UNT COLLEGE OF SCIENCE Department of Biological Sciences

BIOsphere

September 2024 Volume 11 Issue 3

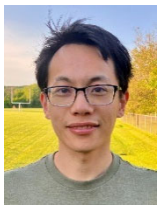
Faculty Promotions

Congratulations to Dr. **Lisa Welch** for her promotion to Senior Lecturer. Dr. Welch teaches Human Anatomy and Physiology I & II and Animal Physiology. She has also taught Biology for Majors I. As a faculty advisor she works with the Medical Laboratory Science students and affiliated clinical programs. What she enjoys most about her position is when student have that “ah ha” moment and the information clicks for them, and they can see the big picture and how it is made of all the details. In the future Dr. Welch would like to work more on curriculum, perhaps creating a new course in Reproductive Physiology. She would also like to work on one of the foundation courses that students are underperforming in a bring in methods including active learning, note taking, and study skills to make them more successful.

Lisa Welch

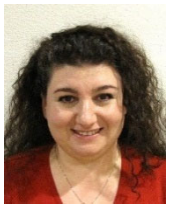
Faculty Appointments

Dr. Fanju Meng has joined the Department of Biological Sciences as an Assistant Professor. He received his Ph.D. in Genetics in 2018 and then completed his postdoctoral training from University of Rochester Medical Center (Rochester, New York). His research focuses on epigenetic regulation of gene expression during embryogenesis using zebrafish embryos as a model system. Dr. Meng’s Goggle Scholar link: https://scholar.google.com/citations?user=SCt51BIAAAAJ&hl=en



Dr. Fanju Meng

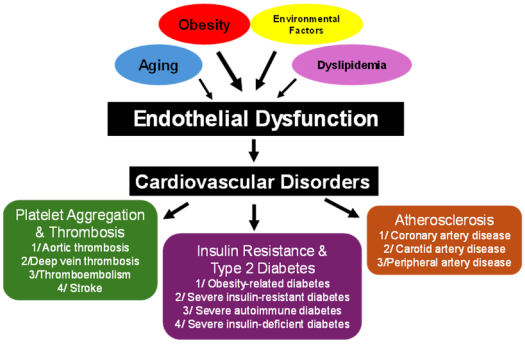
Dr. Rohan Balakrishnan



Dr. Anastasia Sacharidou

Dr. Rohan Balakrishnan has joined the Department of Biological Sciences as an Assistant Professor. He received his Ph.D. in Biochemistry at The Ohio State University where he studied the molecular mechanism of prokaryotic translation. During his Post doc at UC San Diego, he expanded his molecular training into developing a systems-level perspective of the bacterial cell. How are cellular functions like transcription, translation and growth-topics that are typically investigated in isolation, intrinsically tied to one another? At UNT, his lab will work to understand the fundamental relationships between these important cellular processes in growing and non-growing microbe and strive to apply these findings towards biotechnological applications. Dr. Balakrishnan’s Goggle Scholar link: https://scholar.google.com/citations?user=-UC9vYoAAAAJ&hl=en

Dr. Anastasia Sacharidou has joined the Department of Biological Sciences as an Assistant Professor. She received her B.Sc. in Cell and Molecular Biology from the University of Essex, UK, her M.Sc. in Molecular Medicine from Imperial College of London, UK, and her Ph.D. in Medical Pharmacology and Physiology from the University of Missouri, Columbia. She received her first postdoctoral training in Vascular Biology in the Dept. of Medical Pharmacology and Physiology at the University of Missouri-Columbia and her second post-doctoral training in Genetics of Vascular Diseases in the Dept. of Pediatrics at the UT Southwestern Medical Center. Upon completion of her postdoctoral training, she joined the faculty (Instructor) of the Center of Pulmonary and Vascular Biology in the Department of Pediatrics at UT Southwestern Medical Center. During her tenure as a junior faculty at UT Southwestern, she was honored with the Junior Investigator Award for Women from the Atherosclerosis, Thrombosis, and Vascular Biology Council at the American Heart Association. This recognition was a testament to her significant contributions in the fields of thrombosis and insulin resistance. The Sacharidou Lab’s unique research focus lies in the intersection of Cardiovascular Diseases, Genetics, and Gene Regulation. She is particularly interested in Endothelial Cell biology, signaling, gene dysregulation, and control of gene expression in both healthy and disease states. She aims to define novel signaling cascades in endothelial cells that contribute to the development of cardiovascular disorders. The focus is on 1/Insulin resistance and type 2 diabetes, 2/ Thrombosis, and 3/ Atherosclerosis. The new mechanistic and genetic knowledge gained will aim to identify novel targets for the development of therapeutic strategies, signaling a new era in the treatment of cardiovascular diseases. Dr. Sacharidou’s Google Scholar: https://scholar.google.com/citations?hl=en&user=Z1SH5jcAAAAJ



