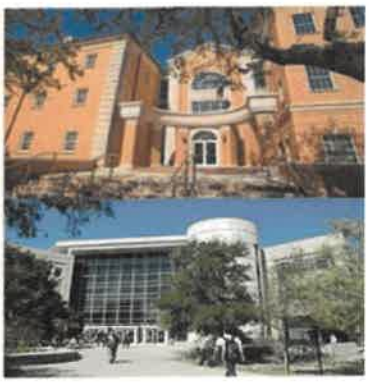
UNT
COLLEGE OF SCIENCE
Department of
Biological Sciences

BIOsphere

December 2023 Volume 10 Issue 4



Awards and Recognitions

Department of Biological Sciences faculty **Drs. Richard Dixon, Warren Burggren, Vladimir Shulaev, Jyoti Shah, Kent Chapman, Guenter Gross (retired), and Thomas Beitinger (retired)** were included in the ranking of world's top 2% cited researchers in their specialty areas over their careers. In addition, Drs. **Richard Dixon, Vladimir Shulaev, Warren Burggren, Jyoti Shah, Kent Chapman**, were included among the top 2% ranking for a single year (2022). The ranking method is based on standardized citation metrics developed by John P.A. Ioannidis at Stanford University (Ioannidis, John P.A. 2023. October 2023 data-update for "Updated science-wide author databases of standardized citation indicators"", Elsevier Data Repository, V6, doi: 0.17632/btchxktzyw.6. **Dr. Richard Dixon** was also named the Clarivate Analytics Highly Cited Researcher for 2023. Highly Cited Researchers have demonstrated significant and broad influence reflected in their publication of multiple highly cited papers over the last decade. These highly cited papers rank in the top 1% by citations for a field or fields and publication year in the Web of Science™. Of the world's population of scientists and social scientists, Highly Cited Researchers™ are 1 in 1,000.


Dr. Richard Dixon


Dr. Warren Burggren


Dr. Vladimir Shulaev


Dr. Jyoti Shah


Dr. Kent Chapman


Dr. Jaime Baxter-Slye

Dr. Jaime Baxter-Slye, who is a member of the University of North Texas Bird Campus Committee, was awarded the 2023 Audubon on Campus Raven Award for Mentor of the Year. The "Raven Award - Mentor of the Year" recognizes a faculty or staff member currently serving as an advisor to a campus chapter or Audubon ambassador. The advisor nominee is someone who has been a visible and integral part of the success of the campus chapter/Audubon ambassador by providing continuous support and contributing to the growth and development of the campus chapter/ Audubon ambassador. **Ashley Giron**, an undergraduate in the UNT Bird Campus Committee, accepted the award on behalf of Dr. Baxter. Ashley was also the recipient of the Audubon on Campus travel scholarship to attend the 2023 Audubon on Campus Leadership Conference in Colorado.

In appreciation of their service to the department and its students, **Kandice Green,** Inventory specialist in the Department of Biological Sciences were recipient of the December 2023, the COS Excellence in Mastering Challenges Continuously ($E=mc^2$) Staff Award. The $E=MC^2$ award was established by Dean Quintanilla to recognize outstanding efforts among full-time staff members within the College of Science and its departments. More on Kandice's award can be found at: https://cos.unt.edu/news/kandice-green-receives-december-cos-emc%C2%B2-award.


Kandice Green with
Dean Dr. John Quintanilla

Avery Pearson, MS student won 1st place for Entomological Society of America President's Prize for best graduate student presentation, "Synergies and tradeoffs in conserving diverse pollinators: a traits-based approach". It was presented at the Entomological Society of America Annual Meeting, Fort Washington, MD, USA, November 6, 2023. Her Co-authors were Shannon M. Collins (MS student), L. A. Taylor, E. M. Lichtenberg.

Spencer Lee from Dr. Calvin Henard's laboratory won 1st place for his poster presentation "*Carbonic anhydrase expression improves carbon conversion efficiency in the biocatalyst Methylococcus capsulatus str. Bath*" in the general microbiology graduate student category at the American Society for Microbiology Texas Branch Fall meeting.


Spencer Lee


Sreemoye Nath

Isha Mittal at the 2023 National Fusarium Head Blight forum

Sreemoye Nath from Dr. Calvin Henard's laboratory won 1st place for her poster presentation "*The effect of elevated atmospheric CO_2 on methanotrophic bacteria in upland soil*" in the environmental microbiology graduate student category at the American Society for Microbiology Texas Branch Fall meeting.

