

NOVEMBER 2020
BIOCHEMISTRY NEWS



CONGRATULATIONS TO

We would like to congratulate the following undergraduate students and faculty research mentors for receiving [CATE \\$500 Faculty Research Grants](#) for the Fall 2020 semester! The students submitted formal research project proposals and their faculty research mentors supported them with very positive letters of recommendation. Faculty receive \$500 per student to offset the cost of supplies and expenses incurred during the student's research.

Emily Johnson, Joe Ogas, "*Examining the role of PKL in DNA damage repair in the homologous recombination pathway*"

Emily Lloyd, Joe Ogas, "*Analysis of Histone Variant H2A.Z Genetic Interaction with Repressive Epigenetic Mark H3K27me3 in Arabidopsis thaliana*"

Katelyn Macknak, Joe Ogas, "*Examining and Identifying Contributions of the Regulatory Histone Variant H2A.Z to the Suppressive Epigenetic Mark H3K27me3 in Arabidopsis thaliana*"

Ogechukwu Exenwa, Joe Ogas, "*Determining the Contribution of the Mediator Complex to the Repressive Chromatin Modification H3K27me3 in Arabidopsis thaliana*"

Jacob Fawley, Joe Ogas, "*Generating and Characterizing Potentially Novel Phenotypes in Arabidopsis thaliana mutants associated with H3K27me3 Epigenetic Mark*"

Adam Schluttenhofer, Joe Ogas, “*Generation and characterization of a chd5 dominant negative allele in Danio rerio to elucidate the role of CHD5 within the Mi-2/NuRD complex*”

Caden Tuinstra, Clint Chapple, “*Making Connections: Determining the Relationship of Arabidopsis Metabolites and Its Genome*”

Abigail Sipes, Clint Chapple, “*Coupling Metabolic Source Isotopic Pair Labeling and Genome Wide Association for Metabolite and Gene Annotation in Plants*”

Benjamin Waddey, Mark Hall, “*Determining Substrate Specificity of hCdc14A/B via Mass Spectrometry*”

Colin Hemme, Jeremy Lohman, “*Isolating Transcarboxylase Subunits to Enable Structure-Function Studies*”

Hannah Blum, Vikki Weake, “*Identifying new Drosophila melanogaster Cdc7 Regulators*”

Jaelen Nice, Jeremy Lohman, “*Using Acyl-CoA analogs to Study Enzyme-Substrate Interactions in Fatty Acid Biosynthesis*”

Tara Paarlberg, Frederick Gimble, “*Determination of the DNA cleavage sequence of the Torulaspora delbrueckii Weird HO endonuclease*”

Cody Goode, James Forney, “*Determining the Localization of DCD14 variants in Tetrahymena*”

Joceyln Sheets (BCHM student), Theresa Casey, “*Does the level of colostrum intake dictate the abundance and activity of hepatic peroxisomes at seven days postnatal?*”

Brendan Williams, Jeremy Lohman, “*Structure-Function Relationships of Propionyl-CoA Carboxylase*”

Sara York, Frederick Gimble, “*Characterization, Purification, and Crystallization of weird-HO Proteins*”

GOING THE EXTRA MILE

Natalia Dudareva served as a Panel manager for the USDA NIFA AFRI Plant Products Program on October 20-22, 2020.

Iskander Ibrahim, Steven McKenzie, Gilbert Kayanja and Sujith Puthiyaveetil attended the 46th annual Midwest/ Southeast photosynthesis meeting held virtually between Oct. 23-24.

POST-DOC SPOTLIGHT

Iskander Ibrahim, Puthiyaveetil Lab



At the age of 11 Iskander moved from Ethiopia to London, U.K. with his family. He completed high school in Hackney, East London, and received an undergraduate degree in Biochemistry from Queen Mary University of London. Iskander enjoyed science from an early age and he wanted to pursue a career in the medical profession, but realized he liked academic research more.

For his final year undergraduate research project, he applied to Prof. John Allen's laboratory at Queen Mary to work on the regulation of the *c*-ring size of the chloroplast ATP-synthase, but later found that there was a second project on the functional characterization of the Chloroplast Sensor Kinase (CSK) that he thought was much cooler. It was natural for him to choose the second project as he had always enjoyed learning about signal transduction pathways in his biochemistry course. He soon realized that the research was challenging but at the same time satisfying when things finally worked. After completion of his undergraduate degree, he was accepted as a PhD student in John Allen's lab. In his PhD research, Iskander characterized the cyanobacterial homologue of CSK and its phosphotransferase activity towards putative functional partners.

After completing his doctoral degree, he moved to the University of Greenwich for his first postdoctoral training. There, he worked on the D-factory Microalgal Biorefinery project to exploit *Dunaliella Salina* for high-value products. He also worked on the cyanobacterial carbon concentration mechanism (CCM), in which he discovered that the CCM is regulated by a network of proteases. For his second postdoctoral research, he moved to the Puthiyaveetil laboratory at Purdue to decipher the long-sought redox sensory mechanism of CSK. He succeeded in this and the results from this study have recently been published in NPG journal *Communications Biology*. In his research at Purdue Iskander found that an iron-sulfur cluster-based redox sensory mechanism helps CSK to perceive and propagate the plastoquinone redox signal. This work has shown, for the first time, how photosynthetic electron transport is monitored by a gene regulatory system in cyanobacteria, algae and plants.

Iskander believes there is more to discover on the functional role of CSK. His latest preliminary data show that the CSK plays a central role in partitioning photosynthetic electrons into two separate pathways under shade conditions. Although his current research is basic science, he believes that the knowledge obtained from it will one day enable the engineering of crop plants for increased photosynthetic efficiency and yield.

GRADUATE STUDENT NEWS

The Tao lab welcomed Pooja Saklani from the Chemistry department to their lab.



Undergrad studies at Delhi University, India
Master's at St. John's University in New York
PhD. Student, Chemistry, Purdue University.

GRANTS

Dr. Vikki Weake received bridge funding in the amount of \$376,148 for her NIH grant, Epigenetic Regulation of Gene Expression in the Aging Eye

RECENT PUBLICATIONS

Zhang, H., Y. Deng, X. Liu, J. Sun, L. Ma, Y. Ding, Z. Zhan, H. Zhang, Y. Yang, Y. Gu, A. B. Iliuk, C. Yang, **W. A. Tao**. Glass Fiber-Supported Hybrid Monolithic Spin Tip for Enrichment of Phosphopeptides from Urinary Extracellular Vesicles. 2020. *Anal Chem.* **92** (21) 14790-14797

IMPORTANT DATES

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

<https://zoom.us/j/9577929238?pwd=TFRlVmlYdkc0NjdQVmhzSUVzRHMxdz09>

(Meeting ID: 957 792 9238 Passcode: biochem20)

November 24	Last day for students on campus
November 26-27	Thanksgiving Break
December 1	Dr. Tom Richards, University of Oxford, Dept. of Zoology (cancelled)
December 8	Dr. Siavash Kurdistani, UCLA, Dept. of Biological Chemistry
December 7-11	Finals Week
December 21- Jan. 1	Winter recess