

Miguel A. Villalobos

Centro de Investigación en Biotecnología Aplicada (CIBA), Unidad Tlaxcala

Type of address: Postal address.

Mexico

Email: mvillalobosl@ipn.mx



Research interests

My group is interested in studying plants and bacteria with high tolerance to abiotic stress (drought, cold, salinity, among others). We investigate the biochemical, physiological, and molecular mechanisms they use to survive. We have experience with *Arabidopsis thaliana* and *Cratogeomys merriami* as model plants. In recent years we have focused on the study of mosses with extreme protoplasmic tolerance to desiccation, freezing, and very high concentrations of sodium chloride. The models used are the mosses *Pseudocrossidium replicatum*, *Bryum billardieri*, and *Physcomitrella patens*. We are conducting RNAseq studies of *P. replicatum* subjected to different abiotic factors and stimuli (dehydration, rehydration, ABA, NaCl, sorbitol, glucose). The identified genes are currently studied using constitutive and induced overexpression, knockouts, and gene editing mediated by the CRISPR-Cas system.

Employment

Centro de Investigación en Biotecnología Aplicada (CIBA), Unidad Tlaxcala

Mexico

1 Aug 2006 → present

Research outputs

Establishment of in vitro germination of *Distichlis spicata* and response to osmotic stress

Castelán-Fentanes, M. L., García-Morales, S., Contreras-Jiménez, J. L., Ríos-Meléndez, S., Bibbins-Martínez, M. D., Villalobos-López, M. A. & Arroyo-Becerra, A., 2023, In: Israel Journal of Plant Sciences. 69, 3, p. 1-9 9 p.

Biotechnological Advances to Improve Abiotic Stress Tolerance in Crops

Villalobos-López, M. A., Arroyo-Becerra, A., Quintero-Jiménez, A. & Iturriaga, G., Oct 2022, In: International Journal of Molecular Sciences. 23, 19, 12053.

The decolorization and degradation of azo dyes by two *Stenotrophomonas* strains isolated from textile effluent (Tepetitla, Mexico)

Vilchis-Carmona, J. A., Rodríguez-Luna, I. C., Elufisan, T. O., Sánchez-Varela, A., Bibbins-Martínez, M., Rivera, G., Paz-Gonzalez, A. D., Villalobos-López, M. A. & Guo, X., Dec 2021, In: Brazilian Journal of Microbiology. 52, 4, p. 1755-1767 13 p.

***Pseudocrossidium replicatum* (Taylor) R.H. Zander is a fully desiccation-tolerant moss that expresses an inducible molecular mechanism in response to severe abiotic stress**

Ríos-Meléndez, S., Valadez-Hernández, E., Delgadillo, C., Luna-Guevara, M. L., Martínez-Núñez, M. A., Sánchez-Pérez, M., Martínez-y-Pérez, J. L., Arroyo-Becerra, A., Cárdenas, L., Bibbins-Martínez, M., Maldonado-Mendoza, I. E. & Villalobos-López, M. A., Nov 2021, In: Plant Molecular Biology. 107, 4-5, p. 387-404 18 p.

Genome-wide transcriptional changes triggered by water deficit on a drought-tolerant common bean cultivar

Gregorio Jorge, J., Villalobos-López, M. A., Chavarría-Alvarado, K. L., Ríos-Meléndez, S., López-Meyer, M. & Arroyo-Becerra, A., Dec 2020, In: BMC Plant Biology. 20, 1, 525.

High levels of glucose alter *Physcomitrella patens* metabolism and trigger a differential proteomic response

Chamorro-Flores, A., Tiessen-Favier, A., Gregorio-Jorge, J., Villalobos-López, M. A., Guevara-García, Á. A., López-Meyer, M. & Arroyo-Becerra, A., Dec 2020, In: PLoS ONE. 15, 12 December, e0242919.

The mitogenome of *Pseudocrossidium replicatum*, a desiccation-tolerant moss

Cevallos, M. A., Guerrero, G., Ríos, S., Arroyo, A., Villalobos, M. A. & Porta, H., 2 Jul 2020, In: Mitochondrial DNA Part B: Resources. 5, 3, p. 2339-2341 3 p.

Antimicrobial susceptibility pattern of *Stenotrophomonas* species isolated from Mexico

Elufisan, T. O., Luna, I. C. R., Oyedara, O. O., Varela, A. S., García, V. B., Oluyide, B. O., Treviño, S. F., López, M. A. V. & Guo, X., 23 Apr 2020, In: African Health Sciences. 20, 1, p. 168-181 14 p.