Dr. Jaime Baxter-Slye has joined the Department of Biological Sciences as a Clinical Assistant Professor. She graduated with her Ph.D. from UNT in 2013 under the direction of Dr. James Kennedy. Prior to being trained as a classical aquatic ecologist, she obtained a MS from Texas A&M - Kingsville, specializing in marine fish parasites. Since 2014, she has served as the Department of Biological Sciences Instructional Laboratory Supervisor and created the Ecology Laboratory. She built multiple programs and student organizations to enhance undergraduate experience and skills. In the Clinical Assistant Professor for Ecology Education position, she will continue to serve as an advisor for the UNT Society for Ecological Restoration, Mean Green Tree Team, Pollinative Prairie, Bee Campus, Bird Campus, and the UNT Sustainability Committee. Her laboratory, the Ecological Action Studio, will create undergraduate internship and outreach opportunities focused on healthy urban development using blue-green infrastructure to promote native Texas prairie, forest, and aquatic habitats within our rapidly growing north central Texas region. Dr. Baxter-Slye’s link tree is https://linktr.ee/baxterslye

Dr. Jaime Baxter-Slye

Dr. Nan Lu

Dr. Nan Lu, who is a member of the BioDiscovery Institute, has transitioned to Research Assistant Professor. Dr. Lu received his Ph.D. in Horticulture from Virginia Tech in 2013, and subsequently worked as a postdoc with Dr. Richard Dixon’s. His research is focused on understanding the biosynthetic pathway and regulatory mechanisms of condensed tannins, a family of plant specialized metabolites, in soybean and maize. Dr. Lu’s Google Scholar link: https://scholar.google.com/citations?user=ENBCvncAAAAJ&hl=en

Dr. Neal J. Smatresk has joined the Department of Biological Sciences as a Professor. He joined the University of North Texas in 2014, as its president, with a vision for leading the UNT to national prominence as the largest, most comprehensive university dedicated to meeting the needs of the dynamic North Texas region. Under his leadership, UNT has been named a Tier One research university by the Carnegie Classification, grown in enrollment to serve more than 47,000 students and earned designation as both a Minority-Serving and Hispanic-Serving Institution. As he returns to the classroom, he plans on working to support our students' interests in technology transfer, food science, and science education. Prior to coming to UNT, Smatresk served as president of UNLV.


Dr. Neal J. Smatresk


Dr. Nuzhat Farooqui

Dr. Nuzhat Farooqui has joined the Department of Biological Sciences as a Lecturer. Dr. Farooqui received her Ph.D. in Agriculture Microbiology from A.M.U, India in 2010. Before joining UNT she was teaching as an adjunct professor at Texas Woman's University, where she was nominated twice for the Star Teacher award (2018) and Red Bud Award (2024) for teaching excellence. As an educator she thinks beyond teaching in a classroom. Teaching is all about facilitating the students and bridging the gap that connects their true potential with the real world. She wants to inspire students to achieve their hopes and aspirations and want them to use whatever they learn in class and take it to real world and become a better citizen. She wants to contribute and make positive impact in their life. At UNT, she will be teaching courses in the area of Microbiology. Her other responsibility will be as a Faculty Advisor to undergraduates in the department.


