DEPARTMENT OF BIOLOGICAL SCIENCES
COLLEGE OF SCIENCE
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BIOsphere

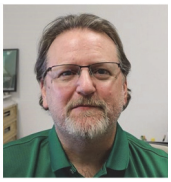
June 2022 Volume 9 Issue 2

Awards and Recognitions

Congratulations to Assistant Professor **Dr. Elinor Lichtenberg** on being selected as a U.S. Department of Agriculture (USDA) 2022 E. Kika De La Garza Science Fellow in June. The E. Kika De La Garza Fellowship Program links USDA and Hispanic-Serving Institutions to help build awareness in Hispanic communities of USDA services, resources, and employment opportunities. Since 1998, these annual fellowships have recognized highly accomplished staff and faculty at HSIs, which are accredited and degree-granting institutions of higher education with a full-time Hispanic student enrollment of 25 percent or more.

E. Kika De La Garza Science Fellows and organizers

Congratulation to University Distinguished Teaching Professor **Dr. Lee Hughes** for being named as the Interim Associate Dean for Undergraduate Studies in the College of Science starting June 1st, 2022.



Dr. Lee Hughes

Sabrina Moore

Graduate Awards and Scholarships

Congratulations to **Sabrina Moore**, the recipient of the 2021 UNT Faculty Senate's Outstanding Teaching Fellow (TF)/Teaching Assistant (TA) Award. This annual award from UNT's Faculty Senate recognizes four graduate Teaching Fellows/Teaching Assistants for their outstanding work as TF/TA. Sabrina who was the Department's nominee for this award, was recommended by her Lab Supervisor Dr. Jaime Baxter-Slye and her major advisor Dr. Jim Kennedy.

Outstanding Teaching Assistant Awardees with their Lab supervisors and major

Department of Biological Science's Outstanding Teaching Assistant Awards: Congratulations to the Department of Biological Sciences Outstanding Teaching Assistant (OTA) Awardees. The OTA, which is awarded annually, recognizes the excellence of our graduate students for their outstanding service as Teaching Assistants in our undergraduate laboratory courses. These OTA's, who are nominated by the Teaching Lab Supervisors, participated in all aspects of the laboratory offering, including review of the manual, laboratory preparation, TA'ing the labs, and proctor grading for the laboratory assignments and exams, as well as exams in the associated lecture course. The winners of the 2022 OTA: **Lani Archer** for excellence in Biology for Educators Lab. Her Lab Supervisor is Claudia Gonzalez and Major Advisor is Dr. Jyoti Shah; **Abby Chapman** for excellence in Freshman Majors' Lab. Her Lab Supervisor is Ipsita Lahiri and Major Advisor is Dr. Aaron Roberts; **Kaitlynn Davis** for excellence in Environmental Science/Ecology Lab. Her Lab Supervisor is Dr. Jaime Baxter-Slye and Major Advisor is Dr. James H. Kennedy; **John Evers** for excellence in Upper Division Majors Lab. His Lab Supervisor is Claudia Gonzalez and Major Advisor is Dr. Brian Ayre; **Debasish Ghosh** for excellence in Microbiology Lab. His Lab Supervisor is Dr. Syeda Alam and Major Advisor is Dr. Vladimir Shulaev; **Yen-Tung Lin** for excellence in Upper Division Majors Lab. Her Lab Supervisor is Claudia Gonzalez and Major Advisor is Dr. Brian Ayre; **Sara McGillewie** for excellence in Upper Division Ecology Lab. Her Lab Supervisor and Major Advisor is Dr. David Hoeinghaus.