Isha Mittal, graduate student in the Department of Biological Sciences and BDI received the 2nd prize in poster award for graduate students at the 2023 National Fusarium Head Blight (FHB) forum, which was held in Cincinnati on December 3-5, 2023. As part of this competition, Isha competed with graduate students from across the country and was required to participate in a pre-meeting virtual interview, and present a 3 min flash and dash talk in addition to her poster. Isha's mentor is Dr. Jyoti Shah.


Elle Rogers


Mahith Ravulapati


Etash Bhat


Dr. Calvin Henard

The second annual UNT international genetically engineered machine (iGEM) team consisting of Department of Biological Sciences undergraduates **Elle Rogers, Logan Yu, Mahith Ravulapati, Etash Bhat, Jayla Reedy** and mentors **Spencer Lee** and **Dr. Calvin Henard** earned a bronze medal for their presentation titled "*Engineering methanotrophs for the synthesis of value-added products*" at the iGEM Grand Jamboree in November. The iGEM team is sponsored by a National Science Foundation award to PI Henard. Find out more: https://2023.igem.wiki/unt/team

The UNT Society of Ecological Restoration (SER) took 13 students to the Texas Society for Ecological Restoration meeting in El Paso, Oct 2023 with a Raupe Undergraduate Travel Scholarship. They won Best Undergraduate Poster and Best Undergraduate Oral Presentation and were delighted to spend the eclipse with retired UNT Research Scientist Dr. Ken Steigman.


UNT SER won Best Undergraduate Poster and Best Undergraduate Oral Presentation

Faculty Transitions to New Positions

Dr. Yingqi Cai

Dr. Yingqi Cai was reclassified from postdoc to a Research Assistant Professor. She received her Ph.D. in Biochemistry and Molecular Biology at the University of North Texas and was a postdoctoral research associate at Brookhaven National Laboratory. Her research interests include understanding the regulation of plant lipid metabolism, studying the mechanism of lipid droplet biogenesis, and engineering value-added bioproducts in plant tissues. Recently, Dr. Cai (as CoPI) was awarded a research grant from the U.S. Department of Energy, together with Dr. Kent Chapman (PI), to elucidate the cellular machinery for packaging energy-rich hydrophobic compounds in plants and its application in developing sustainable bioproducts.

Dr. James Bednarz

Dr. James Bednarz was reclassified from a Principal Lecturer to a Clinical Associate Professor. He and his students have been active involved in research since he joined UNT in 2016. This reclassification will better credit both his graduate and undergraduate researchers for their scholarly contributions to UNT and will further facilitate his ability to apply for grants to support his research and that of his students. He plans to continue working with both graduate and undergraduate students on his long-term ecological studies on American Kestrels, Harris's Hawks, and Painted Buntings.

Faculty News

Dr. James Bednarz participated in Osher Lifelong Learning Institute (OLLI) at UNT podcast discussing his current research including the breeding ecology of a local Painted Bunting population and the wintering biology of the American Kestrel! Episode 93: Avian Ecology with Dr. James Bednarz was made available in early December 2023. This podcast will give you a deeper look into the professional and personal lives of various members of the OLLI at UNT community. You can listen to the podcast interview with Dr. Jim Bednarz at: https://olli.unt.edu/podcast

Thesis and Dissertation

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

Brandt Smith

Jindanuch Maneekul

Alyssa G. Becnel successfully defended her Undergraduate Honors Thesis titled, "Distribution of larval Chironomidae in river ecosystems on Navarino Island, Sub-Antarctic region of Chile". Her major professor was Dr. James H. Kennedy.

Brandt Smith successfully defended his PhD dissertation titled "The Effect of Developmental Hypoxia on Cardiac Physiology in Three Species: *Alligator mississippiensis, Chelydra serpentina, and Danio rerio*". He will be working as a Post-doc for the next few years at UT southwestern. Brandt's major advisor was Dr. Dane Crossley.

Jindanuch Maneekul successfully defended her PhD dissertation titled "Investigating Novel *Streptomyces* Bacteriophage Endolysins as Potential Antimicrobial Agents". She is currently working as a postdoctoral associate at the Structural Biology Department, School of Medicine, University of Pittsburgh. Jin's major advisor was Dr. Lee Hughes.

Maddy Hannappel

Maddy Kaleta

Katie Vasquez successfully defended her MS thesis in Environmental Science titled "Using Macroinvertebrates to Assess Aquatic Macrophyte Restoration in Austin, Texas Resevoirs Post Hydrila Invasion". Her major professor was Dr. James H. Kennedy. Katie is an Aquatic Biologist for the US Army Corp of Engineers.

