

## VITA

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### EDUCATION

|      |         |   |  |
|------|---------|---|--|
| 2006 | Diploma | Agri-food Biotechnology<br>(Biotecnología Agroalimentaria)  | Autonomous University of Sinaloa-State<br>Council of Science and Technology (CECyT),<br>Culiacan, Sinaloa, Mexico.   |
| 2006 | B.S.    | Biochemical Engineering<br>(Supporting areas: food<br>technology, bioprocess, unit<br>operations, bioprocess, process<br>engineering) | Autonomous University of Sinaloa, Culiacan,<br>Sinaloa, Mexico.  |
| 2013 | Ph.D.   | Plant Biotechnology   | National Laboratory of Genomics for<br>Biodiversity (LANGEBIO)-Center for<br>Research and Advanced Studies of the National<br>Polytechnic Institute (CINVESTAV), Irapuato,<br>Guanajuato, Mexico.                      |
| 2013 | Diploma | Strategic Management of<br>Innovative Projects (Gestión<br>Estratégica de Proyectos de<br>Innovación)                                 | Centro de Competitividad e Innovación<br>CANAME-State Council of Science and<br>Technology of the State of Guanajuato<br>(CONCYTEG), part of the Program<br>Incorporating Young Masters and Doctorates in<br>Industry. |

### PROFESSIONAL EXPERIENCE

|                    |   |
|--------------------|---|
| Jun-Aug 2005       | <i>Undergraduate Research Assistant</i><br>Laboratory of Metabolic Engineering CINVESTAV, Irapuato,<br>Guanajuato, Mexico   |
| 2005-2006          | <i>Undergraduate Research Assistant</i><br>Laboratory of Food Science and Technology Facultad de Ciencias Químico-<br>Biológicas, Autonomous University of Sinaloa, Culiacan, Sinaloa, Mexico |
| 2012               | <i>Co-founder</i><br>StelaGenomics Inc/StelaGenomics Mexico, Irapuato, Guanajuato, Mexico   |
| Dec 2012-Sept 2018 | <i>Scientific Director</i><br>StelaGenomics Inc/StelaGenomics Mexico, Irapuato, Guanajuato, Mexico  |

|                   |  |
|-------------------|--|
| Jan 2018-Aug 2021 | <i>Adjunct Professor</i><br>State Key Laboratory of Crop Genetics and Germplasm Enhancement, College of Resources and Environmental Sciences, Nanjing Agricultural University, Nanjing, China (2-month appointment)                            |
| Oct 2018-Present  | <i>Assistant Professor</i><br>Institute of Genomics for Crop Abiotic Stress Tolerance (IGCAST), Department of Plant and Soil Science, Davis College of Agricultural Sciences and Natural Resources, Texas Tech University, Lubbock, Texas, USA |
| Nov 2022-Present  | <i>Scientific Advisor</i><br>StelaGenomics Inc/StelaGenomics Mexico, Irapuato, Guanajuato, Mexico  |
| Nov 2022-Present  | <i>Scientific Advisor</i><br>HadosBiotec, Irapuato, Guanajuato, Mexico   |
| Oct 2023-Present  | <i>Co-Chief Scientific Officer</i><br>FlatlandGenomics LLC, Lubbock, TX, USA   |

### **MEMBERSHIP IN PROFESSIONAL AND HONORARY SOCIETIES**

|              |  |
|--------------|--|
| 2022-Present | American Association for the Advancement of Science (AAAS); <i>Member</i>        |
| 2022-Present | American Society of Plant Biologists (ASPB); <i>Member</i>                       |
| 2013-2019    | National System of Researchers (SNI) in Mexico; <i>Member Researcher Level I</i> |
| 1999-2001    | H. University Council of the Autonomous University of Sinaloa, <i>Member</i>     |

### **RESEARCH INTERESTS AND SPECIAL COMPETENCIES**

- Adaptive/tolerance responses of algae and plants to stress conditions:** a) study of the adaptive/tolerance responses of crop plants and green algae to nutrient starvation; b) stress responses leading to allelochemicals and bioproducts accumulation in algae; c) study of the resistance responses of crop plants (cotton) to pathogens.
- Molecular crop improvement:** a) functional analysis of the molecular mechanisms of algae and plants to cope with nutrient stress and pathogens; b) genome, transcriptional, and metabolic engineering for algae domestication and plant improvement.
- Development of resources and tools:** a) generation of high-quality genomes of plants and algae species with promising properties; b) multi-omics platforms; c) development of genetic transformation systems for algae and plants; d) identification of natural algal bioactive compounds with pesticide activities.

### **INTERNATIONAL EXPERIENCE**

- Development of a dual fertilization and weed control system based on genetically modified plants able to metabolize phosphite.* Scientific presentation at the 1st. Annual World Congress of Agricultural Biotechnology (WCAB), Changchun, China, October 28, 2011 (Invited speaker).

2. *Use of phosphite oxidoreductase and phosphite as a selectable marker system for plant transformation*. Scientific presentation at the International Workshop on Agricultural Resource Utilization and Soil Quality Improvement, Nanjing Agricultural University of China, Nanjing, China, October 27, 2012 (Invited speaker).
3. *From the laboratory to the field: creating a technology-based company*. Presentation at the Science-Industry Matchmaking event between Latin American, Caribbean, and European actors of biorefineries, biobased products, and bioenergy (ALCUE-KBBE), European Commission, Antwerpen, Belgium, June 3, 2013 (Invited speaker).
4. *Agricultural Research Connections Workshop*. Bill and Melinda Gates Foundation. Nairobi, Kenya, August 25-31, 2013 (Participant, Selected).
5. *Controlling Weedy Organisms through Metabolic Engineering: Application in Agriculture and in Large-Scale Bioreactors*. Scientific presentation at the 2023 Metabolic Engineering in Plants: Sustainability Through Innovation, Gordon Research Conference, Barcelona, Spain, June 15, 2023 (Invited speaker).
6. Co-hosting a visiting student from the Center for Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV), Unit Irapuato, Guanajuato, Mexico, January-July, 2021.
7. Co-hosting a visiting student from the Center for Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV), Unit Irapuato, Guanajuato, Mexico, December 2021-May 2022.
8. Co-hosting a visiting student from State Key Laboratory of Crop Genetics and Germplasm Enhancement, College of Resources and Environmental Sciences, Nanjing Agricultural University, Nanjing, China, January-May 2024.

## **PROFESSIONAL MEETINGS AND EVENTS**

1. Meeting with the Ambassador of the United States in Mexico, Anthony Wayne, and 15 entrepreneurial Mexican women at the US Embassy in Mexico within the framework of the International Women's Day, Mexico City, March 6, 2013.
2. Public Consultation to prepare the National Development Plan 2013-2018. "Prosperous Mexico" Forum. Participant in the panel: The New Face of the Field. Delivered in hand to the Mexican President Enrique Peña Nieto my contribution and proposal of StelaGenomics' role to improve the food security in our country, Mexico City, May 9, 2013.
3. Meeting with the former President of the United States, Barak Obama, during his visit to Mexico, the Ambassador of the United States in Mexico, Anthony Wayne, US government officials, and 14 young Mexican entrepreneurs at the National Museum of Anthropology, Mexico City, May 15, 2013.
4. Round table with the Minister Counselor of the United States Embassy in Mexico, Laura F. Dogu, and 30 emerging women leaders, Mexico City, August 8, 2013.
5. Meeting with the Secretary of Agriculture in Mexico, Enrique Martínez y Martínez, and the Governor of the State of Guanajuato, Miguel Márquez, to present StelaGenomics and the Agrobioteg Research Park Program within the framework of the National Agriculture Forum, Irapuato, Guanajuato, July 18, 2014.
6. Meeting with the Governor of the State of Guanajuato, Mexico, Miguel Márquez Márquez, to present the most relevant advances of the projects under development at StelaGenomics and inaugurate the

company's biosafety greenhouses. Attending personalities: Director of the Agrobioteg Research Park, Lic. Omar Silva Palancares; Secretary of Sustainable Economic Development, Lic. Guillermo Romero Pacheco; Secretary of Agri-Food and Rural Development, CP. Javier Bernardo Usabiaga Arroyo, Irapuato, Guanajuato, December 1, 2015.

## **HONORS AND AWARDS**

- 2000            *3rd Place (individual)*  
State Academic Competition, XIX Rafael Buelna Tenorio Award, Autonomous University of Sinaloa, Sinaloa, Mexico
- 2001            *1st Place, Outstanding Achievement*  
Class 1998-2001. High-School Lázaro Cárdenas, Autonomous University of Sinaloa, Sinaloa, Mexico.
- 2001            *1st Place, Outstanding achievement (individual)*  
State Academic Competition. XX Rafael Buelna Tenorio Award, Autonomous University of Sinaloa, Sinaloa, Mexico
- 2006            *1st Place, Outstanding achievement*  
Class 2001-2006, Faculty of Chemical-Biological Sciences (FCQB), Autonomous University of Sinaloa, Sinaloa, Mexico
- 2006            *Recipient, scholarship*  
State Council of Science and Technology (CECyT), Culiacan, Sinaloa, Mexico
- 2006-2011      *Recipient, Ph.D. scholarship*  
National Council of Science and Technology CONACYT, Guanajuato, Mexico
- 2012            *TR35 Award as the most distinguished Young Mexican Innovator Under 35 (individual)*  
Massachusetts Institute of Technology
- 2013            *AgroBIO Mexico Award for the best PhD Thesis in Crop Science and Agricultural Biotechnology*  
AgroBIO Mexico, Mexico
- 2013            *Arturo Rosenblueth Award for the best PhD Thesis in Natural Sciences*  
Center for Research and Advanced Studies of IPN (CINVESTAV), Mexico
- 2013            *Weizmann Award for the best PhD Thesis in Biotechnology*  
Mexican Academy of Sciences (AMC), Mexico
- 2013            *Notable Women in Mexico*  
Sanofi Pharmaceutical, Mexico
- 2015            *2nd Place-Technological Innovation Guanajuato 2015 Award*  
Recognition to small private companies, Council of Science and Technology of the State of Guanajuato (CONCYTEG), Guanajuato, Mexico
- 2016            *Cargill-CIMMYT Award to Food Security and Sustainability*

- Cargill-CIMMYT, Mexico
- 2020 *1st Place*  
Advisor to the recipient of the first place in the Davis College Poster Competition, Texas Tech University
- 2023 *3rd Place*  
Advisor to the recipient of the third place in the IGCASST Poster contest, Texas Tech University
- 2023 *2nd Place*  
Advisor to the recipient of the second place in the IGCASST Poster contest, Texas Tech University

## **PATENTS**

### **Total of 8 (3 after hire)**

1. Herrera Estrella, L. R., **Lopez Arredondo, D. L.** 2011. "Plant cultivation system utilizing phosphite as a nutrient and as a control agent for weeds and algae." Assigned to: Center for Research and Advanced Studies of the National Polytechnic Institute (Centro De Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, CINVESTAV). \*
2. Herrera Estrella, L. R., **Lopez Arredondo, D. L.**, Herrera Estrella, A. H. 2012. "Transgenic plants capable of metabolizing phosphite to reduce competition from weeds." Assigned to: Center for Research and Advanced Studies of the National Polytechnic Institute (Centro De Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, CINVESTAV).
3. Herrera Estrella, L. R., **Lopez Arredondo, D. L.**, Herrera Estrella, A. H. 2012. "Photosynthetic organisms and cells adapted to metabolize phosphite as a source of phosphorus." Assigned to: Center for Research and Advanced Studies of the National Polytechnic Institute (Centro De Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, CINVESTAV).
4. Herrera Estrella, L. R., **Lopez Arredondo, D. L.**, Herrera Estrella, A. H. 2012. "Fungi adapted to metabolize phosphite as a source of phosphorus." Assigned to: Centro De Investigación y de Estudios Avanzados Del Instituto Politécnico Nacional (Cinvestav).\*
5. Herrera Estrella, L. R., **López Arredondo, D. L.** 2015. "Selectable marker for transgenic plants." Assigned to: Center for Research and Advanced Studies of the National Polytechnic Institute (Centro De Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, CINVESTAV).
6. Wang, S., Chen, A., Xu, G., Herrera Estrella, L., **Lopez-Arredondo, D. L.** 2020. "Functional analysis of the OsNPF4.5 nitrate transporter reveals a conserved mycorrhizal pathway of nitrogen acquisition in plants." Assigned to: Nanjing Agricultural University/Texas Tech University. PCT Application.
7. Herrera Estrella, L., **Lopez-Arredondo, D. L.**, Perez-Sanchez, B. 2020. "Tissue-culture independent gene editing of cells by a long-distance RNA transport system." Assigned to: Texas Tech University. PCT Application.
8. **Lopez-Arredondo, D. L.**, Brito-Bello, A., Herrera Estrella, L. 2023. "Bioactive compounds with pesticide activities derived from aged cultures of green microalgae." Assigned to: Texas Tech University. Provisional Application.