Mary Beth Baird Summer Scholarships: Mary Beth Baird was a graduate student in the Department of Biological Sciences who left an endowment to the department, which provides scholarships to our graduate students. Over the years, several graduate students in the department have benefited from this endowed scholarship. This summer, 32 graduate students were selected by the Department of Biological Sciences Graduate TA/Scholarship Committee as recipients of the Mary Beth Baird Summer Research Assistant Scholarship. This summer scholarship is awarded to facilitate student progress towards their thesis/dissertation. Congratulations to the 2022 Mary Beth Baird Summer Research Assistant Scholarship recipients: **Alexis Auzenne, Allie Burdette, Ayah Al Qaryoute, Cameron Emadi, Chris Melendez, Debasish Ghosh, Duaa Quedan, Harmanpreet Kaur, Jillian Via, Jolene Dunbar, Jonathan Hernandez, Jose Robledo, Julia Migliore, Jyotheesweran Panapakam, Karem Roman, Leah Schneider, Lindsey Daniel, Madeleine Kaleta, Manuel Ruiz, Mohammad Alatoum, Moon Twayana, Morgan Bucher, Ronika De, Saifun Nahar, Sanchi Dhinoja, Steven Gore, Sujan Shrestha, Supuni Silva, Tyler Armstrong, Victoria Youngblood, Vincent Paris, Wenasa Frifer**.

BioDiscovery Institute Summer Research Assistantship: This award by the BioDiscovery Institute (BDI), which includes summer Research Assistant salary, was made to graduate students from BDI labs working towards their PhD's. Congratulations to the BDI Summer Research Assistantship recipients: **Amira Rasoul** (Major professor: Dr. Ana Alonso), **Jordan LaChance** (Major professor: Dr. Ana Alonso; co-major professor: Dr. Mauricio Antunes), **John Evers** and **Yen Tung Lin** (Major professor: Dr. Brian Ayre), **Vaidehi Pusadkar** (Major professor: Dr. Rajeev Azad), **Ziynet Nesibe Kesimoglu** and **Jubair ibn Malik Rifat** (Major professor: Dr. Serdar Bozdag; Department of Computer Science and Engineering), **Sreemoye Nath** (Major professor: Dr. Calvin

Henard), **Lani Archer** (Major professor: Dr. Jyoti Shah), and **Sydney Schoellhorn** (Major professor: Dr. Liz Skellam; Department of Chemistry). This scholarship financially supports each student for the full summer semester and was awarded based on the research each student proposed. As part of this award, each recipient is required to give a formal presentation of the research accomplishments made over the summer during the fall 2022 series of the BDI Seminars. Amira Rasoul is pursuing research on the carbon metabolism surrounding oil biosynthesis in *fatty acid elongase 1-3* pennycress embryos, Jordan LaChance is pursuing research on fatty acid metabolism and engineering oil content improvements in *Physaria fendleri* with CRISPR/cas9, John Evers is pursuing research on photoassimilate partitioning in poplar/aspen trees, Yen-Tung Lin is pursuing research on genes promoting embryogenesis and meristem formation in flowering plants, with a focus on cotton, Vaidehi Pusadkar is pursuing research on assessment of metagenomic sequence classification tools and development of a new alignment-free method for metagenome profiling, Ziynet Nesibe Kesimoglu is pursuing research on multiomics data integration to infer gene regulatory networks and to predict subtypes of patients in cancer, Jubair ibn Malik Rifat is working on a project to cluster single cells based on their gene expression from single cell RNA-seq data using deep learning and graph representation learning, Sreemoye Nath's research focuses on metabolic engineering of methanotrophic bacteria to convert methane to bioplastic precursors, Lani Archer is characterizing molecular mechanisms underlying plant defense against phloem sap-consuming aphids, and Sydney Schoellhorn is investigating whether the endophytic fungus *Sarocladium zeae* could be developed as a specific biocontrol agent to prevent mycotoxin contamination of corn.

