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DEPARTMENT OF BIOLOGICAL SCIENCES
UNIVERSITY OF NORTH TEXAS

BIOsphere

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Awards and Recognitions

Dr. Richard Dixon

University Distinguished Research Professor **Dr. Richard Dixon** is the recipient of the Phytochemical Society of North America's **Phytochemical Pioneer Award**. The award recognizes significant contributions to phytochemical research over a scientist's career. Dr. Dixon accepted the award August 11 at the organization's annual meeting at the University of Illinois at Urbana-Champaign.

Graduate student **Amith Reddy** was the recipient of an International Texas Public Education Grant (TPEG) for $2,000 from the Texas Higher Education Coordinating Board for the academic years 2014-2016. Dr. Ron Mittler is Amith's graduate advisor

Garima Saxena

Amith Reddy

Garima Saxena, graduate student in Dr. Steven Brumbley's group was awarded a grant by the Algal Biomass Summit to present her research at the Algae Biomass Summit, which was held in Washington D.C., September 29-October 2.

Other News

Dr. Angie Ambers (Adjunct Professor in Biological Sciences and DNA Analyst at UNTHSC Institute of Applied Genetics) and **Harrell Gill-King** (Professor in Biological Sciences and Director of the Laboratory of Forensic Anthropology) entered into contract with the Texas Historical Commission (THC) to analyze human skeletal remains associated with the French explorer La Salle's last expedition. La Salle's ship, the *La Belle*, sank in 1686 in the Matagorda Bay off the coast of Texas and was discovered in 1995. Dr. Gill- King conducted anthropological analyses on skeletal remains discovered in the shipwreck as well as remains from the subsequent massacre of Fort St. Louis colonists by the Karankawa Indians. Dr. Ambers will be performing DNA analysis on the skeletal remains and collaborating with THC archaeologists and French historians to identify them.

Dr. Richard Dixon served as Chair of the 2015 Plant Metabolic Engineering Gordon Conference (July 2015), which was held in Waterville Valley, NH. In addition, he served on the Department Evaluation Board of the Flanders Institute of Biotechnology's Department of Systems Biology, Ghent, Belgium.

The Chilean Regional Government has commissioned architects for designing the **Cape Horn Sub-Antarctic Center**. Planned for a site within the UNESCO Cape Horn Biosphere Reserve in Puerto Williams, a town on Navarino Island in the Chilean Sub-Antarctic Province, the center will provide home for the Biocultural Research and Conservation Program led by **Dr. Ricardo Rozz**i, Professor at the University of North Texas, the Universidad de Magallanes and the Institute of Ecology and Biodiversity. *http://www.archdaily.com/770004/ennead-teams-up-with-chilean-architects-to-design-cape-horn-sub-antarctic-center/*

UNT's Sub-Antarctic Conservation Program work with the Chilean President Michelle Bachelet was cited in Italian newspaper article on 21 September, 2015 *http://chile.unt.edu/news/unts-sub-antarctic-conservation-program-work-chilean-president-michelle-bachelet-cited-italian-*

The Sub-Antarctica Biocultural Conservation Program co-hosted the Book Series Launch of *Ecology and Ethics* with Springer Publishing at the Ecological Society of America annual meeting, Baltimore, MD on August 11, 2015.

Thesis and Dissertations

Bikash Adhikari successfully defended his PhD dissertation in September 2015. Dissertation title: *Identification and Characterization of an Arabidopsis thaliana Mutant with Tolerance to N-Lauroylethanolamine*. Dr. Kent Chapman was his major professor. Bikash will attend the UNT graduation ceremony in December 2015.

Bikash Adhikari

Samip Bhattari

Samip Bhattarai received his PhD in Biology. Dissertation title: *Characteristics of Primary Cilia and Centrosomes in Neuronal and Glial Lineages of the Adult Brain.* Dr. Jannon Fuchs was his major professor. In his thesis work, Samip identified characteristics of cilia and centrosomes that predict whether a cell in the neuron lineage can divide or not. Samip is currently a postdoc at Columbia University in New York City, in the lab of Dr. Ellen Ezratty. As a postdoc, he will see whether these same characteristics apply to skin cells and whether they can be useful in the diagnosis of skin diseases.

Shannon Brajer successfully completed her comprehensive examination for a Professional Science Master's (PSM) degree in Environmental Science in September 2015. Shannon's work focused on applications of geographic information systems (GIS) in land use planning and environmental science. Dr. Pinliang Dong was her advisor. Shannon is now working for the City of Denton, Texas.

