



Awards and Recognitions

Congratulations to **Dr. Jannon Fuchs**, she has been selected as the sole recipient of the 2023 CUR (Council of Undergraduate Research) Goldwater Scholar Faculty Mentor Award. For years, Jannon has been actively involved in providing research opportunities in her lab to undergraduates. Some of her mentees have received the prestigious Goldwater Scholarship. In addition, as a member of UNT's Goldwater Scholarship Faculty Nominating and Mentoring Committee, she has played a prominent role in nominating several UNT students for the Goldwater Scholarship.

University Distinguished Research Professor **Dr. Warren Burggren** received the UNT Foundation's 2023 Research Leadership Award. This award is given to a full-time University faculty member whose research excellence and leadership at UNT has made substantial contribution to their respective discipline and achieved national and/or international recognition. Dr. Burggren will be honored at UNT's Salute to Faculty Excellence event taking place on April 23, 2023.

Congratulations to **Ryan O'Shaughnessy** for receiving the 2023 UNT Staff Excellence in Research Award! Ryan is the first recipient of this award, which recognizes the contributions of a staff member who provides excellent service to our research enterprise. As the Scientific Instrument Technician Supervisor in the Department of Biological Sciences, Ryan ensures that facilities and equipment that are critical for research, and the general functioning of the department, are well maintained and functioning. He also attends to all emergencies in the department and is the department's liaison with UNT facilities. His services are vital for our research.

Taylor Knight, Office Support Associate in the Department of Biological Sciences was recipient of UNT's Star Performer Award. The UNT Star Performer Award program provides recognition to staff and faculty administrator members who have made outstanding contributions to the values of the University. Taylor ensures that the departments needs in travel, room reservations, faculty/staff hiring, reimbursements, and other administrative needs are met in a timely manner. The efficient and effective service provided by Taylor ensures that we can all focus on our jobs.

Clarissa Molina, currently a undergraduate student in the environmental science program, who this fall will be joining the Biology MS program to continue working in Dr. Andrew Gregory's lab, has received a National Science Foundation Graduate Research Fellowship 2023 in the Ecology category for her MS work on the Rio Grande Wild Turkey in Texas in Life Sciences.

Madeline (Maddy) Hannappel was recently awarded a prestigious National Science Foundation Postdoctoral Research Fellowship in Biology. Maddy expects to finish her Ph.D. at UNT during the 2023 Fall semester. Her major professor is Dr. James H. Kennedy.

Congratulations to Texas Academy of Mathematics and Science (TAMS) students conducting research in Biology labs for winning big at the recently concluded 2023 Fort Worth Science and Engineering Fair (FWSERF), which was held in February (<https://fwrsef.org/>). **Aneesh Mazumder** earned several scholarships and awards for his research. His collaborative project, "Utilizing Machine Learning Techniques to Investigate the Role of Primary Cilia in Aging and Alzheimer's Disease" was accepted for presentation at the Texas State Science & Engineering Fair, the 8th International Conference on Public Health, and Lightning Talks at IEEE MIT Undergraduate Research Technology Conference. His advisors were Drs. Jannon Fuchs and Lin Li. Aneesh will continue undergraduate neuroscience research next year at Harvard University.

Shreya Nair, a TAMS researcher in Dr. Jyoti Shah's lab won the 1st Place Award in the Plant Sciences Category for her project "Understanding the Mechanism of Resistance Against Green Peach Aphid in Arabidopsis Imparted by a Newly Identified Gene - HR4". Shreya worked under the mentorship of Dr. Anil Girija, postdoctoral associate in the Shah lab. This is the second consecutive year that Shreya has won this competitive award.

Sonia Sheth, a first year TAMS student, was awarded 1st place in Senior category for her research in Dr. Jannon Fuchs' lab for her project "Reactive Astrocytes and their Cilia Signaling in Alzheimer's Disease". This award was sponsored by Lockheed Martin Aeronautics Company.