College of Science Dean's Summer Fellowships: The College of Science (COS) awards the COS Dean's Summer Fellowships to current PhD students to support them during summer 2022 to pursue their thesis/dissertation. These students have completed all their qualifying exams to be designated as All-But-Dissertation (ABD) by the Toulouse Graduate School and are in their last year or two of the program. They received a $5,000 stipend as part of this award. Congratulations to the COS Dean's Summer Fellowship recipients: **Jindanuch Maneekul** (Major professor: Dr. Lee Hughes), **Alicia Dunton** (Major professor: Dr. Warren Burggren), and **Sabrina Moore** (Major professor: Dr. Jim Kennedy). Jindanuch Maneekul is characterizing endolysin genes from phages of *Streptomyces* and examining their potential use as antibacterial agents, Alicia Dunton studies the neurotoxic effect of pollutants like polycyclic aromatic hydrocarbons and their impact on animal behavior. Sabrina Moore is pursuing research on food webs in freshwater rivers of the Cape Horn Biosphere Reserve and the impacts on these webs by invasive salmon that escaped net-pen aquacultural facilities along the coast of Chile.

Congratulations to the award winners at the Biology Graduate Student Association organized Annual Graduate Research Symposium in April. **Clarissa Molina**, who was mentored by Dr. Jim Bednarz won the 1st place in poster presentation, **Carleigh Stein** from Dr. Andy Gregory's Lab and **Craig W. McCain** from Dr. Jaime Jimenez's Lab won the 2nd place in poster presentations, **Saifun Nahar** from Dr. Pam Padilla's Lab won the 1st place in oral presentation, **Lindsey Daniel** from Dr. Warren Burggren's Lab won the 2nd place in oral presentation and **Cameron Emadi** from Dr. Ed Mager's Lab won the Art Competition.

Undergraduate Awards and Scholarships

The Clifton C. and Henryetta C. Doak Scholarship, which includes a $4,000 yearly scholarship, is awarded to incoming students to partially cover tuition and fees. The purpose of this scholarship, which is renewable for four years, is to have students invest more time in their academic activities, thus reducing their time to graduation and increasing their ability to earn higher grade point averages. This scholarship will enable them to better compete for jobs and enter excellent graduate and professional school programs. The recipients of this year's scholarship are **Kiran Dualla**, **Esperanza Hinojos**, **Joyradyn James-Rollins**, and **Emily Kelly**.

Twelve students were beneficiaries of **The David R. Redden Scholarship,** which included a $2,000 award. The awardees were **Olivia Compton**, **Allison Horton**, **Sophia Lee**, **Anatalie Nguyen**, **Matthew Nguyen**, **Mikella Nguyen**, **Isabelle Parry**, **Joshua Tabadero**, **Laci Nelson**, **Maya Emeir**, **Heline Kakel**, and **Jorge Garza**. David Redden taught physiology at UNT for over 40 years. He was the pre-med advisor in the department for decades and shepherded dozens of UNT's students through their undergraduate programs into medical and dental schools. He had a passion for sharing his knowledge with students and helping them to begin their careers.

John Morrow was the recipient of the **Robert H. and Jimmie G. Nobles Scholarship,** which included a $1,500 award. Dr. Nobles and his wife supported UNT for many years. They specifically loved Ecology and the Elm Fork program that is hosted in the EESAT building.

The Gladys H. Crawford Scholarship, which includes a $1,000 award was given to **Kristina Lovrien**, **Nhi Nguyen**, **Sheridan Allen**, **Abida Raheem**, and **Alexandra Drake**. Gladys worked in the Department of Biological Sciences at UNT for over 50 years. She was an undergraduate student in Biological Sciences and after graduation she managed the Medical Technology program and guided hundreds of students at UNT through the program into their clinical rotations.

Alyssa Rudolph and **Ashnoor Imran** were recipients of the **Eric P. S Ho Scholarship**, which included a $1,000 award. Dr. Ho graduated from UNT with a MS in Basic Health Sciences, a BS in Medical Technology, and a B.S. in Biology.

