Institute *of* Genomics for Crop Abiotic Stress Tolerance

Institute of Genomics for Crop

Son Phan Lam Tran, Ph. D., Professor

Faculty

Institute of Genomics for Crop Abiotic Stress Tolerance

Phone: 806-834-7829
Office Hours: 9 AM- 6 PM
Email: son.tran@ttu.edu
Room numbre: 201A

Lab Members

Current Research

Personal Information

Lam-Son Phan Tran is an expert in Biological Sciences and Biotechnology. He obtained his M.Sc in Biotechnology in 1994 and Ph.D in Biological Sciences in 1997, from Szent Istvan University (*formerly Godollo University of Agricultural Sciences*), Hungary. After doing his postdoctoral research on *Bacillus subtilis* at the National Food Research Institute (1999-2000) and the Nara Institute of Science and Technology of Japan (2001), in October 2001, he joined the Japan International Research Center for Agricultural Sciences (JIRCAS) as a JIRCAS fellow to work on the functional analyses of transcription factors and osmosensors in *Arabidopsis* plants under environmental stresses. In August 2007, he moved to the University of Missouri-Columbia, USA as a Senior Research Scientist working

on gene discovery for development of drought-tolerant soybean plants. In January 2009, he joined RIKEN Plant Science Center (*currently RIKEN Center for Sustainable Resource Science*), Japan as Unit Leader of the Signaling Pathway Research Unit and then Stress Adaptation Research Unit studying (i) roles of plant growth regulators and their interactions in environmental stress responses, and (ii) translational genomics of legume crops aiming to enhance their performance under normal growth and environmental stress conditions. From September 2020, he joined Texas Tech's Davis College of Agricultural Sciences & Natural Resources' newest research institution - the Institute of Genomics for Crop Abiotic Stress Tolerance, as a Professor with Texas Tech's Department of Plant and Soil Science.

Research Interests

Dr. Tran's research programs broadly focus on regulatory networks and crosstalk among signaling molecules in plant responses to environmental stresses, as well as translational genomics for improvement of crop productivity in the era of global climate change. His basic and applied research programs will contribute to some of the Sustainable Development Goals of the United Nations, which include maintaining sustainable production of crops for food, biomass and industrial uses.

Selected Publications

- Nguyen HM, Ha CV, Le VP, Bui HT, WirschellM, Keya SS, Li W, Li M, Pham NT, Do AM, Le MQ, Anik TR, ***Tran LP** (2023). Improvement of photosynthetic performance by acetic acid to enhance drought tolerance in common bean (*Phaseolus vulgaris*). J Plant Growth Regul (DOI: 10.1007/s00344-023-11001-3).

- Keya SS, Mostofa MG, Rahman MM, Das AK, Sultana S, Ghosh PK, Anik TR, Ahsan SM, Rahman MA, Jahan N, ***Tran LP** (2023). Salicylic acid application improves photosynthetic performance and biochemical responses to mitigate saline stress in cotton. J Plant Growth Regul(DOI:1007/s00344-023-10974-5).

- Anik TR, Mostofa MG, Rahman MM, Khan MAR, Ghosh PK, Sultana S, Das AK, Hossain MS, Keya SS, Rahman MA, Jahan N, ***Tran LP** (2023). Zn supplementation mitigates drought effects on cotton by improving

photosynthetic performance and antioxidant defense mechanisms. Antioxidants 12:854.

- Yi F, Song A, Cheng K, Liu J, Wang C, Shao L, Wu S, Wang P, Zhu J, Liang Z, Chang Y, Chu Z, Cai C, Zhang X, Wang P, Chen A, Xu J, Burritt DJ, Herrera-Estrella L, **Tran LP**, Li W, Cai Y (2023). *Strigolactones positively regulate Verticillium wilt resistance in cotton via crosstalk with other hormones.* Plant Physiol 192:945-66.

- Van Ha C, Mostofa MG, Nguyen KH, Tran CD, Watanabe Y, Li W, Osakabe Y, Sato M, Toyooka K, Tanaka M, Seki M, Burritt DJ, Anderson C, Zhang R, Nguyen HM, Le VP, Bui HT, Mochida K, **Tran LP** (2022). The histidine phosphotransfer AHP4 plays a negative role in *Arabidopsis* plant response to drought. Plant J 111:1732-52.

- Nasr Esfahani M, Kusano M, Abdelrahman M, Nguyen KH, Watanabe Y, Mochida K, Burritt DJ, *__Tran LP__ (2022). Differential metabolic rearrangements in the roots and leaves of *Cicer arietinum* caused by single or double nitrate and/or phosphate deficiencies. Plant J 111:1643-59.

