Curriculum Vitae: J. Vladimir Torres-Rodríguez

University of Nebraska-Lincoln • Lincoln, Nebraska • vladimir.torres@unl.edu • (402) 472-2635

Research Experience

Research Assistant Professor July 2024 - Present
University of Nebraska Lincoln, NE, USA

- Project management for multiple students.
- Identification of candidate genes using multi-species gene expression information and genetic markers using supercomputers.
- Validation of candidate genes.
- Visualization of results to present to a non-scientific community.
- Share gene expression and phenotype data via Google Cloud Storage.

Postdoctoral Scholar (Advisor: James C. Schnable) October 2021 - June 2024
University of Nebraska Lincoln, NE, USA

- Identification of candidate genes using maize, sorghum, and soybean gene expression.
- Recognition and correction for signals adding noise to large gene expression datasets.
- Identification of genetic markers using GATK pipeline.
- Characterization of candidate genes.
- Fixation of candidate genes in maize population via crosses.

PhD - Plant Biotechnology (Advisor: Ruairidh Sawers) March 2017 - August 2021
LANGEBIO-CINVESTAV Irapuato, Mexico

- Elucidation of the effect of nitrogen deficiency on the molecular phosphorus starvation response in maize using transcriptional, ionomic, and phenotypic data.
- Identification of parental regions within crosses using Single nucleotide polymorphisms (SNPs) and simple sequence repeats (SSRs).
- Development of maize Populations
- Manual phenotyping of maize plants in multiple fields and greenhouses.

MSc - Plant Biotechnology September 2014 - February 2017
LANGEBIO-CINVESTAV Irapuato, Mexico

- Selection of lines with teosinte (*Zea mays ssp. parviglumis*) introgression based on molecular markers
- Correction for environmental effects in phenotypes using linear mixed models.
- Collection of plant tissue in greenhouse and laboratory (root and aerial parts).

BSc - Agricultural engineering August 2009 - June 2013
Universidad Autónoma Chapingo Texcoco, México

Contributions to Scientific Community

Collective Research Organization of Plant Science (CROPS) 2023 – 2024
President University of Nebraska-Lincoln

- Promote scientific events to help students develop ideas and network with scientists outside the university.
- Help the community to develop soft skills in a supportive environment.
- Guide younger scientists.

Funding awarded

1. Ultima Genomics count on us initiative. "Whole Genome Re-Sequencing of 500 Sorghum Lines". 2025. In kind value of 45,000 US dollars
2. Plants Science Innovation internal funding. "The Role Of Trehalose In Determining The Nitrogen Use, Nitrogen Partitioning, And Agricultural Productivity Of Maize Hybrids". 2025. 25,000 US dollars

Other awards

1. High Impact Publication Award. "Genome of Paspalum vaginatum and the role of trehalose mediated autophagy in increasing maize biomass". 2024. The Agricultural Research Division At The University of Nebraska-Lincoln

Preprints

1. Dias, H. M., Sagawa, G. I., **Torres-Rodríguez, J. V.**, Mural, R. V., Schnable, J. C., & Van Sluys, M. A. (2024). Bridging Genomic Gaps: The Pan-Grass Syntenic Gene Set in Grass Crop Evolution. BioRxiv, 2024-11. BioRxiv doi: 10.1101/2024.11.12.623179

Publications

1. Mangal, H., Linders, K., Turkus, J., Shrestha, N., Long, B., Kuang, X., ... **Torres-Rodríguez, J. V.** & Schnable, J. C. (2024). Genes and pathways determining flowering time variation in temperate-adapted sorghum. The Plant Journal, 122(5), e70250. doi: 10.1111/tpj.70250
2. Ali, W., Grzybowski, M., **Torres-Rodríguez, J. V.**, Li, F., Shrestha, N., Mathivanan, R. K., ... & Sahay, S. (2024). Quantitative genetics of photosynthetic trait variation in maize. Journal Of Experimental Botany, eraf198. doi: 10.1093/jxb/eraf198
3. Engelhorn J, Snodgrass S, Kok A, Seetharam A, Schneider M, Kiwit T, Singh A, Banf M, Khaipho-Burch M, Runcie D, Camargo V, **Torres-Rodríguez, J. V.**, Sun G, Stam M, Fiorani F, Schnable JC, Bass H, Hufford M, Stich B, Frommer W, Ross-Ibarra J & Hartwig T. (2025). Genetic variation at transcription factor binding sites largely explains phenotypic heritability in maize. *Accepted in Nature Genetics*. BioRxiv doi: 10.1101/2023.08.08.551183
4. Mathivanan, R. K., Pedersen, C., Turkus, J., Shrestha, N., **Torres-Rodríguez, J. V.**, Mural, R. V., ... & Schnable, J. C. (2024). Transcripts and genomic intervals associated with variation in metabolite abundance in maize leaves under field conditions. *BMC genomics*. 26(1), 1-13. doi: 10.1186/s12864-025-11580-3
5. **Torres-Rodríguez, J. V.**, Li, D., Schnable, J. C. (2025). Evolving Best Practices for Transcriptome-wide Association Studies Accelerate Discovery of Gene-Phenotype Links. Current Opinion in Plant Biology, 83, 102670. doi: 10.1016/j.pbi.2024.102670