Dr. Jannon Fuchs



Dr. Warren Burggren



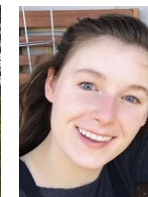
Ryan O'Shaughnessy



Taylor Knight



Clarissa Molina



Maddy Hannappel



Aneesh Mazumder



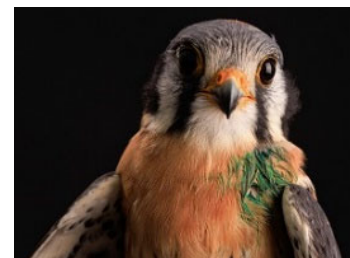
Shreya Nair



Sonia Sheth

Biology Research News

The cover photo of the Spring 2023 issue of the Audubon Magazine highlights the article "What is causing the perplexing decline of the American Kestrel?" featuring the field research of Maddy Kaleta and Dr. Jim Bednarz. More on the article and photos can be found at: <https://www.audubon.org/magazine/spring-2023/the-perplexing-decline-american-kestrel>



Faculty and Staff Service Awards

The following Department of Biological Sciences faculty and staff were recognized for their combined 230 years of service with the University of North Texas during the annual Service Awards event on March 8, 2023. CONGRATULATIONS to all our Service Award honorees!

Celebrating 5 years

Taylor Knight
Novita Rahman

Celebrating 10 years

Dr. Antonella Longo
Dr. Amie Lund
Dr. Umesh P. Yadav
Dr. Brian McFarlin
(COE)
Wendy Risdon (COS)

Celebrating 15 years

Dr. Ione Hunt von
Herbing
Rebecca Petrusky
Dr. Jyoti Shah

Celebrating 20 years

Dr. Pamela Padilla

Celebrating 30 years

Dr. Nicoladie Tam

Celebrating 35 years

Dr. James "Jim"
Kennedy

Celebrating 40 years

Dr. Art Goven



Left to Right: Wendy Risdon, Novita Rahman, Rebecca Petrusky and Dr. Jyoti Shah at the 2022 Service Awards Ceremony

Faculty and Staff Appointments

University distinguished Teaching Professor **Dr. Lee Hughes** was appointed Associate Dean of Undergraduate Studies for the College of Science. "I have learned a lot in this position while serving as Interim Associate Dean over the last nine months and I am happy to continue in this role," he said. "I look forward to continuing to work with our great faculty and staff to improve the undergraduate experience and academic success for students in the College of Science." More on Dr. Lee's appointment can be found at <https://cos.unt.edu/news/dr-lee-hughes-named-cos-associate-dean-undergraduate-studies>.

Dr. Feng Gu has joined the Department of Biological Sciences as Assistant Professor of Neurobiology. Dr. Gu earned his MD from Weifang Medical University in 2002 and attended Xiangya School of Medicine at Central South University for his MS in Neurology. He received his PhD from the University of Houston in 2013. Before joining UNT, Dr. Gu worked as a postdoctoral fellow and research scientist at Stanford University. His research is focused on the mechanisms underlying the development of epilepsy and Alzheimer's disease, as well as brain damage and repair following stroke or trauma.

Dr. Gaëlle Antoine has joined the Department of Biological Science and the BioDiscovery Institute as a Postdoctoral Researcher in Dr. Kent Chapman's Lab. She is from France and did her PhD in plant physiology at the University of Reunion Island, in collaboration with two French research institutes, IRD and CIRAD. Her thesis was about the biological role and the biosynthesis of coffee seed diterpenes and she is currently working on the greenhouse production of fungi derived antibiotics in the Chapman Lab.

Rachel Hilz has joined the BioDiscovery Institute as a Proposal Manager. Rachel grew up in Argyle, TX and earned her B.B.A. in Finance and Marketing. She continued her education at Baylor University in Waco, TX to earn her M.B.A. from the Robbins Institute for Healthcare Policy and Leadership. After graduating from Baylor, Rachel worked in the private sector for a medical device startup in a variety of roles including legal, investor relations, financial, marketing, and market research. She found a passion for proposal management and public funding for education in her most previous role at a large, successful IT Networking VAR in the DFW metroplex. Now settled in Northlake, TX with her family, Rachel is excited to join UNT in supporting grant funding efforts for the BDI and looks forward to learning and growing in her career here.

Dr. Salim Makni has joined the Department of Biological Science and the BioDiscovery Institute as a Postdoctoral Researcher in Dr. Ana Alonso's lab in February 2023. He obtained his PhD in plant biology in November 2022. He was studying the connection between lipid metabolism and circadian clock in plants using a combination of lipidomic and transcriptomic approaches in clock mutants. He was involved in other side-projects related to plant biology (<https://www.scopus.com/authid/detail.uri?authorId=57211332909>). His current research, funded by NIH, consists in identifying the carbon substrates that are feeding *Histoplasma Capsulatum* (human fungal pathogen) during macrophage infection. The combination of ¹³C-labeling experiments and fluxomic/dynamic approaches will help to decipher the metabolic pathways active in yeast during macrophage infection.



