DEPARTMENT OF BIOLOGICAL SCIENCES
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Recognition and Awards

Biological Sciences Faculty and Staff have been at the forefront of providing excellent service to the University. The following faculty and staff achieved a combined milestone of 165 years of service to UNT and its community. They were recognized for their years of service with the University of North Texas during the annual Service Awards event on March 3, 2020.

- 20 years of service with UNT: Dr. Ed Dzialowski, Kimberly Piccolo
- 15 years of service with UNT: Dr. Ruthanne Thompson, Dr. Mark Burleson, Kenneth Steigman, Richard Freiheit, Arland Alberts
- 10 years of service with UNT: Dr. David Hoeinghaus, Mandi Anderson
- 5 years of service with UNT: Dr. Mina Aziz, Dr. Lu Nan, Dr. Xiaoqiang Wang, Carey Earthman, Wendy Pace, Maria Rojas

Dr. Ruthanne Thompson

Dr. Ed Dzialowski

Kim Piccolo

Dr. Mark Burleson

Dr. David Hoeinghaus

Richard Frieheit

Dr. Richard Dixon

A paper on the longevity of Ginkgo trees co-authored by University Distinguished Research Professor **Dr. Richard A. Dixon** (See publications below) received widespread international press coverage in articles and interviews in over 40 outlets including Science Magazine (https://www.sciencemag.org/news/2020/01/how-ginkgo-biloba-achieves-near-immortality), Nature (https://www.nature.com/articles/d41586-020-00067-8), The New York Times (https://www.nytimes.com/2020/01/13/science/oldest-trees-ginkgos.html), and other international news media including BBC World News, Cosmos Magazine (Australia), Canadian Broadcasting Corporation, Discover Magazine and the Daily Mail (UK).https://www.unt.edu/story/distinguished-professor-rick-dixons-discovers-how-ginkgo-trees-can-live-forever.

Mandi Anderson

Maria Rojas

Kenneth Steigman

Faculty and Staff Appointments

Dr. Julius Ver Sagun

Dr. Julius Ver Sagun joined the Department of Biological Science and the BioDiscovery Institute as a Postdoctoral Research Associate in January 2020. He completed his PhD at Hawkesbury Institute for the Environment in Western Sydney University, where his research focused on the environmental regulation of energetics of C4 photosynthesis. He currently works in Associate Professor Dr. Ana Alonso's lab, where he is investigating the effect of candidate genes involved in lipid storage and stability in metabolomics of pennycress plants (*Thlaspi arvense* L.).

Extramural Grants and Contracts

Assessing Fish Swimming Performance to Inform Stream Crossing Design and Barrier Prioritization. Texas Parks and Wildlife Department. PI: Dr. Edward Mager, $33,862.

Assessing the Swimming Performance of SGCN Fishes of the Guadalupe River to Inform Stream Crossing Design and Barrier Prioritization. Texas Parks and Wildlife Department. PI: Dr. Edward Mager, $40,000.

Intracellular Proliferation of the Fungal Pathogen *Histoplasma capsulatum.* National Institute of Health ($1,888,869). PI – Dr. Chad Rappleye (Ohio State Univ.); Co-PI – Dr. Ana Alonso (UNT; $583,552).

Molecular Approaches to Improved Protein Utilization in Alfalfa. Forage Genetics International. PI Richard A. Dixon; **$**150,000.

Publications

Castro-Moretti, F.R., Gentzel, I., Mackey, D., Alonso, A.P. (2020) Metabolomics as an emerging tool for the study of plant–pathogen interactions. Metabolites. 10. 52. 10.3390/metabo10020052. https://www.mdpi.com/2218-1989/10/2/52.

Castro-Moretti, F.R., Cocuron, J-C., Vega, F.E., Alonso, A.P. (2020) Differential metabolic responses caused by the most important insect pest of coffee worldwide, the coffee berry borer (*Hypothenemus hampei*). Journal of Agricultural and Food Chemistry. 68. 2597-2605. 10.1021/acs.jafc.9b07363. https://pubs.acs.org/doi/full/10.1021/acs.jafc.9b07363.