Madeline (Maddy) Hannappel successfully defended her PhD dissertation titled "Factors affecting MeHg contamination of spiders and insect-mediated MeHg flux from human-made ponds". Maddy was awarded the NSF Postdoctoral Research Fellowship in Biology and will start her fellowship in February at the California Academy of Sciences, San Francisco, CA. Her major advisor was Dr. James H. Kennedy.

Maddy Kaleta successfully defended her MS thesis titled "Annual Survivorship and Movement Ecology of Migrant American Kestrel (*Falco sparverius*) Overwintering in North Texas on November 14, 2023. Her major advisors were Drs. Jim Bednarz and Andy Gregory. Maddy is currently interviewing for a number of natural resource-related positions in avian ecology with public agencies and awaiting job offers.

Ronika De successfully defended her PhD dissertation titled "Identification and functional characterization of Genomic Islands: Application to *Pseudomonas aeruginosa* PAO1". Her major advisor was Dr. Rajeev Azad. Through her research work, she has acquired knowledge on the development and application of tools using machine learning approaches and NGS based pipelines to get insights into genes and processes associated with pathogenicity. In the future, she plans to apply her skills and learn new ones as a Bioinformatics Scientist in a clinical setting.

Ronika De

Saifun Nahar

Moon Twayana

Saifun Nahar successfully defended her PhD dissertation titled "Glucose-induced developmental delay is modulated by insulin signaling and exacerbated in subsequent glucose-fed generations in *Caenorhabditis elegans*." Her major advisor was Dr. Pamela Padilla.

Moon Twayana successfully defended her PhD dissertation titled "Role of *Arabidopsis thaliana HR4* in plant defense against the green peach aphid" on November 28, 2023. Moon's Major Professor was Dr. Jyoti Shah. She has been working with True Paleo Inc., as a Website Content Manager and Research Analyst. She will be graduating in Spring 2024.

Thank You Notes from Students

Lee Hughes


Dr. Lee Hughes

Thank you for providing the opportunity to learn about research hands-on. I appreciate your generosity in letting inexperienced students into your lab and the feedback you give at the end of presentations. I've been interested in genomics, and having my phage selected for sequencing is an incredible feeling. This class inspired me to keep researching as an undergrad. I'm looking forward to learning more. Thank you!

-Ifeabia Okororie

Extramural Grants and Contracts

Native Bee Support Initiative. $6,770. UNT We Mean Green Fund. Staff Advisor to student project members Benjamin Copeland, Caitlin McAdoo, and Brie Poe. Raise awareness of native bees on campus, pollinator decline, and provide native bee habitat/housing on the UNT campus. 2023 – present.

The Pond Project: Diamond Eagles and Pollinative Prairie Community Learning Area Phase III. $7589.08. UNT We Mean Green Fund. Staff Advisor to student project members Abby Heath, Nicholas Medina, Brand Richter, and Katie Vasquez. Promotes conservation of native aquatic vegetation on campus. 2023 – present.

Publications

Almalki F, Sunuwar J, Azad RK. (2023) Using machine learning to predict genes underlying differentiation of multipartite and unipartite traits in bacteria. Microorganisms. 2023 Nov 13;11(11):2756. doi: 10.3390/microorganisms11112756. PMID: 38004767

Archer L, Mondal HA, Behera S, Twayana M, Patel M, Louis J, Nalam VJ, Keereetaweep J, Chowdhury Z, Shah J. (2023) Interplay between *MYZUS PERSICAE-INDUCED LIPASE 1* and OPDA signaling in limiting green peach aphid infestation on *Arabidopsis thaliana*. J Exp Bot. 2023 Nov 21;74(21):6860-6873. doi: 10.1093/jxb/erad355. PMID: 37696760

Bagley JR, Tan Y, Zhu W, Cheng Z, Takeda S, Fang Z, Arslan A, Wang M, Guan Y, Jiang L, Jian R, Gu F, Parada I, Prince D, Jentsch JD, Peltz G. Neuron Navigator 1 (Nav1) regulates the response to cocaine in mice. Commun. Biol. 2023 Oct 18;6(1):1053. doi: 10.1038/s42003-023-05430-9. PMID: 37853211

Baker CR, Cocuron JC, Alonso AP, Niyogi KK. Time-resolved systems analysis of the induction of high photosynthetic capacity in Arabidopsis during acclimation to high light. New Phytol. 2023 Dec;240(6):2335-2352. doi: 10.1111/nph.19324. Epub 2023 Oct 17. PMID: 37849025