Fernando Mendez-Sanchez defended his PhD dissertation in August 2015. Thesis title: *Environmental Modulation of the Onset of Air Breathing of the Siamese Fighting Fish and the Blue Gourami*. Fernando's major professor was Dr. Warren W. Burggren. Fernando is a full time professor and collaborator at the Biology and Biotechnology departments at the Autonomous University of the State of Mexico (Universidad Autonoma del Estado de Mexico). Fernando is planning to apply for a national researcher position at the Mexican Council of Science CONACyt.

Shaun Jones defended her MS thesis in August 2015. Thesis title: *Phenotypic Morphological Plasticity Induced by Environmental Salt Stress in the Brine Shrimp, Artemia franciscana.* Shaun's major professor was Dr. Warren W. Burggren. Shaun has joined Microconsult Inc. as a Microbiology Technician.

New Graduate Students, Faculty and Staff Appointments, and Visiting Scientists

The Department of Biological Sciences welcomes the incoming Fall 2015 cohort of graduate students. This incoming class includes 29 students from Canada, Grenada, India, Jordan, Mexico, Nepal, Saudi Arabia and USA (Alabama, Oklahoma, South Carolina and Texas).

PhD students: Sujata Agarwal, Naudin Alexis, Emma Barnes, Racha Chabayta, Justin Connor, Dhiraj Dokwal, Amy Eddins, Mohammed Ibrahim, Neha Iyer, Pradeep Khanal, Cynthia Lebel, Jason Magnuson, Subhayu Nayek, Derek Nelson, Prajita Pandey, Rajashree Pradhan Revathi Raman, Kevin Schimitt, Janak Sunuwar, Leah Thornton, Ashleigh Tynes and Jerrod Tynes

MS students: Sattam Alodailah, Naim Martinez Bautista, Stormy Durrant, Jacob Hamilton, Dasya Petranova, Alexandra Stock, and Cole Quarles

Incoming graduate students with Dr. Art Goven, Chair, Department of Biological sciences

The Department of Biological Sciences welcomes our new staff members, postdoctoral fellows and visiting scientists.

Dr. Jill S. Dewey joined the department as a Lecturer/Advisor. In addition to teaching undergraduate Biology, Dr. Dewey also serves as an advisor to undergraduate Biology majors. Prior to joining UNT, Dr. Dewey was at University of St. Thomas in Houston, where she was Assistant Professor of Biology. Dr. Dewey received a BS in Biochemistry from Louisiana State University in 2004, and PhD from Texas A&M University in 2010, where she was in Department of Biochemistry and Biophysics.

Dr. Jill Dewey

Monroe (Louisiana) native **Jett Tullos** joined the department as Graduate Advising Assistant. Jeff, who recently graduated (May 2015) with a BS in Environmental Science from Tarleton State University, will assist with graduate student admissions and help graduate students in the Biology, and Biochemistry and Molecular Biology programs with completing their post admission requirements leading to their graduation.

Denice Gallagher

Denice Gallagher joined the department as an Administrative Specialist I with the Institute of Applied Science. She will assist in the Environmental Science program with graduate student admissions, maintaining graduate files, and with inventory and other administrative tasks. Denice has a BS in Plant and Soil Science and an AAS in Aviation. She has worked in a field research station and a food research laboratory, taught biology labs at UNT, taught high school advanced biology and A&P courses, been an assistant chief flight instructor, and most recently, assisted pharmaceutical and medical device companies comply with FDA regulations by inspecting manufacturing facilities and labs, by evaluating and compiling reports and submissions, and by interacting with the FDA on their behalf.

Jett Tullos

Mandi Anderson

Donald Lynch joined the department as an Administrative Specialist I with the Institute of Applied Science (IAS). Donald, who has a BA degree from UNT with a History major, will assist researchers in the IAS with travel arrangements and purchases.

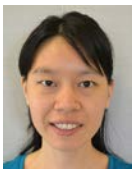
Mandi Anderson joined the department as the Administrative Coordinator for the Gulf of Mexico Research Initiative's (GoMRI) Relationships of Effects of Cardiac Outcomes in fish for Validation of Ecological Risk (RECOVER) consortium at the University of North Texas. Mandi is responsible for managing all administrative duties for the North Texas members of GoMRI RECOVER.