[\*: The foundation patent has been granted in Mexico, Spain, China, New Zealand, and the USA.]

## **REFEREED PUBLICATIONS**

**Books: Total of 0**

**Book Chapters: Total of 4 (2 after hire)**

### **Notes:**

My name is in bold

[\*] indicates I am the corresponding author

[1] indicates graduate students I advised as committee chair

1. Alatorre-Cobos, F., **Lopez-Arredondo, D.**, Herrera-Estrella, L. (2009) Genetic Determinants of Phosphate Use Efficiency in Crops. In *Genes for Plant Abiotic Stress*. Eds Matthew A. Jenks and Andrew J. Wood. Wiley (pp. 143-165). [citations: 8]
2. **Lopez-Arredondo, D.\***, Sánchez-Calderón, L., Yong-Villalobos, L. (2017) Molecular and genetic basis of plant macronutrient use efficiency: concepts, opportunities, and challenges. In *Plant Macronutrient Use Efficiency: Molecular and Genomic Perspectives in Crop Plants*. Eds. Mohammad Anwar Hossain, Takehiro Kamiya, David J. Burritt, Lam-Son Phan Tran, Toru Fujiwara. Elsevier Inc (pp. 1-29). [citations: 28]
3. **Lopez-Arredondo, D.\***, Fan X-R, Jiao, Y. (2021) Recent advancements in molecular breeding for improving nutrient-use efficiency in maize. In *Molecular breeding in wheat, maize, and sorghum: strategies for improving abiotic stress tolerance and yield*. Eds. Mohammad Anwar Hossain, Mobashwe Alam, Saman Seneweera, Sujay Rakshit, Robert Henry. CABI (pp. 340-359). [citations: 1]
4. Flores-Tinoco, V.<sup>1</sup>, Brito-Bello, A.<sup>1</sup>, Le, V.P.<sup>1</sup>, **Lopez-Arredondo, D.\*** (2023) Contamination control in algal bioreactors. Eds. Eduardo Jaco-Lopes and Mariany Costa Deprá. Elsevier Inc. [scheduled to be published in February 2024].

**Books and Book Chapters Edited: Total of 0**

**Original papers in refereed journals: Total of 30 (18 after hire)**

### **Notes:**

My name is in bold

[\*] indicates I am the corresponding author

[a] indicates equal contribution with the first author

[1] indicates graduate students I advised as committee chair

[2] indicated graduate students I mentored

[3] indicates the postdoctoral researcher I advised in my laboratory

**Journal ranking:** expressed in Q indices, is based on Scimago Journal and Country Rank. Journals classified as Q1, Q2, Q3, and Q4 belong to the top 25, 25-50, 50-75, and 75-100%, respectively, of journals under a specific discipline.

### **Chair rating**

- [ ] 1. Hayano-Kanashiro, C., **López-Arredondo, D.L.**, Cruz-Morales, P., Alcaraz, L. D., Olmedo, G., Barona-Gómez, F., Herrera-Estrella, L. (2011). First draft genome sequence of a strain from the genus *Citricoccus*. *Journal of Bacteriology*, 193:6092-6093. DOI: <https://doi.org/10.1128/JB.06045-11>. [impact factor: 3.476; citations: 7; journal rank: Q1 under Microbiology]

- [ ] 2. **López-Arredondo, D.L.**, Herrera-Estrella, L. (2012). Engineering phosphorus metabolism in plants to produce a dual fertilization and weed control system. *Nature Biotechnology*, 30(9), 889-893. <https://doi.org/10.1038/nbt.2346>. **Three recommendations in F1000Prime**.  
[*impact factor: 68.164; citations: 135; journal rank: Q1 under Biotechnology*]
- [ ] 3. **López-Arredondo, D.L.**, Herrera-Estrella, L. (2013). A novel dominant selectable system for the selection of transgenic plants under *in vitro* and greenhouse conditions based on phosphite metabolism. *Plant Biotechnology Journal*, 11(4), 516-525. <https://doi.org/10.1111/pbi.12063>.  
[*impact factor: 13.263; citations: 33; journal rank: Q1 under Biotechnology and Plant Science*]
- [ ] 4. **López-Arredondo, D.L.**, Leyva-González, M.A., Alatorre-Cobos, F., Herrera-Estrella, L. (2013). Biotechnology of nutrient uptake and assimilation in plants (6-8 ed., vol. 57, pp. 595-610). *International Journal of Developmental Biology*. doi: 10.1387/ijdb.130268lh.  
[*impact factor: 2.148.; citations: 68; journal rank: Q3 under Developmental Biology*]
- [ ] 5. **López-Arredondo, D.L.**, Leyva-González, M.A., González-Morales, S.I., López-Bucio, J., Herrera-Estrella, L. (2014). Phosphate nutrition: Improving low-phosphate tolerance in crops. *Annual Review of Plant Biology*, 65:95-123. <https://doi.org/10.1146/annurev-arplant-050213-035949>  
[*impact factor: 28.31; citations: 753; journal rank: Q1 under Plant Science, Physiology*]
- [ ] 6. Loera-Quezada, M.M., Leyva-González, M.A., **López-Arredondo, D\***, Herrera-Estrella, L. (2015). Phosphite cannot be used as a phosphorus source but is non-toxic for microalgae. *Plant Science*, 231, 124-130. <https://doi.org/10.1016/j.plantsci.2014.11.015>.  
[*impact factor: 5.2; citations: 49; journal rank: Q1 under Plant Science*]
- [ ] 7. **López-Arredondo, D.**, González-Morales, S.I., Bello-Bello, E., Alejo-Jacuinde, G., Herrera, L. (2015). Engineering food crops to grow in harsh environments. *F1000Research*, 4:651. DOI: 10.12688/f1000research.6538.1.  
[*impact factor: 3.23; citations: 29; journal rank: Q2 under Biochemistry, Genetics, and Molecular Biology*]
- [ ] 8. Loera-Quezada, M.M., Leyva-González, M.A., Velázquez-Juárez, G., Sanchez-Calderón, L., Do Nascimento, M., **López-Arredondo, D\***, Herrera-Estrella, L. (2016). A novel genetic engineering platform for the effective management of biological contaminants for the production of microalgae. *Plant Biotechnology Journal*, 14(10), 2066-2076. <https://doi.org/10.1111/pbi.12564>.  
[*impact factor: 13.263; citations: 83; journal rank: Q1 under Biotechnology and Plant Science*]
- [ ] 9. Nahampun, H.N., **López-Arredondo, D.**, Xu, X., Herrera-Estrella, L., Wang, K. (2016). Assessment of *ptxD* gene as an alternative selectable marker for Agrobacterium-mediated maize transformation. *Plant Cell Reports*, 35(5), 1121-1132. <https://doi.org/10.1007/s00299-016-1942-x>.  
[*impact factor: 6.2; citations: 41; journal rank: Q1 under Plant Science, and Agronomy and Crop Science*]
- [ ] 10. Herrera-Estrella, L., **López-Arredondo, D.** (2016). Phosphorus: The Underrated Element for Feeding the World. *Trends in Plant Science*, 21:461-463. DOI: 10.1016/j.tplants.2016.04.010.  
[*impact factor: 20.5; citations: 120; journal rank: Q1 under Plant Science*]

- [ ] 11. Pandeya, D., Campbell, L. A., Nunes, E., **Lopez-Arredondo, D.**, Janga, M. R., Herrera-Estrella, L., Rathore, K. S. (2017). *ptxD* gene in combination with phosphite serves as a highly effective selection system to generate transgenic cotton (*Gossypium hirsutum* L.). *Plant Molecular Biology*, 95(6), 567-577. <https://doi.org/10.1007/s11103-017-0670-0>. **One recommendation in F1000Prime.**  
[*impact factor: 5.1; citations: 19; journal rank: Q1 under Plant Science, and Agronomy and Crop Science*]
- [ ] 12. Heuer, S., Gaxiola, R., Schilling, R., Herrera-Estrella, L., **Lopez-Arredondo, D.**, Wissuwa, M., Delhaize, E., Rouached, H. (2017). Improving phosphorus use efficiency: a complex trait with emerging opportunities. *Plant Journal*, 90(5), 868-885. <https://doi.org/10.1111/tpj.13423>.  
[*impact factor: 7.091; citations: 261; journal rank: Q1 under Plant Science, and Genetics*]
- [ ] 13. Pandeya, D., **López-Arredondo, D.L.**<sup>a</sup>, Janga, M. R., Campbell, L. A., Estrella-Hernández, P., Bagavathiannan, M. V., Herrera-Estrella, L., Rathore, K. S. (2018). Selective fertilization with phosphite allows unhindered growth of cotton plants expressing the *ptxD* gene while suppressing weeds. *Proceedings of the National Academy of Sciences of the United States of America*, 115(29), E6946-E6955. <https://doi.org/10.1073/pnas.1804862115>.  
[*impact factor: 12.779; citations: 40; journal rank: Q1 under multiple disciplines*]
- [ ] 14. Carreras-Villaseñor, N., Rico-Ruiz, G., López Hernández, J.F., Martínez-Hernandez, P., Herrera-Estrella, L., Herrera-Estrella, A., **López-Arredondo, D.\*** (2020). Assessment of the *ptxD* gene as a growth and selective marker in *Trichoderma atroviride* using *Pccg6*, a novel constitutive promoter. *Microbial Cell Factories* 19:69. <https://doi.org/10.1186/s12934-020-01326-z>.  
[*impact factor: 6.4; citations: 7; journal rank: Q1 under Biotechnology*]
- [ ] 15. Benedetti, M., Barera, S., Longoni, P., Guardini, Z., Herrero-Garcia, N., Bolzonella, D., **Lopez-Arredondo, D.**, Herrera-Estrella, L., Goldschmidt-Clermont, M., Bassi, R., Dall'Osto, L. (2020). A microalgal-based preparation with synergistic cellulolytic and detoxifying action towards chemical-treated lignocellulose. *Plant Biotechnology Journal*. 19(1):124-137. *Doi:* 10.1111/PBI.13447.  
[*impact factor:13.263; citations: 10; journal rank: Q1 under Biotechnology and Plant Science*]
- [ ] 16. Wang, S., Chen, A., Xie, K., Yang, X., Chen, J., **Lopez-Arredondo, D.**, Luis Herrera-Estrella L., Xu, G. (2020). Functional analysis of the OsNPF4.5 nitrate transporter reveals a conserved mycorrhizal pathway of nitrogen acquisition in plants. *Proceedings of the National Academy of Sciences of the United States of America* 117(28): 16649-16659. <https://doi.org/10.1073/pnas.2000926117>. **One recommendation in F1000 Prime.**  
[*impact factor: 12.779; citations: 142; journal rank: Q1 under multiple disciplines*]
- [ ] 17. Gonzalez-Morales, S., Pacheco, N., **Brito-Bello, A.**<sup>1</sup>, Herrera-Estrella, L., **Lopez-Arredondo, D.\*** (2020). Metabolic engineering of phosphite metabolism in *Synechococcus elongatus* PCC 7942 as an effective measure to control biological contaminants in outdoor raceway ponds. *Biotechnology for Biofuels* 13:19. <https://doi.org/10.1186/s13068-020-01759-z>.  
[*impact factor: 6.3; citations: 25; journal rank: Q1 under Biotechnology*]