Nicole Quintero was the beneficiary of the **James R. (Tad) Lott** Scholarship**,** which included a $500 award. Tad Lott was a longtime physiology teacher in UNT's Department of Biological Sciences. He was loved for his humor and wit. His A&P class was infamous – those students that passed got to wear a T-shirt with "I survived Dr. Lott's A&P class." He was unique and is still missed by those who knew him**.**

Dulce Gonzales was the recipient of the **Tracy Lynn Quay Memorial Scholarship**, which included a $500 award. Tracy received a BS in Biology at UNT and worked at UT Southwestern Medical School in cancer research, where she had a productive career**.**

The Isom Eugene "Gene" Medford Scholarship, which includes a $500 award was made to **Haley Patton**. Gene graduated from North Texas State Teachers College in the Biological Sciences. He furthered his studies at the University of Chicago, never forgetting his experiences at North Texas State. Gene served in WWII as a meteorologist; however, he dedicated his life to teaching high school.

Other scholarship recipients included, **Alondra Rivera Burgos** who received the **Blomstrom Scholarship,** which included a $500 award, and **Christian Youseff**, **Claire Spann**, **Megan Whitley**, and **Issabella Santiago** who received the **Paramount/Outstanding Senior Scholarship** that provided a $100 award.

Congratulations to Ecology Undergraduate Students **Clarissa Molina and Brooke Poplin** who won first place student presentation awards at UNT Scholars Day 2022. Clarissa Molina won first place for her research poster entitled "Female Painted Bunting movement patterns." Brooke Poplin won first place for her oral presentation entitled "Foraging behavior of American Kestrels is influenced by external temperature in North Texas." Dr. Jim Bednarz is Clarissa's and Brooke's research mentor.

Brooke Poplin, Jim Bednarz, and Clarissa Molina

Student Success Initiatives


Transfer Student Success Initiative Program

The **Transfer Student Success Initiative Program** in the Department of Biological Sciences works with our community college transfer students to improve retention and success, while simultaneously reducing time for completion. It connects our transfer students with our advising team and engages them before and after transfer to UNT. As part of this program, a Meet and Greet session with other transfer students and advisors was held on April 15th in conjunction with Graduate Research Day. Faculty member, Jaclyn Cobb, from Collin College and two of her students came for Graduate Research Day, met with the advisor and graduate student and took a tour of the campus.

Staff and Student News


BGSA committee members (from left to right) Rob Whyle, Shannon Collins, Jordan LaChance, and Amira Rasoul

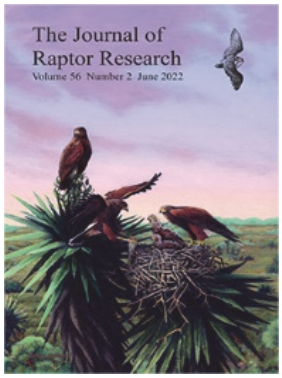
Biology Graduate Student Association: The Biology Graduate Student Association (BGSA) is a student-run organization that advocates for the interests of the Department of Biological Science's graduate students and provides a networking tool to promote professional collaboration and social relationships among labs. BGSA has elected its office bearers for FY2023. Congratulations to the incoming BGSA committee: **Shannon Collins** (President), **Rob Whyle** (Vice President), **Amira Rasoul** (Treasurer) **Jordan LaChance** (Secretary), **Maddy Kaleta** (Social Media Representative). A special thanks to the outgoing committee members, Ambarish Kumar (President), Ben Hendrickson (Vice President), Chris Melendez (Treasurer), Shannon Collins (Secretary), and Alexis Auzenne (Social Media Representative).

Congratulations to undergraduate students working in Dr. Elinor Lichtenberg's Lab for being elected on the UNT SER (Society for Ecological Restoration) board. They are **Isaac Eastland**, President; **Marie Muñiz**, Historian; **Brand Richter**, Liaison; **Brandon Meadows**, Treasurer.


Angela Stoeckman and Lily Saar

Dr. Kent Chapman's Lab is hosting two summer researchers, **Angela Stoeckman** is returning from Bethel University in Minnesota and **Lily Saar**, an undergraduate intern from Lycoming College in Pennsylvania. Both will be here through the end of July.