Dr. Prescilla Perrichon, a native of France, joined Dr. Warren Burggren's lab as a post-doctoral fellow to work on a GoMRI RECOVER project to investigate how early oil exposure from the DeepWater Horizon (2010) in the Gulf of Mexico impacted the cardiac system of resident fishes. Her further perspective will involve the understanding on how a prenatal stress could affect the optimal development of fish in the future generation. Dr. Perrichon obtained a BSc in Sciences of Life from the University of La Rochelle (France, 2008), a MSc in Oceanology from the Mediterranean Institute of Oceanography in Marseille (France, 2010), and a PhD in Ecotoxicology from the University

of La Rochelle (France, 2014). Dr. Perrichon's past research focused on the development of fish embryo larval assays to predict early and later toxic effects of hydrophobic compounds such as Polycyclic Aromatic Hydrocarbons, and the characterization of the functioning and ultrastructure of mechanisms involved in the excitation-contraction coupling of the cardiac function in a turquoise killifish (*Notobranchius furzeri*) a vertebrate model with extremely short lifespan.

Dr. Juan-zi Wu and **Chunliu Zhuo** joined Dr. Richard Dixon's lab as a Visiting Researchers. Dr. Wu is an Associate Professor in Forage and Herbivore Science Research at the Institute of Animal Science in the Jiangsu Academy of Agriculture Sciences in China. Chunliu Zhuo is a PhD student in Grassland Science at the South China Agricultural University.


Dr. Juan-zi Wu


Chunliu Zhuo

Recent Publications

Cai, Y., Goodman, J. M., Pyc, M., Mullen, R. T., Dyer, J. M., and Chapman, K. D. (2015) Arabidopsis SEIPIN proteins modulate triacylglycerol accumulation and influence lipid droplet proliferation. Plant Cell, 2015 Sep 11. pii: tpc.15.00588. [Epub ahead of print] PMID: 26362606. http://www.plantcell.org/content/early/2015/09/11/tpc.15.00588.abstract

Disdier, C., Devoy, J., Cosnefroy, A., Chalansonnet, M., HerlinBoime, N., Brun, E., Lund, A. K., and Mabondzo, A. (2015) Tissue biodistribution of intravenously administrated titanium dioxide nanoparticles revealed blood brain barrier clearance and brain inflammation in rat. Part Fibre Toxicol. 4;12:27. http://www.particleandfibretoxicology.com/content/12/1/27.

Du, Q., Avci, U., Li, S., Gallego-Giraldo, L., Pattathil, S., Qi, L., Hahn, M., and Wang, H. (2015) Activation of miR165b represses AtHB15 expression and induces pith secondary wall development in Arabidopsis. Plant J. 83: 388-400. http://onlinelibrary.wiley.com/doi/10.1111/tpj.12897/abstract

Gallego-Giraldo, L., Shadle, G., Shen, H., Barros-Rios, J., Corrales, S.F., Wang, H., and Dixon, R.A. (2015) Combining enhanced biomass density with reduced lignin level for improved forage quality. Plant Biotechnology Journal, in press. doi: 10.1111/pbi.12439. http://onlinelibrary.wiley.com/doi/10.1111/pbi.12439/abstract

Greyner, H., and Dzialowski, E.M**.** (2015) In vitro oxygen exposure promotes maturation of the oxygen sensitive contraction in pre-term chicken ductus arteriosus. Comparative Biochemistry and Physiology A. 188: 175-180. http://www.sciencedirect.com/science/article/pii/S1095643315001956

Jones, L.B., and Kunz, D.A. (2015) Complete genome sequence of a cyanotroph, *Pseudomonas fluorescens* NCIMB 11764, employing single-molecule real-time technology. Genome Announc. September/October 2015 3:e01111-15; doi:10.1128/genomeA.01111-15. http://genomea.asm.org/content/3/5/e01111-15.full

Kohl, Z. F., Crossley II, D.A., Tazawa, H., and Burggren, W. W. (2015) Dynamics of blood viscosity regulation during hypoxic challenges in the chicken embryo (*Gallus gallus domesticus*). Comparative Biochemistry and Physiology. doi: 10.1016/j.cbpa.2015.07.023. A. http://biol.unt.edu/~burggren/PDFs/2015/177_Kohl-Crossley-Tazawa-Burggren%20-%20CBP%20A.pdf

Lewallen, M. A., and Burggren, W. W. (2015) Chronic hypoxia and hyperoxia modifies morphology and VEGF concentration of the lungs of the developing chicken (*Gallus gallus* variant *domesticus*). Respiratory Physiology and Neurobiology. doi: 10.1016/j.resp.2015.08.004. [Epub ahead of print] http://biol.unt.edu/~burggren/PDFs/2015/178_Lewallen%20and%20Burggren%20-%20RPN.pdf