- [ ] 18. Nitnaware, K.M. Raskar, K.B., Agarwal, G., **Chávez Montes, R.A.**<sup>3</sup>, Chopra, R., **López-Arredondo, D.**, Nikam, T.D., Patil G.B. (2021). Whole-genome characterization and comparative genomics of a novel freshwater cyanobacteria species: *Pseudanabaena punensis*. *Molecular Phylogenetics and Evolution*, 164:107272. <https://doi.org/10.1016/j.ympev.2021.107272>.  
[*impact factor: 5.019; citations: 2; journal rank: Q1 under Genetics, and Molecular Biology*]
- [ ] 19. Pérez-Zavala, F.G., Atriztan-Hernandez, K., **Martinez-Iratorza, P.**<sup>2</sup>, Oropeza-Aburto, A., **Lopez-Arredondo, D.**, Herrera-Estrella, L. (2022). Titanium nanoparticles activate a transcriptional response in Arabidopsis that enhances tolerance to low phosphate, osmotic stress and pathogen infection. *Frontiers in Plant Science*, 1;13:994523. doi: 10.3389/fpls.2022.994523.  
[*impact factor: 5.6; citations: 4; journal rank: Q1 under Plant Science*]
- [ ] 20. Bello-Bello, E., **Lopez-Arredondo, D.**, Rico-Cambren, T.Y., Herrera-Estrella, L (2022). Conquering compacted soils, unveiling the molecular components of root soil penetration. *Trends in Plant Science*, 27(8):814-827. doi: 10.1016/j.tplants.2022.04.001.  
[*impact factor: 20.5; citations: 12; journal rank: Q1 under Q1 under Plant Science*]
- [ ] 21. **Ojeda-Rivera, J.O.**<sup>3</sup>, Alejo-Jacuinde, G., **Najera-Gonzalez, R.**<sup>2</sup>, **Lopez-Arredondo, D.\***. (2022). Prospects of genetics and breeding for low phosphate tolerance: an integrated approach from soil to cell. *Theoretical and Applied Genetics*, 135:4125-4150. <https://doi.org/10.1007/s00122-022-04095-y>.  
[*impact factor: 5.574; citations: 11; journal rank: Q1 under Genetics, Biotechnology and Agronomy and Crop Science*]
- [ ] 22. **Ojeda-Rivera, J.O.**<sup>3</sup>, Ulloa, M., Roberts, P., Kottapalli, P., Wang, C., Paxton, P. **Lopez-Arredondo, D.\***, Herrera-Estrella, L. (2022). Root-knot nematode resistance in *Gossypium hirsutum* determined by a constitutive defense-response transcriptional program. *Frontiers in Plant Science*, 13;13:858313. doi: 10.3389/fpls.2022.858313.  
[*impact factor: 5.019; citations: 4; journal rank: Q1 under Plant Science*]
- [ ] 23. Han, J., **Lopez-Arredondo, D.**<sup>a</sup>, Yu, G., Wang, Y., Wang, B., Wall, S. B., Zhang, X., Fang, H., Barragán-Rosillo, A.C., Pan, X., Jiang, Y., Chen, J., Zhang, H., Zhou, B. L., Herrera-Estrella, L., Zhang, B., Wang, K. (2022). Genome-wide chromatin accessibility analysis unveils open chromatin convergent evolution during polyploidization in cotton. *Proceedings of the National Academy of Sciences of the United States of America*, 119(44). <https://doi.org/10.1073/pnas.220974311>.  
[*impact factor: 12.779; citations: 15; journal rank: Q1 under multiple disciplines*]
- [ ] 24. Wang, L., Jia, X., Xu, L., Yu, J., Ren, S., Yang, Y., Wang, K., **Lopez-Arredondo, D.**, Herrera-Estrella, L., Lambers, H., Yi, K. (2023). Engineering microalgae for water phosphorus recovery to close the phosphorus cycle. *Plant Biotechnology Journal*, doi: 10.1111/pbi.14040.  
[*impact factor:13.263; citations: 1; journal rank: Q1 under Biotechnology and Plant Science*]
- [ ] 25. Chávez Montes, R.A.<sup>3</sup>, Ulloa, M., Biniashvili, T., Zackay, A., Kfir, N., **Lopez-Arredondo, D.\***, Herrera-Estrella, L. (2023). Assembly and annotation of the *Gossypium barbadense* L. 'Pima-S6' genome raise questions about the chromosome structure and gene content of *Gossypium barbadense* genomes. *BMC Genomics*, 24(11), 1-19. <https://doi.org/10.1186/s12864-022-09102-6>.  
[*impact factor: 4.4; citations:3; journal rank: Q1 under Biotechnology*]

- [ ] 26. Flores Tinoco, V.<sup>1</sup>, Herrera-Estrella L., **Lopez-Arredondo, D\***. (2023). Back to Primary Endosymbiosis: from plastids to artificial photosynthetic life-forms. *Trends in Plant Science*, DOI: <https://doi.org/10.1016/j.tplants.2023.03.026>.  
[*impact factor: 20.5; citations: 0; journal rank: Q1 under Q1 under Plant Science*]
- [ ] 27. Alejo-Jacuinde, G., Nájera-González, H.R.<sup>2</sup>, Chávez Montes, R.<sup>3</sup>, Gutierrez Reyes, C.<sup>2</sup>, Barragán-Rosillo, A.C., Perez-Sanchez, B.<sup>1</sup>, Mechref, Y., **López-Arredondo, D.**, Yong-Villalobos, L., Herrera-Estrella, L. (2023). Multi-omic analyses reveal the unique properties of chia (*Salvia hispanica*) seed metabolism. *Communications Biology*, 7;6(1):820. doi: 10.1038/s42003-023-05192-4.  
[*impact factor: 5.019; citations: 2; journal rank: Q1 under Agriculture and Biological Sciences*]
- [ ] 28. Brito-Bello, A.A.<sup>1</sup>, **Lopez-Arredondo, D.\*** (2023). Bioactive Compounds with Pesticide Activities Derived from Aged Cultures of Green Microalgae. *Biology (Basel)*, 19;12(8):1149. doi: 10.3390/biology12081149.  
[*impact factor: 4.2; citations: 0; journal rank: Q1 under Biology*]
- [ ] 29. Ojeda-Rivera, J.O.<sup>3</sup>, Ulloa M, Pérez-Zavala, F.G.<sup>3</sup>, Nájera-González, H.R.<sup>2</sup>, Roberts, P., Yong-Villalobos, L., Yadav, H.<sup>1</sup>, Chávez Montes, R.A.<sup>3</sup>, Herrera-Estrella, L., **Lopez-Arredondo, D.\*** (2024). Enhanced phenylpropanoid metabolism underlies resistance to *Fusarium oxysporum* f.sp. *vasinfectum* race 4 infection in the cotton cultivar Pima-S6 (*Gossypium barbadense* L.), *Frontiers in Genetics*, 14:1271200. Doi:10.3389/fgene.2023.1271200.  
[*impact factor: 5.2; citations: 0; journal rank: Q2 under Genetics*]
- [ ] 30. Kean-Galeno, T.<sup>2</sup>, P. **Lopez-Arredondo, D.**, Herrera-Estrella, L. (2024). The shoot apical meristem: an evolutionary molding of higher plants. *International Journal of Molecular Science*, 25(3), 1519; <https://doi.org/10.3390/ijms25031519>  
[*impact factor: 5.6; citations: 0; journal rank: Q2 under Molecular Biology; manuscript ID: IJMS-2649561*]

### Manuscripts in Preparation and Review

1. Barrera-Duarte, C.<sup>1</sup>, Brito-Bello, A.<sup>1</sup>, Chávez Montes, R.A.<sup>3</sup>, **Lopez-Arredondo, D.\*** (2024). Transcriptional regulatory network analysis reveals potential transcription factors controlling phosphorus and nitrogen starvation responses leading to neutral lipid accumulation in *Chlorella sorokiniana*.
2. **Pérez-Zavala, F.G.<sup>3</sup>**, Ojeda-Rivera, J.O., **Lopez-Arredondo, D.**, Herrera-Estrella, L., (2024). Phosphite induces plant-beneficial responses due to the activation of ABA, SA, and JA biosynthesis pathways in *Arabidopsis thaliana* [*In preparation to be submitted to Frontiers in Plant Science*].
3. **Brito-Bello, A.<sup>1</sup>**, Gutierrez-Reyes, C.D., **Lopez-Arredondo, D.\***(2024). Green algae: a promising alternative to synthetic pesticides [*In preparation to be submitted to Advanced Biotechnology, "Special Issue on Biotech Applications of Algae and Cyanobacteria"*].
4. Tosoni, M. <sup>1</sup>, Barrera-Duarte, C.<sup>1</sup>, **Lopez-Arredondo, D.\*** (2024) Understanding the microalgal molecular mechanisms in response to environmental challenges [*In preparation to be submitted to MDPI-Cells, Special Issue "Molecular and Biochemical Mechanisms Elucidating Growth and Cellular Stress Responses of Microalgae"*].
5. Ulloa, M., Roberts P., **López-Arredondo, D.**, Herrera-Estrella, L. (2024). A comprehensive landscape of cotton resistance to *Fusarium* wilt race 4 (FOV4): integrating QTLs, genomic regions,

allelic-gene mining, and gene expression [In preparation to be submitted to *Theoretical and Applied Genetics*].

6. Siles-Asaff, I., **López-Arredondo, D.**, Olalde-Portugal, V., Martínez de la Vega, O., Herrera-Estrella, L. (2024). Effects of phosphorous availability on root exudate composition and rhizosphere microbial community in phosphite metabolizer and wild type *Nicotiana tabacum* [In preparation to be submitted to *Frontiers in Plant Science*].
7. Pe, V.P.<sup>1</sup>, Tinoco-Flores, V.<sup>1</sup>, Brito-Bello, A.A.,<sup>1</sup>, **Lopez-Arredondo, D.\*** (2024) Stress response and environmental influences: factors for multicellularity in microalgae [In preparation to be submitted to *MDPI-Cells, Special Issue "Molecular and Biochemical Mechanisms Elucidating Growth and Cellular Stress Responses of Microalgae"*].
8. Yadav, H.<sup>1</sup>, **Lopez-Arredondo, D.\***, Ulloa, M., Roberts P. (2024). A quest for survival: exploiting plant defense mechanisms to control root-knot nematodes [In preparation to be submitted to *MDPI-Agronomy, Special Issue "Effects of Nematodes on Crops-2<sup>nd</sup> Edition"*].
9. Pérez-Zavala, F.G.<sup>3</sup>, Chien, H, Nájera-González, H.R.<sup>2</sup>, Tran, S., Herrera-Estrella, L., **Lopez-Arredondo, D.\*** (2024) A phosphite-mediated fertilization and weed control system in soybean elicits plant defense responses and abiotic stress tolerance.
10. Barrera-Duarte, C.<sup>1</sup>, Alejo-Jacuinde G, Brito-Bello, A.<sup>1</sup>, Chávez Montes, R.A.<sup>3</sup>, **Lopez-Arredondo, D.\*** (2024). A high-quality genome and comprehensive characterization of the novel green algae species *Desmodesmus* spp.
11. Tosoni, M.<sup>1</sup>, Chien, H, Tran, S., Herrera-Estrella, L., **Lopez-Arredondo, D.\*** (2024). The ARR-B transcription factor controls neutral lipid biosynthesis and cell growth in *Chlamydomonas reinhardtii*.
12. *Tinoco-Flores, V.<sup>1</sup>*, Chávez Montes, R.A.<sup>3</sup>, **Lopez-Arredondo, D.\*** (2024). Polycistronic gene expression in Chlorellaceae.