Cocuron, J-C., Ross, Z., Alonso, A.P. (2020) Liquid chromatography tandem mass spectrometry quantification of 13C-labeling in sugars. Metabolites. 10(1), 30. https://www.mdpi.com/2218-1989/10/1/30.

Dongus, J. A., Bhandari, D., Patel, M., Archer, L., Dijkgraaf, L., Deslandes, L., Shah, J., Parker, J. E. (2020). Arabidopsis PAD4 lipase-like domain is a minimal functional unit in resistance to green peach aphid. Molecular Plant-Microbe Interactions. 33:328-335.

Fei, Q., Liang, B., Tao, L., Tan, E. C. D., Gonzalez, R., Henard, C., & Guarnieri, M. (2020). Biological valorization of natural gas for the production of lactic acid: techno-economic analysis and life cycle assessment. *Biochemical engineering journal*, 107500. doi:10.1016/j.bej.2020.107500.

Gallego-Giraldo, L., Liu, C., Pose-Albacete, S., Pattathil, S., Peralta, A.G., Young, J., Westphaling, J., Hahn, M., Rao, X., de Meester, B., Knox, J.P., Boerjan, W. and Dixon, R.A. (2020). ARABIDOPSIS DEHISCENCE ZONE POLYGALACTURONASE 1 (ADPG1) releases latent defense signals in stems with reduced lignin content. Proceedings National Academy of Sciences USA. 117: 3281-3290. https://doi.org/10.1073/pnas.1914422117 (with Commentary article by Voxeur and Hofte). F1000 prime recommended.

Grosell, M., Heuer, R., Wu, N., Cramp, R., Wang, Y., Mager, E., Dwyer, R., and Franklin, C. (2020) Salt-water acclimation of the estuarine crocodile, *Crocodylus porosus*, involves enhanced ion transport properties of the urodaeum and rectum. Journal of Experimental Biology. 223, jeb210732. https://jeb.biologists.org/content/223/4/jeb210732.

Lichtenberg, E.M., Richman, S.K., Irwin, R.E., and Bronstein, J.L... In press. Competition for nectar resources does not affect bee foraging tactic constancy. Ecological Entomology. https://onlinelibrary.wiley.com/doi/abs/10.1111/een.12866.

Possamai, B., Hoeinghaus, D.J., Odebrecht, C., Abreu, P.C., Moraes, L.E., Santos, A.C.A., and Garcia, A.M. 2020. Freshwater inflow variability affects the relative importance of allochthonous sources for estuarine fishes. *Estuaries and Coasts*, DOI: 10.1007/s12237-019-00693-0.

Tsogtbaatar, E., Cocuron, J-C., Alonso, A.P. (2020) Non-conventional pathways enable pennycress (*Thlaspi arvense* L.) embryos to achieve high efficiency of oil synthesis. Journal of Experimental Botany. eraa060.https://doi.org/10.1093/jxb/eraa060.

Wang, L., Cui, J., Jin, B., Zhao, J., Xu H., Lu Z., Li W., Li X., Li L., Liang E., Rao X., Wang S., Fu C., Cao F., Dixon R.A. and Lin J. (2020). Multi-feature analyses of vascular cambial cells reveal longevity mechanisms in old *Ginkgo biloba* trees. Proceedings National Academy of Sciences USA January 13, 2020 https://doi.org/10.1073/pnas.1916548117.

Seminars/Talks

A multi-omics approach to build the crops of tomorrow. Benson Hill, St Louis, MO, March 4, 2020. Invited Talk by Dr. Ana Alonso.

Developing plant resistance to disease - breaking susceptibility. BDI Spring 2020 seminar, Denton, TX. March 2, 2020. Talk by Jyoti Shah; Co-authors: Syeda Alam, Vijee Mohan, Isha Mittal.