- Tian H, Watanabe Y, Nguyen KH, Tran CD, Abdelrahman M, Liang X, Kun X, Sepulveda C, Mostofa MG, Ha CV, Nelson DC, Mochida K, Tian C, Tanaka M, Seki M, Miao Y, *__Tran LP__, Li W (2022). KARRIKIN UPREGULATED F-BOX 1 negatively regulates drought tolerance in *Arabidopsis*. Plant Physiol 190:2671-87.

- Rahman MM, Mostofa MG, Das AK, Anik TR, Keya SS, Ahsan SM, Khan MAR, Ahmed M, Rahman MA, Hossain MM, **Tran LP** (2022). Ethanol positively modulates photosynthetic traits, antioxidant defense and osmoprotectant levels to enhance drought acclimatization in soybean. Antioxidants 11:516.

- Abdelrahman M, Nishiyama R, Tran CD, Kusano M, Nakabayashi R, Okazaki Y, Matsuda F, Chávez Montes RA, Mostofa MG, Li W, Watanabe Y, Fukushima A, Tanaka M, Seki M, Saito K, Herrera-Estrella L, **Tran LP** (2021). Defective cytokinin signaling reprograms lipid and flavonoid gene-to-metabolite networks to mitigate high salinity in *Arabidopsis*. Proc Natl Acad Sci U S A 118:e2105021118.

- Mostofa MG, Rahman MM, Nguyen KH, Li W, Watanabe Y, Tran CD, Zhang M,Itouga M, Fujita M, **Tran LP** (2021).Strigolactones regulate arsenate uptake, vacuolar-sequestration and antioxidant defense responses to resist arsenic toxicity in rice roots. J Hazard Mater 325:125589.

- Nasr Esfahani M, Inoue K, Nguyen KH, Chu HD, Watanabe Y, Kanatani A, Burritt DJ, Mochida K, **Tran LP** (2021). Phosphate or nitrate imbalance induces stronger molecular responses than combined nutrient deprivation in roots and leaves of chickpea plants. Plant Cell Environ 44:574-574-97.

- Li W, Nguyen KH, Chu HD, Watanabe W, Osakabe Y, Sato M, Toyooka K, Seo M, Tian L, Tian C, Yamaguchi S, Tanaka M, Seki M, **Tran LP**(2020). Comparative functional analyses of DWARF14 and KARRIKIN INSENSITIVE2 in drought adaptation of *Arabidopsis thaliana*. Plant J 103:111-27.

- Nguyen KH, Mostofa MG, Watanabe Y, Tran CD, Rahman MM, **Tran LS** (2019). Overexpression of *GmNAC085* enhances drought tolerance in *Arabidopsis* by regulating glutathione biosynthesis, redox balance and glutathione-dependent detoxification of reactive oxygen species and methylglyoxal. Environ Exp Bot 161:242-54.

- Nguyen KH, Mostofa MG, Li W, Ha CV, Watanabe Y, Le DT, Thao NP, **Tran LS** (2018). The soybean transcription factor GmNAC085 enhances drought tolerance in *Arabidopsis*. Environ Exp Bot 151:12-20.

- Li W, Nguyen KH, Chu HD, Ha CV, Watanabe Y, Osakabe Y, Leyva-González MA, Sato M, Toyooka K, Voges L, Tanaka M, Mostofa MG, Seki M, Seo M, Yamaguchi S, Nelson DC, Herrera-Estrella L, **Tran LS** (2017). The karrikin receptor KAI2 promotes drought resistance in *Arabidopsis thaliana***.** PLoS Genet 13:e1007076 [highlighted in “Multifactorial response to drought”, Science, 2017, 358:1267 by Pamela J. Hines].

Leadership and Awards

- The Texas Tech Parents Association's Barney E. Rushing, Jr., Faculty Distinguished Research Award – STEM, 2023.

- Elected Fellow of *The National Academy of Sciences, India* (effective 01-January-2023).
- Elected Fellow of *TheWorld Academy of Sciences (TWAS) for the advancement of science in developing countries* (effective 01-January-2020).
- Highly Cited Researcher 2022, 2021, 2020, 2019, 2018, and 2016 (Thomson Reuters/Clarivate Analytics).

Related Links

ResearchID

https://twitter.com/tranlab_TTU

https://www.linkedin.com/feed/

RIKEN

RIKEN Center for Sustainable Resource Science

The *American Society of Plant Biologists*

The Japanese Society of Plant Physiologists

Institute *of* Genomics for Crop Abiotic Stress Tolerance

ADDRESS

Texas Tech University, Institute of Genomics for Crop Abiotic Stress Tolerance, 1006 Canton Ave, Lubbock, TX 79409

PHONE

806.742.3417

EMAIL

IGCAST.info@ttu.edu