### Other publications

1. **Lopez-Arredondo, D.** and Herrera-Estrella, L. (2016). Genetic engineering of microalgae to control biological contaminants in open and closed culture systems. ISB NEWS REPORT.
2. **Lopez-Arredondo, D.** and Herrera-Estrella, L. (2012). A novel fertilization and weed control system based on transgenic plants that can metabolize phosphite. ISB NEWS REPORT.
3. **Lopez-Arredondo, D.** and Herrera-Estrella, L. (2012). Howard Hughes Medical Institute Bulletin.
4. **Lopez-Arredondo, D.**, Sanchez-Calderon, L., Herrera-Estrella, L. (2012). A sustainable alternative for weed control in agriculture. Expo Agroalimentaria Guanajuato.

**Conference proceedings: Total of 2**

**Refereed (Invited): Total of 0**

**Refereed (Volunteered): Total of 2**

1. Pandeya, D., **López-Arredondo, D. L.**, Campbell, L., Rathore, K. S., Herrera-Estrella, L., & Bagavathiannan, M. V. (2019) *Phosphite Dehydrogenase (ptxD)* Gene in Combination with

Phosphite As a Potential, Non-Herbicidal Weed Suppression System. ASA, CSSA, and SSSA International Annual Meetings, San Antonio, TX. <https://scisoc.confex.com/scisoc/2019am/meetingapp.cgi/Paper/121517>

2. Gutiérrez Moreno, K., Sánchez Calderón, L., Ortiz Castro, R., Heil, M., **López Arredondo, D. L.**, Herrera-Estrella, L., (2016) Efficient technological platform development for the identification of PGPR in tomato and their potential use in bio-fertilizers. CABI, pp. 297-301.

### **Technical Reports: Total of 3**

1. Surge of maize production with an effective low-cost and sustainable weed control system. StelaGenomics Inc Project report. Bill and Melinda Gates Foundation, Grand Challenges Exploration Program, USA, 2012-2014.
2. Field evaluation of a new technological platform for the control of weed based on genetically modified maize and soybean. StelaGenomics Mexico, Project report. FINNOVA Program-National Council of Science and Technology (CONACYT)- Secretariat of Economy, Mexico, 2012-2015.
3. Innovation and scaling-up of an efficient system to produce biofuels and bioproducts in open ponds from genetically modified microalgae. StelaGenomics Mexico, Project report. FINNOVA Program-National Council of Science and Technology (CONACYT)-Secretariat of Economy, Mexico, 2012-2015.

### **Abstracts: Total of 22 (abstracts were also presented at scientific conferences)**

1. Milán-Carrillo, J., Gutiérrez Dorado, R., Ayala-Rodriguez, A.E., **Lopez-Arredondo, D.**, Reyes-Moreno, C. "Nutritional value of nixtamalized and extruded flour from quality protein maize." IV International Congress of Biochemical Engineering. Morelia, Michoacan, Mexico, 2006.
2. Gonzalez-Morales, S., **Lopez-Arredondo, D.**, Herrera Estrella, L. "Identification of genes involved in sensing, signaling, and regulation of Phosphorus deprivation responses in *A. thaliana*." VII Meeting of Latin America and the Caribbean on Biotechnology, REDBIO, Guadalajara, Jalisco, Mexico, November 2010.
3. Hayano-Kanashiro, D., **Lopez-Arredondo, D.**, Herrera Estrella, L. "Identification and characterization of Phosphorous-compounds metabolizing strains from Cuatro Ciénegas Bassin." VII Meeting of Latin America and the Caribbean on Biotechnology, REDBIO, Guadalajara, Jalisco, Mexico, November 2010.
4. **Lopez-Arredondo, D.** Herrera Estrella, L. "Generation and characterization of phosphite-metabolizing plants: an alternative to better use the phosphorus in agriculture." VII Meeting of Latin America and the Caribbean on Biotechnology), REDBIO, Guadalajara, Jalisco, México, November, 2010.
5. **Lopez-Arredondo, D.**, Herrera Estrella, L. "Engineering a novel phosphorus metabolism pathway in microalgae: a platform for the effective management of biological contaminants in open pond systems." XVI National Congress of Plant Biochemistry and Molecular Biology/IX Symposium Mexico/USA, Mexican Society of Biochemistry, Queretaro, Mexico, December 7, 2015.
6. **Lopez-Arredondo, D.**, Herrera Estrella, L. "Metabolic engineering of crops to develop a more efficient fertilization and weed control system." XVI National Congress of Plant Biochemistry and Molecular Biology/IX Symposium Mexico/USA, Mexican Society of Biochemistry, Queretaro, Mexico, December 7, 2015.

7. Herrera Estrella, L. **Lopez-Arredondo, D.** "Identification of volatile organic compounds of microbial origin capable of promoting plant growth." XVI National Congress of Plant Biochemistry and Molecular Biology/IX Symposium Mexico/USA, Mexican Society of Biochemistry, Querétaro, Mexico, December 11, 2015.
8. Gutiérrez Moreno, K., Sánchez Calderón, L., Ortiz Castro, R., Heil, M., **López Arredondo, D. L.**, Herrera-Estrella, L. "Efficient technological platform development for the identification of PGPR in tomato and their potential use in bio-fertilizers." 3rd Biotechnology Summit 2016, Ciudad Obregón, Sonora, Mexico, 24-28 October 2016.
9. Carreras-Villaseñor, N., **Lopez-Arredondo, D.** Herrera Estrella, L. "Engineering *Trichoderma* as a biofertilizer in the phosphite/phosphite-metabolizing plants platform." 29th Fungal Genetics Conference Genetics Society of America (GSA), Pacific Grove, CA, September 15, 2017.
10. **Lopez-Arredondo, D.** Herrera Estrella, L. "Metabolic engineering of microalgae and cyanobacteria with a competitive advantage for industrial fermentations processes." 8th International Conference on Algal Biomass, Biofuels and Bioproducts, Elsevier Limited, Seattle, USA, June 11, 2018.
11. Gonzalez-Morales, S. **Lopez-Arredondo, D.** "Metabolic Engineering of *Synechococcus elongatus* to control biological contamination in raceway ponds." 9th International Conference on Algal Biomass, Biofuels and Bioproducts., Elsevier, Boulder, CO, June 18, 2019.
12. Gonzalez-Morales, S. **Lopez-Arredondo, D.** "PTXD/Phi as a dominant and stable selectable marker system for cyanobacteria and microalgae." XVIII National Plant Biochemistry and Molecular Biology Congress XI Symposium México-USA & 1st ASPB Mexico Section Meeting, Sociedad Mexicana de Bioquímica AC, Merida, Yucatan, Mexico, October 28, 2019.
13. Gonzalez-Morales, S., **Lopez-Arredondo, D.** "PTXD/Phi as a dominant and selectable marker system for cyanobacteria and microalgae." 9th International Conference on Algal Biomass, Biofuels and Bioproducts, Elsevier, Boulder, CO, June 19, 2019.
14. Gonzalez-Morales, S. **Lopez-Arredondo, D.** "Metabolic engineering of *Synechococcus elongatus* to control biological contamination in raceway ponds." XVIII National Plant Biochemistry and Molecular Biology Congress XI Symposium México-USA & 1st ASPB Mexico Section Meeting, Sociedad Mexicana de Bioquímica AC, Merida, Yucatan, Mexico, October 30, 2019.
15. Pandeya, D., **López-Arredondo, D.**, Campbell, L-A. Rathore, K.S. Herrera-Estrella, L. Bagavathiannan M. "Phosphite dehydrogenase (*ptxD*) gene in combination with phosphite as a potential, non-herbicidal weed suppression system". ASA, CSSA and SSSA International Annual Meetings, USA, November, 2019.
16. Tossoni, M.<sup>1</sup>, **Lopez-Arredondo, D.**, Herrera-Estrella, L. "An integrated approach to developing a sustainable source of lipids using green microalgae." Davis College Poster Competition, Texas Tech University, Lubbock, September 29, 2022.
17. Perez-Sanchez, B.<sup>1</sup>, Herrera-Estrella, L., **Lopez-Arredondo, D.** "Time to flower, time to change." 3-minute Thesis competition, Texas Tech University, Lubbock, 5, 2022.
18. Perez-Sanchez, B.<sup>1</sup>, **Lopez-Arredondo, D.**, Herrera-Estrella, L. "Direct gene editing of plants based on mobile vectors." Davis College Poster Competition, Texas Tech University, Lubbock, September 29, 2022.
19. Perez-Zavala, F., **Lopez-Arredondo, D.**, Herrera Estrella, L. "An in-depth characterization of phosphite-metabolizing soybean (*Glycine max*) plants and their interaction with weeds using high-

throughput RGB and hyperspectral imaging." American Society of Plant Biologists, Plant Biology Conference, Savannah, GA, August 5-9, 2023.

20. **Lopez-Arredondo, D.**, Herrera-Estrella, L., Ojeda-Rivera, J., Yadav, H<sup>1</sup>. "A constitutive defense-response transcriptional program underlies root-knot nematode resistance in *Gossypium hirsutum*." Beltwide Cotton Conference 2023, National Cotton Council, Cotton Foundation, New Orleans, LA, January 12, 2023.
21. **Lopez-Arredondo, D.**, Herrera-Estrella, L. Ojeda-Rivera, J., Yadav, H<sup>1</sup>. "Transcriptional Landscape of the Response and Resistance to *Fusarium vasinfectum* Infection in Pima Cotton." Beltwide Cotton Conference 2023, National Cotton Council, Cotton Foundation, New Orleans, LA, January 12, 2023.
22. Yong-Villalobos, L., Herrera-Estrella, L., **Lopez-Arredondo, D.**, Hequet, E. "Single-Cell analysis of cotton formation." Beltwide Cotton Conference 2023, National Cotton Council, Cotton Foundation, New Orleans, LA, January 11, 2023.

## **PRESENTATIONS AND LECTURES**

### **Invited talks and lectures: Total of 15**

1. **Lopez-Arredondo, D.** "Development of a dual fertilization and weed control system based on genetically modified plants able to metabolize phosphite." 1st. Annual World Congress of Agricultural Biotechnology, Changchun, China, October 28, 2011.
2. **Lopez-Arredondo, D.** "El fósforo: un recurso estratégico para el futuro de la agricultura. Son las plantas transgénicas una alternativa para optimizar su uso? (Phosphorus: a strategic resource for the future of agriculture. Are transgenic plants an alternative to optimize it use?)." El Colegio Nacional (The National College), Seminar Series of the National College, Mexico City, Mexico, September 24, 2012.
3. **Lopez-Arredondo, D.**, Herrera Estrella, L. "Use of phosphite oxidoreductase and phosphite as a selectable marker system for plant transformation." International Workshop on Agricultural Resource Utilization and Soil Quality Improvement, Nanjing Agricultural University of China, Nanjing, China, October 27, 2012.
4. **Lopez-Arredondo, D.** "Un Nuevo Sistema Agrícola Para el Uso Sustentable de los Recursos (A new agricultural system for the sustainable use of resources)." X Encuentro Participación de la Mujer en la Ciencia (X Meeting, Participation of Woman on Science), Centro de Investigaciones en Óptica (CIO; Center for Research in Optical Science), Guanajuato, Mexico, May 15, 2013.
5. **Lopez Arredondo, D. L.** "From the laboratory to the field: creating a technology-based company." Science-Industry Matchmaking event between Latin American, Caribbean and European actors of biorefineries, biobased products and bioenergy, European Commission (ALCUE-KBBE), Antwerpen, Belgium, June 3, 2013.
6. **Lopez-Arredondo, D.** "From the laboratory to the field: creating a technology-based company." XV National Congress of Biotechnology and Bioengineering/12th International Symposium on the Genetics of Industrial Microorganisms, Mexican Society of Biotechnology and Bioengineering, Cancun, Quintana Roo, Mexico, June 27, 2013.
7. **Lopez-Arredondo, D.** "From a doctoral thesis to a technology-based company: obstacles, challenges and oportunities" (De una tesis doctoral a la creación de una empresa de base tecnológica: obstáculos, retos y oportunities)-From the knowledge to entrepreneurship:

capitalizing your talent (Del conocimiento al emprendimiento: capitalizando tu talento), Agency 3C; Agency for knowledge commercialization of Cinvestav (Agencia de Comercialización del Conocimiento del Cinvestav), Mexico City, Mexico, November 20, 2013.