Dr. Regina Oyesanya

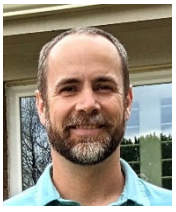

Dr. Lauren Bohenek

Dr. Regina Oyesanya has joined the Department of Biological Sciences family as a Senior Lecturer in Frisco. Dr. Oyesanya obtained her Ph.D. in biochemistry and molecular biology from the Virginia Commonwealth University in 2009, completed her postdoctoral training in molecular and cancer genetics at the Institute of Molecular Medicine, Medical College of Virginia, and is ASCP-certified in Medical Laboratory Sciences from George Washington University. She joined Norfolk State University (NSU) in Norfolk, Virginia as an Assistant Professor in 2012 and was an Associate Professor of Microbiology at NSU until 2019. Prior to UNT, Dr. Oyesanya worked as a medical laboratory technologist with Bon Secours Health Systems and taught biomedical courses at the George Washington University.

Dr. Lauren Bohenek has joined the Department of Biological Sciences as a Lecturer. Dr. Bohenek earned her Ph.D. in Biology at the University of Mississippi where her research focused on the physiological stress response of elasmobranchs to capture. Previously, she taught biology courses (Introductory Biology, Anatomy & Physiology, Genetics, and Conservation Biology) at the University of Texas at Arlington and Tarrant County College.

Staff Appointments

Gary Henson joined as a Scientific Instrument Technician. He is a UNT alumnus with a degree in Ecology. He has worked as a Senior Field Ecologist and Instrument Technician at Battelle working on the NEON project. Gary also has extensive experience as a zookeeper for the Fort Worth Zoo and looks forward to working with the Biology Department and Environmental Science Department on their instrumentation needs.


Gary Henson


Jenny Gnau

Jenny Gnau is a UNT alumni and now serves as the Department of Biological Sciences Instructional Laboratory Supervisor. She graduated with her M.S. in biology in 2017 studying aquatic toxicology in the lab of Dr. Aaron Roberts. Her thesis is titled, "Evaluating the role of UV Exposure and Recovery Regimes in PAH-Photo-Induced Toxicity to *Daphnia magna*". Prior to graduate school, Jenny obtained her B.S. in environmental science from the University of Central Arkansas where she studied aquatic ecology. In 2009, she worked on a research eradication project studying life history traits of the invasive fish, the Northern Snakehead, *Channa argus*. Jenny has worked in toxicology monitoring, has volunteered with GIS studies for The Nature Conservancy, has worked to improve local community gardens, and has taught Environmental Science for over 10 years. Now, her goal is to discover more ways to keep environmental studies relevant and engaging to students of all backgrounds. She seeks to facilitate how students understand their own interconnection of environmental studies. When her course is complete, Jenny hopes students leave with a better understanding of their own environments and how they ethically comprehend the impacts of their choices.


Dr. Nikita Bhatnagar


Dr. Xiaolu Wei

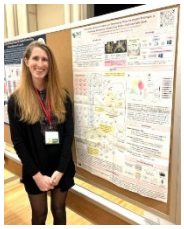
Dr. Nikita Bhatnagar joined Dr. Horn's Lab as a Postdoctoral Research Associate. She is a member of the BioDiscovery Research Institute. Dr. Bhatnagar obtained her Ph.D. in Plant Biotechnology and Molecular Biology from Kyung Hee University, South Korea and gained postdoctoral research experience at Purdue University in Indiana, Donald Danforth Plant Science Center in Missouri and University of Illinois-Urbana Champaign in Illinois. Her expertise covers hormone signaling, abiotic stress response, developmental biology and plant physiology while working with several C3 (*Arabidopsis*, *Brachypodium*, rice) and C4 (sorghum, sugarcane, miscanthus, *Setaria*) model and crop species. At the current position, she will be investigating the role of lipid signaling in plant stress responses to improve plant resilience.

Dr. Xiaolu Wei has joined the Department of Biological Sciences as a Postdoc Associate in Dr. Fanju Meng's Lab. She received her Ph.D. in Biomedical Genetics from University of Rochester in 2022, and worked as a Bioinformatics Analyst at the Genomics Research Center at University of Rochester Medical Center. Her research focuses on applying bioinformatics analysis with various genomic datasets to study embryonic development.