Burggren WW, Mendez-Sanchez JF. "Bet hedging" against climate change in developing and adult animals: roles for stochastic gene expression, phenotypic plasticity, epigenetic inheritance and adaptation. Front Physiol. 2023 Oct 6;14:1245875. doi: 10.3389/fphys.2023.1245875. eCollection 2023. PMID: 37869716

Cai J., Longo A. and Dickstein R. (2023) Expression and mutagenesis studies in the *Medicago truncatula* iron transporter MtVTL8 confirm its role in symbiotic nitrogen fixation and reveal amino acids essential for transport. Frontiers in Plant Science 14:1306491. doi: 10.3389/fpls.2023.1306491. https://www.frontiersin.org/articles/10.3389/fpls.2023.1306491

Cannon, A.E., Horn, P.J. (2023). The molecular frequency, conservation and role of reactive cysteines in plant lipid metabolism. Plant and Cell Physiology-Special Issue in Plant and Algal Lipids. Pcad163 doi.org/10.1093/pcp/pcad163

Coxe T, Azad RK. Silicon versus Superbug: Assessing Machine Learning's Role in the Fight against Antimicrobial Resistance. Antibiotics (Basel). 2023 Nov 8;12(11):1604. doi: 10.3390/antibiotics12111604. PMID: 37998806

Crossley JL, Smith B, Tull M, Elsey RM, Wang T, Crossley DA 2nd. Hypoxic incubation at 50% of atmospheric levels shifts the cardiovascular response to acute hypoxia in American alligators, *Alligator mississippiensis*. J Comp Physiol B. 2023 Oct;193(5):545-556. doi: 10.1007/s00360-023-01510-8. Epub 2023 Aug 24. PMID: 37615772

Cummins JB, Crossley DA 2nd. Cardiovascular physiology of embryonic neotropic cormorants (*Phalacrocorax brasilianus*). Comp Biochem Physiol A Mol Integr Physiol. 2024 Jan;287:111539. doi: 10.1016/j.cbpa.2023.111539. Epub 2023 Oct 24. PMID: 37884170

De R, Whiteley M, Azad RK. A gene network-driven approach to infer novel pathogenicity-associated genes: application to *Pseudomonas aeruginosa* PAO1. mSystems. 2023 Nov 3:e0047323. doi: 10.1128/msystems.00473-23. Online ahead of print. PMID: 37921470

Dorey, J., Chesshire, P., Bolaños, A., O'Reilly, R., Bossert, S., Collins, S., Lichtenberg, E., Tucker, E. M., Smith-Pardo, A., Falcon-Brindis, A., Guevara, D., Ribeiro, B., Pedro, D. D., Fischer, E., Pickering, J., Hung, K., Parys, K., McCabe, L., Rogan, M., Minckley, R., Velazco, S., Grisswold, T., Zariillo, T., Jetz, W., Sica, Y., Orr, M., Guzman, L., Ascher, J., Hughes, A., Cobb, N. (2023) A globally synthesized and flagged bee occurrence dataset and cleaning workflow. Scientific Data. 10: 747. https://www.nature.com/articles/s41597-023-02626-w

Flueck, W.T., Smith-Flueck, J.M., Escobar, M.E., Zuliani, M.E., Fuchs, B., Heffelfinger, J.F., Black-Decima, P., Gizejewski, Z., Vidal, F., Barrio, J., Molinuevo, S.M., Monjeau, J.A., Hoby, S. & Jiménez, J.E. 2023. Review of historical and zooarchaeological data to trace past biogeographic distribution of endangered huemul (*Hippocamelus bisulcus*) to enhance conservation strategies. Conservation 3:569-594.

Fuchs, J.L. (2023) Undergraduate Research: Why and How Do We Mentor? Scholarship and Practice of Undergraduate Research 7(1): 21-24. Fall 2023 issue. doi: 10.18833 https://www.cur.org/journal-issue/fall-2023/