8. **Lopez Arredondo, D. L.** "Transgenic crops: an example of sustainable agricultura" (Plantas transgénicas: un ejemplo de producción agrícola sustentable). 2do. Congreso Nacional de Ciencia y Tecnología Agropecuaria/1er. Simposio Internacional en Innovación en la Producción Agroalimentaria Sustentable, SOMECTA-Instituto Tecnológico de Roque, Guanajuato, Mexico, May 13, 2014.
9. **Lopez-Arredondo, D.** "Creation of a technology-based company: obstacles, challenges and opportunities" (Creación de una empresa de base tecnológica: obstáculos, retos y oportunidades). International Congress on Biotechnology "Quorum", Monterrey Institute of Technology and Higher Education (ITESM), Querétaro, Mexico, April 9, 2016.
10. **Lopez-Arredondo, D.** "Transcendence of genetic improvement in agriculture: challenges and innovations-An example of emerging agricultural technologies." International Maize and Wheat Improvement Center (CIMMYT), Texcoco, Mexico, September 6, 2018.
11. **Lopez-Arredondo, D.** "Controlling weedy organisms through metabolic engineering: applications in agriculture and in large-scale bioreactors." Spring 2019 Seminar Series, TTU-PSS, Lubbock, USA, April 11, 2019.
12. **Lopez-Arredondo, D.** "Genetic engineering to expand microalgae potential for biotechnology." PSS 5325 Transgenic and Plant cell genetics, Guest Lecture, Texas Tech University, Lubbock, TX, April 13, 2023.
13. **Lopez-Arredondo, D.** "Controlling weedy organisms through metabolic engineering: application in agriculture and in large-scale bioreactors." 2023 Metabolic Engineering in Plants: Sustainability Through Innovation, Gordon Research Conference, Barcelona, Spain, June 15, 2023.
14. **Lopez-Arredondo, D.** "Unraveling host-plant mechanisms of Fusarium wilt race 4 and root-knot nematode resistance to accelerate molecular breeding in cotton." AFRI Commodity Board Co-Funding Topics, USDA, online, August 30, 2023.
15. **Lopez-Arredondo, D.** "Microalgae: food, feedstock, and bioproducts for the future." BioFrontiers Seminar Series, University of North Texas, Denton, TX, November 10, 2023.

#### **Poster and oral presentations in conferences: Total of 46**

1. Milán-Carrillo, J., Gutiérrez Dorado, R., Ayala-Rodriguez, A.E., **Lopez-Arredondo, D.**, Reyes-Moreno, C. "Nutritional value of nixtamalized and extruded flour from quality protein maize." IV International Congress of Biochemical Engineering. Morelia, Michoacan, Mexico, 2006.
2. Gonzalez-Morales, S., **Lopez-Arredondo, D.**, Herrera Estrella, L. "Identification of genes involved in sensing, signaling, and regulation of Phosphorus deprivation responses in *A. thaliana*." VII Meeting of Latin America and the Caribbean on Biotechnology, REDBIO, Guadalajara, Jalisco, Mexico, November, 2010.
3. Hayano-Kanashiro, D., **Lopez-Arredondo, D.**, Herrera Estrella, L. "Identification and characterization of Phosphorous-compounds metabolizing strains from Cuatro Ciénegas Bassin." VII Meeting of Latin America and the Caribbean on Biotechnology, REDBIO, Guadalajara, Jalisco, Mexico, November, 2010.

4. **Lopez-Arredondo, D.** Herrera Estrella, L. "Generation and characterization of phosphite-metabolizing plants: an alternative to better use the phosphorus in agriculture." VII Meeting of Latin America and the Caribbean on Biotechnology), REDBIO, Guadalajara, Jalisco, México, November, 2010.
5. **Lopez-Arredondo, D.**, Herrera Estrella, L. "Engineering a novel phosphorus metabolism pathway in microalgae: a platform for the effective management of biological contaminants in open pond systems." XVI National Congress of Plant Biochemistry and Molecular Biology/IX Symposium Mexico/USA, Mexican Society of Biochemistry, Queretaro, Mexico, December 7, 2015.
6. **Lopez-Arredondo, D.**, Herrera Estrella, L. "Metabolic engineering of crops to develop a more efficient fertilization and weed control system." XVI National Congress of Plant Biochemistry and Molecular Biology/IX Symposium Mexico/USA, Mexican Society of Biochemistry, Queretaro, Mexico, December 7, 2015.
7. Herrera Estrella, L. **Lopez-Arredondo, D.** "Identification of volatile organic compounds of microbial origin capable of promoting plant growth." XVI National Congress of Plant Biochemistry and Molecular Biology/IX Symposium Mexico/USA, Mexican Society of Biochemistry, Querétaro, Mexico, December 11, 2015.
8. Gutiérrez Moreno, K., Sánchez Calderón, L., Ortiz Castro, R., Heil, M., **López Arredondo, D. L.**, Herrera-Estrella, L. "Efficient technological platform development for the identification of PGPR in tomato and their potential use in bio-fertilizers." 3rd Biotechnology Summit 2016, Ciudad Obregón, Sonora, Mexico, 24-28 October 2016.
9. Carreras-Villaseñor, N., **Lopez-Arredondo, D.** Herrera Estrella, L. "Engineering Trichoderma as a biofertilizer in the Phosphite/phosphite-metabolizing plants platform." 29th Fungal Genetics Conference Genetics Society of America (GSA), Pacific Grove, CA, September 15, 2017.
10. **Lopez-Arredondo, D.** Herrera Estrella, L. "Metabolic engineering of microalgae and cyanobacteria with a competitive advantage for industrial fermentations processes." 8th International Conference on Algal Biomass, Biofuels and Bioproducts, Elsevier Limited, Seattle, USA, June 11, 2018.
11. Gonzalez-Morales, S. **Lopez-Arredondo, D.** "Metabolic Engineering of *Synechococcus elongatus* to control biological contamination in raceway ponds." 9th International Conference on Algal Biomass, Biofuels and Bioproducts., Elsevier, Boulder, CO, June 18, 2019.
12. Gonzalez-Morales, S. **Lopez-Arredondo, D.** "PTXD/Phi as a dominant and stable selectable marker system for cyanobacteria and microalgae." XVIII National Plant Biochemistry and Molecular Biology Congress XI Symposium México-USA & 1st ASPB Mexico Section Meeting, Sociedad Mexicana de Bioquímica AC, Merida, Yucatan, Mexico, October 28, 2019.
13. Gonzalez-Morales, S., **Lopez-Arredondo, D.** "PTXD/Phi as a dominant and selectable marker system for cyanobacteria and microalgae." 9th International Conference on Algal Biomass, Biofuels and Bioproducts, Elsevier, Boulder, CO, June 19, 2019.
14. Gonzalez-Morales, S. **Lopez-Arredondo, D.** "Metabolic engineering of *Synechococcus elongatus* to control biological contamination in raceway ponds." XVIII National Plant Biochemistry and Molecular Biology Congress XI Symposium México-USA & 1st ASPB Mexico Section Meeting, Sociedad Mexicana de Bioquímica AC, Merida, Yucatan, Mexico, October 30, 2019.
15. Pandeya, D., **López-Arredondo, D.**, Campbell, L-A. Rathore, K.S. Herrera-Estrella, L. Bagavathiannan M. "Phosphite dehydrogenase (*ptxD*) gene in combination with phosphite as a potential, non-herbicidal weed suppression system." ASA, CSSA and SSSA International Annual Meetings, USA, November, 2019.



16. Herrera-Estrella, L., **Lopez-Arredondo, D.**, Ulloa M., Roberts P. "Use of bioinformatics to elucidate the mechanism of resistance to nematodes in cotton." CABANA Food Security Knowledge Exchange meeting. Guanajuato, Mexico, March, 2022.
17. Tossoni, M., **Lopez-Arredondo, D.**, Herrera-Estrella, L. "An integrated approach to developing a sustainable source of lipids using green microalgae." Davis College Poster Competition, Texas Tech University, Lubbock, September 29, 2022.
18. Yong-Villalobos, L., Herrera-Estrella, L., **Lopez-Arredondo, D.**, Hequet, E. "Single-cell analysis of cotton formation." Beltwide Cotton Conference 2023, National Cotton Council, Cotton Foundation, New Orleans, LA, January 11, 2023.
19. **Lopez-Arredondo, D.**, Herrera-Estrella, L., Ojeda-Rivera, J. "Transcriptional landscape of the response and resistance to *Fusarium vasinfectum* infection in Pima cotton." Beltwide Cotton Conference 2023, National Cotton Council, Cotton Foundation, New Orleans, LA, January 12, 2023.
20. **Lopez-Arredondo, D.**, Herrera-Estrella, L., Ojeda-Rivera, J. "A constitutive defense-response transcriptional program underlies root-knot nematode resistance in *Gossypium hirsutum*." Beltwide Cotton Conference 2023, National Cotton Council, Cotton Foundation, New Orleans, LA, January 12, 2023.
21. Martinez-Irastorza, P., **Lopez-Arredondo, D.**, Herrera Estrella, L. "A reversible valve for heterologous production of plant hormone trans-zeatin in yeast *S. cerevisiae*." IGCAS Annual Symposium, Texas Tech University, Lubbock, December 7, 2022.
22. Perez-Sanchez, B., **Lopez-Arredondo, D.** Herrera-Estrella, L. "Direct gene editing of plants based on mobile vectors." IGCAS Annual Symposium, Texas Tech University, Lubbock, December 7, 2022.
23. Brito-Bello, A., **Lopez-Arredondo, D.** "Green microalgae as sources of allelochemicals with a pesticide effect." IGCAS Annual Symposium, Texas Tech University, Lubbock, December 7, 2022.
24. Tossoni, M., **Lopez-Arredondo, D.** "Identification of the genetic basis for improvement of lipid yield in green microalgae." IGCAS Annual Symposium, Texas Tech University, Lubbock, December 7, 2022.
25. Le, V. P., **Lopez-Arredondo, D.**, Herrera-Estrella, L., Tran, S. "Investigating the molecular and genetic origins of multicellularity and cellular differentiation using *Volvox carteri* as a model." IGCAS Annual Symposium, Texas Tech University, Lubbock, December 7, 2022.
26. Yadav, H., **Lopez-Arredondo, D.** "Optimization of hairy root transformation in Acala SJ-2 cotton genotype for effective study of root-knot nematode resistance." IGCAS Annual Symposium, Texas Tech University, Lubbock, December 7, 2022.
27. Barrera-Duarte, C., **Lopez-Arredondo, D.** "Transcriptional regulatory networks reveal key molecular regulators orchestrating nutritional stress in two *Chlorella sorokiniana* stress." IGCAS Annual Symposium, Texas Tech University, Lubbock, December 7, 2022.
28. Flores-Tinoco, V., **Lopez-Arredondo, D.**, Herrera-Estrella, L. "Transposable elements movement in response to chemical stress in *Chlamydomonas reinhardtii*." IGCAS Annual Symposium, Texas Tech University, Lubbock, December 7, 2022.
29. Ojeda-Rivera, J., **Lopez-Arredondo, D.**, Herrera-Estrella, Ulloa, M. "A constitutive defense-response transcriptional program without fitness costs underlies root-knot nematode resistance in

cotton." USDA-ARS & TTU Research Spotlight, Texas Tech University/ USDA-ARS, Lubbock, October 18, 2022.