The mitogenome of *Pseudocrossidium replicatum*, a desiccation-tolerant moss

Cevallos, M. A., Guerrero, G., Ríos Meléndez, S., Arroyo Becerra, A., Villalobos-López, M. A. & Porta, H., 2020, In: Plant Molecular Biology. 3, 5, p. 2339 2341 p.

The Polycyclic Aromatic Hydrocarbon (PAH) degradation activities and genome analysis of a novel strain *Stenotrophomonas* sp. Pemsol isolated from Mexico

Elufisan, T. O., Rodríguez-Luna, I. C., Oyedara, O. O., Sánchez-Varela, A., Hernández-Mendoza, A., Gonzalez, E. D., Paz-González, A. D., Muhammad, K., Rivera, G., Villalobos-Lopez, M. A. & Guo, X., 2020, In: PeerJ. 2020, 1, 8102.

Complete genome sequence of *Stenotrophomonas maltophilia* strain SVIA2, isolated from crude oil-contaminated soil in Tabasco, Mexico

Elufisan, T. O., Lozano, L., Bustos, P., Rodríguez-Luna, I. C., Sánchez-Varela, A., Oyedara, O. O., Villalobos-López, M. Á. & Guo, X., 25 Jul 2019, In: Microbiology Resource Announcements. 8, 30, e00529-19.

Desiccation-induced viable but nonculturable state in *Pseudomonas putida* KT2440, a survival strategy

Pazos-Rojas, L. A., Muñoz-Arenas, L. C., Rodríguez-Andrade, O., López-Cruz, L. E., López-Ortega, O., Lopes-Olivares, F., Luna-Suarez, S., Baez, A., Morales-García, Y. E., Quintero-Hernández, V., Villalobos-López, M. A., De la Torre, J. & Muñoz-Rojas, J., 1 Jul 2019, In: PLoS ONE. 14, 7, e0219554.

The chloroplast genome of the desiccation-tolerant moss *Pseudocrossidium replicatum* (Taylor) R.H. Zander

Cevallos, M. A., Guerrero, G., Ríos, S., Arroyo, A., Villalobos, M. A. & Porta, H., 1 Apr 2019, In: Genetics and Molecular Biology. 42, 2, p. 488-493 6 p.

Differential regulation of *Pleurotus ostreatus* dye peroxidases gene expression in response to dyes and potential application of recombinant Pleos-DyP1 in decolorization

Cuamatzi-Flores, J., Esquivel-Naranjo, E., Nava-Galicia, S., López-Munguía, A., Arroyo-Becerra, A., Villalobos-López, M. A. & Bibbins-Martínez, M., Jan 2019, In: PLoS ONE. 14, 1, e0209711.

Chromium hyper-tolerant *Bacillus* sp. Mh778713 assists phytoremediation of heavy metals by mesquite trees (*Prosopis laevigata*)

Ramírez, V., Baez, A., López, P., Bustillos, R., Villalobos, M. Á., Carreño, R., Contreras, J. L., Muñoz-Rojas, J., Fuentes, L. E., Martínez, J. & Munive, J. A., 2019, In: Frontiers in Microbiology. 10, AUG, 1833.

Loci identification of a N-acyl homoserine lactone type quorum sensing system and a new LysR-type transcriptional regulator associated with antimicrobial activity and swarming in *Burkholderia gladioli* UAPS07070

Seynos-García, E., Castañeda-Lucio, M., Muñoz-Rojas, J., López-Pliego, L., Villalobos, M., Bustillos-Cristales, R. & Fuentes-Ramírez, L. E., 2019, In: Open Life Sciences. 14, 1, p. 165-178 14 p.

The chloroplast genome of the desiccation-tolerant moss *Pseudocrossidium replicatum* (Taylor) R.H. Zander: The chloroplast genome of the desiccation-tolerant moss *Pseudocrossidium replicatum* (Taylor) R.H. Zander

Cevallos, M., Guerrero, G., Ríos Meléndez, S., Arroyo Becerra, A., Villalobos-López, M. A. & Porta, H., 2019, In: Genetics and Molecular Biology. 2, 42, p. 488 493 p.

Cloning, overexpression, and purification of glucose-6-phosphate dehydrogenase of *Pseudomonas aeruginosa*

Acero-Navarro, K. E., Jiménez-Ramírez, M., Villalobos, M. A., Vargas-Martínez, R., Perales-Vela, H. V. & Velasco-García, R., Feb 2018, In: Protein Expression and Purification. 142, p. 53-61 9 p.