Hanauer, D.I., Zhang, T., Graham, M.J., Adams, S.D., Ahumada-Santos, Y.P., Alvey, R.M., Antunes, M.S., Ayuk, M.A., Báez-Flores, M.E., Bancroft, C.T., Bates, T.C., Bechman, M.J., Behr, E., Beyer, A.R., Bortz, R.L., Bowder, D.M., Briggs, L.A., Brown-Kennerly, V., Buckholt, M.A., Bullock, S.K., Butela, K.A., Byrum, C.A., Caruso, S.M., Chia, C.P., Chong, R.A., Chung, H.-M., Clase, K.L., Coleman, S.T., Parks, C.D., Conant, S.B., Condon, B.M., Connerly, P.L., Connors, B.J., Cook-Easterwood, J.E., Crump, K.E., D'Elia, T., Dennis, M.K., DeVeaux, L.C., Diacovich, L., Duffy, I., Edgington, N.P., Edwards, D.C., Egwuatu, T.O.G., Eivazova, E.R., Fallest-Strobl, P.C., Fillman, C.L., Findley, A.M., Fisher, E., Fisher, M.R., Fogarty, M.P., Freise, A.C., Frost, V.J., Gainey, M.D., Garcia Costas, A.M., Garza, A.A., Gavin, H.E., Ghittoni, R., Gibb, B., Golebiewska, U.P., Grinath, A.S., Gurney, S.M.R., Hare, R.F., Heninger, S.G., Hinz, J.M., Hughes, L.E., Jayachandran, P., Johnson, K.C., Johnson, A.A., Kanther, M., Kenna, M., Kirkpatrick, B.L., Klyczek, K.K., Kohl, K.P., Kuchka, M., LaPeruta, A.J., Lee-Soety, J.Y., Lewis, L.O., Lindberg, H.M., Madden, J.A., Markov, S.A., Mastropaolo, M.D., Mathur, V., McClory, S.P., Merkhofer, E.C., Merkle, J.A., Michael, S.F., Mitchell, J.C., Molloy, S.D., Monti, D.L., Mussi, M.A., Nance, H., Nieto-Fernandez, F.E., Nissen, J.C., Nsa, I.Y., O'Donnell, M.G., Page, S.T., Panagakis, A., Parra-Unda, J.R., Pelletier, T.A., Perez Morales, T.G., Peters, N.T., Phuntumart, V., Pollenz, R.S., Preuss, M.L., Puthoff, D.P., Raifu, M.K., Reyna, N.S., Rinehart, C.A., Rocheleau, J.M., Rossier, O., Rudner, A.D., Rueschhoff, E.E., Ryan, A., Saha, S., Shaffer, C.D., Smith, M.A.V., Sprenkle, A.B., Strong, C.L., Sunnen, C.N., Tarbox, B.P., Temple, L., Thoemke, K.R., Thomas, M.A., Tobiason, D.M., Tolsma, S.S., Torruellas Garcia, J., Valentine, M.S., Vazquez, E., Ward, R.E., Ward, C.M., Ware, V.C., Warner, M.H., Washington, J.M., Westholm, D.E., Wheaton, K.A., Wilkes, B.M., Williams, E.C., Biederman, W.H., Cresawn, S.G., Heller, D.M., Jacobs-Sera, D., Hatfull, G.F., Asai, D.J., and V. Sivanathan. (2023) Models of classroom assessment for course-based research experiences. *Frontiers in Education*, 8. https://doi.org/10.3389/feduc.2023.1279921.

Horn, P.J., Chapman K.D. (2023). Imaging plants in situ. Journal of Experimental Botany- Special Issue in Plant Metabolism. erad423 doi.org/10.1093/jxb/erad423

Jaksic, F.M., Zurita, C., Briceño, C. & Jiménez, J.E. (2013). The rare Fuegian fox (*Lycalopex culpaeus*) from the Tierra del Fuego Archipelago: History of discovery, geographic distribution, and socio-ecological aspects. Revista Chilena de Historia Natural.

Johnson JA, Novak B, Athrey G, Sharo AG, Chase T, Toepfer J. Phylogenomics of the extinct Heath Hen provides support for sex-biased introgression among extant prairie grouse. Mol Phylogenet Evol. 2023 Dec;189:107927. doi: 10.1016/j.ympev.2023.107927. Epub 2023 Sep 14. PMID: 37714443

Lichtenberg, E. M., Milosavljević, I., Campbell, A. J., Crowder, D. W. (2023) Differential effects of soil conservation practices on arthropods and crop yields. Journal of Applied Entomology. 147: 931-940. https://onlinelibrary.wiley.com/doi/10.1111/jen.13188

McDaniel EL, Atkinson SF, Tiwari C. Quantifying the land and population risk of sewage spills overland using a fine-scale, DEM-based GIS model. PeerJ. 2023 Nov 20;11:e16429. doi: 10.7717/peerj.16429. eCollection 2023. PMID: 38025695 Free PMC article.

Pusadkar V, Azad RK. Benchmarking metagenomic classifiers on simulated ancient and modern metagenomic data. Microorganisms. 2023 Oct 2;11(10):2478. doi: 10.3390/microorganisms11102478. PMID: 37894136 Free PMC article.