30. Ojeda-Rivera, J., **Lopez-Arredondo, D.**, Herrera-Estrella, Ulloa, M. "Transcriptional landscape of the response rests and resistance to *Fusarium vasinfectum* infection in Pima cotton." USDA-ARS & TTU Research Spotlight, Texas Tech University/ USDA-ARS, Lubbock, October 18, 2022.
31. Perez-Sanchez, B., Herrera-Estrella, L., **Lopez-Arredondo, D.** "Time to flower, time to change." 3-minute Thesis competition, Texas Tech University, Lubbock, 5, 2022.
32. Perez-Sanchez, B., **Lopez-Arredondo, D.**, Herrera-Estrella, L. "Direct gene editing of plants based on mobile vectors." Davis College Poster Competition, Texas Tech University, Lubbock, September 29, 2022.
33. Brito Bello, A., Chavez-Montes, R., Najera, R., Gutierrez, C. D., Lopez Arredondo, D. "*Chlamydomonas reinhardtii* as a source of allelochemicals with pesticide effect." Plant and Soil Science Symposium, April 2023.
34. Perez-Zavala, F., **Lopez-Arredondo, D.**, Herrera Estrella, L. "An in-depth characterization of phosphite-metabolizing soybean (*Glycine max*) plants and their interaction with weeds using high-throughput RGB and hyperspectral imaging." American Society of Plant Biologists, Plant Biology Conference, Savannah, GA, August 5-9, 2023.
35. Brito Bello, A., **Lopez-Arredondo, D.** "Bioactive compounds with pesticide activities derived from aged cultures of green microalgae." 3-Minute Thesis Competition, October 6 2023.
36. Martinez-Irastorza, P., **Lopez-Arredondo, D.**, Herrera Estrella, L. "A reversible valve for heterologous production of plant hormone trans-zeatin in *S. cerevisiae*." IGCAS Annual Symposium, Texas Tech University, Lubbock, November 14, 2023. *3<sup>rd</sup> place in Poster Competition.*
37. Yadav, H., **Lopez-Arredondo, D.** "AtMYB75 transcription factor inducing anthocyanin biosynthesis in cotton hairy roots as an efficient reporter gene to study root-knot nematode interaction." IGCAS Annual Symposium, Texas Tech University, Lubbock, November 14, 2023.
38. Perez-Zavala, F., **Lopez-Arredondo, D.**, Herrera Estrella, L. "Characterization of phosphite-metabolizing soybean (*Glycine max*) plants and their interaction with weeds using high-throughput RGB and hyperspectral imaging." IGCAS Annual Symposium, Texas Tech University, Lubbock, November 14, 2023.
39. Perez-Sanchez, **Lopez-Arredondo, D.**, Herrera Estrella, L. "Direct gene editing of plants based on mobile vectors." IGCAS Annual Symposium, Texas Tech University, Lubbock, November 14, 2023. *2<sup>nd</sup> Place in Poster Competition.*
40. Tosoni, M., **Lopez-Arredondo, D.** "*Chlamydomonas reinhardtii* TF mutant displays clustering phenotype and higher intracellular lipid content." IGCAS Annual Symposium, Texas Tech University, Lubbock, November 14, 2023.
41. Vy Phuong Le, V.P., Yong, L., Tran, S., Herrera-Estrella, L. **Lopez-Arredondo, D.** "Transcriptome analysis of different developmental stages of *Volvox carteri* reveal dynamic change of genes during development." IGCAS Annual Symposium, Texas Tech University, Lubbock, November 14, 2023.
42. Brito Bello, A., **Lopez-Arredondo, D.** "Decoding transcriptomic and metabolomic profiles of microalgae: *Chlamydomonas* as a producer of bioactive compounds with pesticide activities." Oral presentation, IGCAS Annual Symposium, Texas Tech University, Lubbock, November 14, 2023.

43. Brito Bello, A., **Lopez-Arredondo, D.** "Exploring metabolite and transcriptomics profiles of green microalgae extract with bio-pesticide effect." IGCAS Annual Symposium, Texas Tech University, Lubbock, November 14, 2023.
44. Flores Tinoco, V., **Lopez-Arredondo, D.** "Polycistronic gene expression in Chlorellaceae." IGCAS Annual Symposium, Texas Tech University, Lubbock, November 14, 2023.
45. Barrera Duarte, C., **Lopez-Arredondo, D.** "Unraveling triacylglycerol accumulation: a transcriptional regulatory perspective in *Chlorella sorokiniana* strains under nitrogen and phosphorus deprivation." IGCAS Annual Symposium, Texas Tech University, Lubbock, November 14, 2023.
46. Lamb, M., Deb, S., **Lopez-Arredondo, D.**, Jagadish, K., Patil, G. "Optimizing root architecture of cotton cultivars for improving adaptive response to water deficit stress." IGCAS Annual Symposium, Texas Tech University, Lubbock, November 14, 2023.

## **GRADUATE STUDENT COMMITTEES**

### **Completed: Total of 4**

**Chair: Total of 1**

**MS Thesis: Total of 1**

1. Barrera-Duarte, Claudio. MS student, completed Fall 2021. Title of thesis: *Transcriptomic regulatory networks to unveil lipid biosynthesis in Chlorella spp.*

**PhD Thesis: Total of 0**

**Co-Chair: Total of 1**

**MS Thesis: Total of 1**

1. Perez-Sanchez, Benjamin. MS student, completed Summer 2022. Title of thesis: *Development of gene editing mobile vectors based on a long-distance RNA transport system.*

**PhD Thesis: Total of 0**

**Committee member of: Total of 2**

1. Valeria Flores Tinoco, MS student, completed Summer 2023. Title of thesis: *Optimization of a CRISPR/Cas9 system for transient expression in Chlamydomonas reinhardtii.*
2. Chidinma (Lois) Nwoko. MS student, completed Summer 2023. Title of thesis: *Development of a protoplast regeneration system in soybean.*

### **In progress: Total of 11**

**Chair: Total of**

**PhD Thesis: Total of 4**

1. Alethia Brito-Bello. Anticipated completion: Fall 2024. Tentative thesis title: *Discovery and characterization of microalgal natural compounds with pesticide activities.*
2. Matteo Tosoni. Anticipated completion: Fall 2024. Tentative thesis title: *Transcriptional engineering of lipid biosynthesis in microalgae.*
3. Himanshu Yadav. Anticipated completion: Fall 2025. Tentative thesis title: *Molecular insights into the disease resistance mechanisms against root-knot nematode and Fusarium oxysporum sp. vasinfectum race 4 (FOV4) in cotton genotypes.*
4. Claudio Barrera Duarte. Anticipated completion: Spring 2026. Tentative thesis title: *Exploring molecular regulatory mechanisms in microalgae stress responses through integrated multi-omics approaches.*

**MS Thesis: Total of 0**

**Co-Chair: Total of 4**

**PhD Thesis: Total of 4**

1. Vy P. Le. Anticipated completion: Spring 2026. Tentative thesis title: *Understanding the molecular and genetic basis of multicellularity and cellular differentiation using Volvox carteri as a model.*
2. Valeria Flores-Tinoco. Anticipated completion: Fall 2025. Tentative thesis title: *Polycistronic gene expression in Chlorellaceae.*
3. Benjamin Perez-Sanchez. Anticipated completion: Spring 2026. Tentative thesis title: *Development of tissue culture-independent genome editing in plants.*
4. Moises Frausto. Anticipated completion: Fall 2024. Tentative thesis title: *Design and implementation of a new C-fixation pathway in Chlamydomonas reinhardtii.*

**MS Thesis: Total of 0**

**Committee member of: Total of 3**

**PhD Thesis: Total of 2**

1. Shang Wong. Anticipated completion: Spring 2024. Tentative title of thesis: *Linking mycorrhizal and reproductive ecology: a case study of vanilla and other orchid species in Costa Rica.*
2. Lamb Micayla. Anticipated completion: Spring 2025. Tentative title of thesis: *Optimizing root architecture of cotton cultivars for improving adaptive response to water deficit stress.*

**Ms Thesis: Total of 1**

1. Anik Touhidur. Anticipated completion: Spring 2024. Tentative title of thesis: *Improvement of cotton growth performance under drought stress with the employment of zinc fertilizer.*

**Did not complete: Total of 3**

**PhD Thesis: Total of 1**

Lindsay Williams (AY 2019)

**MS Thesis: Total of 2**

Abigail Bell (AY 2021)

Paulina Martinez-Irastorza (AY 2023)

**UNDERGRADUATE ADVISING**

**Student Assistant**

1. **Kharde, Varun.** January 2021-December 2021.
2. **Sheikh Alard, Ahmad.** November 2021-December 2021.
3. **Autude, Kunal.** January 2022-December 2022.
4. **Mujumbar, Ashwini.** August 2022-December 2022.
5. **Adsul, Nikhil Seresh.** October 2022-December 2022.
6. **Jadhav, Rajat.** January 2022-January 2023.
7. **Patel, Hetvi Alpeshkumar.** October 2023-January 2024.
8. **Singh, Gagan Deep.** February 2023-August 2023.
9. **Ramani, Ashish.** February 2023-Present.
10. **Patil, Gourav.** March 2023-Present.

**POST-DOCTORAL ASSOCIATES SUPERVISED**

1. **Ojeda-Rivera, Jonathan Odilón,** Computational Biologist/Molecular Biologist, August 2021-July 2023.
2. **Chavez Montes, Ricardo,** Computational Biologist, June 2020-December 2023.
3. **Perez-Zavala, Francisco,** Computational Biologist/Molecular Biologist, January 2023-Present.

**TEACHING RESPONSABILITIES**

1. **PSS 5100:** Graduate Seminar (1 credit; 95% responsibility; co-teaching with Dr. Glen Ritchie)
  - Fall 2021. PSS 5100: Graduate Seminar. Total of 8 students; 1 credit.
  - Spring 2022. PSS 5100: Graduate Seminar. Total of 10 students; 1 credit.
  - Fall 2022. PSS 5100: Graduate Seminar. Total of 8 students; 1 credit.
  - Fall 2023. PSS 5100: Graduate Seminar. Total of 16 students; three sections; 1 credit.
2. **PSS 6321:** Principles and Applications of Synthetic Biology for Crop Improvement (I developed this course; 3 credits; 100% responsibility)
  - Spring 2022-Taught as Special Topic -Total 7 students.

- Spring 2023-Total 7 students.

### **Other teaching responsibilities**

#### **Fall 2019**

PSS 6001: Selected Topics in Plant and Soil Science: Writing a Review - Phosphite Technology in Microalgae. Total of 1 student; 3 credits.

PSS 7000: Research. Total of 1 student; 3 credits.

#### **Spring 2020**

PSS 6000: Master's Thesis. 1 student; 3 credits.

PSS 7000: Research. Total of 1 student; 3 credits.

#### **Summer 2020**

PSS 6000: Master's Thesis. 1 student; 3 credits.

PSS 7000: Research. Total of 1 student; 3 credits.

#### **Fall 2020**

PSS 6000: Master's Thesis. 1 student; 3 credits.

PSS 6001: Selected Topics in Plant and Soil Science: Developing and Executing your Research Project. Total of 2 students; 3 credits.

PSS 7000: Research. Total of 2 students; 3 credits.

#### **Spring 2021**

PSS 6000: Master's Thesis. 1 student; 3 credits.

PSS 6001: Selected Topics in Plant and Soil Science: Synthetic Biology. Total of 7 students; 3 credits.

PSS 7000: Research. Total of 2 students; 3 credits.

#### **Summer 2021**

PSS 6000: Master's Thesis. 1 student; 3 credits.

PSS 7000: Research. Total of 2 students; 3 credits.

#### **Fall 2021**

PSS 5100: Graduate Seminar. Total of 8 students; 1 credit.

PSS 6001: Selected Topics in Plant and Soil Science: Strategies for the Genetic Improvement of Microalgae. Total of 2 students; 3 credits.

PSS 6000: Master's Thesis. 1 student; 3 credits.

PSS 7000: Research. Total of 3 students; 3 credits.

#### **Spring 2022**

PSS 5100: Graduate Seminar. Total of 10 students; 1 credit.

PSS 6001: Selected Topics in Plant and Soil Science: Plant Genetics and Genomics. Total of 6 students; 3 credits.

PSS 7000: Research. Total of 3 students; 3 credits.

#### **Summer 2022**

PSS 6001: Selected Topics in Plant and Soil Science: Gen. & Mol. Determinants of Plant Resistance to Pathogens. Total of 1 student; 3 credits.

PSS 7000: Research. Total of 3 students; 3 credits.

#### **Fall 2022**

PSS 5100: Graduate Seminar. Total of 8 students; 1 credit.

PSS 6001: Selected Topics in Plant and Soil Science: Phenotyping-from a single cell to a whole plant. Total of 6 students; 3 credits.