Student/Research Staff Awards and Scholarships

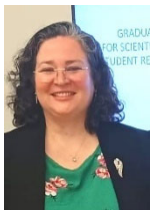
Amira Rasoul, Ph.D. student in Dr. Ana Alonso's Lab, and Jordan LaChance, MS student in Dr. Ana Alonso's and Dr. Mauricio Antunes' laboratory received the International Symposium on Plant Lipids (ISPL) Travel Award ($1,000), sponsored by the National Science Foundation (NSF) and the United States Department of Agriculture's National Institute of Food and Agriculture (USDA-NIFA). Additionally, Amira and Jordan received a UNT College of Science Graduate Student Travel Award ($500), a Toulouse Graduate Student Travel Award ($500), and a BioDiscovery Institute Travel Award ($500) to attend and present at ISPL in July 2024.


Amira Rasoul presenting her talk at the ISPL


Jordan LaChance at her poster at the ISPL

Thesis and Dissertation


Afnan Deebani


Claudia Gonzalez-Villarreal

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

Afnan Deebani successfully defended her Ph.D. Dissertation titled "Studies on the Role of Transmembrane Proteins in Hemostasis." Her major professor was Dr. Pudur Jagadeeswaran. She earned her Bachelor's and Master's degrees in Biology from UNT. Afnan plans to return to Saudi Arabia to become an Assistant Professor at the University of Hafr Albatin.

Claudia Gonzalez-Villarreal successfully defended her Ph.D. dissertation titled, "Graduate Student Teaching Excellence Program for Scientific Teaching (GSTEP-ST): Investigating the Effect of GSTEP-ST on Student Retention in the Biology for Science Major Laboratory". Her major advisor was Dr. Ruthanne Thompson. Claudia is currently working as an Instructional Laboratory Supervisor in the Department. She supervises the Contemporary Biology and Biology for Educators Laboratories. Claudia will continue teaching GSTEP-ST in the College of Science at UNT.


Jamie Dixson


Karem Vazquez Roman

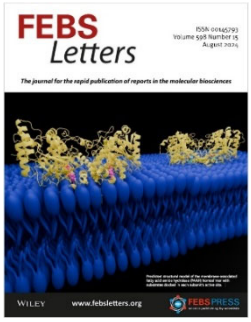
Jamie Dixson successfully defended his dissertation entitled "Identification and Quantification of Structural/Functional Relatedness Among Remotely Homologous Proteins." His major professor was Dr. Rajeev K. Azad. Jamie will be seeking a professorship within a university where he can build and/or contribute to a research program focused on bioinformatics.

Karem Vazquez Roman successfully defended her Ph.D. dissertation titled, "Myocardial infarction and its implications for cardiac function and behavior in the zebrafish larvae model". Her major advisor was Dr. Warren Burggren. Karem will be joining as a Post Doc at the Department of Biological Sciences, starting Spring, 2025.


Yen Tung Lin

Yen Tung Lin successfully defended her Ph.D. dissertation titled "Genetic Manipulation in Cotton Using Embryonic Regulators and CRISPR/Cas9". Her major advisor was Dr. Brian Ayre. Yen Tung's immediate plans are to work on developing CRISPR/Cas9 genome editing tools, and allied technologies, in the biofuel plant pennycress (*Thlaspi arvense*) with Drs. Roisin McGarry and Mauricio Antunes on a project funded through the BioDiscovery Institute.

Biology Research in the News



FEBS LETTERS Cover Illustration and Cover. A research publication from Chapman's Lab authored by graduate student Omar Arias-Gaguancela, Emily Herrell and Kent D. Chapman was highlighted on the August Issue of FEBS Letter. Publication title is "Ex vivo lipidomics reveal monoacylglycerols as substrates for a fatty acid amide hydrolase in the legume *Medicago truncatula*." Illustration by Omar Arias-Gaguancela was chosen for the front cover that shows, predicted structural model of the membrane-associated fatty acid amide hydrolase (FAAH) homodimer with substrates docked in each subunit's active site. FEBS Letters is a not-for-profit society journal for the rapid publication of original research that impacts and advances knowledge in the molecular life sciences. Read the full publication at https://febs.onlinelibrary.wiley.com/doi/10.1002/1873-3468.14944

Extramural Grants and Contracts

Coupling Metabolomics and Transcriptomics in High-Resolution Tissue Analysis with Laser Microdissection. BioDiscovery Institute Core Funding Support for Preliminary Results. Principal Investigators: Reena Sharma and Brian G. Ayre, up to $5000.