Liu, F., Zhao, Q., Mano, N., Ahmed, Z., Nitschke, F., Cai, Y., Chapman, K. D., Steup, M., Tetlow, I. J., and Emes, M. J. (2015) Modification of starch metabolism in transgenic *Arabidopsis thaliana* increases plant biomass and triples oilseed production. Plant Biotechnology Journal. 2015 Aug 19. doi: 10.1111/pbi.12453. [Epub ahead of print] PMID: 26285603. http://onlinelibrary.wiley.com/doi/10.1111/pbi.12453/abstract

Lupoi, J. S., Smith-Moritz, A., Singh, S., McQualter, R. B., Scheller, H. V., Simmons, B. A., and Henry, R. J. (2015) Localization of polyhydroxybutyrate in sugarcane using Fourier-transform infrared microspectroscopy and multivariate imaging. Biotechnol for Biofuels. 8:1-9. http://link.springer.com/article/10.1186/s13068-015-0279-y

Phelps, M. S., Sturtevant, D., Chapman, K. D., and Verbeck, G. F. (2015) Nanomanipulation-coupled matrix-assisted laser desorption/ ionization-direct organelle mass spectrometry: A technique for the detailed analysis of single organelles. Journal of the American Society of Mass Spectrometry (JASMS). 2015 Aug 4. [Epub ahead of print] PMID: 26238327. http://link.springer.com/article/10.1007%2Fs13361-015-1232-9

Vu, H. S., Roston, R., Shiva, S., Hur, M., Wurtele, E. S., Wang, X., Shah, J., and Welti, R. (2015) Modifications of membrane lipids in response to wounding of Arabidopsis thaliana leaves. Plant Signaling Behavior 10(9), e1056422, DOI: 10.1080/15592324.2015.1056422 http://www.tandfonline.com/doi/abs/10.1080/15592324.2015.1056422

Patents

Carbon fibers derived from poly-(caffeyl alcohol) (PCFA). R. A. Dixon, N. D'Souza, F. Chen, and M. Nar. US patent field, August 2015.

Extramural Grants and Contracts

Epigenetic inheritance of physiological phenotypes: occurrence, mechanism and inter- and intra-individual variation. National Science Foundation. PI: W.W. Burggren; Co-PI: P. Padilla; $299,999.

Regulation of neutral lipid metabolism in plants. USDA Agricultural Research Service- Cooperative Agreement- Amendment. PI: K. Chapman; USDA Cooperator, J. Dyer; $42,794.

Biosynthesis, regulation and engineering of C-Lignin. National Science Foundation-Integrated Organismal Systems. PI: R.A. Dixon, $833,772

Metabolomics: Advancing the scientific promise of metabolomics to better understand plant specialized metabolism. National Science Foundation. PI: L.W. Sumner; Co-PI: R.A. Dixon, $62,003

Seminars/Talks

Bifunctional Ammonia-Lyase: Characterization and role in lignin biosynthesis. Gordon Research Seminar on Plant Metabolic Engineering in Waterville Valley, NH, July 18-19, 2015. Invited talk by Dr. Jaime Barros-Rios.

Computational approaches to developing gene regulatory networks and identifying transcriptomic profiles for improving switchgrass as a bioenergy crop. Gordon Research Seminar on Plant Metabolic Engineering in Waterville Valley, NH, July 18-19, 2015. Invited talk by Dr. Xiaolan Rao.

Effects of thyroid hormone manipulaition on growth and metabolism of American alligator hatchlings. 9th International Congress of Comparative Physiology and Biochemistry: from molecules to macrophysiology, Krakow, Poland, August 26, 2015. Presented by Tushar S. Sirsat. Co-authors, Sarah K. Sirsat, Janna L. Crossley, and Edward M. Dzialowski.

Engineering plant cell walls for advanced biofuel and bioproducts. Bioenergy Research Centre, Huazhong Agricultural University Wuhan, Wuhan, China, July 13, 2015. Invited talk by Dr. Fang Chen.

Field Environmental Philosophy and Ecotourism in high latitude and altitude remote zones of Chile and Nepal. Ecological Society of America annual meeting, Baltimore, MD, August, 2015. Presented by Dr. Rajan Rijal.

How to build a furnace: the role of T3 in development of endothermy in altricial birds, including the red-winged blackbird (Agelaius phoeniceus). 9th International Congress of Comparative Physiology and Biochemistry: from molecules to macrophysiology, Krakow, Poland, August 26, 2015. Presented by Sarah K. G. Sirsat, S.K.G. Co-authors, Tushar S. Sirsat, M. R. Pineda, Janna L. Crossley, and Edward M. Dzialowski.

Hydrology, biodiversity and food webs of tropical floodplain rivers. UNT Department of Biological Sciences Seminar Series, Denton, TX, August 2015. Tenure seminar by Dr. David Hoeinghaus.