PSS 6001: Selected Topics in Plant and Soil Science: Selected Topics in Plant Physiology (Writing review articles). Total of 5 students; 3 credits.

### **Spring 2023**

PSS 6321: Principles and Applications of Synthetic Biology for Crop Improvement. Total of 7 students; 3 credits.

PSS 7000: Research. Total of 3 students; 3 credits.

### **Summer 2023**

PSS 7000: Research. Total of 6 students; 3 credits.

### **Fall 2023**

PSS 5100: Graduate Seminar. Total of 16 students; three sections; 1 credit.

PSS 6001: Selected Topics in Plant and Soil Science: Writing Review Articles on Selected Topics. Total of 2 students; 3 credits.

PSS 7000: Research. Total of 3 students; 3 credits.

PSS 8000: Doctor's Dissertation. Total of 1 student; 3 credits.

### **Spring 2024**

PSS 8000: Doctor's Dissertation. Total of 2 students; 3 credits.

PSS 7000: Research. Total of 4 students; 3 credits.

PSS 6001: Selected Topics in Plant and Soil Science: Optimizing an *in vitro* system to test pathogen resistance in cotton. Total of 1 student; 3 credits.

### Summary of Student Ratings of In-Class Teaching Effectiveness

Evaluation scale: 5 = excellent, 4 = outstanding, 3 = good, 2 = fair, 1 = poor

Entries are the section mean by term.

| Year | Term   | Course   | Course Title                  | Students |      | Question 1:<br>Course Objectives |               |               |     | Question 2:<br>Effectiveness |     |               |     | Question 3:<br>Learning Experience |     |               |     |
|------|--------|----------|-------------------------------|----------|------|----------------------------------|---------------|---------------|-----|------------------------------|-----|---------------|-----|------------------------------------|-----|---------------|-----|
|      |        |          |                               | A        | B    | DLLA                             | PSS           | Davis College | TTU | DLLA                         | PSS | Davis College | TTU | DLLA                               | PSS | Davis College | TTU |
|      |        |          |                               | 2021     | Fall | PSS 5100                         | Grad. Seminar | 8             | 5   | 4.6                          | 4.5 | 4.5           | 4.5 | 4.6                                | 4.4 | 4.4           | 4.3 |
| 2022 | Spring | PSS 5100 | Grad. Seminar                 | 10       | 8    | 4.5                              | 4.5           | 4.5           | 4.5 | 4.4                          | 4.4 | 4.4           | 4.3 | 4.4                                | 4.4 | 4.4           | 4.3 |
| 2022 | Fall   | PSS 5100 | Grad. Seminar                 | 8        | 7    | 4.7                              | 4.6           | 4.5           | 4.5 | 4.3                          | 4.5 | 4.4           | 4.4 | 4.3                                | 4.4 | 4.4           | 4.4 |
| 2023 | Fall   | PSS 5100 | Grad. Seminar . (one section) | 6        | 4    | 4.5                              | 4.6           | 4.5           | 4.5 | 4.8                          | 4.4 | 4.4           | 4.3 | 4.8                                | 4.4 | 4.4           | 4.3 |
| 2023 | Spring | PSS 6321 | Syn.Bio                       | 7        | 7    | 4.6                              | 4.6           | 4.6           | 4.5 | 4.6                          | 4.5 | 4.4           | 4.4 | 4.6                                | 4.4 | 4.4           | 4.4 |

Notes:  
**A:** students enrolled  
**B:** students evaluating



## GRANTS AND AWARDS

### POST-HIRE (October 2018-January 2024)

**Total funded (not GURI) \$3,180,730.00** (Awarded directly as PI and Co-PI: \$1,576,634.45)

**Total funded GURI Program: \$5M** (My share: \$1M)

**Pending: Total submitted \$950,000.00**

\*(%) indicates my share

1. **PI: Lopez-Arredondo D; Co-PI: Herrera-Estrella L. 2024.** *Plant stress tolerance and disease resistance biomarker-gene discovery for assisting breeding.* Cotton Incorporated. **Funded:** \$35,000.00 (70%)
2. **PI: Solis J; Co-PIs: Lopez-Arredondo D, Jagadish K, Jiao Y, Hales-Paxton K, Zhan H, Horita J, Galyean M. 2023-2025.** *Elucidation of biological mechanisms of cotton responses and interactions to environmental and disease threats to achieve agriculture sustainability.* Cooperative Research for Joint Projects in Basic and Applied Research Having Regional or National Application-USDA-ARS/TTU. **Funded:** \$316,250.00 (31%)
3. **PI: Lopez-Arredondo D; Co-PIs: Herrera-Estrella, L, Patil G. 2024.** *Development of a cotton mutant population as a source of traits for cotton improvement.* Cotton Incorporated. **Funded:** \$25,000.00 (34%)
4. **PI: Patil G; Co-PIs: Lopez-Arredondo D, Jagadish K, Deb S. 2024.** *Optimizing root system architecture of cotton cultivars for adaptive response to water-deficit stress.* Cotton Incorporated. **Funded:** \$39,185.00 (25%)
5. **PI: Herrera-Estrella; Co-PIs: Lopez-Arredondo D, Tran S, Jiao Y, Patil G. 2023-2027.** *An integrated research program to accelerate sorghum breeding and management for improving weed control, abiotic stress tolerance, and grain quality.* United Sorghum Checkoff Program. **Funded:** \$1,000,000.00 (15%)
6. **PI: Lopez-Arredondo D; Co-PIs: Tran S, Herrera-Estrella L. 2023-2024.** *Genetic improvement of soybean to boost weed control and phosphorus nutrition.* United Soybean Board. **Funded:** \$131,957.00 (50%)
7. **PI: Lopez-Arredondo D. 2023.** *Assessment of the herbicidal effect of natural compounds produced by microalgae.* Cotton Incorporated. **Funded:** \$35,000.00 (100%)
8. **PI: Lopez-Arredondo D; Co-PI: Herrera-Estrella L. 2023.** *Plant stress tolerance and disease resistance biomarker-gene discovery for assisting breeding.* Cotton Incorporated. **Funded:** \$35,000.00 (70%)
9. **PI: Herrera-Estrella; Co-PIs: Lopez-Arredondo D, Hequet E, Yong-Villalobos L. 2023-2027.** *Dissecting cotton fiber development and quality determinants at the single-cell level for breeding improved fiber quality.* USDA-NIFA. **Funded:** \$300,000.00 (20%)
10. **PI: Lopez-Arredondo D; Co-PIs: Tran S, Herrera-Estrella L. 2022-2023.** *Genetic improvement of soybean to boost weed control and phosphorus nutrition.* United Soybean Board. **Funded:** \$108,979.00 (50%)
11. **PI: Lopez-Arredondo D; Co-PIs: Herrera Estrella L, Patil G. 2023.** *Development of a cotton mutant population as a source of traits for cotton improvement.* Cotton Incorporated. **Funded:** \$25,000.00 (34%)

12. PI: Patil G; **Co-PIs: Lopez-Arredondo D**, Jagadish K, Deb S. **2023**. *Optimizing root system architecture of cotton cultivars for adaptive response to water-deficit stress*. Cotton Incorporated. **Funded:** \$39,856.00 (25%)
13. **PI: Lopez-Arredondo D**. **2022**. *Assessment of the herbicidal effect of natural compounds produced by microalgae*. Cotton Incorporated. **Funded:** \$35,000.00 (100%)
14. **PI: Lopez-Arredondo D**; Co-PI: Herrera-Estrella L. **2022**. *Plant stress tolerance and disease resistance biomarker-gene discovery for assisting breeding*. Cotton Incorporated. **Funded:** \$35,000.00 (70%)
15. **PI: Lopez-Arredondo D**; Co-PIs: Herrera-Estrella L, Ulloa M, Roberts P. **2022-2025**. *Unraveling host-plant mechanisms of Fusarium wilt race 4 (FOV4) and root-knot nematode (RKN) resistance to accelerate molecular breeding in cotton*. USDA-NIFA. **Funded:** \$294,000.00 (70%)
16. **PI: Lopez-Arredondo D**; Co-PIs: Herrera-Estrella L, Ulloa M, Roberts P, Liu J. **2021-2022**. *Genetic Analysis and RNA marker development for FOV4 resistance breeding in cotton*. USDA-NIFA. **Funded:** \$201,261.00 (70%)
17. **PI: Lopez-Arredondo D**; Co-PIs: Herrera Estrella L, Patil G. **2022**. *Development of a cotton mutant population as a source of traits for cotton improvement*. Cotton Incorporated. **Funded:** \$25,000.00 (34%)
18. **PI: Lopez-Arredondo D**. **2022**. *Assessment of the herbicidal effect of natural compounds produced by microalgae*. Cotton Incorporated. **Funded:** \$35,000.00 (100%)
19. **PI: Lopez-Arredondo, D**; Co-PI: Herrera Estrella L. **2021**. *Plant stress tolerance and disease resistance biomarker-gene discovery for assisting breeding*. Cotton Incorporated. **Funded:** \$35,000.00 (70%)
20. **PI: Lopez-Arredondo D**; Co-PIs: Herrera Estrella L, Ulloa M. **2020-2022**. *Characterize molecular mechanisms and candidate genes contributing to contrasting stress tolerance responses and disease resistance in cotton*. USDA-ARS. **Funded:** \$62,040.00 (100%)
21. **PI: Lopez-Arredondo D**; Co-PIs: Herrera Estrella L, Patil G. **2021**. *Development of a cotton mutant population as a source of traits for cotton improvement*. Cotton Incorporated. **Funded:** \$24,000.00 (34%)
22. PI: Herrera-Estrella L; **Co-PIs: Lopez-Arredondo D**, Patil G. **2020-2022**. *Tissue-culture independent gene editing of shoot apical meristem cells by a long-distance RNA transport system*. USDA-NIFA. **Funded:** \$299,706.00 (20%)
23. **PI: Lopez-Arredondo, D**. **2020**. *Assessment of the herbicidal effect of natural compounds produced by microalgae*. Cotton Incorporated. **Funded:** \$43,496.00 (100%)
24. PI: Herrera-Estrella; **Co-PIs: de los Reyes B, Hequet E, Lopez-Arredondo D**. **2018-2023**. Governor's University Research Initiative (GURI)/Texas Tech University. **Funded:** \$5,000,000.00. The grant was awarded to TTU in 2018 and then assigned to us to establish and develop IGCAS as a new Institute (20%).