Developing New Technologies for Improving Resistance to Fusarium Head Blight. Funding Agency: US Department of Agriculture - Research Service $59,097; Funded Period: August 1, 2024 - July 31, 2025. PI: Jyoti Shah.

Setting Priorities for Managing Pollinator Habitat. USDA AFRI Foundational and Applied Science grant, Environmental and Natural Resource Economics program. PD –Erik Lichtenberg (University of Maryland); Co-PDs – Elinor Lichtenberg (UNT) and Kathy Baylis (University of California, Santa Barbara), $649,999

Publications

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Oral Presentations

A lipid transfer protein isoform modulates both neutral lipid abundance in embryos and deposition of cuticular waxes on aerial organs: 2024 International Symposium on Plant Lipids (2024 ISPL); Lincoln, Nebraska, USA, July 14-19, 2024. Selected talk by Athanas Guzha, Co-authors Julius Ver Sagun, Tatiana Garcia, Allison Barbaglia-Hurlock, Payton Whitehead, Erich Grotewold, Ana Paula Alonso and Kent D. Chapman

Are there constraints on the developmental plasticity of metabolic physiology in an endothermic insect? Society of Experimental Biology Annual Meeting, Prague, July, 2024. Dzialowski, E.M. and Wilmsen, S.M.

Assessing the impact and public perceptions of free-roaming dogs on wetland birds in southern Chile. To be presented at the Ecological Society of America annual meeting, Long Beach, CA. Wheeler, D. & J.E. Jiménez. 2024.

Comparative Omics Provide Insights into the Synthesis of Unusual Fatty Acids in Alternative Crops. 19th GERLI International Lipidomics meeting, Brest, France, September 23-26, 2024. Plenary Speaker talk by Dr. Ana Paula Alonso. Co-authors: Jean-Christophe Cocuron, Enkhtuul Tsogtbaatar, Amira Rasoul, Christopher Johnston.

Dynamin-Related Protein1A Interacts with Lipid Droplet-Related Proteins for Modulating Storage Lipid Compartmentation in Plant Cells. International Symposium on Plant Lipids (2024 ISPL); Lincoln, NE, USA, July 14-19, 2024. Selected talk by Yingqi Cai. Co-authors, You Wang, Nicolas Esnay, Satinder K. Gidda, Damien Seay, John Dyer, Robert T. Mullen and Kent D. Chapman.

Exploring drug-resistant transporters to identify potent bioactive molecules in potential biocontrol agents. 2024 EMSL Summer School: 1000 Fungal Proteins; Richland, WA. July 22-26, 2024. Selected talk by Francis Eze.

Fueling the future: Evaluating carbon conversion efficiency and biosynthetic pathways in *fae1-3* pennycress (*Thlaspi arvense*) embryos. International Symposium on Plant Lipids (ISPL), Triacylglycerol: metabolism, biosynthetic regulation, and storage session, Lincoln, Nebraska, United States, July 18th, 2024. Invited talk by Amira Rasoul. Co-author, Dr. Ana Alonso (PI).

Harnessing plant immune and susceptibility mechanisms for sustainable pest management. BioFrontiers Biology Seminar, University of North Texas, Denton, TX. Talk presented by Dr. Jyoti Shah. September 27, 2024.

Insights into the Dual CH_4 and CO_2 Metabolism of *Methylococcus*. Gordon Research Conference: Molecular Basis of Microbial One-Carbon Metabolism. Waterville Valley, NH. August 2024. Invited talk by Dr. Calvin Henard.

Lipid droplet packaging proteins from jojoba (*Simmondsia chinensis*) improve the compartmentalization of wax esters. International Symposium on Plant Lipids (2024 ISPL); Lincoln, NE, USA, July 14-19, 2024. Invited Talk by Payton Whitehead. Co-Authors, Raza Saad, Magdalena Miklaszewska, Ellen Hornung, Alyssa C. Clews, Rohith Nadella, John M. Dyer, Robert T. Mullen, Ivo Feussner, Josh V. Vermaas, Kent D. Chapman.