Dr. Lee Hughes



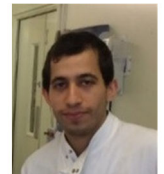
Dr. Feng Gu



Dr. Gaëlle Antoine



Rachel Hilz



Dr. Salim Makni

Student and Staff News

The Diamond Eagles Society has selected the **UNT Pollinative Prairie** to receive \$77,500 in funding for a new expansion project that will enhance outdoor learning, conservation, and community event opportunities at the four-acre site at UNT's Discovery Park! "[We] are thrilled to build the Diamond Eagles Community Learning Area!" said **Dr. Jaime Baxter-Slye**, who has been the staff advisor for the Pollinative Prairie since the project began in 2016. "The pavilion, walkway, and dock will provide better access and shade to all who would like to enjoy this wonderful nature area. We can't wait to provide tours and hold classes under the pavilion. Thank you very much to the Diamond Eagles for your support and partnership!" Learn more about the next steps for the project and the history of the UNT Pollinative Prairie at <https://cos.unt.edu/news/unt-pollinative-prairie-selected-receive-2023-diamond-eagles-society-funding>



Left: UNT SER, UNT Bird Campus, and the Pollinative Prairie Committee all together for workdays. Right: Chione "Kiwi" Lawton, Dr. Jaime Baxter-Slye and Kymie Criswell

Thesis and Dissertation

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

Ayah Al Qaryoute successfully defended her Ph.D. dissertation titled “Role of microRNAs in Zebrafish Thrombopoiesis”. Her major professor was Dr. Pudur Jagadeeswaran. Currently she is in the process of finding a job that is related to her PhD training and medical background combined. Ayah was also selected as the winner of the UNT Faculty Senate’s Outstanding Teaching Assistant Award.



Ayah Al Qaryoute

Sabrina Moore

Sabrina Moore successfully defended her Ph.D. dissertation titled “The Impacts of Invasive Salmonids on Ecosystem Functioning in South America’s Sub Antarctic Inland and Marine Waters”. Her major professor was Dr. James H. Kennedy. Sabrina Moore has accepted a tenure-track Assistant Professor of Biology position at Presbyterian College, Clinton, South Carolina, beginning with the 2023-2024 academic year.

Extramural Grants and Contracts

Formation of cotton bast fiber as a means to modulate carbon capture and increase bio-product utilization. USDA NIFA AFRI Foundational Program. PIs – Ayre and McGarry, \$294,000

Redesigning the cotton plant’s architecture to improve yield and quality. Cotton Incorporated: National Program. PIs – Ayre and McGarry, \$25,000

Pest- and pathogen-resistant cotton through gene editing. Cotton Incorporated: National Program. PIs – Ayre and McGarry, \$25,000

Publications

Arias-Gaguancela O, Aziz M, Chapman KD. Fatty acid amide hydrolase and 9-lipoxygenase modulate cotton seedling growth by ethanolamide oxylipin levels. *Plant Physiol.* 2023 Feb 12;191(2):1234-1253. doi: 10.1093/plphys/kiac556. PMID: 36472510

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Bonatesta, F., V. Messerschmidt, L. Schneider, J. Lee, A. Lund and E. Mager. (2023) Acute Exposure of Early Life Stage Zebrafish (*Danio rerio*) to Deepwater Horizon Crude Oil Impairs Glomerular Filtration and Renal Fluid Clearance Capacity. *Environmental Science and Pollution Research.* 30, 21990–21999.