Biology Research News



A paper coauthored by former UNT graduate student Andrea Gibbons and Dr. Jim Bednarz, along with Cornell University Student Samantha Hagler, was featured on the cover of the June 2022 issue of the Journal of Raptor Research. The paper is entitled "Nest Provisioning and Sociality at Harris's Hawk Nests in South Texas." The research quantified the number of prey deliveries and the types of prey delivered between the nests of hawks breeding in cooperative groups and hawks breeding in pairs. Nests with more nestlings received more frequent prey deliveries, but that there was no difference in prey diversity or total prey deliveries between pairs and groups. The results of this study suggested that cooperative hunting by groups of Harris's Hawks did not provide any measurable benefits in terms of food delivered to nestlings during the spring and summer breeding season in south Texas contrary to some hypotheses in the literature. Read the full article and find out more about the research at https://doi.org/10.3356/JRR-21-39

A paper coauthored by UNT alumni Dr. Syeda Alam (PhD 2021) and Dr. Joe Louis (PhD 2011), current graduate student Zulkarnain Chowdhury, and Drs Sujon Sarowar, Hossain Mondal, and Ragiba Makandar who completed their postdoctoral training at UNT under the mentorship of Dr. Jyoti Shah was featured on the cover issue of Molecular Plant Pathology. This paper entitled "Opposing effects of *MYZUS PERSICAE- INDUCED LIPASE 1* and jasmonic acid influence the outcome of *Arabidopsis thaliana–Fusarium graminearum* interaction", which was first published online in April 2022, uncovered an important relationship between a plant lipase and the plant hormone jasmonic acid that is involved in cross-kingdom interaction between plants and *Fusarium graminearum*. *F. graminearum* is an ascomycetous fungus that is the causal agent of Fusarium head blight, a devastating disease of wheat and barley. This work was funded by grants from USDA and NSF to Dr. Shah. Read the full article and find out more about the research at https://doi.org/10.1111/mpp.13216

Thesis and Dissertation


Fabrizio Bonatesta


Jessica Shrestha

Congratulations to our graduate students who successfully defended their thesis/dissertation.

Fabrizio Bonatesta successfully defended his PhD dissertation titled "Acute toxicity of crude oil exposures to early life stage teleosts: contribution of impaired renal function and of select environmental factors". Fabrizio's major professor was Dr. Edward Mager. Fabrizio is working as an Environmental Science Senior Analyst at Abt Associates.

Jessica Shrestha successfully defended her PhD dissertation, "Regulation of Receptors in Neuronal Cilia with Development, Seizures, and Knockouts: Implications for Excitability". Her major professor was Dr. Jannon Fuchs. Jessica is now Project Scientist in Biomarkers & Pathology with Charles River Laboratories. She leads the development of assays for drug discovery and manages research collaborations with major pharmaceutical companies.


Sara Wilmsen

Sara Wilmsen successfully defended her PhD dissertation "Multi-level Effects of Oxygen Exposure in Endothermic Insects". Her major professor was Dr. Ed Dzialowski. She will be starting a post-doc position at Virginia Tech in the Fall with Dr. Jake Socha.

Extramural Grants and Contracts

Checklist Development and Conservation Status Assessment of Texas Native Bees. US Fish and Wildlife Service. PI: Elinor Lichtenberg (UNT); PC – Winton (TPWD), $200,000

Greenhouse-based production of fungal-derived medicines. W.M. Keck Foundation. Elizabeth Skellam (PI); Co-PI: Ana Paula Alonso, Kent D. Chapman, Michael Carroll. $1,400,000. July 1, 2022- June 30, 2025.