Managing grasslands for pollinator conservation. An outreach talk for the Texas Small Farmers & Ranchers Soil-to-Profit Producer Training, hosted at the Dixon Water Foundation in Decatur, TX. Elinor Lichtenberg.

Overexpression of native carbonic anhydrases increases carbon conversion efficiency in the methanotrophic biocatalyst *Methylococcus capsulatus* Bath. Society for Industrial Microbiology and Biotechnology Annual Meeting. Boston, MA. August 2024. Invited talk by Dr. Calvin Henard.

The Magellanic Woodpecker's role in its assemblage: a case study of cavity provisioning and habitat selection in the world's southernmost forests. 9th International Woodpecker Conference 2024, Puerto Iguazú, Argentina. Wynia, A.L., R. Rozzi, & J.E. Jiménez. 2024.

Conference Presentations

Alonso, A.P., Cocuron, J.C., and Sagun, J. (2024) Exploring Fatty Acid Synthesis in Alternative Crops via 13C-Labeling Approaches. International Symposium on Plant Lipids (ISPL), June 14-19, 2024, Lincoln, NE.

Alonso, A.P., Cocuron, J.C., and Sagun, J. (2024) Exploring Fatty Acid Synthesis in Alternative Crops via 13C-Labeling Approaches. 19th GERLI International Lipidomics meeting, September 23-26, 2024, Brest, France.

Elharis, Y., Sagun, J., and Alonso, A.P. (2024). Lipid Analysis of *Physaria fendleri* for Improving Hydroxy Fatty Acid Production. International Symposium on Plant Lipids (ISPL), June 14-19, 2024, Lincoln, NE.

Eze, F., Schoellhorn, S., Rajendran, S., Skellam, E., and Longo, A. (2024). Exploring drug-resistant transporters to identify potent bioactive molecules in potential biocontrol agents. Microbial Specialized Metabolites: From Genomes to Biological Functions, the tenth in the series of John Innes – Rudjer Bošković Summer Schools on Applied Molecular Microbiology, Dubrovnik, Croatia.

Green, K., Managing Procurement Solutions & Utilizing NAOSMM Discounts. July 21st - 26th 2024. National Association of Scientific Materials Managers (NAOSMM) Conference, Palm Springs, CA.

Kandice Green

Herrell, E., Arias-Gaguancela, O., Chapman, K.D. (2024). Structural and Functional Characteristics of Two Fatty Acid Amide Hydrolase Isoforms in the Legume Model, *Medicago truncatula* G. International Symposium of Plant Lipids 2024, Lincoln, NE.

LaChance, J., Antunes, A., and Alonso, A.P. (2024). Unraveling Metabolic Patterns in Developing *Physaria fendleri* Embryos, a Promising Alternative Oilseed Crop Rich in Hydroxy Fatty Acids. International Symposium on Plant Lipids 2024, Lincoln, NE.

Lee, S.A., Henard, J.M., and Henard, C.A. Carbon dioxide availability alters *Methylococcus capsulatus* physiology. Poster. Gordon Research Conference: Molecular Basis of Microbial One-Carbon Metabolism. Waterville Valley, NH. August 2024.

Lichtenberg EM, Collins SM, Pearson AE. (2024) Using insect traits to develop a predictive understanding of human impacts on pollination. Unifying Ecology Across Scales Gordon Research Conference, Manchester, NH. Poster.

Mittal, I, Alam, S., Sarowar, S., Nalam, V., Berg, K., Kolomiets, M., Trick, H. N., Dong, Y., Shah, J. Plant-derived oxylipins facilitate infection by Fusarium graminearum, the causal agent of Fusarium head blight in wheat. International Symposium of Plant Lipids, Lincoln, Nebraska, United States of America.

Yao-Chuan, Y, Henard, J.M., and Henard, C.A. Carbon dioxide metabolism in the methanotroph *Methylococcus capsulatus* Bath. Poster. Gordon Research Conference: Molecular Basis of Microbial One-Carbon Metabolism. Waterville Valley, NH. August 2024.

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