Dissection of mechanisms of resistance to *Aspergillus flavus* and aflatoxin using tropical maize germplasm

Garrido-Bazan, V., Mahuku, G., Bibbins-Martínez, M., Arroyo-Bacerra, A. & Ángel Villalobos-López, M., 2018, In: World Mycotoxin Journal. 11, 2, p. 215-224 10 p.

Effect of textile dyes on activity and differential regulation of laccase genes from *Pleurotus ostreatus* grown in submerged fermentation

Garrido-Bazán, V., Téllez-Téllez, M., Herrera-Estrella, A., Díaz-Godínez, G., Nava-Galicia, S., Villalobos-López, M. Á., Arroyo-Becerra, A. & Bibbins-Martínez, M., 1 Dec 2016, In: *AMB Express*. 6, 1, 93.

Protonema suspension cultures of the medicinal moss *Polytrichum juniperinum*

Ruiz-Molina, N., Villalobos-López, M. Á. & Arias-Zabala, M., 1 Sep 2016, In: *In Vitro Cellular and Developmental Biology - Plant*. 52, 4, p. 419-426 8 p.

Arbuscular Mycorrhizal Symbiosis-Induced Expression Changes in *Solanum lycopersicum* Leaves Revealed by RNA-seq Analysis

Cervantes-Gámez, R. G., Bueno-Ibarra, M. A., Cruz-Mendivil, A., Calderón-Vázquez, C. L., Ramírez-Douriet, C. M., Maldonado-Mendoza, I. E., Villalobos-López, M. Á., Valdez-Ortiz, Á. & López-Meyer, M., 1 Feb 2016, In: *Plant Molecular Biology Reporter*. 34, 1, p. 89-102 14 p.

Draft genome sequence of *Burkholderia cenocepacia* strain CEIB S5-2, a methyl parathion- and p-nitrophenol-degrading bacterium, isolated from agricultural soils in Morelos, Mexico

Martínez-Ocampo, F., Fernández López, M. G., Beltrán, L. F. L. A., Popoca-Ursino, E. C., Ortiz-Hernández, M. L., Sánchez-Salinas, E., Quintana, F. R., Villalobos-López, M. A. & Dantán-González, E., 2016, In: *Genome Announcements*. 4, 2, e00220-16.

The actions of lyophilized apple peel on the electrical activity and organization of the ventricular syncytium of the hearts of diabetic rats

Martínez-Ladrón De Guevara, E., Pérez-Hernández, N., Villalobos-López, M. Á., Pérez-Ishiwara, D. G., Salas-Benito, J. S., Martínez Martínez, A. & Hernández-García, V., 2016, In: *Journal of Diabetes Research*. 2016, 8178936.

ArgC orthologs from rhizobiales show diverse profiles of transcriptional efficiency and functionality in *Sinorhizobium meliloti*
Díaz, R., Vargas-Lagunas, C., Villalobos, M. A., Peralta, H., Mora, Y., Encarnación, S., Girard, L. & Mora, J., Jan 2011, In: *Journal of Bacteriology*. 193, 2, p. 460-472 13 p.

Betaine aldehyde dehydrogenase from *Pseudomonas aeruginosa*: Cloning, over-expression in *Escherichia coli*, and regulation by choline and salt

Velasco-García, R., Villalobos, M. A., Ramírez-Romero, M. A., Mújica-Jiménez, C., Iturriaga, G. & Muñoz-Clares, R. A., Mar 2006, In: *Archives of Microbiology*. 185, 1, p. 14-22 9 p.

Evolutionary, structural and functional relationships revealed by comparative analysis of syntenic genes in Rhizobiales
Guerrero, G., Peralta, H., Aguilar, A., Dí, R., Villalobos, M. A., Medrano-Soto, A. & Mora, J., 17 Oct 2005, In: *BMC Evolutionary Biology*. 5, 55.

Stress tolerance and glucose insensitive phenotypes in *Arabidopsis* overexpressing the CpMYB10 transcription factor gene

Villalobos, M. A., Bartels, D. & Iturriaga, G., May 2004, In: *Plant Physiology*. 135, 1, p. 309-324 16 p.

Nucleotide sequence of the *Rhizobium etli* nodS gene

Villalobos, M. A., Nava, N., Vázquez, M. & Quinto, C., 2 Dec 1994, In: *Gene*. 150, 1, p. 201-202 2 p.