Publications

Alam, S.T., Sarowar, S., Mondal, H.A., Makandar, R., Chowdhury, Z., Louis, J., Shah, J. (2022) Opposing effects of *MYZUS PERSICAE- INDUCED LIPASE 1* and jasmonic acid influence the outcome of *Arabidopsis thaliana–Fusarium graminearum interaction*. (2022) Molecular Plant Pathology. 23, 1141-1153. First published April 9, 2022. https://doi.org/10.1111/mpp.13216

Archer, L., Mondal, H.A., Behera, S., Twayana, M., Lous, J., Nalam, V.J., Keereetaweep, J., Chowdhury, Z., Shah, J. (2022) Interplay between *MYZUS PERSICAE-INDUCED LIPASE 1* and OPDA signaling in controlling green peach aphid infestation on Arabidopsis thaliana. BioRxiV. doi: https://doi.org/10.1101/2022.07.08.499389

Barros, J., Shrestha H.K., Serrani-Yarce J.C., Engle, N., Abraham, P.E., Tschaplinski, T.J., Hettich, R.L., Dixon, R.A. (2022) Proteomic and metabolic disturbances in lignin modified *Brachypodium distachyon*. Plant Cell. https://doi:10.1093/plcell/koac171

Fenyk, S., Woodfield, H.K., Romsdahl, T.B., Wallington, E.J., Bates, R.E., Fell, D.A., Chapman, K.D., Fawcett, T., Harwood, J.L. (2022) Overexpression of phospholipid: diacylglycerol acyltransferase in Brassica napus results in changes in lipid metabolism and oil accumulation. Biochemical Journal. 479(6): 805–823. https://doi.org/10.1042/BCJ20220003

Flueck, W.T., Smith-Flueck, J.A.M., Escobar, E.M., Zuliani, M., Fuchs, B., Geist, V., Heffelfinger, J., Black-Decima, P., Gizejewski, Z., Vidal, F., Barrio, J. Molinuevo, M.S., Monjeau, J.A., Hoby, S., and Jiménez, J.E. (2022) Loss of migratory traditions makes the endangered Patagonian huemul deer a year-round refugee in its summer habitat. Conservation 2:322-348. https://doi.org/10.3390/conservation2020023

García, T., Arias, C., Gomez-Cano, F., Mukundi, E., Alonso, A.P., Grotewold, E. (2022) Natural variation and improved genome annotation of the emerging biofuel crop field pennycress (*Thlaspi arvense*). G3. https://doi.org/10.1093/g3journal/jkac084

Guan, M., Li, C., Shan, X., Chen, F., Wang, S., Dixon, R.A., Zhao, Q. (2022) Dual mechanisms of coniferyl alcohol in phenylpropanoid pathway regulation. Frontiers in Plant Science 13:896540. https://doi:10.3389/fpls.2022.89654

Hagler, S.J., Gibbons, A., Bednarz, J.C., Clark, W.S., and Bonter, D.N. (2022) Nest Provisioning and Sociality at Harris's Hawk Nests in South Texas. Journal of Raptor Research 56:161–170. https://doi.org/10.3356/JRR-21-39

Johnston, C., García Navarrete, L. T., Ortiz, E., Romsdahl, T. B., Guzha, A., Chapman, K. D., Grotewold, E., Alonso, A. P. (2022) Effective mechanisms for improving seed oil production in pennycress (Thlaspi arvense L.) highlighted by integration of comparative metabolomics and transcriptomics. Front. Plant Sci. https://doi.org/10.3389/fpls.2022.943585

López-Malvar, A., Santiago, R., Souto, X.C., Barros, J., Gómez, L.D., Malvar, R.A. Cell Wall Composition Impacts Structural Characteristics of the Stems and Thereby Biomass Yield. Journal of Agricultural and Food Chemistry, 70, 3136-3141. https://doi.org/10.1021/acs.jafc.1c06986

Lu, N., Jun, J.H., Liu, C., Dixon, R.A. (2022) Flexibility of proanthocyanidin biosynthesis in plants. Plant Physiology https://doi.org/10.1093/plphys/kiac274

Lusk, H.J., Neumann, N., Colter, M., Roth, M.R., Tamura, P., Yao, L., Shiva, S., Shah, J., Schrick, K., Durrett, T., and Welti, R. (2022) Lipidomic analysis of Arabidopsis T-DNA insertion lines leads to identification and characterization of C-terminal alterations in FATTY ACID DESATURASE6. Plant Cell and Physiol. https://doi.org/10.1093/pcp/pcac088