**Pending: (Total amount requested: \$950,000.00)**

1. **PI: Lopez-Arredondo D**; Co-PIs: Tran S, Herrera-Estrella L. Submitted 2023. *Harnessing microalgae diversity to discover novel bioherbicides and nematicides with new modes of action for sustainable agriculture*. USDA-NIFA. **2024-2026**. Total amount requested: \$650,000.00 (60%)

2. PI: Tran S; **Co-PIs: Lopez-Arredondo D**, Herrera-Estrella L. Submitted 2023. *Chemical induction of transgenerational memory for drought stress resilience in cotton*. USDA-NIFA. **2024-2027**. Total amount requested: \$300,000.00 (25%)

**Not funded: (Total amount requested: \$11,417,726.00)**

1. **PI: Lopez-Arredondo D**. Submitted 2023. *Building a genomic platform for improving lipid biosynthesis in microalgae*. National Science Foundation-CAREER. **2024-2028**. Total amount requested: \$1,610,207.00
2. PI: Herrera-Estrella L; **Co-PIs: Lopez-Arredondo D**, Gutman D (Texas A&M). Submitted 2023. *Unraveling the phosphate sensor system and regulatory networks controlling adaptation to low phosphate availability*. National Science Foundation. **2024-2026**. Total amount requested: \$1,288,938.00 (40%)
3. **PI: Lopez-Arredondo D**; Co-PIs: Herrera-Estrella L, Tran S. Submitted 2023. *Evolutionary rewiring of regulatory networks of lipid biosynthesis in microalgae*. DEO-Office of Science. **2023-2028**. Total amount requested: \$6,210,759.00 (50%)
4. **PI: Lopez-Arredondo D**; Co-PIs: Tran S, Herrera-Estrella L. Submitted 2022. *Harnessing microalgae diversity to discover novel bioherbicides and nematicides with new modes of action for sustainable agriculture*. USDA-AFRI. **2023-2027**. Total amount requested: \$649,984.00 (60%)
5. PI: Tran S; **Co-PIs: Lopez-Arredondo D**, Herrera-Estrella L. Submitted 2022. *Generating drought-tolerant cotton and sorghum seeds by exploring transgenerational memory effect of acetic acid application*. USDA-AFRI. **2023-2025**. Total amount requested: \$299,999.00 (25%)
6. **PI: Lopez-Arredondo D**; Co-PI: Herrera-Estrella L. Submitted 2022. *Drought stress-affected cottonseed oil and its regulated molecular mechanism for cottonseed improvement*. East Carolina University. **2023-2025**. Total amount requested: \$150,000.00 (50%)
7. PI: Herrera-Estrella L; **Co-PIs: Lopez-Arredondo D**. Submitted 2021. *Towards the Upland cotton pangenome: de novo sequencing, assembly and annotation of genomes to unravel selection signatures of cotton improvement*. USDA-NIFA. **2022-2025**. Total amount requested: \$299,995.00 (40%)
8. PI: Patil G; **Co-PIs: Lopez-Arredondo D**, Jiao Y, Herrera-Estrella L, Xin Z. Submitted 2020. *Enabling genome-editing technologies to improve yield-related traits in sorghum*. USDA-Foundation for Food and Agriculture Research. Total amount requested: \$583,008.00 (15%)
9. PI: Patil G; **Co-PIs: Lopez-Arredondo D**, Herrera-Estrella L. Submitted 2020. *Exploration of the beneficial role of silicon uptake for disease resistance and fiber quality improvement in cotton*. Cotton Incorporated. Total amount requested: \$28,000.00 (30%)
10. **PI: Lopez-Arredondo D**. Submitted 2019. *Development of phosphite-based compositions with dual effect to fertilize cotton and control weeds*. Cotton Incorporated. Total amount requested: \$30,000.00 (100%)
11. **PI: Lopez-Arredondo D**. Submitted 2019. *A novel genome editing-based strategy for improving weed control and phosphorus nutrition*. USDA-Foundation for Food and Agricultural Research. Total amount requested: \$266,836.00 (100%)

**PRE-HIRE (2012-2018)**

**Total amount funded: \$1,878,983.14**

1. **PI: Lopez-Arredondo D**; Co-PIs: Gonzalez-Morales S, Herrera-Estrella L. **2017-2019**. *A new biotech platform to increase the productivity and reduce the cost of biodiesel production from microalgae*. PRODETES Award by The World Bank and the Secretariat of Energy, Mexico. **Funded:** \$500,000.00
2. PI: Cruz-Ramirez A; **Co-PIs: Lopez-Arredondo D**, Herrera-Estrella L. **2017-2018**. *Development of a system based on the use of cyanobacteria for the production of camel chymosin as an additive for the production of cheese*. PEI Program-Stimulus to innovation and technological development in biotech companies, Mexico. **Funded:** \$38,994.00
3. PI: Carreras Villaseñor N; **Co-PIs: Lopez-Arredondo D**, Herrera-Estrella L. **2017-2018**. *Development of a technological platform for the metabolic modeling of plants without modification of their genome*. PEI Program-Stimulus to innovation and technological development in biotech companies, Mexico. **Funded:** \$41,781.00
4. PI: Sanchez-Calderon L; **Co-PIs: Lopez-Arredondo D**, Herrera-Estrella L. **2016-2017**. *Development of a technological platform for the identification and evaluation of components with potential to design plant biofertilizers, bioinoculants and biostimulants*. FINNOVATEG Program, Council of Science and Technology of the State of Guanajuato, Mexico. **Funded:** \$49,841.00
5. PI: Mondejar-Canet R; **Co-PIs: Lopez-Arredondo D**, Herrera-Estrella L. **2016-2017**. *Development of biotech canola for the sustainable control of weeds in agriculture*. FINNOVATEG Program, Council of Science and Technology of the State of Guanajuato, Mexico. **Funded:** \$38,166.00
6. PI: Carreras Villasenor N; **Co-PIs: Lopez-Arredondo D**, Herrera-Estrella L. **2016-2017**. *Development of tools for the genetic improvement of avocado*. FINNOVATEG Program, Council of Science and Technology of the State of Guanajuato (CONCYTEG), Mexico Modified Organisms (CIBIOGEM) of Mexico, Mexico. **Funded:** \$34,275.00
7. PI: Leyva-Gonzalez M; **Co-PIs: Lopez-Arredondo D**, Herrera-Estrella L. **2015-2016**. *Development of an effective system for the production of non-caloric peptides with sweetening properties of natural origin in microalgae*. FINNOVATEG Program, Council of Science and Technology of the State of Guanajuato (CONCYTEG), Mexico. **Funded:** \$23,748.00
8. **PI: Lopez-Arredondo D**; Co-PI: Herrera-Estrella L. **2020**. *Development of generic BT maize for pest control in Mexico*. FINNOVATEG Program Council of Science and Technology of the State of Guanajuato (CONCYTEG), Mexico. **Funded:** \$31,231.00
9. PI: Herrera-Estrella L; **Co-PIs: Goldbard S, Lopez-Arredondo D**. **2012**. *Surge or maize production with an effective low-cost sustainable weed control system*. Bill and Melinda Gates Foundation. Grant ID: OPP1069296. **Funded:** \$100,000.00
10. PI: Herrera-Estrella L; **Co-PI: Lopez-Arredondo D**. **2012-2015**. *Field evaluation of a new technological platform for the control of weed based on genetically modified maize and soybean*. FINNOVA Program National Council of Science and Technology (CONACYT), Mexico. **Funded:** \$485,439.00
11. **PI: Lopez-Arredondo D**; Co-PI: Herrera-Estrella L. **2012-2015**. *Innovation and scaling-up of an efficient system for the production of biofuels and bioproducts in open ponds from genetically modified microalgae*. FINNOVA Program National Council of Science and Technology (CONACYT), Mexico. **Funded:** \$285,551.00

**SERVICES**

**Service to Professional Organizations:**

1. AgroBIO Mexico Evaluation Committee. Evaluation of PhD and Master dissertations for the AgroBIO Mexico Award, 2014.
2. Grant proposal reviewer, local and federal programs funded by the National Council of Science and Technology (CONACYT) in Mexico, 2013-2019.

**Service to University:**

1. Dean's Representative, PhD Defense Komal Attri, Department of Biological Science, June 2023.
2. Dean's Representative, PhD Defense Inosha Wijewardene, Department of Biological Science, April 2021.

**Service to the College:**

1. Member of the former Davis College's Diversity, Equity and Inclusion Committee. In the process of being renamed, May 2021-Present.

**Service to the Department and IGCAS (Department of Plant and Soil Science, PSS; Institute of Genomics for Crop Abiotic Stress Tolerance):**

1. Member of the Search Committee for Assistant/Associate Professor of Biopolymers for Biomedical Applications-FBRI, June-December 2023.
2. Member of the Search Committee for Assistant/Associate Professor of Renewable Bioproducts-FBRI, December 2021-April 2022.
3. Member of the Search Committee for Assistant/Associate Professor of Cell Biology in Plant Tissue Culture and Plant Transformation, April-December 2022.
4. Judge for PSS Student Research Symposium, 2021.
5. Member of the Search Committee for Business Manager-IGCAS (December 2019 - January 2020).
6. Member of the Search Committee for Assistant/Associate Professor Crop Population Genomics-IGCAS (March - October 2019).
7. Member of the Search Committee for Assistant/Associate Professor of Molecular Crop Improvement - IGCAS (March - October 2019).
8. Member of the Search Committee for Research Associate/Greenhouse Manager-IGCAS (March - May 2019).

**Service to the Scientific Community:**

- a) Reviewer. NSF-Plant Genome Research Program (PGRP) (2022).
- b) Reviewer for Plant Biotechnology Journal, The Plant Journal, Plants, Journal of Experimental Botany, Genetica, Theoretical and Applied Genetics, Scientific Reports, Frontiers in Plant Science, BMC Plant Biology, Nature Communications.
- c) Guest Editor, MDPI-Cells. Special Issue "Molecular and Biochemical Mechanisms

- Elucidating Growth and Cellular Stress Responses of Microalgae” (2023-2024, in progress).
- d) Editorial Review Board Member, Frontiers-Synthetic Biology-Metabolic Engineering (October 2023-Present).
  - e) Editorial Review Board Member, Scientific Reports (February 2023-Present).
  - f) Editorial Review Board Member, BMC Genomics (June 2023-Present).
  - g) Associate Editor, Frontiers in Plant Science-Functional and Applied Genomics (December 2023-Present).

### **Service to Industry:**

- 1. Scientific advisor, StelaGenomics Inc/StelaGenomics Mexico (2018-Present)
- 2. Scientific advisor, HadosBiotec (2021-Present)
- 3. Co-Chief Scientific Officer, Flatland Genomics LLC (2023-Present)

### **DEVELOPMENT ACTIVITIES ATTENDED**

- Conference Attendance, "2023 IGCAS Symposium", Institute of Genomics for Crop Abiotic Stress Tolerance IGCAS, Texas Tech University, Lubbock, TX, USA (November 14, 2023).
- CASNR Retreat, Texas Tech University, Lubbock, TX, USA (August 18, 2023).
- Webinar, "NSF CAREER Seminar", National Science Foundation, USA (May 15, 2023).
- Meeting, "NASA Discussion", Texas Tech University, Lubbock, TX, USA (May 5, 2023).
- Seminar organizer, "A Green Vision for the future of algal biotechnology in extreme environments", Texas Tech University, Lubbock, TX, USA (April 21, 2023).
- Conference Attendance, "2023 Beltwide Cotton Conferences", National Cotton Council of America, New Orleans, LA, USA (January 10 - January 12, 2023).
- Conference attendance, "2023 Metabolic Engineering in Plants: Sustainability Through Innovation", Gordon Research Conference, Barcelona, Spain (June 11-16, 2023).
- Conference Attendance, "2022 IGCAS Symposium", Institute of Genomics for Crop Abiotic Stress Tolerance IGCAS, Texas Tech University, Lubbock, TX, USA (December 7, 2022).
- USDA-ARS & TTU Research Spotlight, Texas Tech University and USDA-ARS, Lubbock, Lubbock, TX, USA (October 18 -19, 2022).
- Conference Attendance, "XIX National Plant Biochemistry and Molecular Biology Congress, XII Joint Symposium Mexico-USA", Mexican Society of Biology, Online, Mexico (November 8 - 11, 2021).
- Conference Attendance, "Plant Synthetic Biology 2021", American Society of Plant Biologist (ASPB), virtual, USA (September 26 - 27, 2021).
- Conference Attendance, "2021 Beltwide Cotton Conferences", National Cotton Council of America, USA (January 5 - 7, 2021).
- Conference Attendance, "Plant Biology Worldwide Summit 2020", American Society of Plant Biologist, virtual (July 27- 31, 2020).
- Faculty Fellow Meeting, CASNR, Lubbock, Texas, USA (September 12, 2019 - May 15, 2020).

Conference Attendance, "2020 Beltwide Cotton Conferences", National Cotton Council of America, Austin, Texas, USA (January 8 -10, 2020).

Workshop, "Write Winning Grant Proposals", Office of Research and Innovation-TTU, Lubbock, Texas, USA (February, 2019).

Workshop, "Soil Fertility and Fertilization", Intagri, Guadalajara, Jalisco, Mexico, March 8-9, 2013.

Workshop, "1<sup>st</sup> International Workshop on Ancient DNA", National Laboratory of Genomics for Biodiversity (LANGEBIO)-Center for Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV), Irapuato, Guanajuato, Mexico, August 2-3, 2010.

Workshop, "Hazardous Chemicals and Cleaning of Contaminated Areas", National Laboratory of Genomics for Biodiversity (LANGEBIO)-Center for Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV), Irapuato, Guanajuato, Mexico, October 22-26, 2007.