Quedan D, Singh R, Akel A, Bernardino AL, Thang C, Bhaskaruni M, Haldankar A, Tanner BCW, Root DD. Cooperative & competitive binding of anti-myosin tail antibodies revealed by super-resolution microscopy. Arch Biochem Biophys. 2023 Oct 1;747:109753. doi: 10.1016/j.abb.2023.109753. Epub 2023 Sep 14. PMID: 37714251

Oral Presentations

City of Lewisville's Big Move Extending the Green: Phase I Garden Ridge Native Median Conversion. Almaguer N., Cantu J., Lawton C., Montanez K., Baxter-Slye JL., Chastain C., Gallegos M., and Anaya S. (2023) Undergraduate oral presentation, Texas Chapter of The Society for Ecological Restoration Annual Meeting, El Paso, TX.

Desalination Concentrate as a Potential Resource for Inland Aquaculture. C. Emadi, F. Dos Santos Neto, E. Mager, B. Smithers, X. Li, and M. Acevedo. U.S. Bureau of Reclamation, Annual Water Innovations and Networking Workshop, Alamogordo, NM, Oct. 24-25, 2023.

Facilitation of *Fusarium graminearum* invasiveness by 9-lipoxygenase. Talk presented by Dr. Jyoti Shah at the NIFA-AFRI Project Director's Meeting, National Harbor, Maryland. November 4, 2023

Fueling the Future: A Multi-omics Analysis of Tailored Fatty Acid Composition in Pennycress for Jet Fuel. BioDiscovery Institute Seminar series, University of North Texas, Denton, TX, United States of America, November 27th, 2023. Invited seminar by Amira Rasoul.

Into the realm of Harris's Hawk: unraveling social dynamics through VHF telemetry in south Texas. Annual Meeting of the Raptor Research Foundation, Albuquerque, New Mexico, October 21, 2023 by Brooke A. Poplin. Coauthors, W.S Clark, A. Gregory, and J.C. Bednarz.

Mechanisms underlying host plant interaction with *Fusarium graminearum*, the causal agent of Fusarium head blight in wheat. Invited talk by Dr. Jyoti Shah at the University of Maryland, Department of Plant Sciences and Landscape Architecture. November 3, 2023.

Metabolomics on Histoplasma capsulatum Reveals Pathogenic Mechanisms. BioDiscovery Institute Seminar Series, Denton, Texas, United States, November 27, 2023. Invited seminar by Adrian Heckart.

Metabolic Engineering of *Physaria fendleri* to improve hydroxy-fatty acid content. Biodiscovery Institute Seminar Series, Denton, Texas, United States, October 2, 2023. Invited seminar by Jordan LaChance.

Plant Biotechnology in the 21st Century. Texas Woman's University, Denton, TX. December 1, 2023. Invited seminar by Dr. Mauricio Antunes (virtual).

Synergies and tradeoffs in conserving diverse pollinators: a traits-based approach. Entomological Society of America Annual Meeting, Fort Washington, MD, USA, November 6, 2023. Talk by Avery Pearson (MS student). Co-authors, Shannon M. Collins (MS student), L. A. Taylor, E. M. Lichtenberg.

The effect of roadside noise and pairing status on the foraging success of wintering American Kestrels in north Texas. Annual Meeting of the Raptor Research Foundation, Albuquerque, New Mexico, October 21, 2023 by Heather E. Bullock. Coauthors, K. Biles, J.R. Bohenek, and J.C. Bednarz.

University of North Texas Tree Inventory and Canopy Assessment: An Applied Student Research Project. Richter B., Thomas S., Rutherford M., Heath A., Wooley, M., and Baxter-Slye, J. (2023). Undergraduate oral presentation, Texas Chapter of The Society for Ecological Restoration Annual Meeting, El Paso, TX. *Best Undergraduate Oral Presentation Award*

Unraveling an anomaly: non-direct migration of a male American Kestrel (E/78) and its implications for understanding the annual cycle. Annual Meeting of the Raptor Research Foundation, Albuquerque, New Mexico, October 20, 2023 by Madeleine Kaleta. Coauthors, S. Kimball and J.C. Bednarz.

Winter refuge in the lone star state: examining American Kestrels' habitat use in north Texas. Annual Meeting of the Raptor Research Foundation, Albuquerque, New Mexico, October 19, 2023 by James C. Bednarz. Coauthors, M Kaleta, K Biles, and B. Poplin.

Poster Presentations

Alatoum, M. (2023) Abietane diterpenoids contribute to the induction of systemic acquired resistance in plants 2023, BioDiscovery Institute Seminar Series, Denton TX.