Nath S., Henard J.M., Henard C.A. (2022) Optimized Tools and Methods for Methanotroph Genome Editing. In: Skellam E. (eds) Engineering Natural Product Biosynthesis. Methods in Molecular Biology, vol 2489. Humana, New York, NY. https://doi.org/10.1007/978-1-0716-2273-5_21

Pacheco, L.F., Iriarte, A., Llerena-Reátegui, G., Luque-Machaca, H.A., Núñez, Á., Villalobos, R., and Jiménez, J.E. (2022) Predation on livestock in the Altiplano of Bolivia, Chile and Perú, a regional problem that requires joint actions. Pp. 233-260, in Valladares-Faúndez, P., G. Aragón Alvarado and Á. Garitano-Zavala (eds.). Topics in transboundary Biodiversity, Chile, Perú and Bolivia. RIL editors, Santiago, Chile.

Phillippi, D.T., Daniel, S., Nguyen, K.N., Penaredondo, B.A., Lund, A.K. (2022) Probiotics Function as Immunomodulators in the Intestine in C57Bl/6 Male Mice Exposed to Inhaled Diesel Exhaust Particles on a High-Fat Diet. Cells 11(9): 1445. https://doi.org/10.3390/cells11091445

Starr, V.J. and Dzialowski, E.M. (2022) Developing chicken cardiac muscle mitochondria are resistant to variations in incubation oxygen levels. Current Research in Physiology. 5: 151-157. https://doi.org/10.1016/j.crphys.2022.03.001

Twayana, M., Girija, A.M., Mohan, V., Shah, J. (2022) Phloem: At the center of action in plant defense against aphids. Journal of Plant Physiology. 273, 153695. https://doi.org/10.1016/j.jplph.2022.153695

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Vu, H.S., Shiva, S., Samarakoon, T., Li, M., Sarowar, MaryS., Roth, M.R. Tamura, P., Honey, H., Lowe, K., Porras, H., Prakash, N., Roach, C.A., Stuke, M., Wang, X., Shah, J., Gadbury, G., Wang, H., Welti, R. (2022) Specific changes in Arabidopsis thaliana rosette lipids during freezing can be associated with freezing tolerance. Metabolites. 12, 385. https://doi.org/10.3390/metabo12050385

Wang, R., Lu, N., Liu, C., Qing Wu, Q., Mao, Y., Yang, Y., Zheng, X., He, L., Zhao, B., Zhang, F., Yang, S., Chen, H., Jun, J.H., Li, Y., Liu, C., Liu, Y., Dixon, R.A., Chen, J. (2022). MtGSTF7, activated by the MYB transcription factor LAP1, specifically participates in anthocyanin accumulation in *Medicago truncatula*. Journal of Experimental Botany, 73, 4129-4146. https://doi.org/10.1093/jxb/erac112

Yu, K., Dixon, R.A., Duan, C. (2022) A role for ascorbate conjugates of (+)-catechin in proanthocyanidin polymerization. Nature Communications 13, 3425. https://doi.org/10.1038/s41467-022-31153-2

Oral Presentations

Barros, J. Global Metabolic Responses to Lignin Pathway Perturbations in Grasses. Interdisciplinary Plant Group Symposium, University of Missouri, Columbia, MO, May 25, 2022. Talk by Jaime Barros.

Bonatesta, F., L. Schneider, V. Messerschmidt, J. Lee, A. Lund, and E. Mager. Acute Exposure of Early Life Stage Zebrafish (Danio rerio) to Deepwater Horizon Crude Oil Impairs Glomerular Filtration and Renal Fluid Clearance Capacity. Society of Environmental Toxicology and Chemistry, South Central Regional Meeting, Corpus Christi, TX. April, 2022.

Dixon, R. Lignin research- past, present and future. US Department of Energy Center for Bioenergy Innovation Annual Science Meeting, Asheville, NC, June 21, 2022. Talk by Richard Dixon.