Functional analysis of candidate genes involved in oil storage and stability in pennycress. DOEBER 2020 Genomic Sciences Program Annual PI Meeting, Washington DC, February 25, 2020. Talk by Dr. Ana Alonso. Co-authors: K. Chapman and E. Grotewold.

Host selectivity and local environmental conditions determine cutaneous microbiome structure of North Texas stream fishes at the onset of drought. Texas Chapter of the American Fisheries Society Annual Conference, Waco, Texas, January 23-25, 2020. Oral presentation by Brittany Harried. Co-authors, D.M. Walker, D.J. Hoeinghaus. *Received the Outstanding Student Presentation Award.

Metabolic engineering of lignin for advancing agricultural sustainability and the new bioeconomy. Department of Agronomy and Horticulture, University of Nebraska at Lincoln, NE, March 13, 2020. Invited talk by Richard A. Dixon.

Role of RESISTANT TO MYZUS PERSICAE in Arabidopsis defense against the green peach aphid. BDI Spring 2020 seminar, Denton, TX. March 2, 2020. Talk by Moon Twayana; Co-authors: Jyoti Shah, Hossain Mondal, Anil Girija.

Stochastic species loss and dispersal limitation drive patterns of spatial and temporal beta diversity of fish assemblages in tropical agroecosystem streams. Texas Chapter of the American Fisheries Society Annual Conference, Waco, Texas, January 23-25, 2020. Oral presentation by Dr. David Hoeinghaus. Co-authors, J.O. Zeni, C.A. Roa-Fuentes, L. Casatti.

Towards the development of high-yielding cultivars & germplasm with optimum oil and protein content and innovative oil attributes for the current market. Soybean Seed Composition Workshop, St Louis, MO, March 4, 2020. Talk by Dr. Leah McHale. Co-authors: A. Alonso, P. Chen, T. Clemente, R. Mian, L. Mozzoni.

Conference Presentations

Alonso, A.P., Cocuron, J-C., de Souza, A.P., Andrade, L.S.N., Oliveira, L., Grandis, A., Jara, C., Buckeridge, M. (2020) Physiological and metabolic responses of soybean plants to global climate change. 2020 Soybean Breeders Workshop, St Louis, MO, March 2-4th 2020.

Benedict, C., Porter, D., Harried, B.L., Mager, E., and Hoeinghaus, D.J. (2020). Gill surface area and metabolic enzyme activity of North Texas stream fishes. Texas Chapter of the American Fisheries Society Annual Conference, Waco, TX.

Hartdegen, E., Hoeinghaus, D.J., Roberts, A., Green, C., Soulen, B., and Roark, K. (2020). Temporal dynamics of aquatic habitat structure, water chemistry, and biodiversity in ephemeral and intermittent habitats on a sustainable land management ranch in North Texas. Texas Chapter of the American Fisheries Society Annual Conference, Waco, TX

Johnston, C., Arias, C., Ortiz, E., Garcia, T., Eric, M., Gomez-Cano, F., Swanson, T., Yang, F., Grotewold, E., and Alonso, A.P. (2020) Assessment of natural variation and comparative metabolomics in pennycress, an emerging oilseed crop. External Advisory Board 2020 Poster Session, University of North Texas, Denton, TX.

Porter, D., Benedict, C., Harried, B.L., Mager, E., and Hoeinghaus, D.J. (2020). Gut morphology and digestive enzyme activities in North Texas stream fishes. Texas Chapter of the American Fisheries Society Annual Conference, Waco, TX.

Reeves, C.G., Hoeinghaus, D.J., Smith, N.G., Daugherty, D.J., and Winemiller, K.O. (2020). Flow-recruitment relationships of smallmouth buffalo in the Colorado and Brazos rivers. Texas Chapter of the American Fisheries Society Annual Conference, Waco, TX.

Roark, K., Soulen, B., Condini, M.V., Garcia, A., Hoeinghaus, D., and Roberts, A. (2020). Mercury concentrations in dusky grouper along the Southern Brazilian coast. Texas Chapter of the American Fisheries Society Annual Conference, Waco, TX.

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