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Castro-Moretti FR, Cocuron JC, Castillo-Gonzalez H, Escudero-Leyva E, Chaverri P, Guerreiro-Filho O, Slot JC, Alonso AP. A metabolomic platform to identify and quantify polyphenols in coffee and related species using liquid chromatography mass spectrometry. *Front Plant Sci.* 2023 Jan 6;13:1057645. doi: 10.3389/fpls.2022.1057645. eCollection 2022. PMID: 36684722

Chaput, S.-L., Burggren, W., Hurd, P. and Hamilton, T. (2023) Zebrafish (*Danio rerio*) shoaling in light and dark conditions involves a complex interplay between vision and lateral line. *Behavioral Brain Research.* 439:114228

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Ferreira, S.S., Anderson, C.E., Antunes, M.S. (2023) A logical way to reprogram plants. *Biochemical and Biophysical Research Communications* 654: 80-86. <https://doi.org/10.1016/j.bbrc.2023.02.080>

Fichman Y, Xiong H, Sengupta S, Morrow J, Loog H, Azad RK, Hibberd JM, Liscum E, Mittler R. Phytochrome B regulates reactive oxygen signaling during abiotic and biotic stress in plants. *New Phytol.* 2023 Mar;237(5):1711-1727. doi: 10.1111/nph.18626. Epub 2022 Dec 8. PMID: 36401805

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Sagun JV, Yadav UP, Alonso AP. Progress in understanding and improving oil content and quality in seeds. *Front Plant Sci.* 2023 Jan 26;14:1116894. doi: 10.3389/fpls.2023.1116894. eCollection 2023. PMID: 36778708

Sengupta S, Azad RK. Leveraging comparative genomics to uncover alien genes in bacterial genomes. *Microb Genom.* 2023 Jan;9(1):mgen000939. doi: 10.1099/mgen.0.000939. PMID: 36748570

Wilmsen, S.M. and Dzialowski, E.M. (2022) Changes in growth and developmental timing in *Manduca sexta* when exposed to altered oxygen levels. *Arthropod Structure and Development.* 72: January 2023 101231. <https://www.sciencedirect.com/science/article/abs/pii/S1467803922000925>

Oral Presentations

Applying natural mobility factors to enhance meristem-based gene editing with RNA viruses. BioDiscovery Institute Seminar Series, University of North Texas, Denton, TX, March 6, 2023. Invited seminar by Harrison Higgs. Co-authors, M. Antunes, B.G. Ayre, and R.C. McGarry.

AWARE: Advancing Weeds as Alternative Renewable Energy. Physiology & Molecular Plant Biology Seminar Series, University of Illinois, Urbana-Champaign, IL, February 15th 2023. Invited seminar by Dr. Ana Paula Alonso.

Early life stage exposure to Deepwater Horizon crude oil impairs kidney development and function in fish. Invited seminar, Texas Women's University, February 17, 2023. E. Mager.

Early life stage exposure to Deepwater Horizon crude oil impairs teleost osmoregulation by altering kidney development and function. Texas Chapter of the American Fisheries Society Annual Meeting, Corpus Christi, TX, February 25, 2023. E. Mager, F. Bonatesta, C. Emadi, A. Khursigara, L. Schneider, J. Lee, A. Lund, and A. Esbaugh.

Fungal leaf endophytes enrich functional metabolomes in wild Coffee. BioDiscovery Institute (BDI) seminar, Spring semester, Mar. 27, 2023. Digar Singh.

Investigations of the winter and migration ecology of a north Texas population of American Kestrels: survival, behavior, and the full annual cycle. Integrated Population Model and Decision Science American Kestrel Workshop, Albuquerque, New Mexico, February 1, 2023. Invited presentation by Jim Bednarz. Co-authors, Kelsey S. Biles (former Ph.D. student), Madeleine Kaleta (M.S. student), Heather E. Bullock (undergraduate student), and Brooke Poplin (M.S. student).

Investigations of cooperative hunting and the social behavior in Harris's Hawks and other raptors – the past, present, and future. Department of Biology, University of Oklahoma, Norman. March 29, 2023. Invited seminar by Jim Bednarz. Co-authors, Andrea Gibbons (former M.S. student), and Ken Levenstein.

Plant cell wall engineering- prospects and problems. Hagler Institute for Advanced Studies and Department of Biological Sciences, Texas A and M University, College Station, TX. March 21, 2023. Oral Presentation by Richard Dixon.

Revealing the Biochemical Pathways Using Dynamic ¹³C Labeling in Pennycress Silicles: A Promising Source of Aviation Fuel. Gordon Research Conference 2023 on Plant Lipids Structure, Metabolism, and Function, January 31st 2023. Flash Talk by Dr. Umesh P. Yadav. Co-authors: Trevor B. Romsdahl, Kent D. Chapman, and Ana P. Alonso.