Al Olaimat, M. (2023) Visit2Vec: Embedding method for electronic health record data 2023, BioDiscovery Institute Seminar Series, Denton TX.

Antoine, G. Biosynthesis and Biological Role of Coffee Seed Diterpenes (2023) 2023, BioDiscovery Institute Seminar Series, Denton TX.

Dale, L., Henard, J.M., and Henard, C.A. *Paracoccus denitrificans* Boosts Growth of the Methanotroph *Methylococcus capsulatus*, American Society for Microbiology Texas Branch Fall Meeting, Stephenville, TX, October 2023.

Emadi, C., Dos Santos Neto, F., Smithers, B., Acevedo, M., and Mager, E. (2023) Toxicity Assessment and Real-Time Metabolic Trait Responses of Juvenile *Macrobrachium rosenbergii* to Ammonia Exposure at Different Salinities. Society of Environmental Toxicology and Chemistry North America Annual Meeting, Louisville, KY.

Fields, M. & Jiménez, J.E. (2023). Conservation of the Ruddy-headed Goose (*Chloephaga rubidiceps*) on its southernmost breeding ground. Poster Presented at the International Bird Observatory Conference, Veracruz, Mexico.

Girija, A. (2023) Identification and Characterization of Genes Functioning with HR3, a Gene Conferring Resistance to the Green Peach Aphid 2023, BioDiscovery Institute Seminar Series, Denton TX.

Guzha, A. (2023) A lipid droplet associated lipid transfer protein in pennycress (*Thlaspi arvense L.*) modulates neutral lipid abundance and deposition of cuticular waxes on some aerial organs 2023, BioDiscovery Institute Seminar Series, Denton TX.

Heath A., Nering C., Nichols S., Rutherford M., and Baxter-Slye JL. Organization, Engagement, and Impact of the University for North Texas Student Chapter of the Society for Ecological Restoration 2017 – 2023. Undergraduate poster presentation, Texas Chapter of The Society for Ecological Restoration Annual Meeting, El Paso, TX. *Best Undergraduate Poster Award*

Heckart, A. (2023) Metabolomics on Histoplasma Capsulatum Reveals Pathogenic Mechanisms 2023, BioDiscovery Institute Seminar Series, Denton TX.

Heckart, A., Ray, S.C., Cocuron, J.C., Rappleye, C.A., Alonso, A.P. (2023). Deciphering the Metabolism of Human Fungal Pathogen, Histoplasma capsulatum. 1st Annual Research Day, University of North Texas, Denton, Texas, United States.

Islam, M. A., Mittal, I., Shulaev, E., Girija, A., Scofield, S., Shah, J. Mutations in WhNPR3 and WhNPR4 increase resistance against *Fusarium graminearum* in Arabidopsis and Wheat. Poster presented by Dr. Md Ashraful Islam. 2023 National Fusarium Head Blight Forum, Cincinnati, Ohio; December 3-5, 2023.

Kent, A.C., Poplin, B., Bednarz, J.C., and Gibbons, A. Dispersal movements of marked Harris's Hawks amount territories in south Texas. Texas. Annual Meeting of the Raptor Research Foundation, Albuquerque, New Mexico, October 19, 2023

Lachance, J. (2023) Progress Towards: Metabolic engineering of *Physaria fendleri* to improve hydroxy-fatty acid content 2023, BioDiscovery Institute Seminar Series, Denton TX.

Lee, S.A., Henard, J.M., and Henard, C.A. Carbonic anhydrase expression improves carbon conversion efficiency in the biocatalyst *Methylococcus capsulatus* str. Bath, American Society for Microbiology Texas Branch Fall Meeting, Stephenville, TX, October 2023.

Longo, A. (2023) Expression and mutagenesis studies in the *Medicago truncatula* iron transporter MtVTL8 2023, BioDiscovery Institute Seminar Series, Denton TX.

Mahawaththa, I. & Jiménez, J.E. (2023). Small-scale tardigrade distribution: implications for sampling and biodiversity studies. Poster presented at the International Forum on Research Excellence, Long Beach, CA.

Mathis, K. (2023) Programming Cell Interactions with Light Using Oligonucleotides 2023, BioDiscovery Institute Seminar Series, Denton TX.

Medina N., Creswell K., Martinez J., McKinnis A., Rutherford M., Thompson M., and Baxter-Slye JL. (2023). Biodiversity of the Diamond Eagles Community and Learning Area: observational data of a 20-acre restoration project on an urban university campus. Undergraduate poster presentation, Texas Chapter of The Society for Ecological Restoration Annual Meeting, El Paso, TX.