Emadi, C., P. Bean, and E. Mager. Assessing Fish Swimming Performance to Inform Stream Crossing Design and Barrier Prioritization. Texas Chapter of the American Fisheries Society Annual Meeting, Hunt, TX. May, 2022

Lichtenberg E. M. Pollinator biodiversity and pollination in human-dominated landscapes. Division of Biology, Texas Women's University. April 2022. Invited seminar by Dr. Elinor Lichtenberg.

Nath, S. Biogas conversion to plastic precursors by methanotroph *Methylotuvimicrobium alcaliphilum* 20Z. BioDiscovery Institute Seminar, University of North Texas, Denton, TX, May 2, 2022. Talk by Sreemoye Nath (graduate student in Henard Lab).

Shah, J. Abietane diterpenoids: a new twist to their function in plants. Invited seminar by Jyoti Shah at Department of Plant Pathology, University of Kentucky, April 18, 2022.

Poster Presentations

Barros, J., Shrestha H.K., Serrani-Yarce J.C., Engle, N., Abraham, P.E., Tschaplinski, T.J., Hettich, R.L. and Dixon, R.A. Proteomic and metabolic disturbances in lignin modified *Brachypodium distachyo*n. US Department of Energy Center for Bioenergy Innovation Annual Science Meeting, Asheville, NC.

Emadi, C., F. Bonatesta, and E. Mager. Modulation of Hemoglobin Isoform mRNA Expression in Daphnia magna in Response to Lead and Hypoxia Co-Exposure. Society of Environmental Toxicology and Chemistry, South Central Regional Meeting, Corpus Christi, TX. April, 2022

Esnay, N. (2022) SEIPIN gene interactions during lipid droplet biogenesis. Poster presentation and a Talk at the Advisory Board Meeting for BDI, May 2022

Evers, J.F., Ayre, B.G. (2022) Testing phloem-specific expression of the sucrose transporter AtSUC2 in the passive symplastic loader *Populus tremula* x *Populus alba*. 18th Annual Biology Graduate Student Association Research Symposium, April 14-15, 2022, Denton, TX

Guzha, A. (2022) The overexpression of field pennycress seed oil related genes in the leaves of *Nicotiana benthamiana* for quantity and composition analysis. Poster presentation and a Talk at the Advisory Board Meeting for BDI, May 2022

Kaur, H., McGarry, R.C., and Ayre, B.G. Bast fiber development in *Gossypium hirsutum*. 18th Annual Biology Graduate Student Association Research Symposium, April 14-15, 2022, Denton, TX

LaChance, J., Sagun, J., Wallace, M., and Alonso, A.P. Metabolic Engineering to Improve Industrial Relevant Fatty Acids in *Physaria fendleri*. Federation Research Symposium, Online.

LaChance, J., Sagun, J., Wallace, M., and Alonso, A.P. Metabolic Engineering of *Physaria fendleri* to Improve Hydroxy-fatty Acid Content. 2022 Biology Graduate Student Association Symposium, Denton, TX. April, 2022.

LaChance, J., Sagun, J., Wallace, M., and Alonso, A.P. A Multi-omics Approach for Improving Hydroxy-Fatty Acid (HFA) production by *Physaria fendleri*. 2022 BioDiscovery Institute Advisory Board Meeting, Denton, TX. May, 2022.

Lin, YT., McGarry, R.C., and Ayre, B.G. (2022) Genetic induction of somatic embryogenesis in Gossypium hirsutum using embryogenesis regulators. 18th Annual Biology Graduate Student Association Research Symposium, April 14-15, 2022, Denton, TX

Nair, S., Girija, A., Shah, J. Identification and Characterization of Genes Functioning with *HR4, a* Newly Identified Gene Conferring Resistance to the Green Peach Aphid. International Science and Engineering Fair, Atlanta, Georgia, May 7-13, 2022; Poster presented remotely.

Rippamonti, J.R. and Dzialowski, E.M. Contractile response of avian ductus arteriosus to chronic elevated oxygen levels. Experimental Biology, Philadelphia, PA. April, 2022.

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