and RpaB response regulators. *FEBS Letters* **596**(12): 1533-1543

Wu, X., **W.A. Tao**. 2022. Uncovering ubiquitous protein lactylation. *Nature Methods* **19**(7): 793-794.

Zhang, H., Y. H. Cai, Y. Ding, G. Zhang, Y. Liu, J. Sun, Y. Yang, Z. Zhan, A. Iliuk, Z. Gu, Y. Gu, **W. A. Tao**. 2022. Proteomics, Phosphoproteomics and Mirna analysis of Circulation Extracellular Vesicles through Automated and High-Throughput Isolation. *Cells*.**11**(13):2070.

Salomon, C., S. Das, U. Erdbrügger, R. Kalluri, S. K. Lim, J. M. Olefsky, G. E. Rice, S. Sahoo, **W. A. Tao**, P. Vader, Q. Wang, A. M. Weaver. Extracellular Vesicles and Their Emerging Roles as Cellular Messengers in Endocrinology: An Endocrine Society Scientific Statement. *Endocrine reviews*. **43**(3):441-468.

P. Jiang, X. Ma, S. Han, L. Ma, J. Ai, L. Wu, Y. Zhang, H. Xiao, M. Tian, **W.A. Tao**, S. Zhang, R. Chai. 2022. Characterization of the microRNA transcriptomes and proteomics of cochlear tissue-derived small extracellular vesicles from mice of different ages after birth. *Cellular and molecular life sciences: CMLS*. **79**(3): 154.

George, S., H. Blum, E. Torres-Zelada, G. N. Estep, Y. A. Hegazy, G. M. Speer, **V. M. Weake**. 2022. The interaction between the Dbf4 ortholog Chiffon and Gcn5 is conserved in Dipteran insect species. *Insect molecular biology*. Online ahead of print.

IMPORTANT DATES...

Please join us for the Department of Biochemistry Seminar Series. All seminars will begin at 3:30 pm, in WSLR 116, unless otherwise noted.

Sept. 6 Gaurav Moghe, Plant Biology Section, Cornell University

Sept. 20 Georg Jander, Boyce Thompson Institute Cornell University

Sept. 27 Luca Busino, Department of Cancer Biology, Perelman School of Medicine, University of Pennsylvania (Virtual)