Mercado, N. and Hughes, L.E. (2023). Functional Analysis of the Mycobacteriophage HicAB-like Toxin-Antitoxin System in Prophage Maintenance: A Novel Method Proposal. Texas Branch – American Society for Microbiology Fall Meeting, Stephenville, TX.

Mittal, I., Alam, S., Chabra, B., Shulaev, E., Mohan, V., Girija, A., Rawat, N., Dong, Y., Trick, H. N., Scofield, S., Shah, J. Dual RNA-Sequencing analysis of Lpx3-conferred resistance in Wheat during *Fusarium graminearum* infection. Poster presented by Isha Mitta. 2023 National Fusarium Head Blight Forum, Cincinnati, Ohio; December 3-5, 2023.

Mohanan, A. & Jiménez, J.E. (2023). How variable is tardigrade biodiversity to spatiotemporal change? A test at Clear Creek, Denton. Poster presented at the University of North Texas Research Day, Denton.

Morris, A.F., Miller, W.R., Atkinson, S.F. & Jiménez, J.E. (2013). Effects of urbanization on tardigrade diversities: Test of hypotheses. Poster presented at the International Forum on Research Excellence, Long Beach, CA.

Morrow J., Connor M., Richter B., Heath A., Bednarz J., and Baxter-Slye JL. (2023) The University of North Texas Bird Campus Committee: Student-Led

Avian Conservation and Education Initiatives on Campus. Undergraduate poster presentation, Texas Chapter of The Society for Ecological Restoration Annual Meeting, El Paso, TX

Nath. S., Henard, J.M., and Henard, C.A. The effect of elevated atmospheric CO_2 on methanotrophic bacteria in upland soil, American Society for Microbiology Texas Branch Fall Meeting, Stephenville, TX, October 2023.

Ozdemir, C (2023) Integrative Graph Convolutional Networks for Multi-View Graph Topology 2023, BioDiscovery Institute Seminar Series, Denton TX.

Pandey, S. (2023) MicroRNA-mediated Gene Regulatory Network Reconstruction and Inference Using Self-Supervised Graph-Based Method 2023, BioDiscovery Institute Seminar Series, Denton TX.

Poplin, B.A., Kaleta, M.G., Gregory, A, Gibbons, A, and Bednarz, J.C. The habitat composition of Harris' Hawk territories in south Texas. Annual Meeting of the Raptor Research Foundation, Albuquerque, New Mexico, October 19, 2023

Rasoul, A. (2023) Fueling the Future: A Multi-omics Analysis if Tailored Fatty Acid Composition in Pennycress for Jet Fuel Production 2023, BioDiscovery Institute Seminar Series, Denton TX.

Rasoul, A., Johnston C., and Alonso, A.P. (2023). Fueling the Future: A Multi-omics Analysis of Tailored Fatty Acid Composition in Pennycress for Jet Fuel. 1st Annual Research Day, University of North Texas, Denton, TX.

Shoyeb, M. (2023) Investigating gene expression pattern of miRNA395 and miRNA171 gene families in Arabidopsis 2023, BioDiscovery Institute Seminar Series, Denton TX.

Wheeler, D. & Jiménez, J.E. (2023). Challenges to protect birds in an urban wetland in southern Chile. Poster presented at the University of North Texas Research Day, Denton.

Yu. Y., Henard, J.M., and Henard, C.A. Carbon dioxide metabolism in the methanotroph *Methylococcus capsulatus* Bath, American Society for Microbiology Texas Branch Fall Meeting, Stephenville, TX, October 2023.

Zhuo, C. (2023) Hunting the Master Regulator of C-lignin Biosynthesis 2023, BioDiscovery Institute Seminar Series, Denton TX.

Zúñiga, A.H., Encina-Montoya, F. & Jiménez, J.E. (2023). [Monitoring of dogs and foxes in a protected area in south-central Chile: comparing two techniques.] 24th Argentinian Mammalogists' Conference, Jujuy, Argentina.

BIOsphere is a quarterly newsletter of the Department of Biological Sciences, University of North Texas

Physical Location
1511 West Sycamore
Life Sciences Complex
Denton, TX 76203-5017, USA

Phone (940) 565-3591
Web: https://biology.unt.edu/

Mailing Address
University of North Texas, Department of Biological Sciences
1155 Union Circle # 305220
Denton, TX 76203-5017, USA

Fax: (940) 565-3821
Facebook: https://www.facebook.com/untbiology