Massively parallel DNA sequencing: Basics and forensic applications. Promega Technology Tour, August 11, 2015, Denver, Colorado. Invited talk by Dr. Angie Ambers.

Metabolism and function of N-acylethanolamines in seedling development. The Phytochemical Society of North America, Invited Symposium Speaker, Urbana- Champaign, IL, August 2015. Presented by Kent Chapman; Co-authors, Jantana Keereetaweep and Elison Blancaflor.

Mitochondrial function and membrane composition during temperature acclimation in alligators. The 9th International Congress of Comparative Physiology and Biochemistry, Krakow, Poland, August 24, 2015. Oral presentation by Dr. Edwin Price. Co-authors, Tushar S. Sirsat, Sarah K. Sirsat, Gurdeep Kang, Jantana Keereetaweep, Kent Chapman, and Edward Dzialowski.

Signaling function for an abietane diterpenoid in plant defense and development. The Phytochemical Society of North America, Invited Symposium Speaker, Urbana- Champaign, IL, August 2015. Presented by Jyoti Shah; Co-authors, Zulkarnain Chowdhury, Mrunmay Giri, Ratnesh Chatruvedi, and Barney Venables.

The synergic trio of exotic mammals at the southern end of the Americas: Evidence of an invasional meltdown among beavers, muskrats, and mink on Navarino Island (55°S), Chile. 100th Annual meeting of the Ecological Society of America, Baltimore, MD, August, 2015. Presented by Ramiro Crego. Co-authors: J.E. Jiménez, S. Castillo, M. Barceló, N.G. Carro and R. Rozzi.

Conference Presentations

Barros-Rios, J., Serrani-Yarce, J., Wang, X., Huhman, D., Baxter, D., Venables, B., Sumner, L., and Dixon, R.A. Bifunctional Ammonia-Lyase: Characterization and role in lignin biosynthesis. Gordon Research Conference (GRC) on Plant Metabolic Engineering, July 2015, Waterville Valley, NH.

Jara, R., Samuel, M., Schultz, R., and Wydeven, A. Spatial and temporal patterns of gray wolf exposure to vector-borne diseases in Wisconsin, USA. Ecological Society of America annual meeting, Baltimore, MD, August 2015.

Jiménez, J., Wynia, A., Rijal, R., and Rozzi, R. (2015). How long do birds in the southernmost forests of the world live? Maximum longevity estimates. Ecological Society of America annual meeting, Baltimore, MD, August 2015.

Khanal, P., Johnson, J., Thapa, K., Thapa, G., Shah, S., Rijal, R., and Rozzi, R. Human wildlife interaction and cultural diversity in Terai Arc Landscape, Nepal. Ecological Society of America annual meeting, Baltimore, MD, August 2015.

Lewallen, M.A. and Burggren W.W. Metabolic Rate and the Influence of Acute and Chronic Stressors in the Planarian *Dugesia dorotocephala*. International Symposium of Flatworm Biology. University of Oxford, Oxford, England, Aug 3-6, 2015.

Moses, K., Poole, A., Contador, T., Morales, V., Massardo, F., Hargrove, E., Jiménez, J., Kennedy, J., May, R., Armesto, J., and Rozzi, R. A US-Chilean partnership to link ecology and ethics for Earth stewardship: the biocultural conservation approach at Omora Park, LTSER-Chile. Ecological Society of America annual meeting, Baltimore, MD, August 2015.

Rao, X., Chen, X., Ma, Q., Lu, N., Shen, H., and Dixon, R.A. Computational approaches to developing gene regulatory networks and identifying transcriptomic profiles for improving switchgrass as a bioenergy crop. Gordon Research Conference (GRC) on Plant Metabolic Engineering, July 2015, Waterville Valley, NH.

Saxena, G., Pandey, R., Brumbley, S., and Azad, R. Impact of Horizontal gene transfer in *Galdieria sulphuraria* 074W, Algae Biomass Summit, Washington D.C., Aug 29-Oct 2, 2015. Garima received a travel grant from Algae Biomass Summit to present her poster.

Shiva, S., Colter, M., Tamura, P., Roth, M., Sarowar, S., Shah, J., and Welti, R. Identification of genes and enzymes responsible for the stress-induced modification of membrane lipids in Arabidopsis thaliana. Gordon Research Conference on Plant Metabolic Engineering, Waterville Valley, NH, July 19-24, 2015.

Wynia, A., and Jiménez, J. The role of Magellanic Woodpeckers as a keystone species on Navarino Island, Chile. Ecological Society of America annual meeting, Baltimore, MD, August 2015.

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