6. Shrestha, N., Mangal, H., **Torres-Rodríguez, J. V.**, Tross, M. C., Lopez-Corona, L., Linders, K., ... & Schnable, J. C. (2025). Off-the-shelf image analysis models outperform human visual assessment in identifying genes controlling seed color variation in sorghum. The Plant Phenome Journal, 8, e70013. doi: 10.1002/ppj2.70013
7. **Torres-Rodríguez, J. V.**, Li, D., Turkus, J., Newton, L., Davis, J., Lopez-Corona, L., ... & Schnable, J. C. (2024). Population-level gene expression can repeatedly link genes to functions in maize. The Plant Journal. doi: 10.1111/tpj.16801
8. Tross, M. C., Grzybowski, M. W., Jubery, T. Z., Grove, R. J., Nishimwe, A. V., **Torres-Rodríguez, J. V.**, ... & Schnable, J. C. (2024). Data driven discovery and quantification of hyperspectral leaf reflectance phenotypes across a maize diversity panel. The Plant Phenome Journal, 7(1), e20106. doi: 10.1002/ppj2.20106
9. Sun, G., Wase, N., Shu, S., Jenkins, J., Zhou, B., **Torres-Rodríguez, J. V.**, ... & Schnable, J. C. (2022). Genome of Paspalum vaginatum and the role of trehalose mediated autophagy in increasing maize biomass. Nature Communications, 13(1), 1-20. doi: 10.1038/s41467-022-35507-8
10. Alonso-Nieves, A. L., Salazar-Vidal, M. N., **Torres-Rodríguez, J. V.**, Pérez-Vázquez, L. M., Massange-Sánchez, J. A., Gillmor, C. S., & Sawers, R. J. (2022). The pho1; 2a0-m1. 1 allele of Phosphate1 conditions misregulation of the phosphorus starvation response in maize. Plant Direct, 6(7). doi: 10.1002/pld3.416
11. **Torres-Rodríguez, J. V.**, Salazar-Vidal, M. N., Chávez Montes, R. A., Massange-Sánchez, J. A., Gillmor, C. S., & Sawers, R. J. (2021). Low nitrogen availability inhibits the phosphorus starvation response in maize (Zea mays ssp. mays L.). BMC Plant Biology, 21(1), 1-18.
12. Crow, T., Ta, J., Nojoomi, S., Aguilar-Rangel, M. R., **Torres-Rodríguez, J. V.**, Gates, D., ... & Runcie, D. (2020). Gene regulatory effects of a large chromosomal inversion in highland maize. PLoS genetics, 16(12), e1009213. doi: 10.1371/journal.pgen.1009213

Peer Reviewer ***(selected, recent)***

- The plant Genome
- Frontiers in Plant Science
- Biochemical Genetics
- Machine Learning for Cyber-Agricultural Systems (MLCAS 2024)

Presentations

1. "Lightning talk: Multi-species transcriptome-wide association studies identify additional genes controlling flowering". Maize Genetic Conference 2023. March 6^{th} - 9^{th}. Invited talk
2. "The use of gene expression to predict gene function in maize and sorghum" The INitiative for TRanslational, INtegrative and SYnthetiC Plant Biology (INTRINSyC Plant Biology) . November 22^{nd} 2024. Invited talk
3. "Inferring gene function from expression levels in maize" Agronomy and Horticulture seminar series (Internal talk). October 24^{th} 2024. Invited talk
4. "Lightning talk: How stable are the genetic markers associated with gene expression as molecular phenotypes?" 8^{th} International Plant Phenotyping Symposium. October 7^{th} - 11^{th} 2024. Invited talk
5. "Population-level gene expression can repeatedly link genes to functions in maize" Plant and Animal Genome 2024 conference. January 11^{th} - 17^{th} 2024. Invited talk
6. "Inferring gene function from expression levels in maize" Plant Science Innovation department (Internal talk). November 20^{th} 2023. Invited talk
7. "Employing environmental indices to augment cross-environment prediction accuracy in diverse maize populations. Machine Learning for Cyber-Agricultural Systems (MLCAS2023). July 2^{nd} 2023.

Invited talk

8. “Measurement of expression from a limited number of genes is sufficient to predict flowering time in maize”. Maize Genetic Conference 2023. March 16th - 19th. Invited talk
9. “A small subset of genes can predict flowering time with high accuracy in maize” MLCAS2022. October 10th - 11th. Invited talk

Teaching experience

- “Inferring gene function from expression levels in maize” North Dakota State University. March 12th 2024. Invited lecture (Online)
- "Tutorial for Transcriptome-Wide Association Study"South Dakota State University. October 17th - October 31st 2024. Invited lecture (Online)
- "Big questions course: coding practice"University of Nebraska-Lincoln. October 31st 2024. Invited lecture

Extension & Outreach

- Host students from the Arlington High School-Nebraska. University of Nebraska-Lincoln. January 31st 2025.

Mentorship

Students mentored at the University of Nebraska-Lincoln. Mentorship includes advice in their personal and academic career and supervision of their respective research project.

1. Harshita Mangal. PhD Student. 2023-present
2. Waqar Ali. PhD Student. 2023-present
3. Karla M. Cuellar Perez. PhD student. 2024-present
4. Sofiya Arora. MS Student. 2024-present
5. Amany Gomaa. PhD Student. 2024-2025

References

- James C. Schnable, University of Nebraska-Lincoln, USA. schnable@unl.edu
- Matthew Zinselmeier, Corteva Agriscience, matt.zinselmeier@corteva.com
- Rubén Rellán-Álvarez, North Carolina State University, USA. rrellan@ncsu.edu