Role of HR4 and its interactors in Arabidopsis defense towards the green peach aphid, *Myzus persicae* Oral presentation by Dr. Anil Girija at the 2023 ASPB Southern Section Annual meeting, Fayetteville, AR; March 25 to 27, 2023. Co-authors: Shreya Nair, Beatriz Alapatt, Siddhartha Shah, Moon Twayana, and Jyoti Shah.

Using ¹³C to Map the Pathways Leading to Industrially Relevant Fatty Acids. 2023 Gordon Research Seminar & Conference on Plant Lipids: Structure, Metabolism and Function, Galveston, TX, February 1st 2023. Talk by Dr. Ana Paula Alonso. Co-author: Jean-Christophe Cocuron.

Using Structural Modeling and in Planta Complementation Studies to Unravel the Alternating-Access Mechanism in Plant NPFs. 2023 Meeting of the Southern Section of the American Society of Plant Biologists, March 25-27, 2023, Fayetteville, Arkansas. Invited talk by Dr. Antonella Longo. Co-authors, Yao-Chuan Yu (former Ph.D. Student) Rebecca Dickstein.

Poster Presentations

Boucher, T., Bednarz, J., and Gregory, A. (2023). Avian community responds positively to prairie and emergent wetland restoration at Riverby Ranch mitigation area in North Texas. Annual Texas Chapter of the Wildlife Society Meeting, Houston, TX 21-23 February 2023.

Gage, A., Bednarz, J., and Gregory, A. (2023). Mating mystery: a closer look at the breeding ecology of the Painted Bunting. Annual Texas Chapter of the Wildlife Society Meeting, Houston, TX 21-23 February 2023.

Johnston, C. R., and Alonso, A. P. (2023) Investigating the metabolic framework behind cytosolic ACCase and plastidic malic enzyme interaction in *Physaria fendleri*. 2023 Gordon Research Conference on Plant Lipids: Structure, Metabolism and Function, Galveston, TX, January 29-February 03, 2023.

Kaleta, M., Biles, K., Bednarz, J., and Gregory, A. (2023). Connecting the dots: documenting the full annual period movement patterns of migrant American Kestrels. Annual Texas Chapter of the Wildlife Society Meeting, Houston, TX 21-23 February 2023.

Mager, E., Price, E., Bonatesta, F., McGruer, V., Schlenk, D., and Roberts, A. (2023) Exposure of Zebrafish larvae to water accommodated fractions of

weathered crude oil alters steroid hormone concentrations with minimal effect on cholesterol. South Central SETAC Annual Meeting, Denton, TX.

Maneekul, J., Hughes, R., Labry, F., Saito, J., and Hughes, L.E. (2023). Investigating Novel *Streptomyces* Bacteriophage Endolysins as Potential Antimicrobial Agents. Texas Branch- American Society for Microbiology Spring Meeting, Abilene, TX.

Poplin, B., Bednarz, J., and Biles, K. (2023). Foraging behavior of American Kestrels (*Falco sparverius*) is influenced by the time of day and external temperature in North Texas. Annual Texas Chapter of the Wildlife Society Meeting, Houston, TX 21-23 February 2023.

Rasoul, A., Alonso AP. (2023). Evaluating the Biosynthetic Efficiency and Metabolic Fluxes of *fae1-3* Pennycress (*Thlaspi arvense*). 2023 Gordon Research Seminar & Conference on Plant Lipids: Structure, Metabolism and Function, Galveston, TX, January 28-February 03, 2023.

Sagun, J.V., LaChance, J., Wallace, M., Guzha, Chapman, K.D., and Alonso, A.P. (2022). An effective strategy for improving hydroxy- fatty acid production by *Physaria fendleri*. 2023 Gordon Research Seminar & Conference on Plant Lipids: Structure, Metabolism and Function, Galveston, TX, January 28-February 03, 2023.

Yadav, U.P., Romsdahl, T.B., Chapman, K.D. Alonso, A.P. (2023) Revealing the Temporal and Spatial Organization of Storage Lipids Using ¹³C-Labeling and Mass Spectrometry Imaging in Developing Embryos of Pennycress. 2023 Gordon Research Seminar & Conference on Plant Lipids: Structure, Metabolism and Function, Galveston, TX, January 28-February 03, 2023.

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